Industrial Development Perspective Plan: Vision 2020

Project NC/NEP/00/009

Analytical Report

Prepared for HM's Government of Nepal,
Ministry of Industry, Commerce and Supplies
by the United Nations Industrial Development Organization
on behalf of the United Nations Development Programme

Kathmandu
September 2002

The *Analytical Report* of the Industrial Development Perspective Plan—Vision 2020 was prepared during July-December 2001 by a team of Nepali and foreign consultants and submitted to HMG/N, Ministry of Industry, Commerce and Supplies in early January 2002. It was subsequently reviewed by a large spectrum of stakeholders between Government and industry throughout the first half of the year, and actively discussed at a seminar in Kathmandu on 29 August 2002.

It essentially provides an economic analysis of the manufacturing industry in the Kingdom, its long-term perspectives and the challenges that are likely to emerge along the way. The approach is to a large extent an academic one, as the report draws from a massive set of statistics, qualitative data and existing studies that it tries to compile and analyse in a rigorous, holistic manner.

A separate document extracts from this main report the action-oriented conclusions, which it lays out in the concise format of a white paper on public action for manufacturing progress in Nepal. Indeed, an Industrial Development Perspective Plan—or any plan for that matter— is primarily a Government affair; however, the *Strategy Paper* strongly recommends the pro-active engagement of all stakeholders to join forces in the implementation of the strategy towards a shared vision of Nepal 2020.

Kathmandu, August 2002

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List of Acronyms

ADB	Asian Development Bank
APP	Agriculture Perspective Plan
ATC	Agreement on Textiles and Clothing
BOS	Biological Oxygen Demand
CBS	Central Bureau of Statistics
CBI	Caribbean Basin Initiative
CBO	Community Based Organization
CCIA	Central Carpet Industries Association
CDB	Carpet Development Board
CEA	Carpet Exports Association
CEDAW	Convention to Eliminate All Forms of Discriminations Against Women
CP	Cleaner Production
CRC	Convention on the Right of Child
DDC	District Development Committee
DECONT	Democratic Confederation of Nepalese Trade Unions
DST	Differential and Special Treatment
DSU	Understanding on Rules and Procedures Governing the Settlement of Disputes
EPC	Export Promotion Council
FDI	Foreign Direct Investment
FGT	Foster, Greer and Thorbecke Index
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Products
GEFONT	General Federation of Nepalese Trade Unions
GMSDP	Greater Mekong Sub-regional Development Program
GSP	General System of Preferences
HCI	Head Count Index
HMG/N	His Majesty Government of Nepal
FNCCI	Federation of Nepalese Chambers of Commerce and Industry
FNCSI	Federation of Nepalese Chambers of Small and Cottage Industries
ICD	Inland Container Depot
ICT	Information and Communication Technology
IDM	Industrial Districts Management Company
IDPP	Industrial Development Perspective Plan
IFAD	International Fund for Agriculture Development
ILO	International Labour Organization
IMF	International Monetary Fund
IPB	Industrial Promotion Board
I-PRSP	Interim Poverty Reduction Strategy Paper
ISC	Industrial Services Centre
IT	Information Technology
MFA	Multi-Fibre Arrangement
MOICS	Ministry of Industry, Commerce and Supplies
MPE	Manufacturing Public Enterprise
NBSM	Nepal Bureau of Standards and Metrology
NGA	Nepal Garments Association
NGO	Non-Government Organization
NIE	Newly Industrializing Economy

NLSS	Nepal Living Standard Survey
NPC	National Planning Commission
NRB	Nepal Rastra Bank (Central Bank of Nepal)
NTA	Nepal Textile Association
NTB	Non Trade Barriers
NTUC	Nepal Trade Union Congress
PAF	Poverty Alleviation Fund
PG	Poverty Gap
RONAST	Royal Nepal Academy for Science and Technology
OWC	One-Window Committee
SAARC	South Asian Association for Regional Cooperation
SAFTA	South Asian Free Trade Agreement
SAGQ	South Asia Growth Quadrangle
SAPTA	South Asian Preferential Trade Agreement
SPM	Suspended Particulate Matters
TCDD	Tri-Chloro-Dioxo-Dibenzenes
TNC	Trans National Corporation
TPC	Trade Promotion Council
TSP	Total Suspended Particles
TSS	Total Suspended Solids
UN	United Nations
UNDP	United Nations Development Program
UNIDO	United Nations Industrial Development Organization
VAT	Value Added Tax
VDC	Village Development Committee
WACN	Women Awareness Centre Nepal
WB	World Bank
WEAN	Women Entrepreneurs Association Nepal
WTO	World Trade Organization

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Executive Summary and Main Recommendations

Nepal is a small kingdom, wedged between two economic powers of Asia: China in the north, separated by the Himalayas, and India in the east, south and west with a long open border. Nepal is rich in biodiversity with its diverse ecological zones ranging from the highest altitudes in the world to the low tropical plains bordering with India. Because of the Himalayas and its related river systems, it has great hydroelectric and irrigation potential. The mountains, together with Nepal's rich cultural heritage visible in numerous large and small Hindu and Buddhist temples (including the birthplace of Buddha), make Nepal a major centre for religious and cultural travellers and tourists.

Yet, with a per capita income of about US $250, Nepal is one of the poorest countries in the world. Nearly half of its population is estimated to be living below the poverty line. There are large disparities across income/consumption groups, between urban and rural areas and within areas, and across socio-ethnic groups.

The economic challenge for Nepal is to fight its way out of stagnation and move towards long-term sustainable development. Industrial development will have to be one of its cornerstones. Thus, this document provides a comprehensive set of recommendations for industrial development in Nepal during the course of the first two decades of the 21st century supporting the strategies developed in the 9th five-year plan and refined in the Concept Paper of the 10th Five-Year Plan, emphasizing four core issues: poverty alleviation, regional balance, gender equality and environmental health.

Poverty is most prevalent in rural areas while long-term economic development depends on more formal urban-based industrialization, through sustained increases in productivity. Regional balance cannot be achieved by forcing industries to locate in remote areas. Together, these facts will lead to the general recommendation to follow a two-pronged strategy aiming at the same time at rural, agro-based industrialization as well as more formal urban-based industrial development.

Despite current biases, the manufacturing sector has great potential to absorb female labour and, when supported by strong programmes directed at both men and women gender equality and women empowerment, the growth of manufacturing would provide a positive contribution to increased women employment and opportunities for female entrepreneurship.

Invariably, the impact of industrialization on environment will be mixed. Sustained efforts will be required to maintain the right balance between an enabling industrial environment and minimizing the impact of industries on the environment.

This document has undertaken a thorough analysis of the industrial sector in terms of its macroeconomic environment, the sector's past and present performance, policies affecting the industrial sector, infrastructure for industry, relevant government and non-government institutions and the international outlook. In addition, a nation-wide sample survey of the manufacturing sector was carried out to obtain the latest picture of the characteristics and performance of the manufacturing sector.

The performance of the manufacturing sector in Nepal shows a rather mixed picture. After a policy of economic liberalization was adopted in 1986, the manufacturing sector made a

promising start with real growth rates averaging around 9 percent at the end of the eighties and early nineties, even reaching above 20 percent in 1991/92. Since then, however, real manufacturing growth declined to become even negative in the year 2000/01. Currently, the contribution of manufacturing to GDP is in the order of 9.5 percent, with the share of agriculture in GDP still close to 40 percent. Moreover, manufacturing growth has been erratic, at times driven by one or two fast growing export oriented sub-sectors such as carpets and garments. Recent negative developments in these sectors have made a large impact on overall manufacturing performance.

Below the main recommendations are summarized. For more details, the reader is referred to the Chapter 9 'Conclusions and Recommendations'. For more background information and argumentation the relevant individual chapters must be consulted.

1. Empowerment in policymaking and implementation

It is recommended that an Economic Development Commission (EDC)[1] be formed that stands above sectoral interests and derives power directly from the prime minister to steer policy coordination and implementation.

The Investment Promotion Board should be reconstituted into a powerful Economic Development Board (EDB) focusing on domestic production and investment, while assigning commerce and trade a subsidiary role. The EDB should have a direct link with the Economic Development Commission to implement measures across ministerial boundaries.

It is recommended that the EDB and EDC be supported by a strong, applied policy and research institution (APRI), that can draw upon and direct research capability that at present is scattered across the public sector and research capability that exists outside the public sector in universities, FNCCI, special institutions and local consultants.

Government needs to be enabled, focused and dedicated, and transparent. Thus, bureaucracy must be strengthened. Political interference must be eliminated. A merit-based, performance oriented reward/promotion system should be introduced at all levels.
A political consensus must be build among all parties to fight corruption effectively. Strong political commitment from the top is essential and anti-corruption programmes should start at the top to be credible. All rules, laws and processes should be made clear, and simple. Transparency should be promoted at all steps.

2. General recommendations for industrial development

Every one of the chapters that compose the *Analytical Report* comes with its own set of conclusions and recommendations, later summarized in Chapter 9. Recommendations for public action vary along three dimensions: the urgency of the measure, the cost of the intervention, and the length of the transmission mechanism from the particular action to the impact it was intended to generate.

[1] The Report merely states the need for the particular *functions* to be fulfilled by an Economic Development Commission, an Economic Development Board or an Applied Policy and Research Institution. Whether such functions can be effectively delivered through the strengthening of existing institutions such as the National Planning Commission or the Investment Promotion Board, or should warrant new institutions altogether is a question beyond the scope of the present analysis.

Together, they delineate a framework through which HMG/N will support the implementation of the Industrial Development Plan. Rather than repeating the sequence of recommendations in the order of their appearance in the text, Table 1 below clusters them according to the particular role of the Government they call for: from what MOICS can do (restructuring ailing industries, facilitating promising industries and sub-sectors), to what it can promote (productivity, technology development), to what it can support (infrastructure, education and training), and to what it can advocate (enabling environment: law and order, investment climate). This form of presentation establishes a straightforward correspondence between the present *Analytical Report* and the separate *Strategy Paper*.

Table 1: Overview of Recommended Public Action

Policy Intervention (in a sequence of decreasing direct involvement by HMG/N)	**Priority** → ↗ ↑	**Cost** → ↗ ↑
1. Facilitating Industrial Restructuring and Fostering Future Promising Industries		
1.1 Facilitating industrial restructuring		
1.1.1 Divest (privatization or liquidation) the majority of SOEs	↗	↑
1.1.2 Allow phasing out ailing industries with uncertain prospects	↗	→
1.1.3 Introduce a credit guarantee scheme for industrial restructuring	→	↗
1.1.4 Introduce a subsidy to enterprises permanently employing retrenched SOE employees	→	↗
1.2 Sub-Sector specific support for manufacturing activities		
1.2.1 Implement the Agriculture Perspective Plan (APP)	↑	↑
1.2.2 Broaden involvement in the implementation of APP to include ministries other than MOAD and FNCCI/ Agro-Enterprise Centre	↑	→
1.2.3 Reduce distorting policies affecting prices, demand and supply of commodities for food industries	↑	→
1.2.4 Introduce grades/standards for products such as milk and meat	→	↗
1.2.5 Upgrade and provide adequate financial resources for the Institute of Food Technology	→	↗
1.2.6 Initiate with donor support the establishment of a carpet weaving and design training institute in the private sector	↑	→
1.2.7 Assist the private sector to consolidate institutional support for the carpet industry; seek donor assistance for marketing	↑	→
1.2.8 Introduce for tax purpose double deduction of costs for export marketing of carpets	↑	↗
1.2.9 Initiate negotiations with USA regarding preferential access to the US market for garments	↑	→
1.2.10 Include garment industry as a ”national priority industry” under the Industrial Enterprises Act	→	↗
1.2.11 Allow the private sector to manage the ”dry dock” in Birgunj	↑	→
1.2.12 Enforce laws to halt further deforestation	↑	↑
1.2.13 Promote private investment in organized forestry production integrated with wood processing	→	↗
1.2.14 Promote village management systems of natural forests	→	↗
1.2.15 Develop adequate quality control of imported and domestically manufactured pharmaceuticals	→	↗
1.2.16 Enforce WHO’s Good Manufacturing Practices (GMP)	→	↗
1.2.17 Increase gradually requirements of licensing of pharmacies	→	↗
1.2.18 Ensure that a critical mass of staff is educated in pharmacology, chemistry and microbiology to support pharmaceutical industries	→	↑
1.2.19 Continue support in R&D for traditional medicines	→	↗
1.2.20 Enforce more strongly environmental regulations for brick manufacturing and consider incentives to pursue this objective	→	↗
1.2.21 Promote private sector involvement in exploration, mining and further processing of non-metallic minerals by abolishing Government rights to share in as an investor and co-owner in the	↑	→

Policy Intervention (in a sequence of decreasing direct involvement by HMG/N)	Priority			Cost		
	➔	↗	↑	➔	↗	↑
mining of discovered minerals						
1.2.22 Strengthen education and training for the mechanical engineering sub-sector						
1.2.23 Introduce business support services by engineering training institutes						
1.2.24 Bureau of Standards to adopt standards for engineering products						
1.2.25 Adopt as Government procurement policy to disaggregate major purchases of engineering goods to allow domestic firms to compete for parts of major infrastructure projects						
1.2.26 Department of Archaeology to remove administrative obstacles for the production and exports of jewellery						
2. Raising productive efficiency and technological capabilities of domestic firms						
2.1 Strengthen technological development capabilities within industrial firms						
2.1.1 Public institutes to explicitly stimulate demand by firms						
2.1.2 Introduce a grant-based subsidy scheme for training in design, engineering and R&D						
2.1.3 Introduce on a pilot basis a grant-based system to support the early stages of technology development activities						
2.2 Strengthen support for technological development						
2.2.1 Modify and strengthen the role of Department of Industry to support technological development						
2.2.2 Strengthen the role of industry associations to support technological development						
2.2.3 Detailed review of each S&T public institute aimed at manufacturing sector. Recommend measures to effectively serve manufacturing firms.						
2.2.4 Abolish the requirement under the Foreign Investment and Technology Transfer Act to obtain permission for technology transfer agreements						
3. Public and private investment in physical infrastructure						
3.1 Electricity						
3.1.1 Establish a separate regulatory body for the electricity sector involving also representatives of consumer interests						
3.1.2 One-window system for private investors; inventory of projects; transparent mechanisms for project appraisal and approval						
3.1.3 Legal amendments to allow open access to the grid and private sector operation in transmission and distribution						
3.1.4 Prepare standard power purchase agreements						
3.1.5 Strengthen the system of investment guarantees						
3.1.6 Change in NEA monopoly to allow private parties to be involved in generation, transmission, distribution and exports						
3.1.7 Explore the potential for energy intensive industries						
3.2 Transport and telecommunications						
3.2.1 Extend rural road network to reach every village						
3.2.2 Maintenance of existing roads						
3.2.3 Improvements (widening and asphalting) of existing roads						
3.2.4 Establish a direct road link between Kathmandu and India						
3.2.5 Improve integration of transport, port and administration Nepal-India-Bangladesh to facilitate exports to overseas markets						
3.2.6 Promote private sector involvement in the road sector						
3.2.7 Improve airfreight services (through privatization?)						
3.2.8 Provide legal framework for private sector participation in fixed-wire and wireless telecommunications						
3.3 Water Supply						
3.3.1 Expand water supply						
3.3.2 Provide legal framework for private sector participation						
3.4 Industrial estates and zoning						

Policy Intervention (in a sequence of decreasing direct involvement by HMG/N)	Priority			Cost		
	→	↗	↑	→	↗	↑
3.4.1 Upgrade physical infrastructure for viable existing industrial estates						
3.4.2 Provide legal framework to allow for purchase of land inside industrial estates						
3.4.3 Allow for private sector development of industrial estates						
3.4.4 Improve industrial relations in industrial estates through improved mechanisms of Government-private sector-trade union consultations						
4. Raising Education Quality and Improving Skills						
4.1 Upgrade quality of primary and secondary school education						
4.2.Upgrade quality of tertiary education system						
4.3 Public-private sector review of budget allocations for technical and vocational education						
4.4 Department of Industry to undertake regular surveys of manpower needs by the manufacturing sector						
4.5 Introduce a manufacturing-wide incentive scheme for upgrading skills at firm level (double deduction of training costs or voucher based)						
5. Enabling business environment						
5.1 Restore political stability and law and order						
5.2 Pursue macroeconomic policies to support manufacturing competitiveness						
5.3 Trade Policy Reform						
5.3.1 Accelerate efforts to join WTO before the end of 2004						
5.3.2 Establish timetable to reduce import duties						
5.3.3 Harmonize tariff rates with those of India						
5.3.4 Abolish the floor price for export of carpets						
5.3.5 Abolish export taxes for commodities re-exported to India						
5.3.6 Rationalize existing import tariffs to avoid disincentives						
5.3.7 Improve rules of origin and certificates of origin system						
5.3.8 Abolish the 0.5% service fee on exports						
5.4 Public-Private-Union Consultative Mechanism						
5.4.1 Strengthen public-private-union consultative bodies						
5.4.2 Appoint an *ad hoc* commission to review the operations of the various agencies responsible for the manufacturing sector						
5.4.3 Appoint an *ad hoc* commission to review the operations of the various agencies responsible for labour						
5.4.4 Establish public-private consultative mechanism for tax matters						
5.4.6 Government to involve itself in a continuous dialogue with the private sector to develop support programmes for promising future industries as identified by the business community						
5.5 Improve efficiency of the Government						
5.5.1 Train customs officers in classification and valuation of goods						
5.5.2 Simplify custom documentation requirements						
5.5.3 Impose a time limit on custom officers for goods clearance						
5.5.4 Institute an effective system for resolving tax disputes						
5.5.5 Employ a competent international agency for custom management						
5.5.6 Review performance of One-Window system and recommend actions to increase its performance						
5.5.7 Review performance of Investment Promotion Board and recommend actions to increase its efficiency						
5.5.8 Formulate FDI policy to promote technology transfers to domestic firms (non-discriminatory)						
5.5.9 Strengthen policy implementation, coordination and monitoring mechanisms of the Ministry of Industry, Commerce and Supplies						
5.5.10 Strengthen the Department of Industry to act as a facilitator for private sector development						
5.5.11 DCSI, in cooperation with FNCSI, to formulate a strategy and						

Policy Intervention (in a sequence of decreasing direct involvement by HMG/N)	Priority			Cost		
	→	↗	↑	→	↗	↑
policies for promotion of small and rural-based enterprises						
5.5.12 Strengthen the Department of Labour to improve the industrial relations environment of the country						
5.5.13 Take measures to effectively coordinate energy policy making and implementation						
5.5.14 Strengthen the effectiveness of boards, committees, councils, etc., by avoiding duplication of membership and expanding membership of private sector and trade unions						
5.6 Legislation reform						
5.6.1 Amend the Labour Law to facilitate labour mobility						
5.6.2 Amend the Company Law to facilitate liquidations and abolish approvals for loan transactions						
5.6.3 Amend the Contract Law to provide protection against the break of contracts						
5.6.4 Amend the Land Law to provide more secure land tenure						
5.6.5 Draft new laws in areas such as bankruptcy, anti-dumping, intellectual property rights, competition, etc.						
5.7 Financial sector reform						
5.7.1 Deepen and speed up financial sector reform						
5.7.2 Introduce a credit guarantee scheme						
5.7.3 Introduce an export credit guarantee scheme						

3. Towards a phased action plan in support of IDPP

Identifying the measures to be implemented by HMG/N in support of the Industrial Development Perspective Plan is a positive step, based on expert's judgement. Articulating these into a sequence of actions in the short-, medium-, and long-run requires a normative decision on the relative importance to the policy-maker of the variables "priority" and "cost".[2]

Clearly the most urgent initiatives to be undertaken by HMG/N are these labelled as high priority, low cost. Next—and somewhat arbitrarily—this section of the *Analytical Report* has adopted the convention that "priority" dominates "cost"; in other words, a high-priority, medium-cost action is considered to precede a medium-priority, low-cost initiative. The resulting lexicographic order defines a phased action plan for the Government.

3.1. Short-term, priority measures

- Allow the phasing out of ailing industries with uncertain prospects
- Broaden involvement in the implementation of APP to include ministries other than MOAD and FNCCI/ Agro-Enterprise Centre
- Reduce distorting policies affecting prices, demand and supply of commodities for food industries
- Initiate with donor support the establishment of a carpet weaving and design training institute in the private sector

[2] In traditional parlance, a long-term action plan is a set of actions with relatively long maturities, that is, where the benefit is felt 10 or 20 years after the initiative is taken—for instance, deepening technological capabilities or enlarging access to secondary education. A short-term action plan refers to measures that yield immediate effects, such as a reduction in import duties. An expanded version of Table 1 showing the estimated length of the transmission mechanism is found in Annex of the *Strategy Paper*. However, it was felt more practical and useful to Nepal's authorities to distinguish here the suggested actions according to how urgent they are—regardless of how long they will eventually take to bear fruit. Thus "short-term measures" will encompass reforms that ought to be implemented immediately, particularly if they have little incidence on the State budget.

- Assist the private sector to consolidate institutional support for the carpet industry; seek donor assistance for marketing
- Initiate negotiations with USA regarding preferential access to the US market for garments
- Allow the private sector to manage the ”dry dock” in Birgunj
- Promote private sector involvement in exploration, mining and further processing of non-metallic minerals by abolishing Government rights to share in as an investor and co-owner in the mining of discovered minerals
- Promote private sector involvement in the road sector
- Pursue macroeconomic policies to support manufacturing competitiveness
- Establish public-private consultative mechanism for tax matters
- Government to involve itself in a continuous dialogue with the private sector to develop support programmes for promising future industries as identified by the business community
- Amend the Labour Law to facilitate labour mobility
- Legal amendments to allow open access to the grid and private sector operation in transmission and distribution
- Prepare standard power purchase agreements
- Change in NEA monopoly to allow private parties to be involved in generation, transmission, distribution and exports
- Improve integration of transport, port and administration Nepal-India-Bangladesh to facilitate exports to overseas markets
- Introduce a manufacturing-wide incentive scheme for upgrading skills at firm level (double deduction of training costs or voucher based)
- Establish timetable to reduce import duties
- Institute an effective system for resolving tax disputes
- DCSI, in cooperation with FNCSI, to formulate a strategy and policies for promotion of small and rural-based enterprises
- Divest (privatization or liquidation) the majority of SOEs
- Implement the Agriculture Perspective Plan (APP)
- Enforce laws to halt further deforestation
- Extend rural road network to reach every village
- Maintenance of existing roads
- Upgrade quality of primary and secondary school education
- Restore political stability and law and order
- Employ a competent international agency for custom management
- Deepen and speed up financial sector reform

3.2. Medium-term measures

- Adopt as Government procurement policy to disaggregate major purchases of engineering goods to allow domestic firms to compete for parts of major infrastructure projects
- Department of Archaeology to remove administrative obstacles for the production and exports of jewellery
- Modify and strengthen the role of Department of Industry to support technological development
- Strengthen the role of industry associations to support technological development
- Detailed review of each S&T public institute aimed at manufacturing sector. Recommend measures to effectively serve manufacturing firms.
- Abolish the requirement under the Foreign Investment and Technology Transfer Act to obtain permission for technology transfer agreements

- One-window system for private investors; inventory of projects; transparent mechanisms for project appraisal and approval
- Strengthen the system of investment guarantees
- Provide legal framework for private sector participation in fixed-wire and wireless telecommunications
- Provide legal framework to allow for purchase of land inside industrial estates
- Allow for private sector development of industrial estates
- Public-private sector review of budget allocations for technical and vocational education
- Department of Industry to undertake regular surveys of manpower needs by the manufacturing sector
- Abolish the floor price for export of carpets
- Rationalize existing import tariffs to avoid disincentives
- Strengthen public-private-union consultative bodies
- Simplify custom documentation requirements
- Impose a time limit on custom officers for goods clearance
- Strengthen policy implementation, coordination and monitoring mechanisms of the Ministry of Industry, Commerce and Supplies
- Strengthen the Department of Industry to act as a facilitator for private sector development
- Introduce a credit guarantee scheme for industrial restructuring
- Introduce a subsidy to enterprises permanently employing retrenched SOE employees
- Include garment industry as a ”national priority industry” under the Industrial Enterprises Act
- Promote private investment in organized forestry production integrated with wood processing
- Promote village management systems of natural forests
- Develop adequate quality control of imported and domestically manufactured pharmaceuticals
- Enforce WHO’s Good Manufacturing Practices (GMP)
- Increase gradually requirements of licensing of pharmacies
- Continue support in R&D for traditional medicines
- Enforce more strongly environmental regulations for brick manufacturing and consider incentives to pursue this objective
- Public institutes to explicitly stimulate demand by firms
- Establish a separate regulatory body for the electricity sector involving also representatives of consumer interests
- Explore the potential for energy intensive industries
- Improve airfreight services
- Accelerate efforts to join WTO before the end of 2004
- Abolish export taxes for commodities re-exported to India
- Improve rules of origin and certificates of origin system
- Abolish the 0.5% service fee on exports
- Amend the Company Law to facilitate liquidations and abolish approvals for loan transactions
- Amend the Land Law to provide more secure land tenure
- Draft new laws in areas such as bankruptcy, anti-dumping, intellectual property rights, competition, etc.
- Introduce a credit guarantee scheme
- Introduce an export credit guarantee scheme

- Ensure that a critical mass of staff is educated in pharmacology, chemistry and microbiology to support pharmaceutical industries
- Establish a direct road link between Kathmandu and India
- Upgrade physical infrastructure for viable existing industrial estates
- Upgrade quality of tertiary education system
- Train customs officers in classification and valuation of goods

3.3. Long-term measures

- Bureau of Standards to adopt standards for engineering products
- Improve industrial relations in industrial estates through improved mechanisms of Government-private sector-trade union consultations
- Appoint an ad hoc commission to review the operations of the various agencies responsible for the manufacturing sector
- Appoint an ad hoc commission to review the operations of the various agencies responsible for labour
- Review performance of One-Window system and recommend actions to increase its performance
- Review performance of Investment Promotion Board and recommend actions to increase its efficiency
- Formulate FDI policy to promote technology transfers to domestic firms (non-discriminatory)
- Strengthen the Department of Labour to improve the industrial relations environment of the country
- Take measures to effectively coordinate energy policy making and implementation
- Strengthen the effectiveness of boards, committees, councils, etc., by avoiding duplication of membership and expanding membership of private sector and trade unions
- Amend the Contract Law to provide protection against the break of contracts
- Introduce business support services by engineering training institutes
- Introduce a grant-based subsidy scheme for training in design, engineering and R&D
- Introduce on a pilot basis a grant-based system to support the early stages of technology development activities
- Harmonize tariff rates with those of India
- Strengthen education and training for the mechanical engineering sub-sector
- Improvements (widening and asphalting) of existing roads

1. Introduction

Nepal is a small kingdom, wedged between two economic powers of Asia: China in the north, separated by the Himalayas, and India in the east, south and west with a long open border. Its land area is about 4.3 percent that of India and 1.5 percent of China. Nepal is rich in biodiversity with its diverse ecological zones ranging from the highest altitudes in the world to the low tropical plains bordering with India. Because of the Himalayas and its related river systems, it has great hydroelectric and irrigation potential. The mountains, together with Nepal's rich cultural heritage visible in numerous large and small Hindu and Buddhist temples (including the birthplace of Buddha), make Nepal a major centre for religious and cultural travellers and tourists.

Yet, with a per capita income of about US $250, Nepal is one of the poorest countries in the world. It ranks 144th out of the 175 countries listed according to the Human Development Index used by 1999 UNDP in its Human Development Report. Nearly half of its population is estimated to be living below the poverty line. Not only is poverty measured in economic terms is high; other indicators of the quality of life also paint a poor picture. Social indicators are low for all, and they are particularly low for the very poor. There are disparities across income/consumption groups, between urban and rural areas and within areas, and across socio-ethnic groups.

1.1. Objectives of the Industrial Development Perspective Plan

The economic challenge for Nepal is to fight its way out of stagnation and move towards long-term sustainable development. Industrial development will have to be one of its cornerstones. Thus, this document provides a comprehensive set of recommendations for industrial development[3] in Nepal during the course of the first two decades of the 21st century. The point of departure will be the vision and strategies developed in the 9th five-year plan and refined in the Concept Paper of the 10th Five-Year Plan (NPC 2001). This vision has been expressed in concrete socio-economic targets (Table 1.1). The strategy has been formulated around four core issues: poverty alleviation, regional balance, gender equality and environmental health. The relation between industrial development, the national vision, and these core issues is discussed in the sections that follow.

To arrive at a long-term perspective for industrial development, this document has undertaken a thorough analysis of the industrial sector in terms of its macroeconomic environment, the sector's past and present performance, policies affecting the industrial sector, infrastructure for industry, relevant government and non-government institutions and the international outlook. In addition, a nation-wide sample survey of the manufacturing sector was carried out to obtain the latest picture of the characteristics and performance of the manufacturing sector.

The performance of the manufacturing sector in Nepal shows a rather mixed picture. After a policy of economic liberalization was adopted in 1986, the manufacturing sector made a promising start with real growth rates averaging around 9 percent at the end of the eighties and early nineties, even reaching above 20 percent in 1991/92. Since then, however, real

[3] In this document, the terms "industry" and "industrial development" refer exclusively to the manufacturing sector. Other industries are referred to by their explicit names (*e.g.* tourism industry, etc.).

manufacturing growth declined to become even negative in the year 2000/01. Currently, the contribution of manufacturing to GDP is in the order of 9.5 percent, with the share of agriculture in GDP still close to 40 percent. Moreover, manufacturing growth has been erratic, at times driven by one or two fast growing export oriented sub-sectors such as carpets and garments. Recent negative developments in these sectors have made a large impact on overall manufacturing performance. In contrast to this is a steadily growing food sector relying on agricultural inputs. In short, the problem is one of a stagnating manufacturing sector at a low level of development with erratic growth rates due to a narrow base.

The remainder of the section will discuss the long-term perspective developed in the 9th and 10th Five-Year Plan (Section 1.1.1) and the relation of industrial development to the overall development objectives of Nepal (Section 1.1.2). In the first place, this constitutes the potential impact of industrial development on combating poverty; secondly, the relation between industrialization and regional balance; thirdly, its impact in terms of gender; and finally, the impact of the sector on the environment. The next section (1.2) will define the scope and instruments of industrial policy as perceived by this document. The following sections cover the limitations of the study underlying the recommendations, provide an argued overview of the chapters composing this document, and give information on the composition of the steering committee and the team of consultants who have contributed to this report.

1.1.1. Long-Term Perspective of the 9th and 10th Five-Year Plan

The current 9th Five-Year Plan (NPC 1998) has established longer-term goals for the country in terms of the major macroeconomic and social indicators. This was deemed necessary since in previous plans ‘a clear vision could not be formed for the socio-economic development of the country because of the lack of formulation of an overall framework for long-term development’ (NPC 1998:59). Table 1 below summarizes the main indicators.

The national vision envisages a decline in the incidence of poverty by the end of the 12th plan poverty from 40 percent of the population living below the poverty line to 10 percent. Total unemployment (taken as the sum of unemployment and underemployment) will be reduced by 2017 from around 50 percent at present to 13 percent of the population of working age. The share of manufacturing will have grown from the present 9 – 9.8 percent to 20 percent. Gross national savings will increase from 19.7 (in 2000/01) to 20.0 percent during the 10th Plan, reaching 30 percent during the 12th Plan.

The Concept Paper on the 10th Five-Year Plan (NPC 2001) has revised these socio-economic targets for the period 2003 – 2007 (end of year) with GDP growth at 6.5 percent, agricultural sector growth at 4.2 and non-agricultural sector growth at 7.7 percent. Given these different growth rates, projections of sectoral contributions to GDP at the end of the Tenth Plan changed from 34.0 percent to 32.4 percent for agriculture and from 66.0 percent to 67.6 percent for non-agriculture. The 10th Plan assumes national savings to increase to 22.5 percent as compared to 20.0 percent foreseen in the 9th Plan for the same period (2003 – 2007). Despite the more cautious targets for the growth rates in the 10th Plan the target for employment and poverty remain the same, while national savings have gone up from the 20.0 foreseen in the 9th Plan to 22.5 percent in the 10th Plan.

Given past performance, the overall growth targets of the 10th Plan do not seem unrealistic. However quite recently the economy has entered a period of stagnation, with particularly the

manufacturing and tourist sectors facing serious problems. This would imply that even these targets are on the high side.

For the more distant future the 9th Plan sets rather challenging goals. In line with these targets and for the purpose of the IDPP and Vision 2020, the NPC has determined the goal of industrial strategy and policy at doubling the share of manufacturing value added to 20 percent. With reasonable assumptions about the rate of growth of the rest of the economy, this amounts to an annual growth rate of manufacturing value added between 8.5 and 9.8 percent over a twenty years period. When implemented, the strategies and policies proposed in this document will lead the country progressively in that direction.

Table 1.1: Long-Term Projections of Major Socio-Economic Indicators (2003 – 2017)

	Projections for the Planning Period			
	9th Plan	10th Plan	11th Plan	12th Plan
	1997 – 2002	2003 – 2007	2008 – 2012	2013 - 2017
GDP growth (%)	6.0	7.0	7.5	8.3
Agricultural sector	4.0	5.0	5.0	5.0
Non-agricultural sector	7.3	8.2	8.8	9.7
Contribution to GDP (%)				
Agricultural sector	38.0	34.0	30.0	25.0
Non-agricultural Sector	62.0	66.0	70.0	75.0
Of which: Manufacturing				20.0
Total Investment / GDP (%)	25.0	27.0	31.0	34.0
National Savings / GDP (%)	17.0	20.0	25.0	30.0
Poverty and Unemployment				
People below poverty line (%)	32	30	15	10
Unemployed population	4.0	3.6	3.3	3
Underemployed population	32	23	15	10

Source: Extracted from The Ninth Plan (NPC 1998)

The latest IMF medium term projections estimate real GDP growth between 6.0 and 6.5 percent over the period 2001/02 to 2004/05 under a "High Growth" scenario, and at 3.5 percent over the same period under a "low growth" scenario. For the agricultural sector, the high growth scenario is around 4.0 percent and the low growth scenario at 3.0 percent. For the non-agricultural sector, the high growth scenario is between 7.2 and 8.0 percent and the low growth scenario at 3.8 percent (IMF 2001). NPC's long-term projections therefore seem too optimistic even in the medium term, particularly when the most recent figures on the economy are taken into account.

1.1.2. The National Development Objectives

1.1.2.1. Industrial development and poverty alleviation

With a per capita GDP of $244, Nepal ranks among the poorest countries in Asia. Reducing the level of poverty thus remains the Government's major development challenge. About 42 percent of the population remains below the poverty line[4]. This dry but shocking figure obtains more depth with the understanding that to a large extent the same people are also deprived of basic social services. This percentage has not changed significantly over the last 30 years. This is partly because of the high population growth rate in the country (2.4 percent

[4] Number of persons below the poverty line as percentage of total population in the area covered. In simple words, the poverty line is determined by the minimum daily food intake for a person to stay healthy and does not risk illness from lack of food. It does not cover malnutrition.

in recent years). Overall income distribution is not extremely skewed, but large inequalities are revealed when analysing the income distribution in geographical, social, and gender terms.

The current Ninth Five-Year Plan (1998–2002) aims to reduce poverty incidence by 10 percent at the end of the plan period. However, the wide scope of the Plan's targets means that the impact on poverty is often lost when the relevant programmes are implemented (ADB 2001). The Government has adopted an Interim Poverty Reduction Strategy Paper, which provides a more focused and comprehensive framework for poverty than the Ninth Plan. The Paper emphasizes the Government's intentions to consider the impact on poverty when it prioritises development projects. The Paper will incorporate the resulting priorities into the Tenth Five-Year Plan, for which planning has begun already. As shown in Table 1 above, the target of poverty incidence in 2017 is set at 10 percent. Strategies adopted for all sectors of the economy will have to contribute to attaining the objective set for poverty alleviation.

The IDPP will discuss the direct and indirect, medium-term and long-term linkages that exist between industrial development and poverty alleviation. In this context, two basic facts must be appreciated when formulating industrial policy in Nepal. First is the fact that poverty is most prevalent in rural areas (see section 1.1.2.2. below and Chapter 9 for more details). Secondly, long-term economic development depends on more formal urban-based industrialization, through sustained increases in productivity. Together, these facts will lead to the general recommendation to follow a two-pronged strategy aiming at the same time at rural, agro-based industrialization as well as more formal urban-based industrial development.

1.1.2.2. Industrial development and regional balance

Poverty in Nepal has a strong spatial dimension. In terms of ecological belts, the head-count index shows that the Mountain Belt shows by far the highest poverty incidence of 56 percent as compared to the Hill Area (at 41 percent) and the Terai Area (low plains) at 42 percent (World Bank 1999). In terms of the rural-urban divide, rural poverty was measured at 44 percent while urban poverty stood at 23 percent as measured by the head count index. Poverty is highest in the Western development regions and within those more and the hills and even more in the mountains. In the urban centres, poverty incidence is lowest in Kathmandu and Kathmandu Valley.

Formal industries will not locate in rural areas unless a strong linkage exists with a rural resource that has to be processed on the spot. Creating strong incentives for dispersion into rural areas is not conducive for fast formal industrial development where the positive effects of externalities, economies of scale, and conglomeration can only be harvested by polarization and concentration. Therefore, in line with the general conclusion in the previous section, industrial development's contribution to regional balance will follow the two lines of rural industrialization as well as formal urban-based industrialization.

1.1.2.3. Industrial development and gender equality

Basic human rights dictate equal opportunities for all. In the real world large differences exist globally, between regions, races, classes and castes and in terms of gender.

Also in Nepal opportunities are unequal along the gender dimension. In general, poverty has a gender bias. Specifically for the manufacturing sector differences exist in terms of numbers

and quality of employment, remuneration, and entrepreneurship. Many factors contribute to this situation: historical factors, factors located in culture and the division of gender roles and related perceptions of both men and women.

Modern labour intensive manufacturing often provides more employment to women than to men, albeit in unskilled labour categories. The IDDP survey showed that the female to male ratio for all manufacturing was 0.20, for employees only 0.21 and for proprietors 0.11. All these figures are quite low but for some large sub-sectors like textiles and garments the figures for employees were substantially higher, respectively 0.54 and 0.39. However, the figure for entrepreneurs is even less favourable when the scale factors are be taken into account, as the presence of women entrepreneurs is higher in the small-scale category.

Nevertheless, the manufacturing sector has great potential to absorb female labour and, when supported by strong programmes directed at both men and women gender equality and women empowerment, the growth of manufacturing would provide a positive contribution to increased women employment and opportunities for female entrepreneurship.

1.1.2.4. Industrial development and environment

Accelerated industrial development will impose extra strain on the environment. Even with more rational use of environment-related inputs such as fuel, water and electricity, industrial growth will eventually lead to increased waste and pollution of air and water as part of the outputs of the production process. Spatial concentration of industries, required for dynamic growth, will also concentrate environmental problems in specific locations.

Too stringent environmental requirements and regulations will increase costs for industrial firms, after the more rewarding cost saving measures have been exhausted. This will limit the competitiveness of existing firms and discourage new investments.
Rural industries might add to the problem of deforestation and its consequences when utilizing wood for fuel.

Yet, industrial concentration will also allow for (a) more intensive monitoring of compliance with environmental standards, (b) easier provision of common facilities for water treatment and waste disposal, (c) separation of industrial zones from residential areas, and (d) demonstration effects of clean production methods. New technologies often already comply with stringent environmental standards.

Rural electrification will, apart from many other advantages, reduce the need for fuel and will encourage new methods of production that are more environmentally friendly. In the long run, successful industrialization will reduce population pressures on natural resources in the rural areas by providing alternative employment opportunities.

Thus, invariably, the impact of industrialization on environment will be mixed. Sustained efforts are required to maintain the right balance between an enabling industrial environment and a minimum impact of industries on the environment.

1.2. Scope and Instruments of Industrial Policy

To arrive at a comprehensive and coordinated set of recommendations for the future development of the industrial sector, all policies affecting the industrial sector are considered

to fall within the scope of industrial policy (Bhattacharya and Linn 1997). Thus, in combination with specific policies geared towards the industrial sector, this will include:

- Macroeconomic policy (fiscal, monetary, and exchange rate policies)
- Trade policy (tariffs, export promotion, trade agreements)
- Financial sector policy
- Labour market policy
- Tax policy (general tax structure, corporate taxes)
- Direct government investment and ownership (covering government investment in large projects as well as privatisation policy both with regard to manufacturing public enterprises and public enterprises providing physical infrastructure and other industrial services)
- Industrial investment incentives policy
- Industrial regulation and licensing (including environmental protection policy)
- Foreign direct investment policies
- Policy on infrastructure (both physical infrastructure and industrial services, *e.g.* technology development, marketing, and other business services)
- Training and education

In addition to this long list are the overriding issues of good governance, and the efficiency and competitiveness of government itself.

This wide scope is justified by the overall importance industrial development plays in the long-term development of a country. The transformation process of development expresses itself in a changing structure of production away from agriculture towards industry, followed later by an expansion of high value adding services.

However, since at the present stage of development of the Nepalese economy agriculture is still the dominant sector in the Nepalese economy in a variety of ways, complementarities and trade-off's between industrial sector policies and agricultural sector policies will have to be considered and tackled at high political level. The view adopted in this document is that the complementarities between these two sectors are of far greater importance than their possible trade-offs.

A frequently raised question in developing countries as well as in Nepal during the course of the present project has been: "What are the future promising manufacturing sub-sectors, product groups and individual products ("sunrise" industries) for Nepal and what targeted incentives and support should HMG/N provide to these industries?" This issue is addressed in Chapter 3.3. It is concluded, in light of international experience as well as the negative experience in Nepal itself from industry- and product-targeted incentives and support schemes, that such an approach is less appropriate for Nepal and is therefore not adopted, nor for that matter included, in the present report. Despite this fact, the report in Chapter 3.3 identifies three manufacturing sub-sectors which deserve particular attention by HMG/N for reasons of their potential to create value added, exports and employment in the future, viz. the food, carpet and garment sub-sectors. Regarding identification of greenfield "sunrise" industries, it is proposed that this be seen as mainly the task of the private sector business community. However, possible support programmes by HMG/N, in a concerted effort with the private sector, should be subject to discussions in a continuous public-private sector policy dialogue.

1.3. Limitations

The project has operated with a very tight time schedule and rather limited resources. The project parameters were finalized between UNDP/UNIDO and the Steering Group in July 2001. Shortly thereafter, in early August, a team of national experts was recruited to engage in background studies and start a sample survey on manufacturing industries. Beginning September, coinciding with the arrival of one of the international experts, the project took off. Halfway November, the first drafts of the background papers were completed. Papers by international experts were completed by the end of December.

On advice of the Steering Committee extensive use has been made of existing studies, in view of the ambitions of this document and the limitations of time and resources. Given the available time and in absence of recent input-output tables, no attempt was made to construct economic models. Besides that, such models are quite irrelevant for long-term projections and analysis. Serious alternative modelling techniques are not available for this purpose. Neither has it been possible to translate the strategy and policies into actual budget expenditures. The recommendations of this study must be interpreted in this light. They are suggesting improvement over the present situation and map out strategic directions. They are not mechanical recipes, but require sustained leadership and effort on the side of both public and private sectors.

With regard to the collection of recent data, the sample survey carried out by the project did not cover the areas where political unrest prevails. However, very few industries would have been included anyway since most industries (with more than 10 employees) are located outside these areas.

1.4. Overview of Chapters

This first introductory chapter has provided a general overview of the objectives of the IDPP and its linkages with the national long-term development objectives and strategies as determined by the NPC. In addition, it has defined the scope of industrial policy as all policies that affect the industrial sector. Finally an overview was given on the limitations and modalities of the work done.

The next chapter, Chapter 2, will describe and analyse the industrial sector (a) in relation to the rest of the economy, (b) in terms of its sub-sectors, and (c) in relation to the policies that have affected the sector. It will lead to recommendations on the macroeconomic environment with regard to the industrial sector. The chapter shows that industrialization has a weak base, is fundamentally influenced by its large neighbour India and will require a strong efficient government to create an enabling environment.

The most important manufacturing sub-sectors will be the focus of Chapter 3, providing details of their performance and discussion of their strengths, weakness, opportunities and threats. This will form the basis for detailed recommendations focusing on the sub-sectors of the manufacturing sector. Suggestions are made for restructuring and sectors with comparative advantage identified.

After the review and analysis of the manufacturing sector in the context of the overall economy and in detail at the sub-sectoral level, Chapter 4 will focus on services provided to the manufacturing sector from institutions both within and outside government. Important recommendations are made with regard to the enabling environment of the manufacturing

sector. Amongst many others, a major general conclusion is that many institutions do not work to the advantage of the industrial sector, that there is lack of coordination and implementation. A strong consultative body is recommended together with a strong government body that can implement decisions across ministries.

Chapter 5 will discuss the constraint and opportunities for the manufacturing sector as they arise from physical infrastructure. Reliable, adequate and affordable provision of electricity, roads and transport, water and telecommunication, industrial land and estates are essential for improving manufacturing performance. Yet most industries suffer from inadequate services in most of these areas. Added to the inherent problems of industrialization in a small landlocked country, these problems put the industrial sector at a serious disadvantage. Determined action is needed particularly in the area of electricity and transport.

After discussing the manufacturing sector and its environment, Chapter 6 will analyse its performance. First by providing a comparative perspective by comparing the Nepalese manufacturing sector to a number of other countries considered relevant as future competitors, as examples of countries that are roughly in the same position as Nepal or are ahead of Nepal in industrial development. This will lead to some strategic insights and long-term recommendations. It shows that Nepal is at a very early stage of industrial development. Secondly, this chapter provides a detailed analysis of manufacturing performance by measuring effective protection rates, levels of efficiency and changes in labour productivity and total factor productivity. The manufacturing sector is highly protected because even modest rates of nominal protection translate into high effective protection when value added as percentage of output is low. Important causes of poor performance are derived and recommendations provided. The chapter suggest developing a solid policy and programming for skill training for the manufacturing labour force and combination with revamped vocational and technical training. This same recommendation is supported by findings of Chapter 4 and 8.

Chapter 7 will focus on international dimensions of the Nepalese manufacturing sector. The first section of Chapter 7 will provide a review of international trade agreements such as WTO, regional trade agreements and bilateral trade agreements (*e.g.* with India). It makes an assessment of their potential impact on and implications for manufacturing performance and opportunities. The second section of Chapter 7 will discuss the importance of foreign direct investment for Nepal in relation to the manufacturing sector. Recommendation will be made on how to improve the foreign investment climate and foreign trade opportunities.

The impact of the manufacturing sector on environment, poverty and gender, now and in the future will be the focus of Chapter 8. Details will be provided on the present status of these issues and an assessment will be made what the manufacturing sector's role might be in alleviating poverty, influencing the gender bias and minimizing environmental damage and problems. Where appropriate within the scope of industrial policy, recommendations will be derived on optimising the relationship of the industrial sector with these areas of concern. Rural industrialization through rural electrification, telephone connections and rural roads provides one avenue for fighting poverty.

The final chapter will summarize all recommendations made in the previous chapters. Together, these recommendations are believed to form a coherent and comprehensive set of policy recommendations for the long, medium and short term to achieve maximum growth of rural and urban-based industries.

Appendix A will discuss the reliability of the available secondary data and the methodology and the efforts to make the best of them. This is followed by a description of IDPP's own primary data collection exercise, the methodology followed, problems encountered and the reliability of the results. Major statistical findings on the manufacturing sector will be highlighted.

1.5. Timing of Fieldwork and Consultations

A team of ten national and five international experts has been working on this document over the period from September 2001 to end of December 2001. The national team consisted of three sectoral experts, two experts in surveys and statistics, and experts (5) in institutional development, the knowledge base, labour, poverty, gender, environment, and infrastructure. The international inputs were concentrated in the months of November and December. Inputs were provided in the areas of industrial policy, industrial competitiveness, industrial productivity measurement, sectoral analysis, foreign direct investment and international trade agreements.

Starting in July and continuing into December, discussions were held by international and national consultants with private sector representatives and government officials. The first drafts of the studies prepared by the national consultants were discussed at a progress workshop on November 29th. The workshop was attended by resource persons from the business community, government, and UNDP. Moreover, the Steering Group set up to oversee the execution of the project met several times to discuss the progress and define and refine the objectives of the project.

A second workshop on 29 August 2002 gave an opportunity to exchange views on the *Analytical Report* as well as on the accompanying *Strategy Paper*. The two documents were finalized after taking on board the comments received from Government and industry.

2. The Industrial Sector and the Economy

2.1. Broad Determinants of Nepal's Industrial Development

Given its limited resource endowments, a land-locked location and rugged terrain, and centuries of political and economic isolation, which in turn contributed to underdeveloped economic and social infrastructure, economic development is a challenging task in Nepal.

Following the transition to a democratic government in 1991, Nepal initiated a wide-ranging economic reforms in the early 1990s, which initially helped to accelerate economic growth and bring about improvements in some key areas of economy, such as the trade, investment and foreign exchange regimes. Since then, Nepal has gone through an extended period of political instability. Between 1994 and 2001, there have been ten different governments (including six coalitions), and notwithstanding strong declarations of intent, there has been no coherent overall drive to promote economic development. Rather, this period has witnessed increasing politicisation; weakening of administrative and institutional capacity; increasing governance problems; poor economic policies and a deterioration of the law and order situation culminating in the current emergency situation in connection with the Maoist uprising.

Its geographic location makes Nepal a virtual province of India with strong dependency in macroeconomic policy-making, market relations, transport networks, investment and labour flows. Internal markets are small, because of a predominant and low-productivity agricultural sector and stagnating tourism. Import competition from India and, increasingly, China is fierce. Regional export markets are constrained by low efficiency of the manufacturing sector as compared to its neighbours, while exporting to international export markets is hindered by the additional disadvantage of long transport routes to harbours in India and Bangladesh. International aid plays a dominant role in socio-economic development and restructuring.

2.2. Recent Macroeconomic Developments

Nepal's economy has witnessed ups and downs during 1990s. Following the economic reforms, Nepal made good initial progress in improving macroeconomic stability and accelerating economic growth during early 1990s. However, the favourable initial effect resulting from policy reform on economic growth has not been sustained. The economy has slowed down during the Eighth Five-Year Plan (1992/93-1996/97) compared to the early 1990s in many respects – GDP growth, per capita incomes, investment, government revenue and expenditures, merchandize exports and imports, among others. The private sector has been reluctant to invest due to a combination of weak market institutions and a politically unstable environment. The political instability has focused the attention of politicians on short-term manoeuvring and led to increasing politicisation of the administration. Development has suffered as key decisions have not been made on time or not been adequately implemented as compared to the early 1990s when political stability enabled vigorous development efforts by the government. Nevertheless, annual GDP growth of 4.9 percent witnessed during the Eighth Plan slightly exceeded the targeted rate of 4.8 percent per annum while the macroeconomic stability was also maintained during the period (1992/93-1996/97).

Under the Ninth Plan, the country has been able to maintain macroeconomic stability and economic growth strongly recovered. Real GDP growth reached 6.5 percent per annum during 1999/00 but slowed down to just below 5 percent in 2000/01, while it is estimated to decline to less than 1 percent in 2000/01 (CBS 2002). The Ninth Five-Year Plan (1997/98-2001/02) projects average annual growth of GDP at 6.0 percent during the plan period. As GDP growth averaged only about 5 percent during the first four years, the Ninth Plan's target will not be reached, given the expected slow down of the economy in the last two years.

The external payment position strengthened due to a strong recovery of merchandize exports and to a slow down of merchandize imports. As a result, the current account deficit has narrowed down from 6 percent of GDP during the period (1992/93-1996/97) to 2 percent during the period (1997/98-2000/01) with a significant strengthening of gross foreign exchange reserves. The overall budget deficit has been kept down to 7.4 percent of GDP although the fiscal situation remains weak. Likewise, the growth of domestic credit slowed down to around 16 percent per annum during the period (1997/98-2000/01). Domestic inflation has decelerated slightly to an annual rate of about 1.6 percent.

In parallel with these achievements, there were less positive developments in some areas.[5] A weak financial sector continues to be a serious impediment to private economic activities. Inefficiencies of the two largest banks have helped to keep lending rates high in real terms and reduced the incentives to other banks to be competitive and efficient. While fiscal management has successfully maintained macroeconomic stability, it has not been accompanied by strong efforts to keep up development activity. In sum, the economy has grown steadily for the period (1992/93-2000/01), but slowed down in the last two years.

2.3. Structure and Sectoral Performance of the Economy

Nepal's economy is highly dualistic, with a backward agricultural sector and a relatively modern non-agricultural/urban sector. Agricultural sector is still the backbone of the rural economy and accounts for about two-fifths of the value added in the economy. Table 2.1 indicates that agricultural growth averaged around only 3 percent per annum for both the Eighth and Ninth Plan Period which are lower than the targeted growth rate for these plan period. The Eighth Plan aimed at attaining growth rate of 3.7 per annum in agricultural sector while the Ninth Plan projects an annual growth rate 4.0 percent.

On the other hand, non-agricultural sector grew at more respectable rate of 6 percent per annum during the period (1997/98-2000/01), which however represented a significant deceleration from 10 percent annual growth observed in the early 1990s. The service sector—which accounts for about two-fifths of the value added in the economy—grew by some 6 percent during the Eighth Plan period, reaching an average of 6.6 percent per annum during last four years. The growth in services export is substantially a reflection of increased remittances made by the Nepalese workers employed abroad.[6] Miscellaneous services exports reported in Nepal's balance of payments include the remittances made in the form of gold imports paid for by the Nepalese workers abroad while cash remittance are recorded as private transfers. This means that much of the export services did not consist of services produced in the domestic economy, thus raising the standards of living without raising domestic productivity.

[5] See The World Bank (2000), Nepal 2000 Economic Update.
[6] The total value of remittance from international migrant workers is estimated at 25 percent of official GDP.

Table 2.1: Sectoral Share of GDP and Growth Performance

	Average Sectoral share (%)			
	FY86-90	FY91-92	FY 93-97	FY 98-01
Sectoral Share of GDP (%)				
Agriculture	50.3	46.3	41.2	38.7
Non-agriculture	49.7	53.7	58.8	61.3
Industry	15.9	18.9	21.8	21.8
Services	33.8	34.7	37	39.5
Total	100	100	100	100
Sectoral Growth (% p.a,)				
Agriculture	4.1	0.5	3	3.2
Non-agriculture	5.5	10.2	4.9	5.9
Industry	6.1	14.7	6.5	4.5
Services	5.3	8.2	6.1	6.6
GDP	4.8	5.5	4.9	4.7

The growth rate of industrial sector (including mining and construction), which shares about one-fifths of value-added in the economy, was also subject to wide year-to-year fluctuations although they have been consistently higher than agriculture. The actual performance of industrial sector during the Eighth Plan was well below the targeted annual growth rate. The Eighth Plan aimed at achieving an average annual growth rate of 12.4 percent for the industrial sector but the actual performance averaged only about 7 percent for the plan period. Industry sector expanded by about 7 percent during (1998/99-1999/00, an improvement from those in 1997/98, but expected to decline to 2.5 percent in 2000/01. The Ninth Plan projects an average annual growth rate of 7.7 percent for industry during the plan period; however, actual performance averaged only 4.5 percent per annum during the first four years.

2.4. The Manufacturing Sector in the Economy

2.4.1. Manufacturing Value Added: Share in GDP and Growth

Nepal's manufacturing is still in an early stage of development although its role is important in the industrial sector both in terms of its share and growth (Table 2.2).

The contribution of the manufacturing sector to GDP has reached at about 10 percent in recent years from about 6 percent during the period (1985/86-1989/90). The share of manufacturing value added to GDP increased by maximum during early 1990s. For example, it increased by 2 percent in 1991/92.

Table 2.2: Growth and Contribution Manufacturing Sector in Nepalese Economy

	Manufacturing Value Added at 1984/85 prices (Rs.Million)	Share of MVA in GDP Value (%)	MVA Growth (%)	Manufacturing Employment	Share of Mfg Empl in Total Econ Active Population
Annual Data					
1985	2511	5.7		79,821	1.1
1986	2892	6.1	15.2	96,098	1.3
1987	2959	6.1	2.3	124,559	1.7
1988	3128	6.3	5.7	140,246	1
1989	2907	5.7	-7.1	140,631	1.9
1990	3192	6	9.8	135,677	1.8
1991	3756	6.8	17.7	156,528	2.1
1992	4958	8.8	32	213,653	2.9
1993	5266	8.8	6.2	215,746	2.9
1994	5915	9.3	12.3	217,838	2.9
1995	6031	9.3	2	230,360	3
1996	6576	9.4	9	208,838	2.7
1997	7040	9.2	7.1	187,316	2.4
1998	7281	9.3	3.4		
1999	7666	9.2	5.3		
2000	8218	9.5	7.2		
2001	8514	9.4	3.6		
Period Average					
FY86-90	3016	6.0	5.2		
FY91-92	4357	7.8	24.8		
FY93-97	6166	9.2	7.3		
FY98-01	7920	9.4	4.9		

Note: The official figures for MVA reported here do not correspond to estimates made by the IDPP study team reported in Table 2.5, which in its view are a better reflection of reality.
Source: Economic Survey (2000); Census of Manufacturing Establishments, 1985/86, 1991/92, and 1996/97

Nepal's manufacturing sector grew more rapidly at 25 percent per annum during early 1990s following widespread policy reforms. Such higher growth witnessed for manufacturing sector during the period 1990/91-1994-95 could not be sustained. The growth rate has declined since 1992/93, although with erratic movements. Recently, growth has come down and is even negative for the current year. The stagnation and decline of manufacturing sector, other than the unstable political environment, can be explained by the abolition of the protection vis-à-vis the Non-Indian markets, which has exacerbated the problem of competitiveness in the absence of offsetting policies for the promotion of infant industries. Manufacturing sector, which competed with established Indian industries, had little compensation for their infancy due to the open border with India.[7]

For the limited number of industries that did not have or were able to withstand competition from India, however, the protection from competition from rest of the world under the past

[7] Nepal could not resort to traditional methods of protecting its legitimate infant industries from competition from Indian producers. Any attempt to create trading relations with the rest of the world through standard instruments of trade policy would be thwarted by unofficial and unrecorded movement of goods and services across the open border with India. The magnitude of such trade is believed to be substantial (Karmacharya 2001).

regime was a major source of profit. The profitability of many of these industries was undoubtedly adversely affected with the decline in the effective protection rate.

The 1996 renewed Trade Treaty with India, which provides improved access for Nepal's manufacturers to Indian market, have been the catalyst for the higher growth in the sector in recent years, particularly 1999/00. Some of the manufacture sector growth, however, could be of transitory in nature as there are fly-by-night Nepalese manufacturers who have taken advantage of prevailing tariff differentials between Nepal and India on imports from third country. Nevertheless, there are also some Nepalese manufacturers who are exploring opportunities in the Indian market in a genuine manner through joint ventures and collaborative marketing.

2.4.2. Manufacturing Employment

Employment promotion is one of the objectives of the industrialization in Nepal. However, the achievement is not encouraging. In terms of direct employment generation Nepalese manufacturing is one of the smallest sector of the economy. Table 2.2 shows that manufacturing sector employed about 3 per cent of the total economically active population during the period from 1990/91 to 1994/95. Table shows that manufacturing employment has even declined since 1995/96 onwards in terms of both absolute and relative terms although they should be taken with great caution. There are two possible explanations for the decline in manufacturing employment which could be both related stringent Labour Law which has made layoff of the permanent worker, employed for more than 240 days continuously, quite difficult. One possible explanation is that the underestimated reporting of the number of workers engaged by the manufacturing firms by not mentioning those who have been hired on temporary basis. Second possible explanation could be the adoption of more capital-intensive techniques to avoid unnecessary labour problem.

2.4.3. Manufacturing Exports

Table 2.3 indicates that the merchandize exports grew substantially by an annual average of 37 percent during early 1990s following widespread policy reforms which declined to an average annual growth of about 4 percent during (1992/93 – 1996/97). Its growth recovered recently although they have not reached the level attained during early 1990s. The recent growth of merchandize exports more importantly reflects increase exports to India. The proportion of Nepal's exports destined for the Indian market has risen substantially to about 40 percent from the very low levels of about 15 percent to which it has fallen in the early 1990s. The average export growth to India during the period (1997/98-1999/00) was about 60 percent as compared to about 35 percent during the first half of 1990s.

Table 2.3: Major Indicators of Nepal's Total and Manufacturing Exports

			Nepal's Exports with India		Manufacturing Exports		
	Total Exports			Share in Total		Share in Total	
	Value	Growth	Value	Exports	Value	Exports	Growth
Annual Data	(US$Million)	(%)	(US$Million)	(%)	(US$Million)	(%)	(%)
1985	151				65.6	43.6	
1986	145	-4	59	40	83.3	57.3	27
1987	138	-4.8			86	62.5	3.2
1988	177	28.3			112.2	63.3	30.4
1989	155	-12.4			123.6	79.8	10.2
1990	176	13.5			143.9	81.8	16.4
1991	199	13.1	36	21	157.7	79.4	9.6
1992	321	61.3	34	11	261.1	81.3	65.6
1993	356	10.9	33	9	302	84.9	15.7
1994	391	9.8	49	13	297.2	76	-1.6
1995	341	-12.8	62	18	296.1	86.9	-0.4
1996	351	2.9	65	20	298.2	84.9	0.7
1997	391	11.4	92	24	326.9	83.7	9.6
1998	418	6.9	130	32	329.3	78.9	0.7
1999	523	15.1	184	35	407.8	78	23.9
2000	705	34.8	321	44	591.9	83.6	45.1
2001	780	10.7	372	48	628.6	80.5	6.2
Period Average							
FY86-90		4.3				68.9	17.5
FY91-92		37.2		16		73.3	37.6
FY93-97		4.4		17		83.3	4.8
FY98-01		19.4		40		80.2	19

Source: Economic Survey (2000); Nepal Rastra Bank: Quarterly Economic Bulletin (various issues), and Nepal's Foreign Trade Statistics

Table 2.3 also underscores increasing export orientation towards manufacturing goods from the primary products. Manufacturing goods shared for about 80 percent of total exports in recent years. Thus the share of manufactured goods almost doubled from 44 percent of Nepal’s -total exports between 1984/85 and 2000/01. Nepal’s manufactured exports witnessed substantial growth during early 1990s following widespread policy reforms in the external sector. Manufactured exports grew by an annual average of about 38 percent between 1991 and 1992.

The manufacturing export growth has been greatly assisted by improved trade and exchange rate policies. However, they could not be sustained after the implementation of the major reforms. Although the growth of manufacturing exports has again accelerated in recent years after a brief period of slight decline, it has not regained the peak during early 1990s. As indicated earlier, growth of manufacturing exports in recent years is largely due to the much-improved access of Nepalese exports to the Indian market provided by the 1996 Trade Treaty.

2.4.4. Profile of Manufacturing Establishments: Size, Ownership and Spatial Concentration

Table 2.4 provides the profile of manufacture sector as expressed in terms of number of establishments, and their classification by size of fixed investment, legal status and geographical location. Manufacturing units, which numbered 15 in 1950/51, increased to 3633 in 1986/87, to 4230 in 1991/92, 4487 in 1995/96 and declined to 3557 in 1996/97.[8]

The decline in number of manufacturing units in 1996/97 as indicated above seems to be largely due to the closure of cottage and small scale industrial units. This is evident when the figures on number of establishments by their classification in terms of size of fixed investment are compared over the time. There is an absolute decline in number of cottage and small-scale industrial units by 880 during the two census periods from 1991/92 to 1996/97. The Census of Manufacturing Establishments of 1996/97 shows that 90 percent of the industrial units fall under the cottage and small industry (CSI) sector in terms of their size of fixed capital. According to the Census of Manufacturing Establishments of 1986/87 and 1991/92, the corresponding figure was about 95 percent. On the other hand, the number of medium and large-scale industrial units has increased both in absolute and relative terms during inter-census period of 1991/92 and 1996/97.

According to the Census of Manufacturing Establishments of both 1991/92 and 1996/97, industrial units registered under personal type are the largest number of manufacturing establishments as classified in terms of their legal status. They are followed by those registered under Private Limited, Partnership and Public Limited in both these census years. The industrial units registered under personal type account for more than two third of the manufacturing establishments in both the census years. While the industrial units registered under Private Limited share slightly above 14 percent of the total number of manufacturing establishments in 1991/92, the corresponding figure increased to 21 percent in census year 1996/97.

The manufacturing establishments are heavily concentrated in Kathmandu valley, which accounts for little more than one third of the total manufacturing establishments in Nepal. They are relatively evenly distributed among Eastern, Central and Western regions in 1996/97. The manufacturing industries are sparsely located in the Mid-West and Far-West regions. The predominance of manufacturing establishments in Central, Western, and Eastern regions and Kathmandu Valley is explained by relatively better infrastructure facilities available in these places and easier access to markets.

[8] These figures exclude the grain milling units (around 5000) and establishing less than units.

Table 2.4: Profile of Manufacturing Establishments in Nepal

	1986/87	1991/92	1996/97
Number of Establishments	3633	4271	3557
Industry Classification			
Cottage and Small	3436	4083	3203
Medium	111	136	282
Large	67	52	72
Others	19		
Legal Status			
Government Owned	62		
Private Owned	3517		
Foreign Owned	1		
Jointly Owned	35		
Personal		2957	2403
Partnership		600	324
Public Limited		83	63
Private Limited		604	743
Others	18	27	24
Location			
Eastern Region	648	749	704
Central Region (excluding Kathmandu valley)	777	1313	681
Western Region	679	439	519
Mid-West Region	196	177	182
Far-West Region	146	159	133
Kathmandu Valley	1186	1434	1338

Source: Census of Manufacturing Establishments, 1985/86, 1991/92, and 1996/97
Notes: Over the years definitions of firm size have varied. Industrial Policy 1981: small (fixed capital up to

2.5. The Manufacturing Sector and Its Composition

1.1.1. Sub-Sectoral Developments

Table 2.5 gives yearly estimates over the whole period 1986/87-2000/01 based on IDPP study team calculations. The major conclusion manufacturing sector value added growth has been very modest since 1996/97, the last census year. However, growth performance has been rather erratic with VA growth of –7.3 percent in 1997/98, 2.7 percent in 1998/99, up to 14.3 percent in 1999/00, and down to –2.3 percent in the last fiscal year 2000/01. Only the food sector has registered consistent growth record and accounts now for 43 percent of total MVA.

Table 2.5: Value Added by Sub-Sector in Constant 1984/85 Prices, 1986/87-2000/01

	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/00	2000/01	gr.86-01	gr.91-01	gr.96-01
Food and beverages	616058	730888	646986	844041	1189891	931167	1002897	1100124	1278159	1384100	1273020	1474235	1820546	2494400	2654483	11.0%	12.3%	20.2%
Tobacco	440423	473632	446605	489689	515391	503776	568542	499204	538763	585248	705734	680902	591249	484504	401146	-0.7%	-2.5%	-13.2%
Textiles	306085	291536	256273	224415	273261	314516	341876	407106	381693	500237	476186	489737	416676	371295	197344	-3.1%	-5.0%	-19.8%
Pashmina														252849	564986			
Carpets	160949	264971	307914	385653	543087	1098063	1344219	1183878	859253	829228	1049288	823854	808490	713122	578447	9.6%	-6.9%	-13.8%
Garments	103622	129349	135079	146673	121646	279850	324772	465380	385954	394227	358452	356643	404157	480925	389590	9.9%	3.7%	2.1%
Leather and footwear	63087	45677	60422	123909	158802	80285	53397	46520	50475	49757	76748	68619	54409	26732	23637	-6.8%	-12.7%	-25.5%
Wood & wood pr.	46089	30414	27519	4959	9591	70049	61520	82763	78666	78620	82889	40256	41098	81568	80951	4.1%	1.6%	-0.6%
Paper	35593	55597	59061	45067	43980	18867	26186	39166	50650	76780	93910	106445	126781	252969	252763	15.0%	33.4%	28.1%
Publishing, printing	33711	40403	41496	44633	57296	37524	41798	43849	40414	42596	66602	92472	106912	117179	122421	9.6%	14.0%	16.4%
Chemicals	374883	396254	464555	481128	681094	494023	420420	384013	432572	540285	564342	539229	484117	381323	293865	-1.7%	-5.6%	-15.1%
Non-met. min. prod.	154795	188654	187737	89290	145760	211664	190439	206815	202962	191261	400951	277679	282977	291483	300980	4.9%	4.0%	-6.9%
Basic metals	105783	75527	98689	98789	118833	146161	149450	177957	240977	234576	96172	75556	80987	90786	89186	-1.2%	-5.3%	-1.9%
Fabricated metal pr.	70297	65879	42181	35404	46526	150654	260066	236477	200813	156194	292122	102465	74730	42340	39185	-4.1%	-13.9%	-39.5%
Electric/electronics	55686	69294	57174	55256	54808	88998	52034	52240	77241	97705	139669	112907	92009	94829	54971	-0.1%	-5.2%	-20.8%
Others	49505	58439	59131	62676	79309	80612	89793	94198	86818	91503	76008	91892	90741	82755	69303	2.4%	-1.7%	-2.3%
Total	2616567	2916514	2890823	3131580	4039274	4506209	4927408	5019690	4905410	5252318	5752091	5332889	5475880	6259060	6113258	6.2%	3.4%	1.5%
Growth rate		11.5%	-0.9%	8.3%	29.0%	11.6%	9.3%	1.9%	-2.3%	7.1%	9.5%	-7.3%	2.7%	14.3%	-2.3%			

Source: Industrial Census (CBS: 1986/87; 1991/92; 1996/97), Economic Survey 2001, IDDP Survey, Own calculations.

Note: Growth between 1996/1997 and 2001/2002 is based on the volume index of production in *The Economic Survey 2001*, except for Pashmina, carpets and garments which are based on actual export figures.

The share of carpets is down to 9.4 percent from 18.2 percent in 1996/97, the last census year. The last year 2000/01 also show a substantial decline as compared to the previous year in garments while recent reports have that Pashmina, at its peak in 2000/01, is now in serious decline. These were the dynamic sector of the 1990s. Apart from the food sector, no other sector has shown consistent growth potential over the last 5 years. Chapter 4 will provide a detailed analysis of the causes for these changes.

2.5.1. Composition of Manufacturing Exports

Table 2.6 shows that Nepal's manufacturing exports until recently have been concentrated in just two goods, carpets and garments. They accounted for about 90 percent of total manufacturing exports during the period from early 1990s to mid 1990s. Furthermore, they are dependent on limited external markets. Carpets are exported primarily to Germany and garments to USA.[9] The share of these items in total manufacturing exports has fallen to about three-fifths during recent years. However, this phenomenon to a larger extent is a more a reflection of an absolute fall in their exports rather than an increased diversification due to an expansion of the export of other goods. This is evident from the decelerating growth of their exports particularly in case of carpets. Average annual growth of carpets declined from more than 40 percent during early 1990s to negative 6 percent during recent years. Likewise, average growth of readymade garments declined from 58 percent during early 1990s to 16 percent during recent years. This was brought about by the concern of OECD countries over the exploitation of child labour and use of environment-hostile in Nepal's carpet exports. Although these problems have been resolved, they could not spark resurgence in carpet export. The fall in export garments is probably due to supply bottlenecks and industry's inability to compete with other exporters from South Asian countries. These problems indicate the vulnerability of Nepal's un-diversified exports of goods especially in the context of the impending abolition of quotas for garments exports.

Following the signing of renewed bilateral Trade Treaty, Nepal has been exporting new manufacturing products to India. These include vegetable ghee, toothpaste, toilet soap, acrylic yarn, copper rod, zinc oxide, MS pipe, *Hazmola, Chyawanprash,* noodles and biscuits etc. Some of these products, however, are transitory in nature since Nepalese manufacturers have been taken advantage of prevailing tariff differentials between Nepal and India on their imports from third country (Karmacharya 2001a).[10] India has put them in the category of sensitive items. These include mainly vegetable ghee, acrylic yarn, copper rod, zinc oxide and MS pipe. Vegetable ghee, which accounts for 8 percent of Nepal's total manufacturing exports during recent years, is the largest export item to India. Its exports grew to an average of 25 percent per annum during recent years from almost nothing. Exports of copper rod grew by more than one thousand times during recent years. Likewise, export of acrylic yarn, zinc oxide, and MS pipe grew by annual rate of 43.2, 24.4, and 30.9 percent respectively during recent years.

[9] Germany buys about 80 percent of Nepal's total carpet export while USA buys more than 80 percent of Nepal's garment export.

[10] Other manufacturing items of this nature exported to India are believed to be acrylic yarn, copper wire, GS Pipe, and zinc oxide.

Table 2.6: Share of Major Products in Total Manufactured Exports and Their Growth

	Share of Major Products in Total Manufacturing Products (%)			Average Growth of Major Manufacturing Products (%)		
	91-92	93-97	98-01	91-92	93-97	98-01
Readymade Garment	26.1	32.8	32.3	58.2	8.2	16.3
Carpet	63.4	55.1	29.1	42.2	-0.5	-5.9
Vegetable Ghee			8.2			25.4
Tooth Paste		1	4.6		4.3	49.1
Toilet Soap			2			13
Acrylic yarn		1	2.8		4.1	43.2
Copper Rod			1.5			1422
Zinc Oxide			0.4			24.4
MS Pipe			0.6			30.9
Gold and Silver Jewellery		0.6	0.7		-0.8	-0.4
Wooden Handicrafts		0.1	0.1		-0.6	26.1
Nepalese Paper		0.2	0.4		4.7	24.7
Tea		0.3	0.5		9.4	108.2
Leather Goods		0.2	0.1		4	19.9
Hazmola			0.2			194.8
Chyawanprash			0.4			-4.8
Noodles		0.3	0.3		30.7	-0.5
Biscuits			0.3		19.5	-12.9
Hides and Skins	3.6	3	1.7	-0.3	7.1	13.9
Handicrafts	0.8	1	0.6	47.2	14.4	

Source: Economic Survey (2000); Nepal Rastra Bank: Quarterly Economic Bulletin (various issues) and Nepal's Foreign Trade Statistics

India has raised issue of "surge" to the exports of these items from Nepal to its country. It has already imposed many restrictions to their imports from Nepal including anti-dumping duties recently. The exports of these items are therefore likely to decline by substantial amount. However, there have also been more encouraging developments that hold out greater promise for the future. For example, renewed 1996 Trade Treaty and India's fast track investment arrangement appear to have stimulated interest among some genuine Nepalese manufacturers in exploring in the Indian market (for noodles, beer, milk, some food products, soaps, cosmetics, toiletries, toothpaste etc) through joint ventures and collaborating marketing arrangements.

2.5.2. Revealed Comparative Advantage

Nepal has revealed comparative advantage in the following broad sectors:[11] dried leguminous vegetables; spices; seeds; leather and leather products; fibres, yarn and textiles; articles of apparel and clothing and non-apparel textile articles.

Six-digit breakdown of export activities as per Harmonized System of commodity classification indicate that the major items in which Nepal has revealed comparative advantage within these broad sectors are as follows: lentils (dried leguminous vegetables); large cardamom and ginger (spices); niger seeds (seeds); hides and skins and wet blue

[11] Balassa's revealed comparative advantage indices; The notion of revealed comparative advantage must be treated with caution as it measures the status quo without providing the reasons for it; For the full table based on the six digit classification, see background paper by B. Karmacharya: The Industrial Sector and the Economy.

chromes (leather and leather products); hand knotted woollen carpets, jute and jute products, polyester yarn (fibres, yarn and textiles); ready made garments, knitwear, Pashmina muffler, shawls, sacks and bags, and linen etc (articles of apparel and clothing and non apparel textile articles). There are about 50 items within the last categories (HS 610110 to 650699).

Nepal's RCA indices are also compared over time to know any shift in its specialization to new products (Table 2.7). The calculated values of RCA in broad commodity groups indicate that the shift in comparative structure has taken place in favour of labour-intensive manufactured products Agriculture raw materials used to be a main source of Nepal's comparative advantage until 1980. Labour-intensive manufacturing products have taken that place by mid-eighties.

Table 2.7: Shift in RCA Indices for Trade in Broad Commodity Groups, 1975-1990.

Broad commodity groups	1975	1980	1985	1990
Food	1.85	2.10	3.81	0.11
Agricultural raw materials	13.59	14.96	2.16	1.97
Fuel	0.00	0.00	0.00	0.00
Ores and metals	0.00	0.05	0.11	0.00
Human-capital intensive mfg	0.00	0.00	0.00	0.00
Labour-intensive mfg	3.11	2.66	5.6	10.50
Physical-capital intensive mfg	0.01	0.05	0.36	0.01
Resource based manufacturing	2.59	2.44	1.82	0.02

Source: Karmacharya (1996)

Table 2.8 also shows the nature of shift in Nepal's specialization during recent years. The first column shows the importance of exports of the commodities before and after the globalisation in which the country acquired new revealed comparative advantages. Conversely, the second column in the table shows the importance of commodities in which the country was initially specialized but then had lost specialization. The results do not indicate any great movements in specialization.

The insignificance of 'new' items in which Nepal has become specialized is revealed by their low share of export (at 3.7 percent, up from 0.9 percent). Some items of specialisation have lost their position in terms of RCA: their 9.7 percent share in exports before liberalisation declined to a 1.6 percent share thereafter.

Table 2.8: Changes in Nepal's Specialization, 1986-95

	New items of specialization*	Items that have lost specialization**
Share in 1986-88 export	0.89	9.70
Share in 1993-95 export	3.74	1.59

Notes: * Items where RCA86-88 < 1 and RCA93-95 > 1 (3-digit SITC);
** Items where RCA86-88 < 1 and RCA93-95 < 1 (3-digit SITC).
Source: Pigato *et al.* (1997).

2.6. Policy Environment for Industrial Development[12]

Nepal's geographical proximity and economic relations with India have profound implications for both the rate of growth and the industrial development as well as the

[12] See section 2.7 for a critical account of the constraint arising from the policy environment

direction of trade. Nepal's trade and industry regime have been shaped by its situation of *de facto* integration with India.[13] While providing opportunities for increased exports and industrial growth which remain to be fully exploited, the *de facto* integration with India was of dubious benefit to Nepal because: (i) it has been subject to adverse spill over effects of widespread and arbitrary protection system in India creating a great deal of inefficiency in its structure of production and trade; and (ii) it could not resort to traditional methods of protecting its legitimate infant industries from competition from Indian producers. Accordingly, the situation of *de facto* integration with India constrained policy choices for Nepal by compelling it to adopt a protection and incentive structure similar to that of former. Any attempt to create trading relations with the rest of the world through standard instruments of trade policy would be thwarted by unofficial and unrecorded movement of goods and services across the open border with India.[14] Lower tariff structure in Nepal provides incentive for trade deflection to India of the goods imported by it from the rest of the world causing drain in its foreign exchange reserves. If Nepal provides export incentive Indian goods would be re-exported causing a fiscal drain.

Thus, Nepal's ability to integrate with the global economy itself is limited by India's integration with the latter. Nepal took important steps for the liberalization of economic policies under Structural Adjustment Programme (SAP) initiated in 1986. But the opportunity for dramatic reforms for integration with the global economy came only in the early 1990s when India started opening up to the global economy in a big way.

The following subsections review the current state of policy environment for industrial development in Nepal that resulted from the major policy reform undertaken by the government policy reforms in Nepal to make its economy outward oriented with specific emphasis on export development by reducing various sources of anti-export bias. The main elements of the reforms were as follows.[15]

2.6.1. Macroeconomic Policies

2.6.1.1. Fiscal Policies

Since the start of the 1990s Nepalese Government has pursued an ambitious tax reform programme with the aim of raising public savings, reducing reliance on direct taxation and to improve the overall efficiency and fairness of the tax system. Reforms have been undertaken to broaden the tax base, lower income tax rates, and to simplify the rate structure across a whole range of taxes. The current fiscal policy of the government is to pursue the following major objectives:

- reduction of unproductive expenditure in the public sector;
- reform of the income tax structure by reducing high rates and broadening the tax base; reduction of net domestic borrowing; and
- streamlining bureaucracy by carrying out administrative reforms.

Nepal's fiscal situation, however, is significantly weaker. The low level of revenues, combined with relatively high expenditure, has led to larger fiscal deficits and heavy aid dependence in Nepal.

[13] For a detailed account of these arguments and reference to various sources see Islam, Khan and Lee 1982; Blejer and Szapary 1991; and Karmacharya 1996.
[14] The magnitude of such informal trade is believed to be substantial and is reflected in an often large and positive errors and omission entry in the balance payments statistics (IMF 1995; Karmacharya 1999).
[15] For a review of policy reforms, see Karmacharya (1996; 2000) and Bajracharya and Sharma 1996.

2.6.1.2. Monetary Policies: Interest Rates and Inflation

The monetary policy of Nepal is geared towards controlling excessive liquidity so as to maintain price stability while simultaneously supporting output growth through adequate credit expansion. Accordingly, broad money and narrow money aggregates are targeted to increase in line with the predetermined benchmarks. The Central Bank (Nepal Rastra Bank, NRB) has given up exercising direct instruments of monetary control since the early 1990s and has resorted to indirect instruments only. In this context, NRB has a limited number of policy instruments at its disposal, namely the cash reserve ratio (CRR), the refinancing rate, and open market operation using treasury bills and repurchase agreement.[16] The NRB currently does not have a discount window system, and the NRB typically affects the level of reserve money by adjusting the amount of treasury bills it takes at the weekly auctions.

In recent years, the NRB has sought to reduce lending rates to support private sector activity. To this end, in 1998/99, the NRB introduced a requirement that all commercial banks keep up the spread between lending and deposit rates below 5 percentage points in order to encourage the desired reduction in interest rates. However, this measure appears to have been relatively ineffective, partly due to the lack of a clearly specified method for calculating interest rate spreads or monitoring bank practices. In order to foster bank lending, the NRB also lowered its refinancing rates from 9 percent in 1998/99 to 6.5-7.5 percent in 1999/2000 while the prime lending rate declined has fallen by roughly 2 percentage points to 9.5 over the past two years[17]. However, while deposit rates also declined, spreads between lending and deposit rates remained high, at around 5 percent, reflecting the continued problems of the two largest banks and the limited ability and willingness of banks to lend despite a build-up of significant excess reserve. Yields on 3-month treasury bills in the primary market rose from under 3 percent in July 1999 to 5.5 percent by July 2000, but they eased to 4.5 percent by mid-2001.

Inflation in Nepal generally follows India's inflation rate because of the exchange rate peg to the Indian rupee and the active trade across relatively open border between the two countries. Inflation was a low 3.4 percent in FY 1999/00—the lowest rate in more than 20 years—compared with the more than 11 percent increase in prices during the previous year. The increased agricultural production due to favourable weather throughout South Asia kept the prices of food items in check. The slower growth in food prices, which increased by less than 1 percent on average during the year, helped to counteract increases in administered prices, namely fuel, electricity, and water. Within the food index, the price of rice, the item with the largest weight in the expenditure basket, rose by 10 percent in 1999/00, compared with 21 percent in 1998/99. Balancing this increase were a 17 percent drop in the price of fruits and vegetables and a 23 percent decline in the price of oil and ghee. Within the non-food index, fuel, light, and water prices increased by 12 percent, and transportation and communication by 13 percent (mainly as response to higher fuel prices). In October 2000, the Government again increased prices for fuel products in response to rising world prices for oil. Petrol prices were raised by nearly 18 percent and diesel prices by nearly 20 percent.

2.6.1.3. Exchange Rate Policies

Nepal's exchange rate policies closely reflect the economic relationship with India. This is evident from the fact that Nepalese currency (NC) is pegged with Indian currency for the last

[16] The market for debt securities is not very deep – longer-term government securities were introduced only in 1997, and while the NRB can issue its own debt instruments, this option is rarely used.

[17] For more details, see Table 9 of the background paper by B. Karmacharya: The Industrial Sector and the Economy.

40 years despite several shifts in Nepal's foreign exchange rate regime towards hard currencies. Accordingly, any change in the IC-US dollar is passed on to NC-US dollar and subsequently to NC-other convertible currencies exchange rates. The current approach of pegging the Nepalese rupee to the Indian rupee has both advantages and disadvantages (Khatiwada 1999). Its main disadvantages are undermining the importance of Nepalese monetary policy, misalignment in the Nepal's exchange rate with convertible currencies, and adverse effect on Nepal's export competitiveness. The main advantages of such approach are as follows. The close to free movement of goods, labour and capital through 500 miles of open border with India and the close substitutability between Nepalese and Indian goods mean that the two economies are inextricably connected. Pegging to the Indian currency widens the effective domain of the Nepalese rupee by removing exchange rate risk and facilitates trade and capital transactions with India. Moreover, with the Indian economy liberalizing and Indian financial policies targeting a reduction in inflation, the advantages of such a peg in terms of encouraging financial disciplines are greater. The system has also insured smooth supply of essential commodities from India.

Nepal undertook a wide array of exchange rate reform programmes since early 1990s. Nepal introduced partial convertibility of Nepalese rupees in the trade account in March 1992 following the India's announcement of doing the same. Under this system, there were two exchange rates for the Nepalese rupees: (i) a principal (official) rate determined by NRB on the basket of currencies; and (ii) a market-determined exchange rate. The principal exchange rate was used for essential imports (like petroleum and fertilizers) and government uses. All other imports were done at the market-determined rate for which foreign exchange could be secured from commercial banks without NRB's approval. Furthermore, exporters were permitted to exchange up to 65 percent of their earnings at market-determined rate while the rest 35 percent had to be sold at the official exchange rate. This ratio was later increased to 75:25. The government abolished the dual exchange rate system and announced full convertibility of the Nepalese rupees for all trade account transactions on February 1993, a few weeks before India introduced the same. The currency basket system was thus abandoned with this announcement. Exchange rate against all convertible currencies was set free to market forces, and all trade account transactions involving foreign exchange were de-licensed. The unified exchange rate has increased the profitability of export sales vis-à-vis domestic sales.

The estimates of real exchange rate for the period 1985 to 1998 are shown in Table 2.9. During the period 1985 to 1990, real exchange rate depreciated by about 3.2 percent vis-à-vis the US dollar. However, real exchange rate depreciated by large magnitude of 24 percent against US dollar especially during early years of recent reform from1990 to 1993. The real exchange rate against US dollar depreciated further by about 8 percent during the period from 1993 to1998. In 1998/99 the real exchange rate appreciated by 7.3 percent, while in 1999/00 it depreciated again by 2.2 percent (IMF 2001). For 2000/01 IMF has estimated another 2.5 percent depreciation of the real exchange rate, owing to the depreciation of the Indian rupee against the dollar.

Table 2.9: Real Exchange Rate (RER) Index, 1985-1998 (1985=100)

Year	Real Exchange Rate		
	Against US Dollar	Against Indian Rs.	Aggregate
1985	100.00	100.00	100.00
1986	101.71	99.88	100.94
1987	101.712	101.40	101.54
1988	101.63	104.42	105.94
1989	106.73	104.81	98.89
1990	96.84	106.52	93.63
1991	89.90	105.10	91.54
1992	86.05	114.94	84.92
1993	73.35	115.60	83.24
1994	71.46	117.73	84.16
1995	74.07	115.30	85.59
1996	70.70	115.90	84.16
1997	72.25	118.35	84.42
1998	67.78	117.03	83.14

Source: Khatiwada (1998)

The real exchange rate vis-à-vis the Indian rupee appreciated during the period 1985 to 1998 indicating the deterioration of Nepal's export competitiveness vis-à-vis India. This trend has continued up till 2000/01 due to the fixed exchange rate with the Indian rupee and the increased inflow of remittances paid in India rupees. If Nepal is going to regain its macroeconomic competitiveness while keeping a fixed exchange rate with the Indian rupee, monetary policy and fiscal policy must be coordinated to produce a lower rate of inflation in Nepal than in India. In order not to raise interest rates (with its negative effect on manufacturing competitiveness), which would result from internal borrowing by Government to finance its deficit, the deficit itself needs to be contained. Government savings need to rise to ensure continued financing of development expenditure. Other actions to avoid overvaluation of the currency would involve careful management (and spending) of aid inflows[18], and ensuring that workers remittances will be paid for in free foreign exchange rather than in Indian rupees.

2.6.2. Trade Policies

Nepal maintains trade system that is relatively low tariff and is relatively free of restrictions. A brief review of import and export regime is given below.

2.6.2.1. Import Trade Regime

The government has been rationalizing the tariff structure by (i) improving tariff classification; (ii) eliminating tariff discrimination and reduce basic tariff rates to equalize effective protection between the various sectors; and (iii) reducing additional tariff rates to better reflect the true price of imports.

The reform measures also liberalized import control in terms of dismantling of non-tariff barriers, including elimination of quantitative restrictions on imports and phasing out import license auctions and replacing them with appropriate tariffs.[19]

[18] … on imports for investment projects rather than on wages and salaries.

[19] The only non-tariff barriers in place are for religious, health, and security purposes (*e.g.*, beef, poppy seeds, and the communication equipment). Imports of salt can only be conducted by the public enterprise Salt Trading Corporation on the grounds that only they have facilities to test iodine levels in the salt.

The prevailing tariff structure of Nepal includes five basic standard rates (5, 10, 15, 25, 40), with the largest number of import items come within the custom duty of 10 to 20 percent and having a significant number of tariff lines with zero duty. Accordingly, simple average tariff rate at present comes around 13 percent.[20] However, imported inputs for the textile industry are exempted from custom tariffs. Likewise, deductions are made on the import of industrial machinery by 50 percent and that of aluminium, copper, and brass in blocks or plates by 80 percent of the announced rate. In 2000, in a move to simplify the tax system, the authorities replaced excise duties on vehicles with two exceptional tariff bands, 80 and 130 percent. In the medium term, the government has stipulated in the reform programme its intention to reduce the number of tariff bands in addition to lowering their levels.

Nepal provides preferential treatment for the import from coming selected countries. Under Nepal-India bilateral trade treaty, signed in December 1996, India provides, on non-reciprocal basis, duty free access, without quantitative restrictions, to the Indian market for Nepalese products, excluding alcohol, tobacco, and cosmetics, provided there is a certification of origin.[21] However, imports from Nepal remain subject to Indian countervailing duties. On the other, all goods imported from India into Nepal are granted a rebate in the chargeable *ad valorem* (except specific) rate of customs duty by 20 percent up to the tariff rate of 40 percent, and by 10 percent on rates above that.

Likewise, the goods imported to Nepal from Tibet Autonomous Region of the People's Republic of China and those from South Asian Association for Regional Cooperation (SAARC) countries other than India (inclusive of Bangladesh, Bhutan, Maldives, Pakistan and Sri Lanka) are given preferential treatment of 10 percent in the chargeable *ad valorem* (except specific) customs duty.

The tariff rationalization measures led to the decline of the un-weighted average custom duty rate for imports from 15.4 percent in 1981/82 to 8.8 percent in 1992/93 and further to 8.2 percent in 1994/95, remaining at 10.7 percent in 1995/96 and shift to around 11 percent in the year 1996/97. Both trade-weighted nominal rate of protection (NRP) as well as effective rate of protection (ERP) also fell substantially. The trade-weighted NRP fell from about 80 percent in early1980s to about 31 percent in 1993/94 (Sharma 1996). Similarly, the average effective rate of protection (ERP) has declined from about 97 percent in late 1980s to about 8 percent in 1996 (*ibid.*). However, to judge the degree of protection enjoyed by the existing manufacturing industries these general figures are misleading and a case-by-case approach must be taken.

The elimination of import licenses, however, was gradual. In July 1992, the number of items subjected to import license was reduced from 88 to 12 in July 1992, to 6 in March 1993, and industrial raw materials and industrial goods were moved from an auction system to an open general licence system. The import license system was completely abolished in July 1993.

[20] Chapter 6 will present an analysis of the effective rate of protection for manufacturing industries. It shows that effective rates of protection are very high since many firms are in the higher tariff bands, while producing limited value added as percentage of output.

[21] In recent years, the treaty has faced opposition from Indian industrialists that accuse Nepal of being a re-export centre, channelling products to India that are produced elsewhere with minimum value added in Nepal. Nepal and India are currently reviewing ways to address this issue by defining the appropriate level of manufacturing value added. On the Nepali side, the outstanding issues are recognition by India of Nepal Standard mark as a proof of quality and India's imposition of quarantine checks on agricultural products and that of luxury tax and anti-dumping duties on selected manufacturing items.

2.6.2.2. Export Trade Regime

In June 1992 the Government announced the new trade policy to encourage exports: an export license is no longer required; the export duty has been abolished except for selected commodities; and the tax registration certificate is required to be presented only once each year.

Two schemes are in operation to stimulate exports: (a) a bonded warehouse (BW) system and (b) a duty-drawback (DD) scheme.

The BW system was introduced in 1988 to promote the ready-made garment industry by reducing costs and the administrative burden relate to imports. Under the system, read-made garments exporters import raw materials, store it in a warehouse under bond, deposit duties payable to the Department of Customs (DOC), and have the deposit released after successful completion of export. The BW system was one of the more successful Government schemes for export promotion and diversification of exports. The BW system has contributed greatly to the expansion of ready-made garment exports during early 1990s. The success of the BW system is apparently attributable to private sector initiative. BWs are kept within the premise of private sector garment manufacturers, and administrative bottlenecks are handled effectively by the public-private Ready-Made Garment Export Promotion Committee. As such, since 1992, the Government allowed the BW system for all manufacturers exporting more than 90 percent of their products. Furthermore, to encourage exports by making the utilization of BW facilities simpler, the verification procedures of raw materials used for export production were substantially simplified. From July 1992, DOC began releasing bank guarantees and deposits to cover duties and sales taxes due upon submission of the evidence of export phase, even before export proceeds are received in the country.

The Duty Drawback (DD) system, on the other hand, has not been as effective since its introduction in 1987[22]. Under this system, exporters should be reimbursed for duties paid on imports of inputs required for their export production. Slow implementation of DD, particularly because of the lack of established procedures and guidelines and inadequate provision of funds, has hampered its effectiveness. Drawbacks for different taxes (customs, sales and excise) were administered by different Tax Departments, and there existed neither co-ordination among the three departments nor a well established procedure to apply for DDs. Further under scheme, DD was granted only to exporters who directly imported inputs, manufactured and exported their products. This artificially encouraged vertical integration of business, thus serving as an entry barrier to small procedures by raising the establishment cost of export business in the country.

To circumvent the problems with DD scheme and to make it operative, DOI through its One Window System (OWS) was designated as the central agency to handle all DDs, and to ensure adherence to the limit of 60 days for reimbursement of duties. It now also allows drawback payments to actual exporters regardless of whether they are importers of inputs or not. This measure eventually allows DDs to be filtered down to indirect exporters through market mechanisms. The Government announced new measures in July 2001 to improve the operation modalities of the DD scheme for facilitating the reimbursement of the duties paid on the imports of raw materials by the exporters. The duties will be now reimbursed in proportion of the export value of items made out of the imported raw materials. Furthermore,

[22] The Budget for Fiscal Year 2002/2003 announced in July 2002 has adopted specific measures to improve the administration of the duty drawback scheme.

Pass Books shall be issued to each eligible exporter from the customs point at the time finished products are exported. Five years debenture bearing 5 percent interest rate will be issued to those exporters who have not been able to get their duty reimbursed for the last few years.

The government also announced additional export incentives in July 2001 to exporters of Pashmina shawl, ready-made garments, carpets and handicrafts. Interest on the export loan provided by the commercial banks to the exporters on convertible currency will be lowered by 1.5 percent. Similarly, interest on export loan provided in the local currency will be lowered by one percent.

Nepal has maintained certain restrictions on the export front. There is an export tax levied 23 specific items which includes essential agricultural commodities and selected manufacturing items., the Government has imposed export tax on selected manufacturing products like processed oil, vegetable ghee, plastic products and copper wire with a view to accommodate India's concern of trade deflection. The service fee 0.5 percent is also levied on all exports although it was reduced from 2 percent in 1993/94. Likewise, the Government has still maintained the export floor price system although it has been gradually reformed. Export floor prices for carpets were reduced from US $65 to US $60 per square meter (washed) and US $61 to US $55 per square meter (unwashed) in October 1992, and then US$49 recently. Likewise, there are also restrictions on the exportation of raw leather and unprocessed wool. On leather, the government allows only about 15 percent of total production to be exported in raw form. This restriction is viewed as a strategy for increasing "value added" as part of Nepal's industrialization process. Similarly, wool exportation is restricted in order to ensure sufficient supplies for carpets.

2.6.3. Tax System

The main tax components that have implications particularly to the industrial sector are commodity tax and taxes on business income. Domestic commodity tax, at present, consists of: (i) value-added tax (VAT); and (ii) excise taxes. They are discussed in this section. Border commodity tax, which consists of (i) import duties; and (ii) export duties, are already discussed above.

2.6.3.1. Value-Added and Excise Tax

As mentioned above, domestic commodity consist of excise tax and value-added tax. At present, excise duties are levied only on health hazardous commodities like liquor and cigarettes. However, liquor industries, which are based on fruits, receive a five-year exemption, with an additional three-year extension, for locating in remote area. Likewise, excise taxes are rebated on the sale of goods for which the current year's production is higher than that of the previous year.

Value-added tax (VAT) of 10 percent is levied on goods and services at all stages of production and distribution with the business transaction exceeding NPR 2 million. However, VAT is exempted for a quite number of business activities. These include until recently: exports; inputs used in the production of exports; equipment for industrial activities; domestically produced cotton fabric, cotton textiles, and other textiles; cotton thread; woollen yarn; carpets; jute products; gold ornaments; unprocessed mustard oil; aluminium; copper, and bronze circles and sheets; printed material; food and medicine for animals; equipment for processing waste and for investment in alternative energy sources. Additional goods

exempted from VAT in the 2000/01 were sarees made of cotton and artificial fibres; aluminium, copper, and bronze utensils; and organic tea.

2.6.3.2. Taxes on Business Income

Taxes on business income of 25 percent are levied on net income from public, private, and joint venture industrial enterprises as compared to 30 and 35 percent that are levied on other enterprises and financial institutions respectively. The Government had provided generous tax facilities to the industrialists on an ad hoc basis for industries, including seven-year tax holidays in the priority sectors and income tax exemption for export earnings. With aim to rationalize the various industrial incentives, the Government amended the Industrial Enterprises Act, 1992 to limit the income tax levied on industrial earnings. Furthermore, the Government also deleted, under the Amendment, sections relating to tax holidays and exemptions under Article 15 of the existing Act to reduce tax holidays for priority sectors and eliminate income tax exemption allowance for export earnings to allow an equal level of tax exemptions for all industrialist. Starting in 1997/98, tax holidays were suspended, except to cottage industries, defined as those based on traditional skills and using local raw materials.[23] Existing tax holidays remained in force for their duration (up to seven years).[24]

Since 1997/98, provisions were also made to deduct taxes on business income by 50 percent for activities falling under the "National Priority" list.[25] Likewise, provisions were also made to deduct taxes on business income of 10 percent to enterprises using 80 percent of local raw materials and Nepali citizens (except tobacco and liquor), and 20-30 percent for those established in underdeveloped areas. Expenses incurred in earning income in the year of assessment are also wholly deductible. Losses, not previously offset against income, may be carried forward and deducted against future income for a maximum of three years. A deduction of up to 50 percent of the cost of new investment is also permitted.

2.6.4. Investment Regime

The Government has traditionally retained tight control over approvals for industrial investments. Industries were required to obtain a license for establishment; and any modification, expansion or diversification of industrial undertakings required the approval of DOI. The industrial license further served as the basis for import and export licenses.

The Government in June 1992 announced radical changes in the licensing requirement in the New Industrial Policy. Unlike in the past, the new industrial policy emphasizes deregulation, encouraging of competition and reliance on market forces in the allocation of resources in manufacturing activities. A new industrial policy was subsequently enacted as the Industrial Enterprise Act (1992) in November 1992. Under the new Act, industries are no longer required to obtain licenses, unless the establishment concerned falls within the category of industries related to defence, public health and environmental hazards as specified in the Act. The Government simplified the procedure for registration of industries by drastically curtailing the information requirements.

[23] Cottage industries include carpet and handicraft manufacturing, textiles and clothing, leather and pottery wares, semi-precious metal objects and jewellery.
[24] Five-year tax holidays and two-year extensions were provided by the Industrial Enterprise Act of 1992 to industries in manufacturing, mining, energy, forestry, agriculture, tourism, services and construction.
[25] National priority includes hospitals, traditional medicines, transport, infrastructure, fuel saving, and pollution control.

Control over foreign direct investment was very strict in the past. A ceiling of 49 percent on the foreign ownership of joint ventures was imposed in the case of medium and large industries, while small-scale and cottage industries were exclusively reserved for Nepalese nationals. Applicants for foreign investment licenses had to go through long procedures, and approval generally took from three to eight months, while approval criteria were not clearly established. In addition, even when an application was approved, strict control was imposed on the repatriation of profits and the payment of royalty and interests to foreign partners.

Nepal also took a number of steps to attract foreign direct investment (FDI) and other forms of private foreign investment. The enactment Foreign Investment and Technology Transfer Act of 1992 (FITTA), which was amended in January 1996, along with Industrial Enterprise Act 1992 formalized these measures. FDI is welcome in the form of share (equity), reinvestment of earnings from foreign investment and loan or loan facilities. The Government is encouraging FDI in Nepal by providing attractive incentives and facilities within a liberal and open economic policy. FDI with 100 percent foreign ownership is permitted in all industries with the exception of strategic, public health and environmental importance. Repatriation of return FDI in convertible currencies is guaranteed. So is the case with the dividend from foreign investment, and amount received as payment of principal and interest on foreign loans. These industries are also entitled to all the facilities and incentives, such as tax incentives, provided to the domestic investors. All provisions regarding infrastructure such as permission, registration, land, electricity, water and facilities on taxation, are to be provided under the one window system for industries to be established with foreign investment. To assist foreign investors, a Foreign Investment and Facilities Section

Nepal is a member of the Multilateral Investment Guarantee Agency (MIGA) providing guarantees to foreign investors against non-commercial risks like currency transfer, expropriation, breach of contract and war and civil disturbance in the host country. Nepal has also signed Reciprocal Encouragement and Protection of Investment Agreement with France, Germany, and the United Kingdom, and is underway to conclude such agreements with a number of other countries. Under these agreement guarantees equitable and non-discriminatory treatment, free transfer of payments such as capital, profits and loans, and free access to the court. In the case of investment disputes, provision exists for its settlement through arbitration under the International Centre for the Settlement of Investment Disputes. Agreements avoiding double taxation have, moreover, been reached with India, Sri Lanka, Norway, and Thailand.

2.6.5. Financial Sector Structure

The financial sector in Nepal is highly segmented. The system has evolved from a system comprising only two state-owned commercial banks at the beginning of the decade, to one that includes 15 commercial banks, 12 development banks, 48 finance companies, 5 regional rural development banks, 34 NGO banking cooperatives societies, 13 insurance companies, a citizen investment trust, an employee’s fund, a postal savings bank, 15 NGO micro-finance institutions, numerous foreign exchange bureaus, and a stock exchange. This segmentation has partly resulted from a legislative framework that limits the scope fro mergers and acquisition between categories. Two state-owned banks (the Nepal Bank Limited (NBL) and the Rastriya Banijya Bank (RBB)) continue to dominate the commercial banking sector, and together account for 83 percent of commercial bank branches. Recently, however, their combined share in total lending and deposits declined to 48 percent and 43 percent, respectively.

Although there are a significant number of commercial banks with some majority foreign ownership, their activities are also constrained.

Since the introduction of economic reform measures, the number of commercial banks, some with majority foreign ownership, has increased significantly. From three public sector commercial banks before mid-eighties, the total number of commercial banks has gone up to 14. Nine commercial banks are joint ventures with 50 percent foreign shareholdings. These joint venture banks have tended to specialize in trade finance but have also, since the mid-1990s, expanded their activities into industrial, tourism, and transport sectors. They are proving to be a major source of financing for the industrial sector. They extend term loans also and participate in consortium financing. So, both for long-term loans as well as working capital, commercial banks are the principal financing mechanisms in the country.

Whereas private domestic commercial banks as group are in a better financial shape than two largest institutions, some smaller banks face balance sheet difficulties. One of the major factor appears to be due to the policy of directed lending under which commercial banks are required to direct 12 percent of their loans to "priority sector" small-scale borrowers, and those loans tend to be at lower-than-market rates, given that the banks compete with development finance institutions that are able to provide subsidized credits. The priority-lending requirement imposes a heavier burden on the smaller private banks that do not have a network of regional branches or a large operating staff.

The Government published in December 2000 its Financial Sector Strategy Statement (FSSS) following broad consultation within the Government and with stakeholders. The main elements of this strategy include:

- implementing restructuring plans for the two large commercial banks—the NRB and RBB;
- identifying restructuring strategies for the two development banks, Agriculture Development Bank of Nepal (ADBN) and Nepal Industrial Development Corporation (NIDC);
- strengthening the NRB's supervisory capacities and its ability to enforce compliance with prudential regulations;
- improving the regulation and supervision on nonblank deposit taking institutions;
- modernizing the legislative framework with a view to reducing legislative overlap and the segmentation and fragmentation of institutions;
- strengthening corporate governance and the framework of loan recovery; and
- phasing out the role of NRB and commercial banks in providing directed credit.

Nepal's legal and regulatory environment is fragmented, inconsistent, and institution-based rather than function based. Various acts governing the financial sector are not consistent and often conflict with commercial and corporate legislation. To address these issues, new statutes are being drafted. These include: a Nepal Rastra Bank Act; and Act of Licensing, Supervision, and Regulation of Banks and Depository Institutions; a Companies Act; and, an Insolvency and Secured Transaction Act. To improve legal enforcement mechanisms, the Government plans a National Judicial Academy; the viability of establishing commercial bench and dispute resolution is under study. The Government is also striving to improve financial and corporate governance by undertaking capacity building of key financial institutions: the Securities Board (SEBO), the Nepal Stock Exchange (NEPSE), and the Office of the Company Registrar (OCR). Equally important are issues relating to

cooperatives, finance companies, and micro finance institutions, which are becoming more numerous but are largely unsupervised.

2.6.6. Privatisation Policy

There are 43 public enterprises (PEs) in Nepal: 8 financial institutions, 13 manufacturing enterprises, 6 trading enterprises, 8 service enterprises, 3 utilities and 5 enterprises in the social sector. The PEs is characterized by poor performance and represents a drain on Government's limited resources. Equity investment in PEs for fiscal year 1997/98 amounted to NRs.2.7 billion or 8 percent of the Government revenue. In fiscal year 1997/98, return on capital employed (ROCE) from PEs amounted to 1.6 percent. The manufacturing, trading and service sectors showed a negative ROCE as almost all PEs are either loss making or only marginally profitable.

Nepal initiated a comprehensive privatisation programme in 1992. The main objectives of the privatisation program, as articulated in the Ninth Plan, are to promote the introduction of private sector participation in the economy with the role of the Government as facilitator and supporter of private sector activities and to reduce the financial burden to the State. The Privatisation Act was passed in 1994 to provide the legal basis and institutional framework for the privatisation program. Ten public enterprises had already been privatised by the time the law was passed. By the end of 1997, a further six PEs were privatised. The programme has to date focussed on small loss-making PEs and privatisation has not contributed to the broader aim of improved efficiency and economic performance (DFID 2000). Since 1997, there has been little change in impetus and the privatisation programme has suffered badly due to various factors (DFID 2000). Firstly, public perception is far from positive. Although there is broad consensus for privatisation as a policy, there is criticism relating to its implementation. The following concerns were expressed:

- past privatisation transactions have been unsuccessful,
- there is no transparency or accountability of process,
- there is influence of vested interests;
- there are allegations of financial irregularities;
- there is no accountability in the utilization of proceeds;
- the interests of workers have not been protected.

Secondly, protracted decision-making and a lack of clear authority contribute to delay, in turn undermining confidence in the process. Potential investors become less inclined to participate and PEs suffer from uncertainty about their future status.

The National Planning Commission suggests the following steps to accelerate the privatisation process:

- preparation of a time-bound privatisation schedule based on prioritisation,
- constitution of a provident fund to afford severance packages to retrenched workers, early retirement schemes, retraining of redundant staff and improvements of management,
- flexible divesture schemes, including for instance partial sale to a private investor, allowed nevertheless to gain control of the firm,
- expansion of the mandate of the privatisation cell at MOF to include the provision of management advise to restructure and strengthen public enterprises prior to their privatisation.

2.6.7. Rehabilitation of Sick Industries

In July 2001, the Government has announced to form a "Sick Industry Rehabilitation Committee" to rehabilitate the sick industries in manufacturing and tourism sector. The Committee is expected to identify sick industries, find out their causes, explore possibilities of rehabilitation, and implement the rehabilitation programme and facilitate supervision and monitoring of such programme by providing an institutional coordination mechanism. The Committee is coordinated by the Ministry of Finance and is composed of representatives of the National Planning Commission, the Ministry of Industry, Commerce and Supplies (MOICS), the Federation of Nepalese Chamber of Commerce and Industry (FNCCI), tourism-related business agencies, Nepal Rastra Bank and Bankers' Association. Upon the approval of the Committee on the basis of set criteria, the sick industries will be provided a loan from different commercial and development banks at a low interest of 7.5 percent for their re-operation. Similarly, the Government also has made provision for sick industries of rescheduling of due loan and interest, waiver of penal interest and capitalized, freezing of interest liability and concession on outstanding revenue dues. Nepal Rastra Bank has made a provision of Rs.1,500 million for refinancing commercial bank loans to such activities. The Government has also announced the policy of levying only one percent customs duty on the importation of machinery and spare parts required for rehabilitation of sick industries.

2.6.8. One-Window System

Nepal introduced one window service to investors along with the adoption of liberal and open industrial and foreign investment policy in 1992 (see also section 2.6.2.2). The main objective of the One Window System (OWS) is to provide prompt service in registration and operation. The policy also declared that infra-structural facilities such as land, electricity, water, telecommunication facility shall be made available to investors under One Window System. The OWS basically intended to provide the services and facilities to the investors from a single place i.e. Department of Industry (DOI) without any hurdle and within specified time. The time specified is 30 days for industrial licensing, and 21 days for registration. Duty drawback refund is to be provided within 60 days of application.

With the establishment of OWC in DOI, investors are receiving services in the following areas:

- Income tax exemption
- Sales tax and Excise duty exemption
- Duty drawback facility on export and deemed export.

2.6.9. Small and Medium Enterprise Development

Small and Medium Enterprises (SMEs) play significant role in the economy of Nepal. The industrial policy has encouraged those industries that use local resources, oriented towards export, labour intensive and located in less developed areas. The incentive system is based not on scale of operation or scale of investment but on nature of activities. All cottage industries are exempted from sales tax, excise duty and income tax. IEA classifies the small and medium firms by the value of their fixed assets as follows:

- Cottage industries is defined as the traditional industries utilizing specific skill or local raw materials and resources and labour intensive and related with national tradition, art and culture.
- Small industries have fixed assets up to 30 Million rupees.
- Medium industries have fixed assets between 30 million to 100 million rupees.

2.7. **Constraints to Industrial Development in Nepal**[26]

Notwithstanding the various policy reforms initiated by the government to shift industrial strategies and foreign trade regime towards greater market-orientation, manufacturing firms face various types of obstacles while doing business in Nepal. Recently, the World Bank (2000) identified major business problems in Nepal by carrying out rigorous ample survey of private manufacturing enterprises in the country. The principal finding of this study is that the unfavourable business environment caused by poor implementation of government policy, bureaucratic and political and policy instability are the biggest problems faced by industrial sector while doing business in Nepal (Table 2.14). In terms of their relative seriousness, other problems faced by the business community in terms of the order of seriousness are: depressed economic activity and low aggregate demand for products, poor access to finance, and inadequate infrastructure. This chapter summarizes the findings of the past studies on the obstacles to industrial development in Nepal.

2.7.1. Bureaucratic Burden of Government

Excessive red tape, extensive delay in provision of government services, and poor administration of the tax laws are believed to be the major ways in which the bureaucracy imposes a burden to the manufacturing firms.

2.7.1.1. Red Tape and Time Delay

There are many factors that created an environment conducive to red tape and time delays. These include:

- lack of clarity, consistency and simplicity in laws and regulations;
- poor delegation of authority and dissemination of information;
- overly rigid application of rules;
- opportunities for arbitrary decisions; and
- absence of a system of accountability.

Some specific examples of them are discussed below.

2.7.1.2. One-Window Service

The original objective of One-Window Service (OWS), as envisioned in the 1992 industrial policy, of streamlining the provisions of government services to industrial firms seem never to have materialized. As it exists today, the service appears to be limited an entry point for providing tax and duty drawbacks refunds only. Once through the window, firms have to chase their files through the Department of Industry, the Department of Customs, FNCCI, and the Department of Finance, which finally releases the tax refunds after receiving approvals from each agency. Firms do not see much change in any of this. Firms that have use the service invariably describe it as "simply one more window of the government bureaucracy to deal with." Others describe it as "an Ankhi Jhyal (a lattice window) of Nepal." Many of the firms even were not aware of the existence of OWS.

2.7.1.3. Centralization

Moreover, the OWS does not appear to benefit firms located outside Kathmandu because the regional offices cannot handle all of the scheme's services. For example, if an upcountry firm wishes to import materials and pay for them in US dollars, the request has to be handled in Kathmandu. In addition to tax and duty refunds, firms located outside Kathmandu also cannot get many other services and often have to travel to Kathmandu to get various government

[26] This section is extensively extracted from the study carried out by the FNCCI and the World Bank (2000).

permissions and obtain licenses. Firms that do not have an office in Kathmandu are at a distinct disadvantage because of the need to send senior mangers to Kathmandu for such purpose. This can be especially costly for firms if the service provided in Kathmandu is not efficient. Many firms also had problems with the recent introduction of the five-day workweek in Kathmandu, which they reported has effectively extended the amount of time they need to spend in Kathmandu when seeking government services.

2.7.1.4. Rigid Procedural Rules

Many firms reported that Customs officials do not haggle over the value of goods if they are paid for by Letters of Credit (L/C). A joint venture company with good relationship with its suppliers and buyers uses demand drafts and telegraphic money transfers. The firm reported that customs authorities do not easily accept a certificate from the bank as the proof payment for duty drawback purposes.

Similarly, many exporters note that it is difficult for firms to send samples of new products to buyers because potential customers do not want to create L/Cs for a small amount especially when they are testing the products of the manufacturer. The firms note that provisions for cash against documents (CAD) as in Bangladesh and India would significantly improve the competitiveness of exporters. Firms in tea industry reported similar problems in marketing their products.

2.7.1.5. Complexity of Rules

The rules governing business practices in some industries are complex, contradictory and costly to firms. For example, a firm in the wood and wood products industry described the intricate set of rules that it must follow. The Forestry Department prohibits the location of a wood processing business within five kilometres of a forest; so the firm had to locate elsewhere. However, it was allowed to locate within an Industrial District even though it was within five kilometres of a forest. Even though the firm obtained permission from the Forestry Department to remove logs from the forest, it had to wait two years before it could secure permission to cut the wood. The difficulties arose because the environment section of the Department was unable to decide what type of Environment Impact Assessment the firm needed to conduct. The most irritating regulation for the firm is to mandatory requirement to get approval from the Forestry Department to sell furniture outside the district. There is no charge for this service, but it takes up to two days to secure the permission.

2.7.2. Tax Administration

Tax administration comes in for some of the bitter complaints amongst the manufacturing firms. Despite recent efforts to overhaul and modernize the tax system, manufacturing firms say that very little has changed. Private enterprises do not suffer from a particularly large tax burden, but they are rather distressed by the arbitrary and capricious way that taxes are assessed. Many firms state that tax officials have too much discretion. The administration of the income tax has not changed substantially despite reforms. It continues to be for all practical purposes a tax turnover. Though firms are required to present audited books, the tax officials ignore them and assess taxes based upon what they estimate the turnover and profit to be. The system for resolving tax disputes is said to be so inefficient that almost no firms uses it. The fact that income tax is not base upon reported profit discourages firms from making investments because, in practice, expensing them does not influence taxed paid.

The introduction of VAT has improved tax efficiency. However, firms are concerned that tax officials are not adequately trained to properly administer the VAT. In addition, the VAT

registration net is not wide enough and firms that are registered have completing with unregistered firms. But is some cases tax officials continue to levy the extinct tax. In some cases firms claim to have been forced to pay the old Contract Tax that ended when VAT was introduced and have been unable to obtain refunds.

2.7.3. Administration of Customs and Import Regime

Five types of problems relate to the administration of customs and import regime. These are: procedural delays and complicated documentation procedures, inaccurate classification of goods, inaccurate valuation of goods, difficulties with the duty drawback[27] scheme, lack of enforcement and smuggling.

2.7.3.1. Procedural Delays and Complicated Documentation Requirement

The procedural delays in terms of clearing customs and complicated documentation requirements are the problems that not only create inconvenience to manufacturing firms but also increase the transaction cost of doing their business. They in turn adversely affect their competitiveness.

Clearing customs is a time consuming process. A large chemical manufacturer reports that customs clearance of normal consignments that do not require special customs inspections takes around ten days after the goods have been offloaded at the Calcutta port. Many pharmaceutical industries report that even they are exempted from customs duties, it takes about a week to sample and analyse a drum of each type of product it imports. A distillery notes that customs can hold up consignment for three weeks because the officer-in-charge is unsure of the regulations and needs to analyse the consignment in a laboratory. An additional week is often required to match the values of the L/C and the consignment. A firm in the metal industry observes that it can take up to two and half months to value and determine tariff rates on some of its electric and electronics because the customs officers are not adequately trained.

Similarly, various documents have to be prepared and submitted to the concerned authorities at each stage of trade transaction. For example, export of woollen carpets generally requires 76 documents of 29 types while ready-made garments, handicrafts and leather exports needs respectively 79, 82 and 77 documents of 30 types each. Some documents are unnecessary and duplicate each other. The number of copies varies according to commodity, the mode of transportation, country of import, importer and sometimes country of export. On an average, export must prepare about 80 copies of various types of documents, but the number may vary as per the specific requirement.

2.7.3.2. Classification of Goods for Determining Tariffs

The tariff rates on some imported goods can vary based on how the good is classified under the different headings of the harmonized codes. These provide opportunities for arbitrary decisions, delays and rent seeking activities. For example, when importing equipment the duty varies based on whether it is “main manufacturing industry” or not. The same equipment can be “main manufacturing machinery” for one firm while not for a firm in another industry creating an opportunity for arbitrary decisions. Similarly, equipment imported for the first time receives an 80 percent duty exemption; however, new equipment imported to replace existing equipment is not eligible for the exemption.

[27] Recent provisions in the Budget 2002/2003 notwithstanding.

2.7.3.3. Valuation

The valuation of imported goods at customs for purposes of determining the import duties is a major source of consternation. Customs officials fear that firms are under-invoicing their imports. As a result, instead of using the actual invoice value of the goods, they use "reference value" which are the values that commodities are believed to have. These reference values are often based on the highest import price historically declared on an invoice, and may overvalue goods substantially when the price of goods has declined over time. This is especially problematic because the reference values are not revised very often. The use of reference values also results in higher duties for large firms that are able to reduce their purchase price through global sourcing.

Even though a recent policy change allows customs officials to accept the CIF value, it is believed that the customs officers do not apply this policy if the CIF value is less than the reference value. To encourage firms to be more transparent in the invoicing of goods, a provision in the Finance Act allows the customs office to buy imported goods at the invoiced CIF value, or got another buyer to purchase the goods at the invoice value. It is unclear how much of an impact this provision has had on importers. Moreover, it is believed that the government also could not get adequate budget to buy imported goods at the invoiced value.

2.7.3.4. Duty Drawback

Duty draw-backs and VAT refunds are extremely slow—often firms have to wait months or even years to obtain the them after application is made. An additional problem is that exporters have six months to claim refunds. But sometimes low demand and unexpected delays can make it difficult for firms to manufacture and export their products and file claims by this deadline. The difficulty meeting the deadline is further exacerbated by the need to present original documents to claim both VAT and duty drawback making it impossible to claim simultaneously. Finally firm's cash flow management has been harder by the reduction in the share of imported raw material that can be brought in under a bank guarantee to 50 percent.

2.7.3.5. Lack of Enforcement and Smuggling

The widespread smuggling of goods from India makes it difficult for the manufacturing firms to compete with cheap imports. Recent study on informal trade along Indo-Nepal border estimates that smuggling from India to Nepal along major selected five trading centres (Kakkadvitta, Biratnagar, Birgunj, Bhairahawa and Nepalgunj) is in the magnitude of Nepalese Rupees 12 to 15 billion (Karmacharya 2001). Textile products are the major item that is smuggled to Nepal from India. Despite substantial reduction of tariff as part of the economic liberalization programmes and recent mobilization of army, the long open border with India makes it difficult to prevent smuggling when price differentials exist in neighbouring along the border.

2.7.4. Government Policy and Regulations

The greatest concerns of firms regarding government policy is not with any specific regulation but with the way policies are formulated and the lack of clarity, predictability and consistency in regulations across time and with other existing regulations.

2.7.4.1. Unpredictability

Many firms complain that the government frequently changes policies and regulations without consulting the private sector. For example, change in tariff rates and currency regulations are often unexpectedly made. Firms complained that because of delays in bidding

process unexpected tariff changes can turn what was a profitable bid into a project that will bankrupt the firm if it is carried out. Unexpected changes in currency regulations can have similar effects. When new regulations prevented textile firms from purchasing yarn in India with dollars, the firms were suddenly faced with paying Indian excise tax of 18 percent, an unanticipated cost.

Unpredictability in government policy also arises because firms are unsure of the government's commitment to its policies. For instance, the government introduced a five-year income tax holiday for new industries in 1992 and removed this provision without significant discourse. Likewise, the provision also has been made in IEA to establish Export Processing Zone, Export Promotion House and Export Promotion Industry. However, none of these measures have been implemented so far now.

2.7.4.2. Clarity of Regulation

Many laws and regulations are unclear and open to interpretation. An example is the minimum wage law, which specifies the minimum wages and allowance for workers. The government periodically resets the minimum wages and allowances for industrial workers to account for inflation. Because the law is not clearly written, the government with the support of the union has interpreted the law as providing for minimum increase in worker compensation. As a result, firms are required to increase the worker wages by the increase in minimum wages whenever they are adjusted.

2.7.4.3. Inconsistency of Regulations

Government laws and regulations are often inconsistent with other regulations creating the opportunity for arbitrary decisions and delays. For instance, a firm in the metal industry notes that there are inconsistencies in Nepal Rastra bank's list of items, which can be imported in US dollars from India and the classifications in the customs tariff. The provision of one set of regulations refers to hot-rolled coils of more than 12 mm diameter, but plates rather than coils are obtainable in this size.

Another example of inconsistency is the requirements to set aside 5 percent of profits for a government housing-fund and to pay gratuities to workers with more than three years' of service under the labour law, but the inability to expense these costs under the income tax. Similarly, wood firms complain about the need to obtain separate permissions to remove logs from the forest and cut the logs.

2.7.5. Labour Regulations

The most problematic regulation for firms is the retrenchment provisions of the permanent labour. The cost of retrenching permanent workers is so high that firms attempt to limit the number of workers they hire. Once a worker becomes permanent it is impossible to lay him/her off or fire him/her without permission of the Labour Department, which can take months or even years. Declining sales are not considered sufficient grounds for retrenchment and the process must be followed even in case of gross worker misconduct. Consequently, many older firms are significantly overstaffed and other firms hesitate to hire new workers. The Labour Law is a particular problem for large multi-national firms seeking to enter a new and risky market. The existing law encourages firms to adopt more capital-intensive production techniques and constrains enterprise learning because the workforce is generally older and less permanent.

2.7.6. Price Regulation

Price controls are a problem for two specific sectors only—carpet and food. The government fixed the minimum valuation of carpet exports as a measure (i) to control foreign currency leakage by checking possible under-invoicing of carpet exports; and (ii) to ensure and maintain the quality standard of carpet export. Prior to 1992, the floor price for unwashed carpet was fixed at US$80 per square meter and that for washed carpet at US$65 per square meter. It has been revised downwards at US$54 per square meter since 1992, which remains unchanged till now. Carpet exporters argue that market price of their lowest quality carpet (60 knot carpets), which sells for around US$45 per square meter in international markets forces them to over-invoice the value of their exports and replenish the foreign exchange difference through secondary transactions in the unofficial foreign exchange markets. Hence, this regulation increases the transaction cost of doing business thus adversely affecting competitiveness in the external market.

While the government does not fix the price of agricultural products such as rice and edible oils, a government-owned enterprise, Nepal Food Corporation, is a major purchaser of such basic food products and influences the market price. NFC purchases these food products to stabilize prices for the farmers and consumers. The prices set by NFC act as the support or floor price for unprocessed rice and the ceiling price for processed rice. Grain mills are affected by both prices. They face the difficulty of determining what the prices will be, how they are set and when they will be set. Late declarations of ‘arbitrary” prices by NFC poses significant price risks for these firms and prevents them from purchasing inputs for processing in a timely manner.

2.7.7. Trade Regime Bias Against Manufacturing

The trade regime in some ways is biased against the manufacturing sector. For example, large infrastructure projects, which can contribute substantially to economic activity import machinery and other products duty free from donor countries. However local companies must pay both VAT and duty on imported products to make the same machinery. Other tariffs provide a negative effective rate of protection. In the case of pharmaceutical products, imported pharmaceuticals pay only a 2.5 percent duty. Domestic manufacturers must pay a 40 percent duty on imported packing materials, which is a major portion of their costs.

2.7.8. Demand and Market Limitations

Lack of demand generally revolves around the issue of market competition and aggregate demand in the economy. The former included inability of the firm to sell their products, given their prices and quality in comparison with domestic or foreign competitors. In contrast, aggregate demand results from decreased demand for a firm’s products due to changes in general economic conditions and purchasing capacity of the people.

A fundamental limitation facing industrial development in Nepal is the low incomes of Nepal and their skewed distribution in Nepal. This restricts domestic demand generally and imposes constraints on the pattern of demand. In addition, the quality and distribution of physical infrastructure necessary for communication and the movement of goods and materials is another major variable. As a consequence, the market for consumer goods in Nepal can best be described as fragmented, loosely linked, small and localized in a few urban and semi-urban areas, restricting to obtain the benefits from attaining the economies of scale. In addition, Nepal had experienced a significant slowdown in overall economic activity and in

the manufacturing sectors in particular in 1997 and 1998. The three major contributory factors were: ripple effect of the Asian economic crisis, reduction in the demand for carpet exports due to concerns about child labour, and poor harvest resulting from inadequate rainfall.

2.7.9. Finance

Inadequate finance is most often cited as a business problem. Final sector reforms undertaken in the 1990s have helped, together with increase in the amount of domestic credit flowing to the private sector, give most manufacturing firms in Nepal access to at least some bank credit. However, high interest rate, large collateral requirements and other factors prevent firms from obtaining as much finance as they need. Furthermore, the majority of the credit is short-term, while long-term credit for fixed asset financing remains scarce. Inadequate information, in terms of accurate accounting, makes it difficult for creditors to assess risk. Furthermore, problems exist with contract enforcement. Political uncertainty and volatility in the business environment also add to lenders problems. The risks increase with the long-term, which leads most lenders to offer only short-term loans. In addition, the lack of information forces creditors to demand personal guarantees and high levels of collateral. The requirement for personal guarantees effectively eliminates the advantages of limited liability and discourages entrepreneurs from taking risks,

Trade credit or, supplier credit, can be an important source of funds for manufacturing firms. A well-developed system of trade credit allows firms to conserve working capital and frees up internal funds for investment. Most firms in Nepal extend or receive some trade credit. However the incidence and extent of bank credit is limited because credit providers do not have adequate information on potential customers and have difficulty enforcing contracts. The lack of trade credit, along with the delays in receiving duty drawback and VAT refunds, puts pressure on firms' working capital and reduces the amount of internal funds available for investment. Most investment in Nepal is funded through retained earnings and other internal funds.

2.7.10. Infrastructure

One of the major contributing factors to the high cost of doing business in Nepal is poor infrastructure in the fields of electricity, transport, water, telecommunications and industrial land. Chapter 5 will analyse these issues in detail.

2.7.11. Productivity[28]

Enterprise and worker productivity in Nepal is low by international standards. Five major factors contribute to this productivity gap. These are; (i) low capacity utilization; (ii) limited economies of scale; (iii) problems with the business environment; (iv) poor infrastructure; and (v) weakness in technology transfer mechanisms.

Small market size limits scale economies and constraints capacity utilization. Expanding exports to widen the market could help resolve these problems. However, in many sectors in Nepal, the poor business environment, infrastructure and remote location make it difficult for Nepalese firms to take advantage of the large markets in neighbouring countries, despite 1996 free trade agreements with India. In sector where economies of scale matter, such as textiles,

[28] See Chapter 6 for details.

pharmaceuticals and soap, firms are either protected from cheaper imports in the home market or exporting to India based upon tariff differentials for critical inputs without any appreciable value addition. Labour-intensive manufactures, like garments and carpets, have been the exception showing relatively better performance. However, factors like US quota have played an important role in their performance. Many Nepalese garments firms feel that they are not competitive enough to continue exporting after the multi-fibre agreement is eliminated without a substantial improvement in productivity.

2.7.12. Entrepreneur's Business Culture and Management

The present business culture that lacks willingness to innovate, have stronger tendency of becoming rich faster by skipping sustained trade promotion that requires long period to fruit the benefits, and lack of business management are also major impediments for export development.

Among Nepalese entrepreneurs, rather than taking risk and spend efforts on innovating, it is only the hope of sure gain that attracts them into any venture, and the fear of likely loss makes them unnecessarily nervous. Thus, lack of dynamism among the entrepreneurs is affecting Nepal's export development. For example, renewed Indo-Nepal trade treaty provides potential opportunity to promote genuine industrial development. However, there are many fly-by-night Nepalese manufacturers who deflect semi-finished imports to India without any appreciable value added. Likewise, Nepalese entrepreneurs lack skill in the areas of marketing management, quality control, costing and pricing of their products, keeping proper accounts, and developing promotional materials of their enterprises.

2.7.13. Institutions[29]

Absence or inadequacy of necessary institutional infrastructure is another problem that adversely affect the manufacturing sector in Nepal. Some of these problems are discussed below.

2.7.13.1. Weak Trade Support Infrastructure

Inadequate market information has been identified by the government as one of the main bottlenecks for export diversification. Most of the exporters in Nepal do not have access to information they need for identifying and developing markets. The information they receive is limited and frequently out of date. As a result of this, most of them are forced to do business without market intelligence. Due to the lack of information enterprises are unable to develop suitable marketing strategies. Trade statistics available to the government are frequently inconsistent and inaccurate due inappropriate arrangements for their collection and dissemination. Although there are some public sector institutes created for the development of trade, they have not been able to play a strong supportive role in terms of undertaking research to explore and opening up new markets and products, developing overseas commercial relations and identifying market requirements, providing product information and collecting and disseminating market intelligence for development of exports.

2.7.13.2. Lack of Trained Human Resources and Capacity Building

Lack of trained human resources has been recognized as another major constraint to industrial development. Weakness in this area is endemic in all agencies and organizations involved in developing international trade, for example, exporting companies, government

[29] See Chapter 4 for more details.

industries and agencies and trade support organizations. At the policy level trained human resources, who can address strategy and structure issues, are lacking. Similarly, at operational level trained human resources, who can implement strategies, monitor performances and take remedial action, are lacking.

Likewise, the development of industrial competitiveness and its dynamic evolution over time requires firm to learn new capabilities and upgrade them over time. The process of capability development may face various market failures. In factor markets, free market may not lead to the optimal supply of inputs, particularly skills, technology and information, needed to keep abreast of international markets. The realization of comparative advantage depends on these failures being addressed. However, the response of the government in creating skilled human capital, and providing information and R&D support appear to be inadequate.

2.7.13.3. Absence of Adequate Legal Provisions

Inadequate legal provisions are considered to be another major impediment for export development. For example, absence of separate laws and by-laws for facilitating the process of land acquisition, leasing and plantation of agricultural crops have adversely affected the commercialisation of agricultural based industrialization. Likewise, lack of separate Labour Act that restricts or limits strikes has adversely affected export-oriented industries in terms of timely delivery of consignments. Similarly, there are not adequate provisions to penalize insincere exporters who act against standard norm of trading. For example, the government has not been able to take stern against those fly-by-night manufacturing firms who misused certificate of origin given to them by deflecting semi-processed imports from third countries without any appreciable value added. Their behaviour resulted to external cost to the economy by jeopardizing whole trade treaty and hence loosing the potential benefit that Nepal could reap from the treaty. Likewise, no legal provision exists on anti-trust, exit policy, and consumer protection.

2.8. Conclusions and Recommendations

Some major issues that need be addressed for promoting manufacturing sector growth are as follows:

- improving competitiveness through macroeconomic management;
- implications of MFA abolition, African Development Act, and China's accession to WTO for Nepal's readymade garment sector;
- opportunities and challenges from Nepal's accession to WTO for its manufacturing sector;
- implications from more restrictive Indo-Nepal Trade Treaty.

Apart from these exogenous forces, there are other major internal factors that have constrained the growth of manufacturing sector which need to be urgently addressed. The greatest obstacles to doing business in Nepal are the government policy and its implementation. In second place are obstacles presented by inadequate demand for products, poor access to finance, and inadequate infrastructure services. While government policies can be well designed, they are often changed, and implemented so inconsistently that they contribute to an unpredictable and risky business environment. In addition, manufacturing sector is reported to be suffering considerably from excessive government red tape and long delays in provision of government services. These problems are often facilitated by lack of clarity in laws and regulations, and unpredictability and inconsistency in government policies. The implementation of tax regime, imports and exports regime and labour laws are

specific areas that affects the manufacturing sector most, and need to be addressed by the government. Low productivity of enterprise and worker in Nepal is another major constraint affecting manufacture sector that need to be properly addressed to enhance the sector's competitiveness.

In order to address above issues and constraints faced by the manufacturing sector, an attempt is made here to suggest some measures. These include:

- enhancement of competitiveness and productivity;
- improved linkage with India by creating environment for genuine industrialization;
- improved business environment;
- improved physical infrastructure;
- overcoming the disadvantage of being land-locked;
- improved access to finance; and
- provision of industry and investment friendly legislation.

2.8.1. Competitiveness through Macroeconomic Management

If Nepal is going to regain its macroeconomic competitiveness while keeping a fixed exchange rate with the Indian Rupee, monetary policy and fiscal policy must be coordinated to ensure a depreciating real exchange rate with the Indian Rupee. A lower rate of inflation in Nepal than in India would be required. At the same time interest rates should be kept low. This will require low fiscal deficits. However to avoid negative consequences on development expenditure, Government savings need to rise. Other actions to avoid overvaluation of the currency would involve careful management (and spending) of aid inflows, and ensuring that workers remittances will be paid for in free foreign exchange rather than in Indian Rupees.

2.8.2. Enhancement of Competitiveness and Productivity

For attaining the potential gains from globalisation, whether in terms of opportunities provide by accession to WTO or MFA abolition, Nepalese entrepreneurs must enhance their competitiveness in terms of reducing the cost of production, improved quality control, reliability of supply and quality, investment in better equipment etc. For improving the productivity of firms, the efficiency of technology transfer mechanism should also be upgraded. This would include programmes to increase FDI, raise the level of manager and worker training, improve firm's access to technical consultancy services, and assist managers to visit suppliers and buyers.

2.8.3. Improved Linkage with India by Creating Environment for Genuine Industrialization

Nepal should try to strengthen its existing economic relation with India further for promoting its industrial sector. For doing this, Nepal should create environment that would promote genuine and sustainable industrialization, unlike the one at present, which has encouraged transitory type of industries based on the tariff differences between two countries on imports from third countries. Some of the measures for doing this would include: (i) provision of rules of origin in terms value added requirements; (ii) Developing transparent and efficient system of providing certificate of origin (COO) to avoid their misuse; (iii) addressing issue of "surge" in an amicable manner; (iv) setting up institutional mechanism for ensuring smooth implementation of the provisions of treaty by speedily addressing bilateral trade disputes; and (v) formulating safeguard measures to protect its own industry.

2.8.4. Improved Business Environment

Efforts should be made to address the specific concerns raised by firms about government implementation of policy, bureaucratic burden and uncertainty. The possible measures include:

- improved One-Window Service for investors;
- improved tax administration;
- expediting duty drawback and VAT refunds;
- reducing transaction cost of doing business by simplifying customs and documentation procedures, abolishing the system of fixing floor prices for exports, and by eliminating export taxes and service charges.

2.8.5. Improved Physical Infrastructure

Another measure of reducing the cost of doing business in Nepal is to improve physical infrastructures be it in, power, road, water, telecommunication, and other facilities like warehouse and go-down. Privatisation of the utilities could be one way of for making them more efficient and more rationally priced.

2.8.6. Overcoming the Disadvantage of Being Landlocked

Nepal should find a way out to overcome the disadvantage of being landlocked. One way to do this would be the creation of a well-developed network of transport, port and administrative infrastructure in Nepal itself and in India and Bangladesh, a task that needs to be approached within the framework of South Asian Growth Quadrangle (SAGQ), sub-regional cooperation among four countries in the region. In this regard, the Asian Development Bank's South Asian Sub-regional Economic Cooperation Programme (SASEC) should be fully explored. Such arrangements will reduce Nepal's reduce Nepal's transactions cost of doing trade in particular the high cost of transit to the ports from which it can access markets beyond those of its immediate neighbours.

2.8.7. Improved Access to Finance

In order to address the shortage of credit, particularly long-term credit, it is important to deepen financial sector reforms. Steps must also be taken to improve accounting standards so that lenders will be able to assess risks. The court and legal system must be strengthened so that contracts can be adequately enforced at a reasonable cost. Addressing these structural elements of the financial system will also enhance the environment for firms to extend trade credit.

2.8.8. Improved Legal Infrastructure

For promoting industry, legal infrastructure should be made investment friendly. Labour Act is considered to be one of the major factors hindering industrial development in Nepal. Accordingly, the labour law should uphold labour standards, such as prohibition of exploitative use of child labour, prohibition of forced labour, elimination of discrimination in employment, freedom of association and provision of the right to organize and bargain collectively. However, it should be careful not to raise the costs and increase the inability to retrench workers, both of which not only increase the cost of doing business in Nepal but also may lead to the break down of possible linkage of employing abundant labour resources in manufacturing sector and poverty reduction. The manufacturing firms may move away from using more labour-intensive technology if stringent Labour Act of not allowing easy exit is

not addressed in an amicable manner. Other legislations that need to be improved are the Company Law and the Contract Act. The Company Law needs to be addressed to make liquidation easy, and non-requirement of approval for loan transaction. Likewise, the Contract Act needs to be amended to address issues relating to compensation against the breach of contract. There are also new legislations that need to be enacted for making the industrial investment climate friendlier. These include legislations on Bankruptcy, Anti-dumping, Intellectual Property Rights and Antitrust Laws.

3. Manufacturing Sub-Sectors

3.1. Introduction

The present chapter presents an overview and analysis of the historical development and current situation of 14 manufacturing sub-sectors in Nepal. It also provides broad recommendations to HMG regarding appropriate measures to be taken in respect of each of these sub-sectors, addressing in particular issues of importance in a longer-term perspective. The proposed measures are sub-sector specific and don't repeat general recommendations on a manufacturing-wide or economy-wide basis made in other chapters of this report, unless they are of particular importance to the concerned sub-sector. It should also be emphasized that the recommendations refer to action proposed to HMG, not firm-level recommendations to individual enterprises.

In addition, the sub-sector reviews also provide alternative outlooks for the long term development of the sub-sectors, where the alternatives are based on whether HMG will continue "business as usual" (assuming slow or stagnant reform and little action on the recommendations made) or will actually accelerate its reform programme and act upon the recommendations made.

The reviews are based on an analysis of the censuses of manufacturing establishments in 1986/87, 1991/92 and 1996/97 as well as the IDPP survey of 121 manufacturing establishments in 2000/01. Various other sources have also been used, *e.g.* regarding production and international trade, as well as estimates and views presented by industry representatives. Furthermore, an attempt is made to assess the sub-sectors in a broader, international perspective.

The above-mentioned census data only cover establishments with 10 or more employees and, therefore, don't capture the importance of establishments with less than 10 employees. A separate survey was carried out in 1999/00 covering establishments with less than 10 employees; households with at least one employee; and households, not hiring any external labour, but having their sole income to finance household expenditures from manufacturing activities. Based on this survey, an estimate was made that these small production units employed 121,000 persons (the census in 1996/97 covered establishments with a total of 197,000 employees) and accounted for a total value added of Rs.6.7 billion (as compared to about Rs.20 billion in the 1996/97 census). Although not included in the summary statistical tables in the sub-sector reviews, numbers on employment from the 1999/00 survey have been incorporated in the text, wherever significant.

Historical data and quantitative estimates for 2000/01 have to be interpreted with caution. For example, national accounts 1986/87-1996/97 are not always consistent with information provided by the censuses. However, in order to assess long-term trends, census data are assessed as adequate. Estimates for 2000/01 have to be interpreted as indicative and should be looked upon in the context of long-term trends.

Estimates of manufacturing sub-sector value added in 2000/01 have been derived from a number of sources. The base has been the production index of manufacturing industries/ commodities prepared by the Central Bureau of Statistics, Nepal Rastra Bank and the Department of Industry. As this index does not include carpets, garments and Pashmina, an

index for these product categories was added, based on actual exports. Output growth for vegetable ghee was also estimated based on actual export statistics. Based on these sources, estimates of production output were made for 2000/01. Then sub-sectoral value added to output ratios from the IDPP survey in 2001 were applied to these output estimates to arrive at estimations of value added values in 2000/01. Finally, the value added values in 2000/01 were transformed into constant 1996/97 prices to make them comparable with the 1996/97 census values of value added, using a deflator derived from the national accounts' current and constant price statistics for over all manufacturing value added (a source of estimate error at sub-sectoral level is of course that in reality there should be different deflators for different sub-sectors, but such deflators are not available).

With the methodology described above, the IDPP study arrives at an estimate of annual average growth of the overall manufacturing sector between 1996/97 and 2000/01 amounting to 1.5 percent, which is significantly lower than the national accounts' 7.0 percent (preliminary estimate for 2000/01 in the national accounts are based on first eight months of FY 2000/01). The difference may be explained by two major factors. The first one is that the national accounts may not have fully captured the strong downturn in the economy during the last four months of the FY 2000/01. The second factor may be that the national accounts may not have fully captured the strong decline in the value added to output ratio between 1996/97 and 2000/01 as revealed by the IDPP survey (a decline from 36.6 percent in 1996/97 to 29.4 percent in 2000/01).

Although the IDPP study team feels confident that the estimate regarding the whole manufacturing sector in 2000/01 is reasonable, estimates for particular sub-sectors may be more erratic. This is mainly due to the fact that the production index for manufacturing industries/commodities by CBS for some sub-sectors do not include more than 50 percent of the commodities in a particular sub-sector and, therefore, may not be representative for the whole sub-sector. Therefore, estimates for particular sub-sectors in 2000/01 should be seen as indicative and should be interpreted with great caution (this is particularly so in the food sector, where the heavy weight attached to sugar in the CSB index of manufacturing industries/commodities is likely to have produced a too high estimate).

Given the short time for the preparation of the present study and the great coverage (14 sub-sectors), it has not been possible to carry out all the requisite analysis underpinning each and one of the recommendations. Therefore, these recommendations should be considered as tentative suggestions, rather than firm recommendations, which should be subjected to requisite in-depth analysis as well as consultations with the private sector before being adopted.

3.2. Sub-Sector Description and Analysis

In the following sections, 14 sub-sectors are covered, providing a description and analysis of the present situation and historical development of each sub-sector as well as recommendations for the future.

3.2.1. Food and Beverages Sub-Sector

3.2.1.1. Description of the Food and Beverages (FB) Sub-Sector

Major product groups covered in the sub-sector description and analysis include sugar, grain mill products, oils and fats, dairy products, spirits and beer. These product groups alone

account for about 80 percent of the value added in the food and beverages sub-sector. Some salient features of the food and beverages sub-sector and its development over the last 14 years are illustrated in Table 3.1 below.

Table 3.1: Selected Characteristics of the Food and Beverages Sub-Sector 1986/87 – 2000/01

	1986/87	1991/92	1996/97	2000/01
Share of total manufacturing value added (%)	22.9	19.8	22.5	29.6-43.4
Number of employees	17,208	25,453	23,911	
Share of total manufacturing employment (%)	13.3	11.4	12.2	
Number of establishments	368	657	661	
Share of total number of manufacturing establishments (%)	17.9	15.4	18.6	
Annual average value added growth rate since previous census/survey, constant prices (%)		8.6	6.5	13.5-20.2
Value added/output ratio (%)	27.6	28.5	30.9	30.9-38.8

Source: Census of Manufacturing Establishments 1986/87, 1991/92, 1996/97 and study team estimates based on the IDPP Survey 2000/01 and CBS's production index of manufacturing industries/commodities.
Note: The lower values in 2000/01 are based on the assumption of unchanged value added to output ratio between 1996/97 and 2000/01.

As can be seen from Table 3.1, the sub-sector's share of total manufacturing value added was rather steady between 1986/87 and 1996/97 at a level of about 20-23 percent, but there are indications that this share increased significantly in 2000/01. Strong growth in the manufacture of sugar, vegetable ghee and tea contributed to this increase.

The sub-sector's share of total manufacturing employment is less than its share of total manufacturing value added, viz. about 12 percent, which reflects high capital intensity in some product groups such as sugar and beverages.

The sub-sector's relative importance in the total manufacturing sector may be even larger when taking into consideration small and cottage size production units with less than 10 employees. In this sector, with value added in the size order of 25 percent of the total value added as reported by establishments with 10 and more employees, the food and beverage sub-sector accounts for about 60 percent of value added and 45 percent of employment (mainly grain milling products).

The average annual value added growth rate decreased from 8.6 percent in the 1986/87-1991/92 period to 6.5 percent in the 1991/92-1996/97 period, but appears to have picked up strongly since then.

The value added/output ratio was steady in the range of about 28-31 percent between 1986/87 and 1996/97, but is likely to have increase somewhat since then.

Major product categories included in the food and beverage sub-sector and their shares of value added and employment of the overall food and beverages sub-sector in 1986/87 and 1996/97 are shown in Table 3.2 below.

Table 3.2: Composition of the Food and Beverages Sub-Sector in 1986/87 and 1996/97

Product Group	Share of Value Added (%)		Share of Employment (%)	
	1986/87	1996/97	1986/87	1996/97
Preserved fruits and vegetable	0.6	n.a.	1.3	n.a.
Oils and fats	19.4	9.9	3.8	7.8
Dairy products	7.8	11.4	9.7	7.7
Grain mill products	25.9	12.9	29.1	21.3
Animal feeds	2.8	2.7	0.8	3.2
Bakery products	6.4	3.6	13.2	12.5
Sugar	12.6	12.9	26.3	26.8
Confectionery/coca	0.6	0.4	1.7	2.4
Noodles	n.a.	3.5	n.a.	2.7
Other food products	10.6	2.6	5.4	7.9
Sub-total Food	86.5	59.8	92.1	91.7
Spirits	7.5	12.0	5.1	3.1
Beer	2.1	21.5	n.a.	2.9
Soft drinks	3.9	6.7	2.8	2.3
Sub-total Beverages	13.5	40.2	7.9	8.3
Grand Total	100.0	100.0	100.0	100.0

Source: Census of Manufacturing Establishments 1986/87 and 1996/97.

The major structural change in the food and beverages sub-sector that can be seen from Table 3.2 is the increase in the share of value added of the beverage product group from 13.5 percent to 40.2 percent between 1986/87 and 1996/97, with a corresponding decrease regarding food manufacture. In particular, there was a large increase in the share accounted for by the manufacture of beer, while the share accounted for by grain mill products had shrunk considerably. Despite this shift in the structure of the value added, shares of employment remained virtually unchanged between the food and the beverages sectors, respectively.

Between 1996/97 and 2000/01, the production of sugar doubled in quantity and the production of oils and fats (prominently vegetable ghee) increase fivefold in quantity. These increases may have significantly changed the composition of the food and beverages sub-sector since 1996/97.

There are significant backward linkages to the agriculture sector, but much less than could be expected in a much agriculture-based economy such as Nepal. The IDPP Survey revealed that only 42 percent of materials and supplies by the food and beverage sub-sector were purchased locally. This reflects the high import dependence of all beverage manufacturing as well as the manufacture of vegetable ghee.

The IDPP Survey also revealed that 85 percent of all products are sold in the domestic market. About 13 percent is exported to India, dominated by exports of vegetable ghee, but also including minor exports of noodles, biscuits and fruit juices.

The degree of self-sufficiency/import dependency in the food and beverage sector is illustrated in Table 3.3 below.

Table 3.3: Production, Imports, Exports and Apparent Consumption of Food and Beverages in 1996/97 (Million Rs.)

Production	14,506	
Imports*	+ 5,401	(31% of consumption)
Exports*	- 2,661	
Consumption	17,246	

Source: Census of Manufacturing Establishment 1996/97 and Economic Survey 2000/01
Note: * Includes food **and** live animals, which results in a certain overestimation, in particular regarding imports of food

Table 3.3 of course doesn't capture the almost complete self-sufficiency by most rural households in food and beverages. However, in the monetized food and beverages sub-sector, it shows that Nepal still relies on imports for 31 percent of its consumption of food and beverages.

There are some 25 enterprises with foreign investment, either wholly foreign owned, or more frequently, as joint ventures with Nepalese partners. Most of these are fairly small, but seven of them have investments in the manufacture of beer, sugar and drinking water exceeding Rs.150 million. The food and beverages sub-sector is the main recipient of foreign direct investment, accounting for about 45 percent of all foreign direct investment in Nepal.

There are five state-owned enterprises in the food and beverage sub-sector, one dairy, two sugar mills and two trading companies. All are of significant size and are all operating at a loss.

3.2.1.2. Determinants of Growth of the Food and Beverage Sub-Sector

For the period 1986/87 to 1996/97, the food and beverages sub-sector grew by an average of 7.5 percent annually, which considerably exceeds the growth rate of the overall economy, which grew at an average annual rate of 5.3 percent in the same period. As the production is mainly geared for the domestic market, this indicates that demand for food and beverages have tended to increase at a more rapid rate than overall incomes. The monetizing of the economy, bringing in increasing shares of the rural population into monetary transactions, and the continued urbanization have contributed to this development, and is likely to continue to do so for a foreseeable future. Thus, aggregate demand for food and beverages is strongly correlated with the growth of the overall economy and increased incomes.

There appears to have been some supply driven growth too having had an impact on the different growth rates during different periods. Between 1986/87 and 1991/92, the high growth rate of 8.6 percent is likely to have been significantly affected by the strong build up of capacity and production regarding sugar, spirits and beer, making these products more extensively available and at lower prices than earlier, when these products were bought from abroad and caught high import duties.

In the same way, the booming production and exports of vegetable ghee has contributed to strong growth in the food and beverage sub-sector after 1996/97. The growth in production and exports of vegetable ghee, however, rests on a very fragile base. The "business concept" has been to take advantage of the import duty differential on palm oil (the main ingredient for the production of vegetable ghee) between Nepal and India. In the latter, the tariff on palm oil

is 40 percent, whereas it is only 5 percent in Nepal (which in addition is reimbursed under the duty draw back system when the vegetable ghee is exported).

At specific product level, productivity-related factors in combination with a natural protection due to high transportation costs for certain goods, have also contributed to Nepal's high degree of self-sufficiency in food and beverages.

3.2.1.3. Government Policies

Leaving general policy statements for the future aside and looking at actual HMG policies currently being enforced, the following are the most important ones:

- State intervention by ownership in sugar milling, dairy and alcohol production;
- State intervention in the distribution of agricultural inputs and the distribution of food;
- Establishment of minimum prices from time to time for agricultural inputs to the food and beverages sub-sector above market prices to support farmers (rice, coffee, wheat and maize), which means that these raw materials can't be provided to the food and beverages sub-sector at international prices;
- Artificially increasing prices of sugar cane and preventing milk prices from reflecting seasonal shifts in supply through distorting purchasing policies by state-owned enterprises;
- Ad hoc introduction of high import duties and quotas to protect state-owned enterprises;
- Incentives provided for sugar refineries, but no particular measures (*e.g.* irrigation) or incentives to increase yields of sugar cane cultivation;
- Fragmented land holdings and uncertainty regarding land tenure, underpinned by the current Land Law, prevent necessary large scale cultivation for the supply of agricultural raw materials in sufficient quantities and at internationally competitive prices;
- Investors in cold stores are provided with incentives in the form of subsidized electricity tariffs and subsidized interest rates on loans;
- Investors in tea processing are provided with subsidized interest rates on loans;
- Processing of fruit in certain areas with fixed assets below Rs.2.5 million is eligible for excise duty and sales tax exemption according to the Industrial Enterprise Act;
- There is a ban on exports of previously imported equipment, which hinders technological upgrading; and,
- Numerous other policy issues as indicated by a list of 50 particular policy issues related to agribusiness compiled by the Agro-Enterprise Centre in 1993 in a study of agribusiness constraints.

The major overall impact of current distorting policies is that much of the food and beverages sub-sector is deprived from access to agricultural raw materials at internationally competitive prices. This prevents its further development and discourages private sector investment in food production.

3.2.1.4. Problems, Constraints and Threats

The food and beverage sub-sector to a varying degree suffers from all the manufacturing-wide problems and constraints, which have been outlined in Chapter 2. Those problems, constraints and threats, which are of particular importance to the food and beverage sub-sector, or sub-sector specific, are the following:

- Lack of availability of agricultural raw materials in sufficient quantities and at internationally competitive prices, which in turn reflects a whole array of problems and constraints in the agriculture sector;

- Distorting HMG policies discouraging private sector investment in the food and beverage sub-sector (see section 4.2.1.3 above);
- An overvalued currency vis-à-vis India, which is a disincentive for exports to India, the most likely and dominant potential recipient of food exports from Nepal;
- Low quality of products reflecting lack of standards or enforcement of standards as well as low technological level in small and cottage enterprises;
- Inadequate road network and road maintenance resulting in difficulties regarding collection of raw materials and high transportation costs for both raw materials and finished goods;
- Lack of adequate cold storage capacity creating logistic problems;
- District authorities levying taxes on goods crossing their borders;
- The future viability of the vegetable ghee business being entirely dependent on unilateral action by India in the field of trade policy;
- A highly distorted and ailing sugar industry resulting in high sugar prices which prevents a whole array of food and beverages products dependent on sugar prices to be developed or being competitive (*e.g.* confectionery currently to a large extent being imported from India); and,
- Weak institutional linkages between the Ministry of Agricultural Development, the Ministry of Industries, Commerce and Supplies, the Ministry of Water Resources, the Ministry of Physical Planning and Works, and the Ministry of Finance often resulting in conflicting policies being pursued (the sugar industry is a point in case).

3.2.1.5. Strengths and Opportunities

Despite the problems, constraints and threats outlined in the previous section, there are some strengths and opportunities as follows:

- A fairly high foreign presence in the modern sector of the food and beverages sub-sector is a positive factor for acquisition of modern technology;
- A long-term strong growth in domestic demand for food and beverages exceeding the growth rate of the overall economy;
- Closeness to India, also with a long-term strong growth in domestic demand for food and beverages with export opportunities, in particular in the border states of India;
- Fairly large potential for efficient import substitution;
- As distorting policies are changed, new business opportunities will arise;
- As food consumption patterns change with rising incomes towards more demand for meat, the production of meat with backward linkages to animal feed and livestock will constitute an increasingly interesting niche in the future;
- Nepal has demonstrated some genuine strengths in being able to export certain niche products to India such as noodles and biscuits;
- If implementation of the Agriculture Perspective Plan is successful, the supply of larger quantities of high value crops such as citrus, apples and vegetables at competitive prices will offer opportunities for further processing into fruit juices, cordials, jams, etc.; and,
- Nepal enjoys a natural protection for geographical reasons for many of its food and beverage products.

3.2.1.6. Comparative and Competitive Advantages

Nepal's apparent current comparative advantage for the production of food and beverages appears to consist of geographical and climatic conditions that are favourable for the cultivation of many crops. Current comparatively low labour costs are also an advantage. As to per capita arable land, it is at a slight disadvantage compared with India (1995-97: 0.13 ha of arable land per capita in Nepal compared with 0.17 ha in India), but at a slight advantage

compared with China (1995-97: 0.10 ha of arable land per capita). Due to natural protection for geographical reasons, Nepal also has a competitive edge in supplying the domestic market with products sensitive to physical transportation and transportation costs.

Nepal also suffers from a number of comparative and competitive disadvantages: inadequate road network, inadequate irrigation, low degree of rural electrification and being one of the countries in the world with the lowest level of agricultural productivity as measured by agricultural value-added per agricultural worker (1996-98: Nepal US$189, India US$406, China US$307, Pakistan US$626 and Bangladesh US$276). The positive view on these disadvantages is that there is a huge scope for Nepal to develop its relative comparative and competitive advantages in these areas.

3.2.1.7. Strategic Recommendations

- Implementation of the Agriculture Perspective Plan is of primordial importance for the future development of the food and beverages sub-sector. The seven major components are:
  - accelerating agricultural growth;
  - large, concentrated investment in a small number of input priorities;
  - the input priorities are irrigation, agricultural roads, fertilizer and a technology system for research and extension;
  - a small number of high value added commodity priorities to facilitate intensification of agriculture;
  - the priority areas are citrus, vegetables and vegetable seeds, apples, apiculture and sericulture;
  - strong multipliers from increased farm incomes; and
  - implementation mechanisms.
- The Ministry of Industries, Commerce and Supplies, which is currently much left out from the implementation of the Agricultural Perspective Plan, should become more involved in its implementation in order to improve coordination between development of the agricultural sector and the manufacturing sector in respect of food and beverages. In this context, FNCCI, the Agro-Enterprise Centre and its product specific commodity associations should also get more closely involved.
- Strengthening of the intra-ministerial linkages between the Ministry of Agricultural Development, the Ministry of Industries, Commerce and Supplies, the Ministry of Water Resources, the Ministry of Physical Planning and Works, and the Ministry of Finance for the development of the food and beverage sub-sector.
- If viable in a broader macro-economic context, HMG should allow the Nepalese Rupee to depreciate vis-à-vis the Indian Rupee in order to facilitate exports to India.
- Promotion of private sector investment through divestiture of State-owned enterprises.
- Promotion of private sector investment by reducing distorting policies affecting prices, demand and supply of commodities.
- Amendment of the Land Law with a view to provide more secure land tenure;
- Grades and standards for certain products (*e.g.* milk and meat) should be introduced and enforced with a view to raise the quality of such products.
- The Institute of Food Technology needs to be upgraded and provided with adequate financial resources.
- To upgrade skills, appropriate training incentives may be considered. This could include measures such as a double deduction of training costs scheme or the provision of vouchers that could be used for costs of training at training institutes at the choice of the

enterprises themselves. Preferably such incentives should be made available at a broad manufacturing-wide base.

3.2.1.8. Sub-Sector Outlook

It is likely that long-term demand for food and beverages will be strong both in the domestic market and in the border states of India. Nepal also has some comparative and competitive advantages that it can draw upon which constitute necessary preconditions to capture a significant share of the domestic market and also provide some opportunities for exports. Other current comparative and competitive disadvantages could gradually be reduced.

However, in order to draw upon these advantages, a prerequisite is that HMG makes considerable progress in implementing the Agriculture Perspective Plan, whereby the food and beverage sub-sector would be ensured the supply of sufficient quantities of agricultural raw materials at internationally competitive prices. HMG would also have to significantly reduce its interventions in the sub-sector by ownership of enterprises and by policies distorting prices, demand and supply of commodities.

If the above measures are taken, the food and beverage sub-sector would face a bright future and could make a major contribution to industrial development with strong backward linkages, employment generation and associated reduction in poverty.

3.2.2. The Tobacco Sub-Sector

Due to its specific nature, the tobacco sub-sector is covered more cursorily in this report than other manufacturing sub-sectors. Main products in the tobacco sub-sector are cigarettes and bidi. Some salient features of the tobacco sub-sector and its development over the last 14 years are illustrated in Table 3.4 below.

Table 3.4: Selected Characteristics of the Tobacco Sub-Sector 1986/87-2000/01

	1986/87	1991/92	1996/97	2000/01
Share of total manufacturing value added (%)	16.4	10.7	12.5	6.6
Number of employees	9,669	5,764	3,213	
Share of total manufacturing employment (%)	7.5	2.6	1.6	
Number of establishments	68	85	38	
Share of total number of manufacturing establishments (%)	3.3	2.0	1.1	
Annual average value-added growth rate since previous census/survey, constant prices (%)		2.7	7.0	-13.2
Value added/output ratio (%)	64.2	66.7	67.8	51.3

Source: Censuses of Manufacturing Establishments 1986/87, 1991/92, 1996/97 and study team estimates based on IDPP Survey 2000/01 and CBS's production index of manufacturing commodities

As can be seen from Table 3.4, the importance of the tobacco sub-sector in the overall manufacturing sector over time has steadily declined as indicated by its share of value added and employment in the overall manufacturing sector. The decline appears to have been particularly steep since 1996/97.

There are no particular backward linkages from the tobacco industry as all tobacco leaves are actually imported.

The industry is entirely geared towards the domestic market, with only marginal quantities being exported. The domestic industry supplied about 80 percent of the domestic market in 1996/97, but its share is likely to have been reduced since then.

HMG has gradually divested state-owned enterprises in the sub-sector with the exception of one enterprise, which is operating at a profit.

There is significant foreign ownership in the industry with the two largest cigarette manufacturers being joint ventures with foreign firms.

HMG is pursuing a cautious policy in respect of development of the tobacco sub-sector as indicated by the exclusion of the tobacco industry from several incentives provided under the Industrial Enterprise Act.

HMG may consider divesting its last state-owned enterprise in the tobacco industry, enabling it to pursue, without being biased by commercial interests in the industry, whatever socio-economic policies it finds appropriate.

3.2.3. The Textile Sub-Sector

3.2.3.1. Description of the Textile Sub-Sector

Major product groups included in the textile sub-sector are fabrics, Pashmina, yarns, made-up textiles and jute goods (carpets are covered in Section 4.2.4 below). The spinning, weaving and finishing of fabrics alone accounted for about 85 percent of the textile sub-sector's value added in 1996/97. A dramatic change in this production structure took place in 1999-2000 when production and exports of Pashmina grew from virtually nil to Rs.5 billion in 2000/01, accounting for more than half of the textile production in that year, while the production of fabrics had reduced its share to about a third only. The importance of Pashmina in the textile sub-sector is even more accentuated when considering the high value added in this production as compared to fabrics. Some salient features of the sub-sector and its development over the last 14 years are illustrated in Table 3.5 below.

Table 3.5: Selected Characteristics of the Textile Sub-Sector 1986/87 – 2000/01

	1986/87	1991/92	1996/97	2000/01
Share of total manufacturing value added (%)	11.4	6.7	8.4	12.4
D:o, excluding Pashmina (%)	11.4	6.7	8.4	3.2
Number of employees	16,212	16,238	20,633	
Share of total manufacturing employment (%)	12.6	7.3	10.5	
Number of establishments	250	254	296	
Share of total number of manufacturing establishments (%)	12.2	5.9	8.3	
Annual average value added growth rate since previous census/survey, constant prices (%)		0.5	8.6	12.5
D:o, excluding Pashmina (%)		0.5	8.6	-19.8
Value-added/output ratio (%)	36.6	33.6	35.2	36.0
D:o, excluding Pashmina (%)	36.6	33.6	35.2	21.6

Source: Censuses of Manufacturing Establishments 1986/87, 1991/92, 1996/97 and study team estimates based on IDPP Survey 2000/01 and CBS's production index of manufacturing commodities

As can be seen from Table 3.5, the sub-sector's share of total manufacturing value-added has increased from 11.4 percent in 1986/87 to 12.4 percent in 2000/01. However, when excluding

Pashmina (thus mainly including traditional fabrics) the picture changes dramatically. Then the sub-sector's share of total manufacturing value added instead declined from 11.4 percent in 1986/87 to 3.2 percent in 2000/01 with a particularly sharp drop between 1996/97 and 2000/01. This sharp drop is attributed both to a decline in output and a decline in the value added/output ratio over the last four years reflecting the stiff competition that has emerged over the last four years from both officially recorded imports and, in particular, smuggled imports from India and China.

The overall growth rate in value added has steadily increased over the years, but again, when looking separately at the sub-sector excluding Pashmina, the period 1996/97 to 2000/01 shows an average annual decline of 19.8 percent.

Total production of fabrics in year 2000/01, according to estimates by the Nepal Textile Association (NTA), amounted to 50 million metres, a significant decrease since 1990 when production of fabrics amounted to 80 million meters. Due to this substantial decrease, some 60 percent of the textile mills have closed over the last five years and the remaining 40 percent of the textile mills currently operate with an estimated 30 percent capacity utilization only. The production of fabrics is mainly geared towards the domestic market, but some specialty fabrics are exported too. The main inputs, cotton and synthetic yarns, are mainly imported.

The domestic consumption of fabrics in year 2000 has been estimated by the NTA at about 350 million meters. Accordingly, only about 6 percent of the domestic demand is met by local production, while the remaining 94 percent is met by imports. Out of total imports of fabrics, NTA estimates that 60 percent consists of officially recorded imports, while as much as 40 percent is smuggled into the country. There is virtually no foreign direct investment in the textile sub-sector.

Total exports of the textile sub-sector amounted to Rs.2,108 million in 1998/99, equivalent to about 6 percent of total Nepalese exports in that year. Major export products were jute products (Rs.872 million), fabrics (Rs.489 million), linen (Rs.376 million) and synthetic yarn (Rs.371 million). Since then, there has been a sharp increase in exports, due mainly to Pashmina exports, to about Rs.7.5 billion in 2000/01, equivalent to about 6.5 percent of total Nepalese exports. The information on production, exports, imports and domestic consumption of fabrics in 1990/91 and 2000/01 is summarized in Table 4.6 below.

Table 3.6: Production, Exports, Imports and Apparent Consumption of Fabrics in 1990 and 2000 (Million of Meters)

Year	Production	Exports	Official Imports	Smuggled Imports	Consumption
2000/01	20	n.a.	200	130	350
1990/91	50	n.a.	100	50	200

Source: Estimates by the Nepal Textile Association and the study team

3.2.3.2. Determinants of the Growth and Decline of the Textile Sub-Sector

In the early 1980s, the textile sub-sector was accorded high priority by the Government. Accordingly, the Government established several state-owned enterprises for the production of yarns and fabrics and also introduced a package of incentives for the private sector including, *inter alia*, consessional loans and high tariff protection. This resulted in the building up of considerable over-capacity in the textile sub-sector.

However, as the Government accelerated the liberalization of the trade regime in the early 1990s, the domestic manufacturers were increasingly exposed to international competition. Despite considerable upgrading of technology and machinery, the domestic manufacturers of fabrics couldn't keep up with the very rapid technological development internationally over the last 5–10 years. Shifting demand, away from traditional cotton fabrics to synthetic fabrics, also posed a challenge to Nepalese producers.

The situation has been aggravated by rampant smuggling, whereby products are brought into the market avoiding payment of 20 percent import duty (16 percent in the case of India) and 10 percent VAT. Not even the fast growing garment industry has helped up the situation, as the domestic fabrics manufacturers couldn't (and can't) supply the garments producers with fabrics at competitive price and quality and with sufficiently prompt delivery times and flexibility. Thus, as mentioned previously, many textile mills have had to cease operation as they had been unable to downscale their operations by reducing the number of employees due to rigidities in the Labour Law.

The explosive growth of the Pashmina business is partly based on a fashion-induced demand. By the end of calendar year 2001, producers were reporting a sharp decline in demand. Low quality of many machine-made Pashminas are also said to have contributed to this decline.

3.2.3.3. Government Policies

Since the economic reform programme took up speed in the early 1990s, the Government has divested its state-owned enterprises in the textile sub-sector and left it entirely to the private sector. No sub-sector specific incentives are provided any longer. A moderate trade protection is, however, provided with import duties amounting to 5 percent for cotton yarn, 10 percent for synthetic yarn and 15 percent for fabrics. This provides some protection for supply to the domestic consumer market (inefficient though due to the above mentioned smuggling), but no protection for supply to export-oriented garment manufacturers, as they enjoy the duty draw back system in respect of imported raw materials.

3.2.3.4. Problems, Constraints and Threats

The textile sub-sector to a varying degree suffers from all the manufacturing-wide problems, which have been outlined in Chapter 2. Those problems, constraints and threats of particular importance to the textile sub-sector, or sub-sector specific, are the following:

- Unfair competition from smuggling;
- Government inability do deal with the smuggling problem;
- Arbitrary valuation of imported goods at customs points;
- Requirement from Indian exporters that payment for imported yarns be made in US$in order to make them eligible for VAT draw back;
- Difficult access to credits and high interest rates which are problems of particular concern for a capital intensive industry such as the textile sub-sector;
- Rigid Labour Law making it difficult to adjust the work force in response to decreasing demand, thereby forcing enterprises to liquidate instead of down-scale;
- Internationally rapid technology change, trends towards larger units to reap benefits of economies of scale and increasing capital intensity – all factors which are difficult for Nepalese manufacturers to keep pace with;
- Long term negative trend in demand for jute goods;
- Work force not having sufficient industrial discipline and high absenteeism; and,
- Problems internal to the firm associated with low productivity.

3.2.3.5. Strengths and Opportunities

The textile sub-sector has shown some strength in being able to supply fabrics for the domestic consumer market as well as for manufacturers of garments for the domestic market. Closeness to the market, knowledge of local tastes and ability to adjust to local market demands are inherent strengths.

In the export markets, the textile sub-sector was quick to pick up the booming demand for Pashmina shawls and had the advantage of having idle production capacity. Strengths have also been revealed by the exports of jute goods and some specialty made-up textile products such as linen and blankets.

The main opportunity lies in the domestic market where, subject to the above-mentioned problems and constraints being properly addressed, it would be within reasonable reach for the industry to provide efficient import substitution.

In export markets the main opportunity is India and also other overseas markets for high value added products which are not so sensitive to transportation costs and which could fetch a premium price. Pashmina shawls offer the most prominent example. Other examples of opportunities for niche products may consist of other Pashmina products than shawls, curtains, bedspreads, tents, tarpaulins, sails, hand-woven design fabrics and continued export penetration for bed, toilet and kitchen linen.

As India is likely in the long run to significantly liberalize its trade, a huge market will open up to Nepal for products, where the advantages of closeness to the market works in favour of Nepal vis-à-vis other third country competitors.

In order to exploit these opportunities, foreign direct investment may be an appropriate avenue to pursue.

3.2.3.6. Comparative and Competitive Advantages

Comparative and competitive advantage in *garments* is usually found in countries with low wages and at an early stage of industrialization like Nepal. Comparative and competitive advantages in the typically capital intensive and large scale manufacture of *fabrics* is present mostly in countries at the next stage of their industrial development, while comparative and competitive advantages in manufacture of *yarns* are typical for countries at even further stages of industrial development.

Extensive technological change has taken place over the last 10 years. These changes have increased the spinning speed at least fourfold and reduced labour requirements by about 40 percent in the spinning stage of the manufacturing process. In the textile weaving, various improved types of the shuttle-less loom, including wider loom capacity, has dramatically raised the productivity of modern textile mills. Further automation of knitting and, particularly, finishing have also resulted in much decreased labour requirements.

Thus, textile manufacture has become increasingly capital intense and less labour intense, even further accentuating the low comparative advantage of textile manufacture in capital scarce, labour abundant developing countries at their early stages of development. In addition, worldwide, the industry increasingly consists of larger and larger firms, reflecting that international competitiveness requires the reaping of benefits of significant economies of scale. It is, therefore, unlikely that Nepal has a comparative advantage in this sub-sector (or

can develop a comparative advantage within a foreseeable future). Nor does it seem that Nepal has the requisite preconditions to become internationally competitive by developing sufficiently large-scale operations.

3.2.3.7. Strategic Recommendations

Four strategic recommendations of particular importance to the textile sub-sector are provided below in the fields of: (i) reducing the problem of smuggling; (ii) facilitating the restructuring of the industry; (iii) upgrading of worker skills; and (iv) financing.

- HMG should consider seriously addressing the problem of smuggling so as to provide the domestic manufacturers with a fairer chance to compete with imported goods. This could be achieved by, *inter alia*, tighter border controls, improved customs valuation through training, improved controls of domestic distribution channels for smuggled goods (to enforce the payment of VAT) and a gradual reduction of import duties on the concerned goods, thereby making smuggling less profitable. HMG may even consider hiring an honest international firm to actually manage the customs by means of a management contract (as was done by Indonesia in the 1970s when corruption was at a peak).
- HMG should facilitate the restructuring of the industry towards processes and products that are more in line with Nepal's comparative advantage. A key measure in this context would be to amend the Labour Law to allow for a more flexible labour market. HMG should refrain from using the "Sick Industry Fund" to bail out firms that are unlikely to be competitive in the long run.
- To upgrade skills, appropriate training incentives may be considered. This could include measures such as a double deduction of training costs scheme or the provision of vouchers that could be used for costs of training at training institutes at the choice of the enterprises themselves. Preferably such incentives should be made available at a broad manufacturing-wide base.
- Pursuing financial sector reform would be the appropriate response to address the problem of insufficient availability of credits and high interest rates. A credit guarantee scheme with shared risks between HMG, the banks and the enterprises may also be considered.

3.2.3.8. Sub-Sector Outlook

With appropriate assistance, the manufacturers of traditional fabrics could restructure away from products and processes in which Nepal is unlikely to have a comparative advantage in the foreseeable future, nor to have the capability to compete in internationally.

If smuggling can be contained and a level playing field be developed in the domestic market between domestic manufacturers and competing foreign enterprises, the domestic industry may be given a fair chance to capture a reasonable share of the domestic market for fabrics.

The restructuring may also give way for exploiting opportunities in export markets, which, in addition to Pashmina products, may consist of high value added, less transport cost sensitive niche products such as bed, toilet and kitchen linen, blankets, curtains, bedspreads, hand-woven design fabrics, tents, etc. As the foreseen further trade liberalization in India proceeds, a huge market will gradually open up to Nepal where Nepal will enjoy the advantage of closeness to the market.

Foreign direct investment, if encouraged by HMG, may be instrumental in exploiting opportunities in export markets.

Jute products will continue to phase a decreasing total demand in the Indian market, but with the current strong foothold in that market, the jute industry may still be able to survive for quite some time.

The textile sub-sector has suffered a lot over the last five years. Inaction by HMG may lead to a virtual collapse of the industry, while appropriate measures as indicated above may help the industry to restructure and grasp the opportunities in the future.

3.2.4. The Carpet Sub-Sector

3.2.4.1. Description of the Carpet Sub-Sector

More or less all of the carpets referred to in the carpet sub-sector are hand-knotted woollen carpets, most of them featuring traditional patterns, but some also featuring new, modern patterns. Table 3.7 below illustrates some of the salient features of the sub-sector and its development over the last 14 years.

As can be seen from Table 3.7, the sub-sectors share of total manufacturing value added grew dramatically between 1986/87 and 1991/92, from 5.5 percent to 23.7 percent. Since then the industry has been on the decline, reducing its share of manufacturing value added to 9.5 percent in 2000/01.

Table 3.7: Selected Characteristics of the Carpet Sub-Sector 1986/87 – 2000/01

	1986/87	1991/92	1996/97	2000/01
Share of total manufacturing value added (%)	5.5	23.7	18.5	9.5
Number of employees	8,852	64,807	54,670	
Share of total manufacturing employment (%)	6.9	29.0	27.9	
Number of establishments	122	1,173	532	
Share of total number of manufacturing establishments (%)	5.9	27.5	15.0	
Annual average value added growth rate since previous census/survey, constant prices (%)		49.9	-1.2	-13.8
Value added/output ratio (%)	39.4	40.7	47.7	33.9

Source: Censuses of Manufacturing Establishments 1986/87, 1991/92, 1996/97 and study team estimates based on IDPP Survey 2000/01 and CBS's production index of manufacturing commodities

Employment followed the same pattern, growing from about 9,000 persons in 1986/87 to about 65,000 in 1991/92, but dropped to about 55,000 five years later. Since then there has been a further reduction in the labour force reflecting the continued decrease in production. The organized carpet enterprises, however, sub-contract a significant part of their production to individual households that are not covered in the above statistics. The Central Carpet Industries Association estimates that, if including also the informal sector, altogether the carpet industry, including workers producing hand-spun yarn used in some carpets, currently employs some 150,000 persons. About 45 percent of these are women.

The growth in value added in the period 1986/87 to 1991/92 amounted to a staggering average annual of 49.9 percent, a rate that was turned into an average annual decrease of 1.2 percent during the following five-year period. Over the last four year the pace of decrease has become even more rapid, with value added declining by an average of –13.8 percent annually. In parallel, the value added/output ratio has decreased from 47.7 percent in 1996/97 to 33.9 percent in 2000/01, reflecting increased competition in the export markets. The latter

figure is indicative only, as it is based on only three enterprises included in the sample survey, but is consistent with estimates by the industry itself.

There are few backward linkages of the carpet industry as all wool is imported from New Zealand and dyes mainly from Switzerland. However, some carpets use locally produced hand-spun yarn, which involves employment of some 10,000 persons.

Exports of carpets in the last 10 years have developed as shown in Table 3.8 below.

As seen in Table 3.8, there has been a steady decline in volumes of exports as well as carpet exports share of total Nepalese exports. EU is the main export market receiving 86 percent of total carpet exports, followed by USA with 10 percent and other countries 4 percent in 1998/99. Germany alone accounted for 75 percent of the exports, but has the function as wholesaler and distributor of carpets from all around the world to EU.

Table 3.8: Export of Carpets 1993/94 to 2000/01

Year	Thousands Square Meter	Rs.Million	Share of Tot. Exports (%)
1993/94	3,325	9,518	49.3
1994/95	2,896	7,704	43.7
1995/96	2,618	8,032	41.1
1996/97	2,891	9,145	39.2
1997/98	2,447	8,485	30.8
1998/99	2,604	9,802	27.5
1999/00	2,509	9,842	19.1
2000/01*	2,243	8,588	14.7

Source: Nepal Rastra Bank Annual Report 1999/00 and Monthly Report April 2001
Note: * Estimate based on first 9 months of 2000/01

3.2.4.2. Determinants of Growth and Decline of the Carpet Sector

The phenomenal growth of the carpet industry in the late 1980s and early 1990s has been attributed, *inter alia*, to a Swiss technical assistance project functioning as a catalyst to open up the market in EU to Nepalese carpets and a World Bank funded project, whereby the practices of washing carpets and using moth resistant dyes were introduced to improve the quality of carpets. Simultaneously, the carpet industry started to use high quality wool imported from New Zealand as supplies of wool from Tibet became increasingly insufficient.

The steady decline since 1993/94 is mainly a function of the decline in overall demand for carpets in EU, which went down by 38 percent in Germany alone between 1993 and 2000. Another contributing factor has been the shift in the structure of demand to either higher quality carpets from Iran or lower quality/low price carpets from other countries. Nepal has occupied a middle segment consisting of medium quality carpets, at somewhat higher prices than the cheapest carpets, for which the demand relative to the other categories has decreased.

3.2.4.3. Government Policies

Although the carpet industry is not accorded the status of a ”national priority industry” according to the Industrial Enterprises Act, the general incentives provided there, in particular in respect of an ”export promotion industry”, are quite favourable in an international perspective. Of particular importance is that imported raw materials are subject to a duty draw back system. Except for this, there are no particular incentives provided to the carpet industry.

3.2.4.4. Problems, Constraints and Threats

The carpet sub-sector to a varying degree suffers from all the manufacturing-wide problems that have been outlined in Chapter 2. Those problems, constraints and threats that are of particular importance to the garment sub-sector, or sub-sector specific, are the following:

- Decrease in overall demand for carpets in leading export markets;
- Increased competition from cheap so called "Indo-Nepal" carpets of inferior quality produced in India;
- High transportation costs due to the landlocked-ness of the country;
- The presence of a "floor price" for carpet exports established by HMG, exceeding actual prices, forcing exporters into foreign exchange transactions which add 1-2 percent to the costs;
- Lack of export marketing competence of enterprises and international exposure;
- Inability of banks to provide 90 days LCS;
- Lack of finance making it difficult for enterprises to produce for stock with due longer delivery times in response to demands for quick deliveries of the most popular designs;
- Given the increased competition internationally as well as amongst Nepalese manufacturers themselves, some producers have lowered the quality of the carpets which has already had an impact on buyers perception of the quality of Nepalese carpets in general; and,
- Weak and fragmented institutional support (one central carpet industries association, one carpet export association – both in the private sector - and one public carpet and wool development board).

In contrast to many other sub-sectors where HMG policies and bureaucracy are the major hurdles for development, the major problems in the carpet sub-sector rest with the industry itself.

3.2.4.5. Strengths and Opportunities

Despite the problems and constraints outlined in the previous section, there are some strengths and opportunities as follows:

- Good know-how in the production of carpets;
- Reasonable to good product quality serving the "middle" market segment in EU;
- Good reputation regarding "modern design" carpets, an increasing market niche in which Nepalese manufacturers currently are in a good position to capture;
- Ability to adjust to changing demands regarding colours, patterns and sizes;
- Fairly long and established business relations in Germany for exports to EU;
- USA still being an unexploited market for Nepalese carpets;
- Good reputation for reliable deliveries; and,
- Unused capacity which enables Nepalese manufacturers to service also large orders.

3.2.4.6. Comparative and Competitive Advantages

Based on low labour costs and having an abundance of people with good knowledge and a fairly long tradition in carpet weaving, Nepal has demonstrated that it has both comparative and competitive advantages in carpet weaving. These advantages are, however, not static factors, but have to be maintained and developed. There are already some signs that some of these advantages may be eroding if appropriate action is not taken.

3.2.4.7. Strategic Recommendations

- In the field of human resource development, HMG may consider to financially support the establishment and operation of a sub-sector specific training institute providing

training in fields such as weaving and design of patterns. Donors may be approached for co-financing and technical assistance.

- Also in the field of human resource development, other appropriate training incentives may be considered. This could include measures such as a double deduction of training costs scheme or the provision of vouchers that could be used for costs of training at training institutes at the choice of the enterprises themselves, in Nepal or abroad. Preferably such incentives should be made available at a broad manufacturing-wide base.
- In order to address the carpet industry's financial concerns, HMG is advised to vigorously pursue the financial reform programme. In addition, HMG should consider introducing an export credit guarantee scheme with shared risks between HMG, the banks and the enterprises.
- HMG could, jointly with the private sector, make an effort to consolidate the weak and fragmented institutional support in the carpet industry. At an institutional level, there is justification for assistance in quality control, development of pattern designs and joint export marketing activities. A strong institution could also be instrumental to the implementation of an "Original Made in Nepal" label as well as assisting the industry to position itself favourably in the growing "modern design" niche market. Donor support may be sought in this context.
- HMG may avail itself of the opportunity under the Industrial Enterprises Act to grant additional incentives to an "export promotion industry". Such an incentive may consist of *e.g.* double deduction of costs for export marketing. Although export incentives in principle are not acceptable under WTO, there is a provision for least developed countries to provide such incentives during a transitional period.
- If making progress in implementing the above-mentioned recommendations, there is no longer any justification for the "floor price" and it could thus be abolished.

3.2.4.8. Sub-Sector Outlook

Even after 5-10 years of a glut in the market, the carpet sub-sector still provides employment for some 150,000 persons. Long-term international trends work in favour of Nepal. As incomes increase in developed countries such as EU and USA, a proportionally lower share of income is spent on basic consumption goods (elasticity of demand is less than one), whereas proportionally more is likely to be spent on "luxury" goods (elasticity of demand is greater than one), where Nepalese carpets could be included. In due time, too, long term demographic changes in EU and USA will turn the downward demand trend into an upward demand trend. The carpet industry, therefore, has a huge employment potential, which would benefit, in particular, relatively poor people and women.

Whether Nepal would capture this potential or not mainly depends on the entrepreneur-ship and managerial skills of individual enterprises. HMG could by no means replace this private sector role, but HMG could support and facilitate the process of development.

3.2.5. The Garment Sub-Sector

3.2.5.1. Description of the Garment Sub-Sector

Major product categories in the garment sub-sector are men's and boys' shirts and trousers as well as ladies' dresses.

Some salient features of the sub-sector and its development over the last 14 years are illustrated in Table 3.9 below.

Table 3.9: Selected Characteristics of the Garment Sub-Sector 1986/87-2000/01

	1986/87	1991/92	1996/97	2000/01
Share of total manufacturing value added (%)	5.0	8.4	6.3	6.4
Number of employees	8,697	17,791	15,126	
Share of total manufacturing employment (%)	6.7	8.0	7.7	
Number of establishments	84	234	136	
Share of total number of manufacturing establishments (%)	4.1	5.5	3.8	
Annual average value added growth rate since previous census/survey, constant prices (%)		24.1	-1.8	2.1
Value added/output ratio (%)	43.2	40.2	33.2	18.4

Source: Censuses of Manufacturing Establishments 1986/87, 1991/92, 1996/97 and study team estimates based on IDPP Survey 2000/01 and CBS's production index of manufacturing commodities

As can be seen from Table 3.9, the sub-sectors share of total manufacturing value added has increased from 5.0 percent in 1986/87 to an estimated 6.4 percent in 2000/01. Its share of total employment in 1996/97 amounted to 7.7 percent.

The growth in value added in the period 1986/87 to 1991/92 amounted to a staggering average annual of 24.1 percent, which turned into an average annual decline of 1.8 percent in the following five-year period. Since then it picked up again, although the industry reports a significant decline in 2000/01, which has even accelerated in the first few months of 2001/02. Growth in individual years differs significantly around the above-mentioned averages, reflecting the nature of the Nepalese garment industry being to a large extent dependent on "spill over" orders from India. When quotas to USA are filled in India, orders are placed in Nepal through the intermediation of Indian enterprises. When Indian quotas are not filled, there is a dearth of "spill over" orders. Of course, producing on the margin of such a large exporter as India, even small changes in demand can result in big swings for Nepal.

An alarming development is the steady decline in the value added/output ratio, which has decreased from 43.2 percent in 1986/87 to 18.4 percent in 2000/01. A number of factors may have contributed to this negative development. One is the stiffening competition by high growth rates in overall quota allocations in the USA, as stipulated in the second phase of the Agreement on Textiles and Clothing, resulting in lower prices. Another is an increase in absolute costs of production, and a third decreasing factor productivity, with or without a shift in capital/labour ratio. This issue was dealt with in more detail in Chapter 3 regarding competitiveness.

Fabrics and accessories for the export oriented garment industry are almost entirely imported, predominantly from India. Packing materials are sourced locally. Thus, there is currently very little domestic backward linkages from the garment sub-sector.

Exports of garments in the last 9 years have developed as shown in Table 3.10 below.

Table 3.10: Export of Garments 1991/92 to 2000/01

Year	No. of Pieces (thousand)	Rs.Million	Share of Tot. Exports (%)
1992/93	22,785	3,930	21.6
1993/94	40,968	5,943	30.8
1994/95	33,505	5,139	29.1
1995/96	27,970	5,375	27.0
1996/97	29,954	5,955	26.3
1997/98	34,951	7,015	25.5
1998/99	37,749	9,702	27.2
1999/00	46,836	13,925	27.0
2000/01 *	49,000	13,960	23.9

Source: Nepal Rastra Bank Annual Report 1999/00 and Quarterly Bulletins. FNCCI
Note: * Estimate based on first 8 months of 2000/01 (a likely overestimate)

As seen in Table 3.10, there has been a fairly steady growth in the value of exports of garments, although the share of exports of total Nepalese exports has declined. USA is the main recipient of garment exports accounting for 83 percent of the total, followed by EU with 10 percent, Canada and Japan 1 percent each and other countries 5 percent in 1998/99. In the early 1990s, an estimated 90 percent of exports took place made under quota arrangements. That share has decreased to about 75 percent in 2000/01, while non-quota exports have increased its share to about 25 percent in 2000/01.

About 20 percent of the garment manufacturers are joint ventures with foreign partners, mainly from India, but most of them are fairly small- scale operations and they probably represent less than 10 percent of the fixed assets in the garment industry.

3.2.5.2. Determinants of Growth of the Garment Sector

The export oriented garment sub-sector began to develop seriously in the mid 1980s as a consequence of Indian enterprises being heavily restricted by quotas on exports to USA. Consequently, between 1986/87 and 1991/92 there was a surge in number of garment manufacturers, which tripled in this period. Although actual ownership was predominantly in the hands of Nepalese, the Indian partners had the commercial contacts abroad and provided know-how and capital. Thus, the main determinants of growth have been a combination of the quota system in USA and support from Indian enterprises. Although the Nepalese manufacturers are currently less dependent on foreign support and non-quota exports are increasing, they still rely heavily on the commercial contacts abroad by Indian enterprises.

3.2.5.3. Government Policies

Although the garment industry is not accorded the status of a ”national priority industry” according to the Industrial Enterprises Act, the general incentives provided there, in particular in respect of an ”export promotion industry”, are quite favorable in an international perspective. Of particular importance is that equipment and machinery can be imported without any import duty, that imported raw materials are subject to a duty draw back and also that exemptions are made in respect of all taxes and duties in respect of intermediate goods produced in the country.

In 1998/99, HMG established a garment training institute providing 4-months training courses under a cost-sharing arrangement with the garment industry with the latter covering the operational costs of the institute.

3.2.5.4. Problems, Constraints and Threats

The garment sub-sector to a varying degree suffers from all the manufacturing-wide problems that have been outlined in Chapter 2. Those problems, constraints and threats, which are of particular importance to the garment sub-sector, or sub-sector specific, are the following:

- The phasing out of the Multi-Fibre Arrangement (MFA) as of end 2004, whereby all WTO members will abolish their quotas, will subject all Nepalese garment exports to global competition;
- The US Caribbean/Sub-Saharan Facility that entered into force as of 1 January 2001 provides very large quotas and duty free exports to USA for 42 Caribbean and Sub-Saharan countries (as compared to import duties in the range of 17-21 percent for other countries); this constitutes a significant change in the competitive situation of Nepal vis-à-vis Sub-Saharan African countries, which have not previously enjoyed any preferential treatment on exports to USA; vis-à-vis Caribbean countries the competitive disadvantage will increase, but Caribbean countries already enjoyed preferential treatment under the Caribbean Basin Initiative (CBI), whereby Caribbean countries using US fabrics only had to pay import duties on the value added in the offshore processing;
- Vulnerability due to the concentration of exports primarily to one country;
- Inadequate direct contact with overseas buyers;
- Extremely weak efficiency in the administration of the duty draw back system;
- No availability of an export credit guarantee scheme;
- Rigidities in the Labour Law not permitting enterprises to lay off staff even in cases of gross misconduct, contributing to a low degree of working discipline; this also has the consequence that workers simply leave the factories during harvesting periods when workers are in high demand in the agricultural sector;
- Not sufficiently well trained and disciplined work force;
- Due to Nepal's landlockness, transportation costs are high (7 percent higher than in Bangladesh), time-consuming and there are thefts on the route through India to Indian ports; and,
- Due to external conditions (transportation costs, external transaction costs, etc.) and firm internal factors (low productivity, labour problems, etc.) the Garment Association of Nepal estimates that the Nepalese garment manufacturers currently are at a 25-28 percent cost disadvantage as compared to its major international competitors.

3.2.5.5. Strengths and Opportunities

Despite all the problems and constraints outlined in the previous section, there are some strengths and opportunities as follows:

- After 15-20 years, the garment industry has a core of well-trained, experienced and skilled workers;
- Initial, now outmoded, Indian machinery and equipment has been replaced by modern machines in 80-90 percent of the industry over the last five years;
- The quality of the products is at par with international standards;
- Quota allocation and export procedures are quite satisfactory;
- Nepal has been able to increase non-quota exports;
- Technological change reducing the advantage of low-cost labour is not so fast in the garment industry (automation mainly takes place in the non-sewing operations such as grading, lay out and cutting of materials in the pre-assembly stage, and warehouse management and distribution in the post-assembly stage – however, about 80 percent of the labour costs still remain in the sewing and assembly process);

- Contacts with the Indian enterprises can be developed into a ”triangle manufacturing system” as already developed in South East Asia;[30]
- Changing structures in the global production-distribution and buyer-seller patterns may offer opportunities for Nepal; and,
- Increased importance of fast deliveries by air (from any country) may reduce Nepal’s disadvantage of being a landlocked country.

In order to exploit these opportunities, foreign direct investment or other arrangements with foreign partners may be needed.

3.2.5.6. Comparative and Competitive Advantages

Nepal’s low labour costs could of course be considered as a comparative advantage. However, many other countries also have an equal comparative advantage in this respect. To turn the comparative advantage into a competitive advantage, much more than low labour cost is needed.

Under the prevailing distorting quota systems in the world it is difficult to actually assess the comparative and competitive advantages of a country. Measures of revealed comparative advantage can be highly misleading. However, a look at the product categories where Nepal has fully utilized its quotas, or not fully utilized the quotas, may provide indications regarding product categories where Nepal is more likely to have a competitive edge and, particularly, regarding product categories where Nepal is unlikely to have a competitive edge (full utilization of quotas may not reflect a competitive edge, but rather that a particular quota allocation was very small).

Product categories where Nepal has achieved 80 percent or more quota utilization in the last five years are: men’s cotton shirts and trousers, terry towels and soft towels (and men’s rayon shirts in 2000/01). Quotas for towels only started in 1997.

Product categories where Nepal has achieved between 50 percent and 80 percent quota utilization in the last five years are: ladies’ dresses.

Product categories where Nepal has achieved less than 50 percent quota utilization in the last five years are: men’s rayon shirts (except for last year, see above), ladies’ cotton and rayon shirts and blouses.

Main products included in non-quota exports are jumpers, men’s and ladies’ T-shirts and men’s and ladies’ wind-proof jackets and trousers.

3.2.5.7. Strategic Recommendations

- HMG is recommended to initiate negotiations with USA in order to obtain the same preferential access to the US market for Nepal as the Caribbean and selected Sub-Saharan African countries have been provided.
- HMG is recommended to proceed with the negotiations regarding accession to WTO with a view to accede before the end of 2004.

[30] US or other overseas buyers place their orders with reliable suppliers that they have experience of and feel comfortable with in South East Asian NIEs (*e.g.* Hong Kong and South Korea), which then outsource all or part of the production to countries in the region with lower labour costs. The triangle is completed when the actual manufacturer of the garments delivers directly to the final buyer. The role of the NIE enterprise then has changed from being a supplier to becoming a “middle-man” in a buyer-driven commodity chain.

- HMG should amend the Labour Law.
- HMG should take measures to improve the efficiency of the duty draw back system.
- HMG should take measures to improve the efficiency of the One Window facility.
- HMG should consider abolishing the requirement under the Foreign Investment and Technology Transfer Act to obtain permission for technology transfer agreements.
- HMG should consider introducing an export credit guarantee scheme with shared risks between HMG, the banks and the enterprises.
- To upgrade skills, appropriate training incentives may be considered. This could include measures such as a double deduction of training costs scheme or the provision of vouchers that could be used for costs of training at training institutes at the choice of the enterprises themselves. Preferably such incentives should be made available at a broad manufacturing-wide base.
- HMG may consider including the garment industry as a "national priority industry" under the Industrial Enterprises Act so as to provide the garment industry the incentives associated with this status.
- HMG should consider allowing the private sector to manage the "dry dock" in Birgunj, once completed.

3.2.5.8. Sub-Sector Outlook

Two scenarios could be drawn up:

- In the first scenario it could be assumed that HMG would not act, or proceed very slowly, on the ten strategic recommendations outlined above. Under this scenario there is all likelihood that the garment industry would considerably shrink over the next 3-5 years.
- In the second scenario it could be assumed that HMG would act swiftly and decisively on the ten strategic recommendations outlined above. This is no guarantee for a prosperous development of the garment industry, but in this scenario private entrepreneurs, both in Nepal and abroad, would be given a fair chance to exploit all opportunities offered in the future. In addition, the mere decisiveness of HMG would send signals to investors both in Nepal and abroad that would be very positively received.

3.2.6. Leather, Leather Products and Footwear

3.2.6.1. Description of the Sub-Sector

Table 3.11: Characteristics of the Leather, Leather Products and Footwear Sub-Sectors 1986/87- 2000/01

	1986/87	1991/92	1996/97	2000/01
Share of total manufacturing value added (%)	2.4	1.3	1.4	0.4
Number of employees	1,196	1,473	2,130	
Share of total manufacturing employment (%)	0.9	0.7	1.1	
Number of establishments	18	41	77	
Share of total number of manufacturing establishments (%)	0.9	1.0	2.2	
Annual average value added growth rate since previous census/survey, constant prices (%)		-1.5	5.4	-25.5
Value added/output ratio (%)	33.5	28.6	33.1	14.8

Source: Censuses of Manufacturing Establishments 1986/87, 1991/92, 1996/97 and study team estimates based on IDPP Survey 2000/01 and CBS's production index of manufacturing industries/commodities

Main product categories of the sub-sector consist of tanned/processed leather (mainly wet blue) and leather footwear accounting for 2/3 and 1/3, respectively, of the sub-sector's total value-added in 1996/97 (plastic slippers fall under plastics). Some marginal quantities of

other leather goods such as saddlery, handbags, gloves and belts are also produced in some small-sized units.

Some salient features of the sub-sector and its development over the last 14 years are illustrated in Table 3.11 above. Although output and employment grew between 1986/87 and 1991/92, in terms of value added there was an average annual decrease of 1.5 percent. The industry picked up between 1991/92 and 1996/97 with an average annual growth of 5.4 percent and employment almost doubled thanks to strong export performance in overseas markets for wet blue (90 percent of the production was exported) and strong sales of leather shoes in the domestic market.

However, between 1997/98 and 1999/00, exports of wet blue has gone down to only about a third of its 1997/98 level, and imported cheap leather shoes, both officially imported and smuggled, from India and, particularly, China have put an increasing price pressure on domestically manufactured leather shoes.

The main problems facing the leather tanning industry (wet blue) are low productivity and a negative price trend in international markets. For leather shoes, the small scale of production (on average shoe producing factories only employ about 20 persons) renders the industry uncompetitive in comparison with significantly larger Indian and Chinese shoe manufacturers.

The sub-sector faces a bleak future until the plans of the Agricultural Perspective Plan in respect of livestock development are implemented.

3.2.6.2. Determinants of Growth/Decline of the Sub-Sector

The industry developed under strong government support: either export subsidy or use of foreign exchange earnings in the early years. Further Nepal banned the export of raw hides and skins. Nepal sales potential for wet blue is due to the fact that India and Pakistan does not allow wet blue exports and that even if the demand is low it goes into India. The industry these days is dependent mostly on the international price cycle. If Nepal is to ban the export of wet blues then there would be further down scaling of the production as Nepal does not have both capacity as well as competitiveness in exports of processed leather as against India and Pakistan.

The footwear, has never been able to slice substantial domestic market share in leather shoes category. The selective export has been tried but much effort is still required. As against it PVC slipper did perform well. Enjoying the differential tax regime in India for imports from Nepal as against other countries on the one hand and domestic protection from third country imports augured well for this product. The production has, however, has scaled down considerably against the pinnacle of 9.8 million pairs reached in 1990/91. Sports shoes industry faced another extreme suffering a heavy blow given cheap imports from Tibet.

The leather goods industry as yet is to make enough grounds. Both the production base and market penetration has remained small.

3.2.6.3. Government Policies

Key policy measures contributing to the growth of the tanned and processed leather till recently include the ban on exports of raw hides and skins. But the tax burden of Rs.75 per piece of hide imposed by District Development Committees has added to the disadvantage.

3.2.6.4. Problems, Constraints and Threats

Leather industry is at cross roads despite the support of resource base caused by fluctuating international prices (wetblue), and problems resulting from low competitiveness in finished leather for incapacitation and production disadvantage. Footwear industry suffers from competition from imported products owing to inappropriate customs valuation, lack of design and product research and training. Leather goods industry is still at its infancy. The lack of international exposure, coupled with the lack of design and product research also affects the industry.

3.2.6.5. Strengths and Opportunities

The leather industry 's strength lies on domestic resource base and export ban by India and Pakistan in wet blue category. Footwear industry's basic strength lies on growing business relationship with the foreign buyers, and domestic resource base for leather shoes. Leather goods industry has advantage in terms of substantial backward linkage within the country, and increasing adaptability to foreign product designs.

3.2.6.6. Comparative and Competitive Advantages

The industry for a number of reasons is not internationally competitive in finished leather products, despite its competitive edge in the production of wet blues. It would require a good finish for which further investments will be required. And still the market is not guaranteed, as it will have to face competition from India and Pakistan.

Likewise the footwear industry is not internationally competitive for leather shoes, nor is it competitive domestically for sports shoes. It has secured though some competitive edge for PVC slippers. The leather shoes sector in particular is faced with problems originating from ineffective customs administration and also lack of appropriate linkages with export market. Nepal also faces disadvantage against India as she is a competitive producer and that the exports are provided with 12% incentive, which is not there in Nepal. In the domestic market front the huge market remains untapped as the domestic industry faces disadvantage of Rs.200 per pair owing to absence of customs valuation, which takes away the competitive edge against imports mainly from Tibet.

3.2.6.7 Conclusions, Recommendations and Outlook

The leather industry has not been able to mature into a full-fledged processing industry. The wet blues have remained on demand and competitive as well, the continuity of which should be allowed for the medium term and steps should be encouraged for establishing processing facilities. For the long term, it is recommended to extend supports to push market campaigning for the processed leather.

The industry has continued to focus on the domestic market but still unable to substitute the large part of the demand. For the medium term, it is recommended that the industry should be supported on the design, training, and development of auxiliary and ancillary units. For the long term, stepping for integration with export marketing is recommended.

The industry is not yet well developed to cater to either domestic or foreign markets. For the medium term, it is recommended to provide facilitation for international exposure, design and

training. For the long term, it is recommended to support stepping into the arena of new product development.

The leather industry would continue to perform under wet blues consideration. A strong support would require moving into processing into the finished leather. The footwear industry has potential to grow particularly in leather shoes and even interlink with the export market. It is however tied with the government ability to effectively regulate the customs and to support marketing campaigns in export markets. In leather goods, the scope is considerable but will require efforts in tapping export markets.

3.2.7. Wood and Wood Products Sub-Sector

3.2.7.1. Description of the Sub-Sector

Main product categories in the wood and wood products sub-sector (wooden furniture not included) in terms of shares of value added of total value added in the sub-sector in 1996/97 were: sawn wood (72 percent), plywood, particle board and veneer sheets (17 percent), carpentry and joinery products (3 percent) and other products (8 percent). Some salient features of the sub-sector and its development over the last 14 years are illustrated in Table 3.12 below.

As these are the official census figures, the importance of carpentry/joinery products and various other wood products (including handicrafts) is of course underestimated as these products are manufactured mainly by smaller production units. Based on a survey of small manufacturing establishments (less than 10 employees) in 1999/2000, it could be estimated that almost 8,000 persons are employed in these smaller establishments adding another 50 percent of the value added of the census establishment to the total value added of the sub-sector.

Until 1991/92, saw milling products was the dominating single product category accounting for 90-95 percent of the output and value added of the census establishments, but that share has decreased with the emergence of particle board and veneer sheet factories in the 1990s. Currently, the operation of sawmills is actually to saw timber for individual customers on demand. Integration between processing and forestry development is weak and there is only one particleboard factory that has an organized backward linkage with organized forestry production.

Table 3.12: Characteristics of the Wood and Wood Products Sub-Sectors 1986/87-2000/01

	1986/87	1991/92	1996/97	2000/01
Share of total manufacturing value added (%)	2.4	2.0	1.5	1.3
Number of employees	3,003	3,585	3,731	
Share of total manufacturing employment (%)	2.3	1.6	1.9	
Number of establishments	108	143	198	
Share of total number of manufacturing establishments (%)	5.3	3.3	5.6	
Annual average value added growth rate since previous census/survey, constant prices (%)		7.5	-2.2	-0.6
Value added/output ratio (%)	33.2	38.9	36.1	28.6

Source: Censuses of Manufacturing Establishments 1986/87, 1991/92, 1996/97 and study team estimates based on IDPP Survey 2000/01 and CBS's production index of manufacturing industries/commodities

3.2.7.2. Determinants of Decline of the Sub-Sector

Despite a temporary growth in the period 1986/87–1991/92, the sub-sector has faced a long term trend of decline which was particularly strong in the late 1970s and the first half of the 1980s when about half of the then existing saw mills were actually closed. The reason is the ongoing depletion of forests making availability of timber increasingly scarce. Although HMG has attempted to halt the depletion of forests, widespread weakness in implementation of policies have been counterproductive to HMG ambitions. Gradual substitution of wooden products for substitute materials (plastics, aluminium, etc.) has also contributed to the declining trend.

3.2.7.3. Government Policies

There is no specific policy for the Sector. Key policy measures contributing to the growth of the saw milling until the 1980,s were the forest clearance plan of the government. Plywood was also linked to resource arrangement. For other wood products, the growth has come from the government's supports in participation in international fairs and promotion of industrial estates.

3.2.7.4. Problems, Constraints and Threats

It is indeed the absence of raw materials quota on the one hand and no move to the operation of managing production forests that the saw mills have closed down one after another. These continue to put the saw milling in the backseat.

The limited production activity on the part of the plywood and boards industry is facing problems of lack of long-term arrangement for supply of wood.

The other wood products span a few specific products only and that too very much tied to export marketing. The emerging threats specifically to wooden crafts are reckoned in areas of a) skills in the new generation manpower, b) penetration by machine products in traditional hand operated designs from foreign copiers.

3.2.7.5. Strengths and Opportunities

The saw-milling prospects hold on the maturing of the community forests and the possibility of leasehold forestry.

Plywood and boards industry have an opportunity to exports to India and from the resource point of view private forestry would contribute to the growth of this industry.

The industry, wooden craft in particular, enjoys gimmick for handmade crafts and speciality products and could venture into mass production of regular types of product designs.

3.2.7.6. Comparative and Competitive Advantages

The saw milling industry for a number of reasons is fundamentally just not able to operate and be internationally competitive such as lack of resource base. Flexibility to rapidly integrate different product stages right from production forestry to end-use products is a key factor in competitiveness.

Plywood and boards industry is in similar situation with respect to resource. In the given situation too, saleability to India has emerged which is a plus point.

Comparative and competitive advantage in manufacture of woodcraft is present owing to selling of traditional designs having been able to fetch sentimental values. The move to types

of product usually demanded in export markets may not be that easy and advantageous. The industry has become an increasingly mass production capital-intensive industry in some sub-products where Nepal at present may not have a comparative advantage.

3.2.7.7. Conclusions, Recommendations and Outlook

The future of the wood and wood products sub-sector depends entirely on

- enforcement of laws to halt further deforestation;
- private sector investment in organized forestry production integrated with wood processing;
- the development of village management systems of natural forests.

However, even with the introduction of fast growing species, the modern type of industry could only be expected to take off sincerely in about ten years time. Until then, Nepal would reap the most advantageous benefits from its scarce timber forest resources by utilizing them in labour intensive activities such as carpentry, joinery and handicrafts.

3.2.8. The Paper and Paper Products Sub-Sector

3.2.8.1. Description of the Sub-Sector

Main product categories in the paper and paper products sub-sector in terms of shares of value added of total value added in the sub-sector in 1996/97 were: paper, mainly newsprint and writing paper (62 percent), corrugated paper and paper board (24 percent) and other articles of paper and paper board (14 percent). Some salient features of the sub-sector and its development over the last 14 years are illustrated in Table 3.13 below.

In addition, small establishments with less than 10 employees, according the survey on small manufacturing establishments in 1999/00, employ some 1,400 persons and account for value added equivalent to about 20 percent of the value added by the census establishments. These small enterprises are mainly involved in the production of various articles from paper and paperboard (cartons, boxes, stationery, etc.).

Table 3.13: Characteristics of the Paper and Paper Products Sub-Sectors 1986/87-2000/01

	1986/87	1991/92	1996/97	2000/01
Share of total manufacturing value added (%)	0.7	0.7	1.7	4.1
Number of employees	1,269	1,563	3,536	
Share of total manufacturing employment (%)	1.0	0.7	1.8	
Number of establishments	23	47	118	
Share of total number of manufacturing establishments (%)	1.1	1.1	3.3	
Annual average value added growth rate since previous census/survey, constant prices (%)		9.7	24.6	28.1
Value added/output ratio (%)	23.7	29.4	31.5	27.8

Source: Censuses of Manufacturing Establishments 1986/87, 1991/92, 1996/97 and study team estimates based on IDPP Survey 2000/01 and CBS's production index of manufacturing industries/commodities

The sub-sector has demonstrated strong growth all along the covered 14 year-period reflecting strong growth in domestic demand. The restoration of democracy in 1990 is likely to have been a major impetus by means of rapid growth in the number of newspapers and other printed publications.

The domestic production of newsprint and writing paper cater for about 50 percent of domestic demand, while 50 percent is imported. Regarding other paper products, domestic production accounts for about one third of the domestic market, while two thirds are imported.

An interesting niche product consists of hand made paper, which in 1996/97 accounted for about 10 percent of the total production of paper. In 1996/97, most of it was exported, at a value of Rs.66 million, which rose to Rs.191 million in 2000/01.

3.2.8.2. Determinants of Growth/Decline of the Subsector

Handmade paper industry has sustained because of the export demand and also owing to application in special products preparation. Tied to the marketing, the industrial performance is still limited. The industrial performance of general paper has improved but still the product variations are limited for which imports continue to hold on. The production jump exceeding 100% (1999/2000 and 2000/01) was supported by exports.

The determinant for the growth of the paper boxes industry is no other than the industrial demand and the production fluctuates along the fluctuation in the production of the user industry. The carbon paper industry has not been able to grow owing to the downscaling of demand as typing is replaced by computer and fax machines, which provide a better alternative. While the industry has not been able to switch to specific demand products like airline tickets, airway bills, bank forms, etc. Regarding the production of envelopes, files and cards a change is seen in the market. The demand for handmade paper laminated on newsprints has been taken over by the machine manufactured paper and board for envelops and cards, and board and plastics for files. Some of such preparations are being made locally in the informal sector and most come from outside.

3.2.8.3. Government Policies

The industry is receiving a low to moderately high protection. The import duty on newsprint paper is 5 percent, for writing/printing paper and miscellaneous paper products 15 percent (toilet paper 25 percent), while the import duty on pulp is only 5 percent.

3.2.8.4. Problems, Constraints and Threats

World-wide the pulp and paper industry is increasingly an industry of large firms. Nepal is seen moving along that line. The industry is confronted with several problems at the operational level:

- competition in prices with imported products,
- production limited to few variations and not possible techno-economically without additional investment.

The paper products industry is confronted with marketing barriers of different kind such as user industry production level or use practices and taste changes. There is also strong competition with imports in areas of non-traditional products, particularly, stationery materials.

3.2.8.5. Strengths and Opportunities

The pulp and paper industry does enjoy good business opportunity from the fact that the quantum of per capita paper consumption is growing, and will benefit from the improvement in regulative bottleneck for the printing industry.

The paper products industry as is tied to the market; the very market is also a source of strength and opportunity arising from promotion of speciality greeting cards/paper conversions for international market, and possibility of integrating with specific user's demand for domestic market.

3.2.8.6. Comparative and Competitive Advantages

The pulp and paper industry has become an increasingly capital intensive industry where Nepal at present may not have a comparative advantage. Given the barriers, the upsurge in paper production will be dependent upon action that will remove the barriers negating the competitiveness of the industry without inducing inefficiency.

Comparative and competitive advantage in paper products is usually found in countries with competitive paper production situation and right size technology. The development of this industry along ongoing product categories could be boosted with once the domestic production of paper itself is tuned to competitive level on the one hand and removal of non-competitive barriers that exist on the other.

3.2.8.7. Conclusions, Recommendations and Outlook

Although the industry is likely also in the future to benefit from strong growth in domestic demand, the production of standard newsprint paper and writing/printing paper is a typical industry where much of the competitiveness is due to economies of scale. Therefore, as Nepal continues to further reduce its import duty levels, the sub-sector is likely to face increasingly stiff competition from imports. Only large companies will survive in this environment and, therefore, mergers or acquisitions would be the adequate response from the industry. HMG's reform of the financial sector, expected to improve the access to credits, would facilitate the restructuring process, as would an amendment of the Labour Law.

3.2.9. The Publishing and Printing Sub-Sector

3.2.9.1. Description of the sub-sector

The publishing and printing refers to newspapers, magazines, books, brochures, advertising materials, labels, packaging materials, stationery, etc. Some salient features of the sub-sector and its development over the last 14 years are illustrated in Table 3.14 below.

Table 3.14: Characteristics of the Publishing and Printing Sub-Sectors 1986/87-2000/01

	1986/87	1991/92	1996/97	2000/01
Share of total manufacturing value added (%)	1.9	0.5	1.2	2.0
Number of employees	2,020	2,944	2,421	
Share of total manufacturing employment (%)	1.6	1.3	1.2	
Number of establishments	86	135	79	
Share of total number of manufacturing establishments (%)	4.2	3.2	2.2	
Annual average value added growth rate since previous census/survey, constant prices (%)		-15.7	24.9	16.4
Value-added/output ratio (%)	42.8	17.7	45.5	47.1

Source: Censuses of Manufacturing Establishments 1986/87, 1991/92, 1996/97 and study team estimates based on IDPP Survey 2000/01 and CBS's production index of manufacturing industries/commodities

The publishing and printing sub-sector has undergone distinct and different changes during different periods.

The initial changes towards a more liberalized market in the late 1980s led to an increase in demand for printed products resulting in an increase in number of establishments and employees. However, the production was much based on printing by traditional letterpress units, which increasingly came under competitive pressure by offset printing. Thus, the value added to output ratio decreased dramatically and the growth in value added in fact decreased by an average annual of 15.7 percent during the period 1986/87 to 1991/92.

In the period 1991/92 to 1996/97 demand continued to be strong due to the democratisation of the society and the deepening of market reforms. In parallel, the restructuring away from traditional letterpress printing to offset, flexoprinting and rotogravure printing resulted in an upgrading of the industry with more up-to-date technology as well as fewer and larger establishments with improved value-added to output ratio. Consequently, the industry grew by an average annual of 24.9 percent in that period.

After 1996/97 the industry has continued to show strength in a strongly growing market. Despite this fact, industry representatives estimate that the domestic industry only accounts for about 25 percent of the domestic market.

3.2.9.2. Government Policies

In contrast to most other sub-sectors, HMG is actually providing the printing and publishing sub-sector with a negative protection vis-à-vis imports. Import duties on books and most printed materials are 10 percent, while import duties for printing paper is 15 percent. This has had the consequence that the industry has been competing well when using domestically produced paper (mostly lower to medium quality, enjoying a certain protection), while it has been at a disadvantage when trying to produce printed publications based on higher quality, imported paper (*e.g.* tourist brochures). In addition, paper is subject to VAT, while imported as well as domestically produced books are not.

Altogether there is a job worth Rs.4 billion annually, but only Rs.1 billion comes to Nepali printer and rest goes out to foreign printers. For technical reason some specific printing capacities do not exist. While some requirements continue to be printed out though could be printed locally. The local printers are charged with being costly, not so good quality and that orders are not complied in time. Some book publishers are going out for the government discrepancy in facilitation. The disadvantage of printing locally is 15% on paper and 10% on other materials and after crying much the government has imposed 10% duty on books authored by Nepali writers if printed outside Nepal. Further VAT is free on books but on the papers used for printing.

Newspaper, which constitutes on specific class, is having good times with the growing reading habit and purchase culture. As the industry has changed the technology form letter press system to mostly offset press, the demand for print supports has also outgrown. Subsequently to fill the void print support establishments have come to be established.

3.2.9.3. Problems, Constraints and Threats

There are problems in capacity utilisation of press (newspapers). Administrative/regulative bottlenecks continue to generate cost disadvantage (general service). Further, service limitations, quality problems and strong competition continue to exist (print supports). The integrated industry concept alike to newspaper publishing has not effectively emerged in other categories of printing dealing specific print products.

3.2.9.4. Strength and Opportunities

The increasing readership of newspapers, incremental use of domestic text books, paper based marketing/political campaigns, possibility of extending print services to European customers on competitive terms constitute potential opportunities. There is also scope for limited security printing business as public private collaborative effort.

3.2.9.5. Comparative and competitive Advantages

Worldwide the printing industry is increasingly an industry of large firms with state of art technologies. Nepal could be a printing hub with potential for export as printing is getting shifted out from the developed countries. It will still be cheaper to print in Nepal compared to them but not compared to India and Thailand. (In India excise refund is provided on exports.) For the newspaper publications readership itself is the key factor. Print support service providers are linked with the growth of print industry is general and demand for them.

3.2.9.6. Conclusions, Recommendations and Outlook

The industry is likely to be facing continued strong growth in the domestic market for a foreseeable future (*per capita* consumption of paper is still amongst the lowest in the world). The industry has also had the capability to upgrade its technological level in the recent decade, and if this level can be continually upgraded, the sub-sector is foreseen to be able to maintain a reasonable competitiveness. Adding to this competitiveness is the fact that for many product categories, economies of scale are not particularly important.

HMG could support the industry by significantly lower the import duty rates for higher quality paper, which is not produced in Nepal. By this, the sub-sector would be able to compete in the field of higher quality printing works, which are now printed abroad. This also means that the industry would be given a fair chance to significantly increase its share of the domestic market for printed goods.

3.2.10. The Chemical and Chemical Products Sub-Sector

3.2.10.1. Description of the Sub-Sector

There are five categories of products included in the chemical and chemical products sub-sector (numbers within parenthesis refer to the share of the product category's value added of the sub-sector's total value added in 1996/97):

- soaps, detergents, toothpaste, etc. (33 percent);
- pharmaceuticals (28 percent);
- plastic products (18 percent);
- rubber products (15 percent); and
- basic chemicals and paints (6 percent).

Some salient features of the sub-sector and its development over the last 14 years are illustrated in Table 3.15 below.

As can be seen from Table 3.15, there was an accelerated growth in value added in the period 1986/87-1996/97, with 6.7 percent average annual growth 1986/87-1991/92 and 12.9 percent average annual growth 1991/92-1996/97. Since then, there are indications that the sub-sector has faced a rapid decline in terms of value added, viz. by –15.1 percent annually. Sales of plastic products actually halved between 1996/97 and 2000/01. Although sales of soaps, detergents, toothpaste, etc. increased in volume by 50 percent in the same period, the value-added/output ratio declined sharply. As a consequence, the sub-sector's share of total

manufacturing value added decreased from a range of 6-8 percent in the period 1986/87-1996/97 to 4.8 percent in 2000/01.

Table 3.15: Characteristics of the Chemical and Chemical Products Sub-Sectors 1986/87-2000/01

	1986/87	1991/92	1996/97	2000/01
Share of total manufacturing value added (%)	7.1	5.6	8.5	4.8
Number of employees	7,138	8,068	8,656	
Share of total manufacturing employment (%)	5.5	3.6	4.4	
Number of establishments	140	252	241	
Share of total number of manufacturing establishments (%)	6.8	5.9	6.8	
Annual average value added growth rate since previous census/survey, constant prices (%)		6.7	12.9	-15.1
Value added/output ratio (%)	27.9	30.3	30.1	15.4

Source: Censuses of Manufacturing Establishments 1986/87, 1991/92, 1996/97 and study team estimates based on IDPP Survey 2000/01 and CBS's production index of manufacturing industries/commodities

The development of the production of major product categories for the period 1986/87–1996/97 is shown in Table 3.16 below.

Table 3.16: Production by Major Product Categories and Growth Rates 1986/87-1996/97

Product Category	Share of Value Added 1986/87 (%)	Share of Value Added 1996/97 (%)	Annual Average Growth 86/87-96/97 (%)
Soaps, detergents, etc.	25	33	13.1
Pharmaceuticals	7	28	26.1
Plastic products	16	18	11.5
Rubber products	8	15	17.8
Basic chemicals, paints	44	6	-9.4
Total	100	100	10.1

Source: Censuses of Manufacturing Establishments 1986/87 and 1996/97

As can be seen in Table 3.16, basic chemicals has reduced its share of the sub-sector's total value added from 44 percent in 1986/87 to a mere 6 percent in 1996/97. In the same period pharmaceuticals grew from 7 percent to 28 percent, rubber products from 8 percent to 15 percent and soaps, detergent, toothpaste, etc. from 25 percent to 33 percent. These increased shares of the sub-sector's total value added reflect strong growth rates as shown in Table 3.16. Basic chemicals, on the other hand, have decreased by 9.4 percent annually in the same period.

Except for traditional medicines, the sub-sector is highly dependent on imported raw materials. In respect of soaps, detergents, toothpaste, plastic and rubber products, Nepal is more or less self-sufficient. Regarding modern medicines, however, about 75 percent is imported.

The pharmaceutical industry consists of 36 enterprises with about 5,000 employees according to the Association of Pharmaceutical Producers of Nepal (only about 3,000 employees according to the Census of Manufacturing Establishments in 1996/97). The state-owned Royal Drug Ltd. is the major manufacturer, which together with a few others actually formulate drugs from active ingredients. The remaining ones are mainly involved in small

scale repackaging and labelling of drugs imported in bulk. There is also one state-owned enterprise manufacturing traditional medicines.

Exports of chemical products in 2000/01 reached Rs.3.9 billion, equivalent to about 50 percent of the total production in the entire sub-sector, thereby accounting for about 7 percent of total exports from Nepal. Major export products were toothpaste (Rs.2.3 billion), soaps (Rs.1.1 billion) and traditional medicines (Rs.0.5 billion). Exports of toothpaste and soaps are mainly accounted for by a couple of large trans-national corporations (Colgate/Palmolive and Unilever) taking advantage of the tariff differential between Nepal and India. In India, internationally branded soaps and toothpastes are levied an import duty of 60-70 percent and associated raw materials (oils, perfumes) 30-40 percent. When used for exports, these raw materials don't carry any import duty at all in Nepal (after duty draw back). This tariff differential is sufficient for Nepalese based manufacturers to successfully compete in the Indian market, as the finished products can be exported to India with no import duty levied by India.

Foreign investment in the sub-sector is significant, due to large investments by Colgate/Palmolive and Unilever, accounting for about a third of all foreign direct investment in Nepal.

3.2.10.2. Determinants of Growth

The growth of the sub-sector has been due to a combination of (i) strong demand in the domestic market; (ii) high effective rate of protection; (iii) import duty differential between Nepal and India; and (iv) direct foreign investment.

3.2.10.3. Government Policies

Soaps, paints and plastic products are levied 40 percent import duty, while the associated raw materials are levied 10-15 percent import duty only. This indicates a fairly high rate of effective protection.

Pharmaceuticals are levied 15 percent import duty, while the active ingredients in these pharmaceuticals are levied 5 percent import duty. Imports of pharmaceuticals by HMG for use in hospitals are, however, duty exempted. Packages in the form of glass bottles are levied 5 percent import duty, while sheets, films, foils and strips of plastics are levied 25 percent. As packaging materials often account for 40-60 percent of the total production costs of pharmaceuticals in consumer packs, there is actually a negative effective rate of protection for such products.

Rubber products are levied 25 percent import duty, while the rubber itself carries 5 percent import duty, which may indicate a moderate degree of protection.

Enterprises producing traditional medicines are accorded status as "national priority industry" according to the Industrial Enterprise Act.

3.2.10.4. Problems, Constraints and Threats

The sub-sector to a varying degree suffers from all the manufacturing-wide problems that have been outlined in Chapter 2. Problems, constraints and threats of particular importance to the chemical and chemical products sub-sector, or sub-sector specific, are the following:

- Small scale production (when economies of scale are important) and low productivity (except for a few large enterprises) due to the fact that many small enterprises have prospered behind high effective rates of protection;
- Negative effective rate of protection for many modern pharmaceuticals;
- Policies distorting competition between the private and public sector regarding pharmaceuticals;
- Maoist insurgency targeting foreign enterprises in the sub-sector;
- Inadequate quality control regarding production and, particularly, distribution of pharmaceuticals (GMP adherence in factories, inadequate quality control of imported pharmaceuticals, low educational level of pharmacy staff);
- Lack of pharmacists as well as properly educated staff for production of modern pharmaceuticals;
- Imports through smuggling rendering the official trade protection less efficient; and,
- Continued reduction of import duties in India reducing the tariff differential between Nepal and India.

3.2.10.5. Strengths and Opportunities

Despite the problems and constraints outlined in the previous section, there are some strengths and opportunities as follows:

- Local availability of a great number of species of herbs suitable for the production of traditional medicines;
- Sufficiently large domestic market for the production of a few selected major generic essential drugs (*e.g.* paracetamol, acetyl salicylic acid);
- Low labour costs allowing for competitive re-packaging and labelling of pharmaceuticals imported in bulk;
- For geographical reasons, a natural protection regarding bulky and transport cost sensitive pharmaceutical products (*e.g.* infusion solutions); and,
- Potential for the manufacture of diversified plastic products to meet local demand at district level, requiring small investment.

3.2.10.6. Comparative and Competitive Advantages

Low labour costs constitute a comparative advantage for some re-packing and labelling activities.

Availability of locally grown herbs is a comparative advantage for the production of traditional medicines.

Natural protection, due to geographical reasons, for bulky and transport cost sensitive goods.

The size of the domestic market is adequate for certain products (*e.g.* selected pharmaceuticals, mass consumed plastic products), but inadequate for others (*e.g.* basic chemicals, paints).

3.2.10.7. Strategic Recommendations

HMG may, by strong intervention, be able to create a conducive environment for the long term development of the pharmaceutical industry in product categories characterized of low to medium-tech formulation and non-patented large volume pharmaceuticals.

The first stage of such a strategy is to organize an appropriate distribution of pharmaceuticals in the country; the second stage is to actually develop the production, once a critical mass of

competent staff is available. The interventions should be of regulatory nature, not actual production by state-owned enterprises. Specific components of such strategy include:

- Development of adequate quality control of imported and domestically manufactured pharmaceuticals.
- Enforcement of WHO's Good Manufacturing Practices (GMP) in factories.
- Gradually increasing the requirements of licensing of pharmacies.
- Ensure that sufficient qualified personnel are educated at university level in fields such as pharmacology, chemistry, and microbiology to supply a growing pharmaceutical sector.
- Review and amend the current distorting import duty structure in respect of pharmaceuticals.
- Measures to be taken to curb smuggled imports of pharmaceuticals.
- Divest state-owned enterprises in the sub-sector.
- Continued support in research and development regarding traditional medicines.

Although, other product categories don't appear to offer the same long term potential (rubber products possibly excluded), a gradual and well pre-announced reduction of import duties on finished goods would provide an incentive for enterprises to improve their productivity.

3.2.10.8. Sub-Sector Outlook

As parts of the sub-sector have been allowed to develop with the assistance of strong effective protection, parts of the industry will no doubt be facing increasing difficulties as Nepal pursues further trade liberalization. In addition, the large export oriented production of soaps and toothpastes based on the import duty differential between Nepal and India is also likely to suffer and could even vanish as India pursues it trade regime reform, alternatively that India may take unilateral action by introducing countervailing taxes.

However, the pharmaceutical industry offers significant long term potential, provided that HMG implements a number of measures as outlined above to properly regulate production, distribution and trade as well as ensure that an adequately educated critical mass of professionals will be available in the future to meet the demand from the industry.

3.2.11. The Non-Metallic Minerals Sub-Sector

3.2.11.1. Description of the Sub-Sector

The main product categories in the non-metallic minerals sub-sector are cement and bricks, accounting for 45 percent and 40 percent, respectively, of the sub-sector's total value added in 1996/97[31]. Some salient features of the sub-sector and its development over the last 14 years are illustrated in Table 3.17 below.

[31] Other minerals include marble industries, coal mines/industries, lignite, agrilime, magnesite/talc, slat, ochere clay, gemstone, construction materials (building stone), which together account for only 15 percent of value-added. However, the paucity of data precludes their analysis.

Table 3.17: Characteristics of the Non-Metallic Mineral Sub-Sector 1986/87-2000/01

	1986/87	1991/92	1996/97	2000/01
Share of total manufacturing value added (%)	15.2	12.1	7.1	4.9
Number of employees	45,409	50,884	43,978	
Share of total manufacturing employment (%)	35.2	30.1	22.4	
Number of establishments	503	709	623	
Share of total number of manufacturing establishments (%)	24.5	16.6	17.5	
Annual average value added growth rate since previous census/survey, constant prices (%)		6.9	-6.7	-6.9
Value added/output ratio (%)	54.9	56.8	48.5	39.2

Source: Censuses of Manufacturing Establishments 1986/87, 1991/92, 1996/97 and study team estimates based on IDPP Survey 2000/01 and CBS's production index of manufacturing industries/commodities

As can be seen from Table 3.17, since 1991/92 the sub-sector has been on the decline with an annual average decrease of -6.7 percent in the period 1991/92–1996/97 and in the same size order since then. Subsequently, the sub-sector has decreased its share of total manufacturing value added from 15.2 percent in 1986/87 to an estimated 4.9 percent in 2000/01.

The sub-sector is a major employer with about 44,000 employees in 1996/97, whereof brick manufacturing alone accounted for about 38,000 employees. Another 7,000 persons are employed in brick manufacturing units employing less than 10 persons.

The cement production is dominated by three state-owned enterprises, which are all operated at a loss. The production volumes of cement have hovered around 200,000- 250,000 metric tonnes per year since 1991/92, with the exception of a temporary surge in 1992/93-1994/95 when production was in the range of 300,000-325,000 annually. For a cement factory, these are extremely small volumes. Internationally, cement factories reaping all benefit of economies of scale nowadays have a capacity of 1.5-2.0 million metric tonnes per year.

The domestic manufacturers of cement over the last five years have catered for about 40-50 percent (with a decreasing trend) of the domestic demand, while the rest is imported from India at a value of about Rs.1.5 billion.

Bricks are produced in a few modern brick factories, but most production units are using traditional kilns, which are both energy intensive and polluting.

3.2.11.2. Determinants of Decline of the Non-Metallic Mineral Products Sub-Sector

Despite the fact that the construction sector grew by an average annual of 4.5 percent in the period 1991/92 – 2000/01, the sub-sector was not able to benefit from this growth (there is normally a strong correlation between the development of the construction sector and demand for cement). Much of this growing demand was captured by imports.

Another explanation for the poor performance in the 1990s is also that cement has been sold at low prices fixed by the state-owned enterprise causing these enterprises to be operated at a loss and also resulting in the value added to output ratio to decline from 56.8 percent in 1991/92 to 39.2 percent in 2000/01.

3.2.11.3. Government Policies

The main policy by HMG is to actually intervene in the sub-sector by ownership of three cement factories.

In addition, a high effective rate of protection is indicated by the levying of import duties on imports of cement by 40 percent on white Portland cement and Rs.1,750/metric tonne on other Portland cement (equivalent to 30-40 percent depending on the prevailing price of the imported cement). For thee main imported input (coal) the import duty is 5 percent. Import duties on bricks are 10 percent.

3.2.11.4. Problems, Constraints and Threats

The sub-sector to a varying degree suffers from all the manufacturing-wide problems outlined in Chapter 2. Problems, constraints and threats of particular importance to the non-metallic minerals products sub-sector, or sub-sector specific, are the following:

- Cement factories are small sized and not able to reap the benefits of economies of scale;
- Cement factories are operated at a low level of capacity utilization (33-48 percent);
- Cement factories are not efficiently managed; and,
- Traditional kilns for brick manufacturing are highly polluting.

3.2.11.5. Strengths and Opportunities

Despite the problems and constraints outlined in the previous section, there are some strengths and opportunities as follows:

- In the long-term there may be sufficient domestic demand to allow for a cement plant of optimal size in Nepal;
- If Nepal's hydropower potential is significantly exploited, cement production could be based on a fairly cheap source of power;
- There are 211million tonnes of total reserves of limestone, which is sufficient for large scale production of cement;
- There is ample availability of clay suitable for brick manufacturing;
- There are marble deposits which could be further exploited; and,
- There are some indications in terms of geological conditions that further exploration activities may discover gem quality ruby, sapphire, aquamarine and tourmaline resources, which could provide inputs for the growing jewellery industry in Nepal.

3.2.11.6. Comparative and Competitive Advantages

It appears as though Nepal has both comparative and competitive advantages in the production of bricks. On the contrary, cement production currently doesn't appear to enjoy neither comparative nor competitive advantages, which may only be possible to develop in the long term. Should further geological explorations reveal significant resources of other non-metallic mineral resources, Nepal may enjoy a comparative advantage in further processing these minerals.

3.2.11.7. Strategic Recommendations

- HMG may consider to divest its three companies in the cement business (joint operating losses of Rs.1.5 billion in 2000/01) giving due consideration to the currently about 2,000 employees. Losses alone appear to be higher even than the total wage bill of these enterprises.
- HMG may, in the case of divesting from the cement industry, consider lowering the import duty rate from 40 percent to, say, 10-15 percent in order to reduce the price of cement for use in infrastructure project and for the public.

- It would be appropriate for HMG to enforce more strongly environmental regulations for brick manufacturing, providing an incentive for the industry to restructure away from polluting traditional kilns towards more modern and less polluting type of brick manufacturing.
- HMG may consider some financial incentives to facilitate the restructuring of the brick manufacturing industry.
- HMG may consider to more strongly encourage private sector involvement in the exploration, mining and further processing of non-metallic minerals by amending the Mines and Mineral Act currently giving HMG the right to share in as an investor and co-owner in the mining of discovered minerals.

3.2.11.8. Sub-Sector Outlook

If HMG would pursue with state-owned enterprises producing cement, even with a possible merger of these enterprises, it is likely that HMG's cement business would still continue to be a drain on the state budget. Due to the industry's high dependence on imported coal, there would not be any particular savings in foreign exchange. Furthermore, cement would be provided at higher prices as compared to imported cement, which would have as a consequence that many badly needed infrastructure projects would become unnecessarily expensive.

On the other hand, should HMG divest its ownership interests in the cement industry, the domestic cement industry would most likely more or less vanish. However, with import duties at lower levels, public infrastructure projects would become cheaper and the public at large would benefit from lower cement prices. The drain on the state budget would cease and total revenues from import duties would gradually increase even with the lower import duty rates.

Should HMG be successful in facilitating the restructuring of the brick industry, the industry would continue to flourish and provide employment to large numbers of people. Furthermore, the industry as a whole would become less polluting.

Further discoveries of other non-metallic mineral resources such as various gems could provide a boost to the rapidly growing jewellery industry.

3.2.12. The Mechanical Engineering sub-sector

3.2.12.1. Description of the Mechanical Engineering Sub-Sector

The main product categories in the mechanical engineering sub-sector are (i) basic metals and (ii) various kinds of fabricated metal products, machinery and equipment. In basic metals, casting of iron and steel is dominating, while the fabricated metal products category is dominated by stamping and roll-forming of metals. The two groups are presented separately in Table 3.18 below. Some salient features of the sub-sector and its development over the last 14 years are illustrated in Table 3.18 below.

As can be seen from Table 3.18, the sub-sector's share of total value added ranged between 5 percent and 7 percent between 1986/87 and 1996/97. Since then, its share has dropped to 2.1 percent in 2000/01 which is attributable to a more or less halt in the production of agricultural tools, a sharp decline in the production of steel utensils and a significant drop in the value added/output ratio (from 23.7 percent in 1996/97 to 12.7 percent in 2000/01). This is also reflected in the growth rates of the sub-sector which turned from an average annual growth of

about 9-10 percent in the period 1986/87-1996/97 to an actual annual decline of 24.2 percent since then.

There were some 6,700 persons employed by the mechanical engineering sub-sector in 1996/97, equivalent to 3.4 percent of total employment in the manufacturing sector. In addition, about 9,000 persons are employed in a large number of small production units employing less than 10 persons. That number is likely to have gone down significantly since then. Enterprises producing basic metals are comparatively larger employing on average about 50 persons, while enterprises manufacturing fabricated metal products on average only employ about half that number.

Table 3.18: Characteristics of the Mechanical Engineering Sub-Sector 1986/87-2000/01

	1986/87	1991/92	1996/97	2000/01
Share of total manufacturing value added (%)	5.9	5.5	6.9	2.1
Of which basic metals	2.6	2.6	1.7	1.5
Of which fabricated metal products	3.3	2.9	5.2	0.6
Number of employees	4,655	6,132	6,727	
Of which of basic metals	1,263	1,590	1,224	
Of which fabricated metal products	3,402	4,542	5,503	
Share of total manufacturing employment (%)	3.6	2.7	3.4	
Of which basic metals	1.0	0.7	0.6	
Of which fabricated metal products	2.6	2.0	2.8	
Number of establishments	141	213	224	
Of which basic metals	21	15	22	
Of which fabricated metal products	120	198	202	
Annual average value added growth rate since previous census/survey, constant prices (%)		10.4	8.6	-24.2
Of which basic metals		11.5	-4.4	-1.9
Of which fabricated metal products		9.4	16.4	-39.5
Value added/output ratio (%)	25.7	23.4	23.7	12.7
Of which basic metals	20.9	21.2	17.0	11.8
Of which fabricated metal products	31.7	25.7	27.2	15.2

Source: Censuses of Manufacturing Establishments 1986/87, 1991/92, 1996/97 and study team estimates based on IDPP Survey 2000/01 and CBS's production index of manufacturing industries/commodities

Most production can be classified into three categories, viz. (i) products for construction purposes, (ii) machinery and equipment and (iii) consumer durables. Examples of products for construction consist of iron rods, bars and angles, galvanized iron and black pipes, corrugated sheets for roofing, components for bridges as well as assembly of transmission towers and steel poles. Examples of machinery are simple agricultural machinery, small water turbines and the assembly of agricultural diesel pumps, transformers and, since recently, production of bodies for simple motor vehicles, such as trailers and two-wheelers, and the assembly of such vehicles. Examples of consumer durables are stainless steel utensils, steel furniture and assembly of bicycles. As a whole, the production is based on fairly low-level technologies.

The sub-sector is completely dependent on imported raw materials and predominantly geared towards the domestic market, mainly the construction industry. About Rs.1.4 billion worth of goods is exported, mainly metal wastes and scrap, but also some minor quantities of small turbines to a few countries in the region by one successful company.

Out of the total domestic market for mechanical engineering products, amounting to about Rs.22 billion, the local industry supplied almost Rs.6 billion worth of goods, equivalent to about 25 percent of the total domestic market in 1998/99.

There is virtually no foreign investment in the sub-sector, nor are there any longer any state-owned enterprises.

3.2.12.2. Determinants of the Growth and Decline of the Sub-Sector

There are many different developments that have determined the overall development of the mechanical engineering sub-sector over the last 15 years or so.

Until the mid 1980s the mechanical engineering sub-sector was protected and included a number of state-owned enterprises. The then thinking was to pursue the ”basic industry” strategy. Consequently, in 1986/86 the manufacture of basic iron and steel accounted for 45 percent of the production of the whole sub-sector. As the strategy was abandoned and the protection was reduced, the lack of competitiveness was revealed and the melting of these basic metals in 1996/97 only accounted for about 12 percent of output and 7 percent of value added in the sub-sector.

The main factor countervailing the above negative trend regarding melting of iron and steel was the introduction of metallurgical industries in the early 1990s, *e.g.* by the introduction of stamping and roll forming of metals, growing from a very low base to account in 1996/97 for about 60 percent of the sub-sector’s total value added.

Another long term trend since the mid 1980’s has been the steady growth in demand for other metal products used for construction purposes, *e.g.* the manufacture of iron rods, bars and angles, galvanized iron and black pipes, corrugated sheets for roofing, etc.

The sharp drop since 1996/97 mainly reflects the sharp drop in the manufacture of steel utensils for consumer goods through increased competition from India, both by formal and unrecorded imports. The decline between 1996/97 and 2000/01 in Table 4.18 may, however, be somewhat exaggerated as the estimate is based partly on the CBS production index which is likely to attach a too strong weight to steel utensils alone.

3.2.12.3. Government Policies

In addition to the general incentives provided to industries under the Industrial Enterprise Act, the mechanical engineering sub-sector is provided additional incentives in its capacity of being declared a ”national priority industry” in Annex 4 of the said act.

HMG also provides a moderate protection for the sub-sector by levying import duties on most finished goods in the range of 10-15 percent, while most imported raw materials for the production of such goods is levied import duties at 5 percent.

Furthermore, if an industry has been operated in loss for a consecutive period of five years and its capacity utilization if 20 percent or less, HMG may declare it a ”sick industry”, whereby no duty, fee or tax shall be levied on machinery imported by such an industry.

3.2.12.4. Problems, Constraints and Threats

The mechanical engineering sub-sector to a varying degree suffers from all the manufacturing-wide problems that have been outlined in Chapter 2. Problems, constraints

and threats of particular importance to the sub-sector, or sub-sector specific, are the following:

- Shortage of skilled workers and highly skilled engineers and technicians, in particular for reasonable mastery of production technology;
- Technology for the production of most machinery and equipment being at a too sophisticated level for Nepal at its present stage of development;
- Virtually no capabilities in product design:
- Low productivity as a consequence of the above mentioned problems[32];
- Stiff competition from formally and unrecorded imports of consumer goods;
- Demand for large consumer durables (air-conditioners, refrigerators, etc.) currently being too small in Nepal for economically viable production;
- Lack of metallic mineral resources and/or cheap electricity rendering production of basic metals not feasible;
- Unreliable and expensive power supply or non-availability of publicly provided electricity in many parts of the country;
- High transportation costs due to inadequate road network and road maintenance (a problem particularly for delivery of goods to construction sites in remote areas); and,
- HMG procurement policies, which divert purchases to imports for certain goods away from domestic purchases, even in cases where domestic manufacturers may be competitive (including also duty free imports under aid funded projects).

3.2.12.5. Strengths and Opportunities

Despite the problems and constraints outlined in the previous section, there are some strengths and opportunities as follows:

- As Nepal will need a lot of investments in infrastructure over the next 20 years and consessional loans are being made available for such investment, domestic demand for fabricated metal products for construction purposes is likely to be strong over an extended period;
- If Nepalese manufacturers can increase their productivity, the market created by the above mentioned infrastructure investments could give a boost to the industry;
- In large projects it is possible to disaggregate the inputs into components suitable to be supplied by foreign and domestic manufacturers, respectively;
- Over time, with growing incomes the assembly of consumer durables is likely to become viable in Nepal;
- Increased parts manufacturing, assembly operations and general purpose workshops appear to be opportunities within reach for Nepalese manufacturers also in the short and medium term perspective;
- The mechanical engineering sub-sector appears to be developing along a “learning curve”, albeit at an early stage of that curve, as indicated by the steady diversification of the range of products being manufactured; if the process continues (improved productivity, upgrading of technologies), Nepalese manufacturers will gradually be able to increase the coverage of their production;
- A positive sign is the rapidly growing interest in Nepal by foreign investors, resulting in 17 projects with foreign participation in the mechanical engineering sub-sector being approved in 2000/01 only; and,
- If Nepal’s untapped hydropower resources are developed, there may be scope to exploit Nepal’s iron ore resources for the production of sponge iron.

[32] A recent study by FNCCI and the World Bank regarding the business environment and manufacturing performance in Nepal, in a comparison at sub-sectoral level, ranked the mechanical engineering sub-sector as having the lowest productivity level of all manufacturing sub-sectors.

3.2.12.6. Comparative and Competitive Advantages

The mechanical engineering industry consists of a very broad and heterogeneous variety of products requiring different kinds of comparative and competitive advantages. The production of basic metals, for example, is very much favoured by domestic access to the concerned metallic mineral resources and cheap power. The production of advanced machinery doesn't necessarily need availability of domestically produced metals, but depends very much on availability of highly skilled people, good research and development, and high level technologies. Some products are much dependent on access to large amounts of capital and need to reap benefits of scale economies. Other products, on the other hand, are bulky and expensive to transport and therefore, for these products, closeness to the market is a comparative advantage.

In the mechanical engineering sub-sector, Nepal's current prime comparative advantage appears to consist of low labour costs and closeness to the domestic market. However, to take advantage of these comparative advantages and translate them into a competitive advantage, raising productivity is a key issue. From Nepal's comparatively overall low level of productivity, there is substantial scope to improve competitive advantages.

3.2.12.7. Strategic Recommendations

The key strategic issue in the mechanical engineering sub-sector is to raise the level of productivity and gradually move up along the technological ladder. Some key strategic recommendations are as follows:

- Strengthening of the entire educational and training system related to the mechanical engineering sub-sector. This includes strengthening of vocational institutes to provide medium and high skilled workers, strengthening of specialized engineering training institutes to provide engineers with design capabilities as well as strengthening of the education at the Tribhuvan University to produce higher qualified professionals.
- To upgrade skills, appropriate training incentives may be considered. This could include measures such as a double deduction of training costs scheme or the provision of vouchers that could be used for costs of training at training institutes at the choice of the enterprises themselves. Preferably such incentives should be made available at a broad manufacturing-wide base.
- It is also advisable to include a business support arm at the engineering training institutes (on a fee basis) which could serve the double purpose of providing on-the-job training for the trainees at these institutes as well as providing services in fields such as design and calculation of dimensions, tolerances, etc, which could be a valuable support for the numerous small-scale enterprises in the sub-sector.
- The Bureau of Standards should be authorized to develop or adopt national standards for common construction structures, machinery, equipment, parts, etc. to foster the development of the industry.
- HMG procurement policy should include an effort in all public procurement to disaggregate purchases of engineering goods into smaller components, where domestic manufacturers would be allowed to compete in the bidding for such components where they may be competitive. The intra-ministerial links between the Ministry of Industry, Commerce and Supplies and the ministries involved in infrastructure development needs to be strengthened in this context.
- HMG may apply certain transparent preferential treatment of domestic manufacturers when evaluating bids under international competitive bidding.
- The overall recommendation made in Chapter 2 to improve the promotion of foreign direct investment is of particular importance to the mechanical engineering sub-sector.

3.2.12.8. Sub-Sector Outlook

The demand for mechanical engineering products is likely to grow more rapidly than the overall growth of the economy for a considerable time ahead and, therefore, the sub-sector will be operating in a strongly growing domestic market.

To capture a reasonable share of this market, the industry would, however, have to considerably raise its productivity and move up the technological ladder. To achieve this, the sub-sector would need strong support by HMG in the fields of education and training. As a major purchaser of mechanical engineering goods for infrastructure development, HMG also has the possibility to provide domestic manufacturers with a fair chance to compete with foreign companies in a level playing field, or possibly with some preferential treatment.

Should HMG proceed with the recommendations made, the mechanical engineering sub-sector is likely to move up the ”learning curve”, increase its productivity, and demonstrate strong growth being able to capture a reasonable share of the domestic market.

3.2.13. The Electrical and Electronics Sub-Sector

3.2.13.1. Description of the Electrical and Electronics Sub-Sector

Main products in the electrical and electronics sub-sector in terms of shares of value added of total value added in the electrical and electronics sub-sector in 1996/97 were: wire and cables (62 percent), dry cell batteries (15 percent), electric motors, generators and transformers (11 percent) and TV and radio receivers and cassette players (11 percent). Some salient features of the sub-sector and its development over the last 14 years are illustrated in Table 3.19 below.

Table 3.19: Characteristics of the Electrical and Electronics Sub-Sectors 1986/87-2000/01

	1986/87	1991/92	1996/97	2000/01
Share of total manufacturing value added (%)	1.5	1.4	2.5	0.9
Number of employees	705	1,185	1,860	
Share of total manufacturing employment (%)	0.5	0.5	0.9	
Number of establishments	24	36	34	
Share of total number of manufacturing establishments (%)	1.2	0.8	1.0	
Annual average value added growth rate since previous census/survey, constant prices (%)		10.2	16.6	-20.8
Value added/output ratio (%)	25.5	28.3	26.3	10.4

Source: Censuses of Manufacturing Establishments 1986/87, 1991/92, 1996/97 and study team estimates based on IDPP Survey 2000/01 and CBS’s production index of manufacturing industries/commodities

From 1986/87 to 1996/97, the electrical and electronics sub-sector increased its share of the total value added in the manufacturing sector from 1.5 percent to 2.5 percent. It also demonstrated a high and increasing growth rate from 1986/87 to 1996/97, albeit from a low starting point, almost entirely due to the increased production of wires and cables. The negative growth rate since 1996/97 is mainly attributable to the decline in production of copper wire.

3.2.13.2. Determinants of Growth of the Sub-Sector

The production in the sub-sector is much characterized by assembly operations (*e.g.* machinery and consumer electronics), except for the production of wire and cables where, however, the technological level is not very complicated.

Assembly is mainly taking place based on semi-knocked down (SKD) components, where the production is possible to a large extent due to high effective rate of protection. For completely assembled colour TV sets the import duty rate is 25 percent, while for SKD components the import duty is only 5 percent. Due to increased automation over the last decade, internationally competitive assembly of TV sets normally requires an annual production volume of 400,000 sets, while the largest assembly plant in Nepal has an annual production volume of 8,000 sets only.

In the case of copper wire, the dominating product in the sub-sector, the production is based on imported copper wire rod, where the production in Nepal is made possible due to the import duty differential between India and Nepal, with the former allowing 10,000 tons of copper wires as quota, free of basic duty, while Nepal levies 5 percent only (reimbursable under the duty draw back system when the finished copper wire is exported) for imports from third country suppliers, and 4 percent duty for imports from India.

Thus, as a whole, the sub-sector is based on a very fragile ground and will most likely not be competitive under a more liberalized trade regime in India and Nepal.

3.2.13.3. Opportunities

Some opportunities may arise in the future regarding assembly of semi-conductors, a field that has been a ”success story” of several countries in South East Asia, as major international corporations in the industry have relocated these operations to countries with low labour costs.

The assembly of semi-conductors require mainly low-/low-medium skilled workers, and the products are not sensitive to transportation costs due to their low weight/high value characteristics. As labour costs have grown in the first wave of countries assembling semi-conductors (Hong Kong, South Korea, Taiwan and Malaysia), much of this production is now being transferred to a second wave of countries consisting of China, Thailand, the Philippines and Indonesia. Nepal may join this second wave of countries or may pioneer a third wave of low labour cost countries, as labour costs are growing in the second wave of countries.

3.2.13.4. Conclusions and Recommendations

Key issues for foreign investors to relocate semi-conductor assembly to Nepal are: political stability, a literate and disciplined work force, and a conducive and non-bureaucratic environment for foreign investment (dealt with in Chapter 2 of this report). HMG can deal with all these matters, including, *inter alia*, creation of an environment free from insurgence, improved and extended primary education, amendment of the Labour Law and improvements in the business environment for foreign investors.

3.2.14. Other Manufacturing

3.2.14.1. Description of Other Manufacturing

The production of wooden furniture dominates in the group of “other manufacturing”, accounting in 1996/97 for 65 percent in terms of share of value added of the sub-sector’s total value added and 78 percent of employment. Amongst remaining products, jewellery appears to be the most dynamic product group. Some salient features of “other manufacturing” and its development over the last 14 years are illustrated in Table 3.20 below.

The manufacturing of wooden furniture is more or less entirely geared towards the domestic market, where small enterprises focus on supplying geographically narrow markets. The development follows closely the overall development of incomes. The statistics in Table 3.20 only covers establishments with 10 employees and more and, therefore, doesn't picture very well the overall importance of manufacture of wooden furniture in the economy. The CBS survey on small manufacturing establishments in 1999/00, covering establishments with less than 10 employees, reveals that another estimated about 16,000 persons in about 4,000 production units are involved the manufacturing of wooden furniture. In terms of value added, the small establishments with less than 10 employees are estimated to produce three times as much as those establishments with 10 or more employees

Table 3.20: Characteristics of "Other Manufacturing" 1986/87 – 2000/01

	1986/87	1991/92	1996/97	2000/01
Share of total manufacturing value added (%)	1.8	1.8	1.3	1.1
Number of employees	2,909	4,770	5,337	
Share of total manufacturing employment (%)	2.3	2.1	2.7	
Number of establishments	119	292	300	
Share of total number of manufacturing establishments (%)	5.8	6.8	8.4	
Annual average value added growth rate since previous census/survey, constant prices (%)		12.0	-2.3	-2.3
Value added/output ratio (%)	35.8	39.1	38.8	19.9

Source: Censuses of Manufacturing Establishments 1986/87, 1991/92, 1996/97 and study team estimates based on IDPP Survey 2000/01 and CBS's production index of manufacturing industries/commodities

Although the production of jewellery is not specified in the censuses, the CBS survey on small establishments estimates that this particular activity in 1999/00 employed some 6,000 persons in about 2,000 production units. The silver and the cut semi-precious and precious stones used for the production of jewellery is imported, in part consisting of such stones being mined in Nepal, exported to India for cutting and then re-imported in cut form to Nepal. In the last five years, exports of jewellery have grown from negligible values in the mid 1990s to present levels of about Rs.200 million annually.

3.2.14.2. Determinants of Growth/Decline of the Subsector

Furniture is required by all offices and households. Wooden furniture is the most diverse and holds a greater percentage of market. It is rising with the rise in the application of interior designs. Second is steel furniture, which provides a good sharing in office requirements. Cane and bamboo furniture have limited applications (garden and terrace). And the use of plastic furniture (mainly chairs) has strong applications in services of party facilitators. Chinese particleboard furniture (for cheapness and looks) assembled in Nepal is making significant inroads, more recently.

The number of small units supplying general qualities wooden furniture has increased, but the organised units supplying high quality furniture have remained same. In steel furniture, lot many are in informal sector sharing 50% steel furniture market. The cane-bamboo furniture industry has limited numbers in specific locations and the business is facing continued slackness.

Apart from the traditional jewellery that exists from the time immemorial, the crafting of silver jewellery for export market has gradually expanded in the 1990's. As against the

practices of selling local designs or artefacts common to handicraft industry, the shift has taken place on the type that sells at the European markets for this product category.

3.2.14.3. Government Policies

Industrial Policy 1992 and the corresponding Industrial Enterprises Act 1992 are the principal regulatory instruments applicable to this sector. There is no separate or any specific policy relating to furniture industry. A special facilitation provided to jewellery is the selling of gold and silver by the Nepal Rastra Bank.

3.2.14.4. Problems, Constraints and Threats

The timber availability is the key problem for the wooden furniture and there is low quality furniture imports competing in prices. Steel furniture faces competition from wooden furniture and cheap imports from China. The cane-bamboo furniture is faced with problems of material supply and market limitations.

The industry suffers from specific problems despite the export performance picking up. There is lack of facilitation in imports of production aids, design samples as well as stones to be studded in jewellery and government administrative bottlenecks are also there. Limitation of international exposure and market drive is also a factor to be noted.

3.2.14.5. Strengths and Opportunities

Wooden furniture enjoys specific advantages as against others and there is a potential to export furniture as semi-finished parts and components. Steel furniture enjoys niche market in some categories of demand and has some growth potential. Cane bamboo furniture has prospects in collaborating for exports and improve local supply base.

The key strength is the growth potential itself supported by requisite craft skill and interlinks with market patterns.

3.2.14.6. Comparative and Competitive Advantages

Comparative and competitive advantage in furniture is usually found in countries with huge resource base, customer appeal designs. Nepal holds some advantage in wooden furniture and could develop in cane bamboo furniture. Steel furniture too is considered competitive for Indian markets. But these remain to be capitalised.

Competitiveness of this industry does not seem that strong but still the interconnection and local product adaptability will continue to provide marketing edge.

3.2.14.7. Conclusions, Recommendations and Outlook

Wooden furniture enjoys a natural protection due to their bulky and heavy nature. Most of the future demand will follow the general development of incomes in Nepal. If deforestation is allowed to continue, the industry may face a constraint in acquiring raw materials in the future.

The manufacture of jewellery is based on traditional craft skills and is labour intensive, two factors that contribute to making this activity economically attractive to Nepal. It appears, however, as though the Department of Archaeology could make a significant contribution to the development of this niche activity by removing administrative obstacles. Much of the future of jewellery production, however, rests with the industry itself and its capability to develop designs and to market its products abroad as well as to tourists visiting Nepal.

3.3. Conclusions and Recommendations

3.3.1. Major Conclusions

A major conclusion emerging from the analysis of manufacturing sub-sectors under the present project is that considerable capacity has been built up in manufacturing sub-sectors in Nepal, dominated by the manufacture of products which are not in line with the country's current or near future comparative advantage.

The building up of this inappropriate industrial structure mainly took place in the 1970s and 1980s with assistance of highly protective trade barriers, incentives provided by HMG/N and the establishment of numerous state-owned enterprises. Explicitly or implicitly, a "basic industries strategy" was pursued, a strategy which, when attempted, has largely failed in all developing countries at their early stages of development

Although HMG/N has taken measures, in particular in the late 1980s and early 1990s, to liberalize trade, phase out certain sub-sector specific incentives and privatise or liquidate state-owned enterprises, the overall industrial structure is still not sufficiently aligned with the country's comparative advantage. Furthermore, this structure is being preserved by high import duties (at the level of 40% for most products) and the continued presence of large state-owned enterprises.

The sub-sector analysis revealed that sources of lack of comparative advantage consist of one or more of the following factors:

- Nepal being a landlocked country;
- a particular product requiring large scale production beyond the reach of Nepal:
- the production of a particular product requiring huge investments;
- the production of a particular product not requiring much labour in which Nepal has a comparative advantage;
- Nepal not having a critical mass of sufficiently educated staff or skilled workers for the manufacture of the particular product;
- inadequate infrastructure; and
- inadequate availability or access to raw materials at internationally competitive prices.

The following sub-sectors or product categories have been analysed as being dominated by the manufacture of products in which Nepal doesn't have a comparative advantage at present, nor is likely to have in a foreseeable future (which doesn't exclude the possibility that Nepal may have a comparative advantage in certain niche products of the particular sub-sector): sugar, textiles (excluding Pashmina and carpets), cement, chemicals, plastic products, mechanical engineering and the electrical/electronics sub-sector. Aggravating the situation is also the fact that production of some goods in Nepal is based entirely on the tariff differential between Nepal and India.

The above mentioned sub-sectors or product categories in 1986/87 accounted for about 40% of total manufacturing sector value added and still accounted for about 35% in 1996/97. There are, however, indications that this share may have significantly decreased since then (maybe to about 20%) due to dismal performance in these sub-sectors or product categories, even with present high trade protection (rampant smuggling, however, has gradually eroded the efficiency of this protection). These are also the sub-sectors and product categories which are characterized by deteriorating technology, low capacity utilization, low productivity and

low value added to output ratios. In terms of employment, these industries in 1996/97 employed some 30,000 persons, equivalent to about 15% of formal sector employment.

The challenge to HMG/N and the industry itself is to restructure the entire manufacturing sector so as to reduce activities in the above mentioned industries and release financial and human resources that could be channelled to industries more in line with Nepal's comparative advantage and with more bright commercial prospects. It is obvious that this restructuring will be associated with significant financial costs, mainly to the industry, but the longer term financial and economic benefits to the industry and the society will outweigh these short to medium term financial costs.

3.3.2. Approach to Industrial Restructuring

In a short-term perspective it could be tempting to try to rescue those ailing industries identified in Section 3.3.1. Political considerations and the safeguarding of jobs are of course major considerations in this context. However, the negative consequences of such an attempt in the short, medium and long term are overwhelmingly larger than the short-term benefits. An inappropriate industrial structure would be maintained; the rescue operations would be a huge drain on the state budget (and a complete package would not be affordable anyway to HMG/N); consumers at large would be paying relatively higher prices for the concerned products (if import duties were maintained at a high level); industries which could possibly be established utilizing the raw materials from the ailing industries would not be forthcoming (as raw material prices would be higher than international competitive prices); infrastructure projects would suffer from relatively higher prices; and, the ailing industries would get under increasing pressure as India is liberalizing its trade.

A more appropriate response by HMG/N would be, not to bail out these industries, but allow them to gradually be phased out (including the privatisation or liquidation of state-owned enterprises), to assist the industries in their efforts to restructure, and facilitate the reallocation of employees to more promising activities. Support for restructuring could consist of an appropriate amendment of the Labour Law, the provision of a credit guarantee scheme for mergers and industrial sub-sector restructuring, a subsidy to enterprises permanently employing retrenched employees from state-owned enterprises (funds that would come from retrenchment allowances that would otherwise have had to be paid) and an incentive for permanently employing retrenched employees from other enterprises.

3.3.3. Approach to Fostering Future Promising Industries

In addition to encouraging and facilitating industrial restructuring as well as softening the negative impacts of such restructuring, HMG/N should also work in parallel to foster the development of healthy or potentially healthy industries. Most efficient to this end would be the economy-wide and manufacturing sector-wide measures outlined in Chapter 9 of the present report.

There may, however, be justification for some stronger HMG/N interventions in selected important and promising sub-sectors.

3.3.3.1. Future Promising Industries

A frequently asked question in developing countries is what the future promising manufacturing sub-sectors, product groups or individual products ("sunrise" industries, future "winners", etc.) of the country are, with the underlying assumption that these industries

should be promoted by targeted incentives by the governments. This issue, however, encompasses a lot of dangers.

First, international experience from "picking winners" is overwhelmingly negative, or mixed at best. Notable exceptions are Japan, Korea and Singapore, which however had governments that were strong, had well-paid and competent staff, had financial resources to consistently pursue targeted industrial policies and had close working relations with the private sector (even these governments during periods went wrong, but had the capability to adjust their policies). Most other international experience is quite negative, including the one from Nepal.

Second, Nepal's track record in targeting specific manufacturing sub-sectors and products is quite negative. In the 1970s and 1980s in Nepal, manufacturing sub-sectors such as textile, basic metals and cement were promoted by high tariff protection, subsidized loans and by the establishment of state-owned enterprises. These are precisely the manufacturing sub-sectors that are ailing today, while manufacturing sub-sectors and products that were not given any particular support by HMG/N, *e.g.* carpets, garments and Pashmina, demonstrated strong growth.

Third, even if it were possible to rank manufacturing sub-sectors, product groups and individual products in terms of likely future success or failure, it is difficult to use the information for design of incentives. The likely failures **should** not be supported and the likely successes **need** not be supported. In the "middle range", the issue is to find those manufacturing sub-sectors, product groups and individual products which are likely successes, given that some incentives over a limited period are provided. Such "infant industry" support is justified from the point of view of strict economic theory. However, the great risk is that errors are made in the identification of areas for incentives. In practice too, the limited period has most of the time been extended and the intended temporary incentive has become permanent with inefficiencies in the economies and extensive rent-seeking as a consequence. HMG/N is likely to face similar challenges with the recently introduced "sick industry scheme".

Fourth, international experience strongly suggests that functional incentives are more appropriate than sub-sector or product specific incentives and more efficient in achieving government objectives. Thus, functional incentives linked to *e.g.* employment creation, upgrading of skills, upgrading of technology, export performance, etc., are more efficient than general tax incentives for the production of specific goods.

Fifth, identifying future business opportunities is not a core competence of government officials, or consultants. This is an area where the private sector entrepreneurs themselves have an edge competence. Governments should focus on putting an enabling business environment in place, while leaving it to the private business sector to decide what products should be manufactured.

Despite the above outlined dangers, there are some legitimate reasons why governments anyway need to make projections for the future, including assessments of future "sunrise" industries. These include, in particular, the need for projections for the planning of government services in areas such as health, education and infrastructure. For example, for the planning of education, some forecasting of the future economy and its structure is required in order to assess the need for different types of education. This may also include a projection of the country's future industrial structure, including its sub-sectoral composition.

However, there is a two-way relationship between the forecasting of the future industrial structure and the present educational needs. A bit simplified, if a country decides to educate electronic engineers today, it may have an electronics industry in the future. If it doesn't, it won't have an electronics industry in the future. Seen in this way, governments can chose in which fields to actually contribute to the creation of future comparative advantage, and from this point of view they have a legitimate interest in making assessments about future "sunrise" industries. However, it is not recommended that the HMG/N nurture the ambition to create with its own resources entirely new "sunrise" industries virtually from scratch, as this would be beyond HMG/N's present financial and human resources. Reinforcing existing trends and demonstrated strengths by the Nepali industry as well as facilitating for the business community to build on these trends and strengths should, however, be well within the reach of HMG/N.

It is important too in this context to recognize that comparative and competitive advantages, as well as other external factors, are not static, but change over time, sometimes rapidly and unpredictably. It is therefore essential that the forecasting of future industrial structures (including both "sunrise" industries and fading industries) be seen as a continuous process, and a process that is pursued in close consultation between the public and private sectors. Also important is to recognize that comparative advantage is not a sufficient precondition for "sunrise" industries to develop. It takes individual firms and entrepreneurs to exploit a country's comparative advantage and translate it into a competitive advantage. The uncertainty whether such firms and entrepreneurs will be present in the future or not makes predictions about future "sunrise" industries even more difficult.

In conclusion, making efforts to trying to identify future "sunrise" industries and provide such industries with incentive packages shouldn't be seen as a priority task of HMG/N (nor as a focus of the present IDPP). Its main task vis-à-vis the industrial sector should rather be to facilitate for the business community to identify and develop itself possible "sunrise" industries. Such measures were outlined in the previous Sections 4.1 – 4.5. Furthermore, in order to perform the role as a facilitator, HMG/N should involve itself in a continuous dialogue with the private sector business community with a view to enable it to provide services which are based on the needs of the business community. Based on such a dialogue, also concerted efforts to support and foster potential "sunrise" industries as identified by the business community could be designed.

3.3.3.2. Fostering the Development of Future Promising Industries

Future promising industries as referred to in this section are based on their assessed potential for value added creation, exports and employment generation. Based on available information and knowledge, three manufacturing sub-sectors deserve particular attention by HMG/N, viz. the food, carpet and garments sub-sectors. Details of recommended action are contained in Section 3.2. Below are the main recommendations for these sub-sectors as well as some key interventions in other manufacturing sub-sectors.

The Food Sub-Sector. In the food sub-sector, the implementation of the Agricultural Perspective Plan is a prerequisite for long term-development. The Agricultural Perspective Plan is, however, a costly scheme. Fortunately, HMG/N has at its hands also much less costly means to foster the food sub-sector. This sub-sector is the most over-regulated sub-sector of all with numerous distorting HMG/N policies in place. A systematic deregulation and abolishment of distorting HMG/N policies would be the most efficient means to foster private

investment in this sub-sector. The intervention in this sub-sector would in fact be more ”non-intervention”.

The Carpet Sub-Sector. The carpet sub-sector is most likely the manufacturing sub-sector in which Nepal currently enjoys its strongest comparative advantage. The industry and its associations have, however, not been able to adequately draw upon its comparative advantage and have only marginally exploited the global market for carpets. A strong support, with donor assistance, has therefore been proposed to strengthen the sub-sector associations in assisting it members, particularly in product designs and export marketing.

The Garment Sub-Sector. The garment sub-sector, despite current problems, is also likely to represent a potential long-term growth industry. The industry would, however, need strong and urgent support from HMG/N in, *inter alia*, the fields of negotiation of international trade agreements, training incentives, improvements in the duty draw back system and an export credit guarantee scheme.

Other Sub-Sectors. In the tobacco sub-sector, HMG/N may consider to divest its last state-owned enterprise enabling it to pursue, without being biased by commercial interests in the industry, whatever socio-economic policies it finds appropriate.

In the leather, leather products and footwear sub-sector, the implementation of the Agricultural Perspective Plan in respect of livestock development is a prerequisite for a healthy future development of the sub-sector.

In the wood and wood products sub-sector, enforcement of laws to halt further deforestation, private sector investment in organized forestry management integrated with wood processing and development of village management systems of natural forests are prerequisites for increased production of wood and wood products. Until this is achieved, Nepal would reap the most advantageous benefits from its scarce timber resources by utilizing them in labour intensive activities such as carpentry, joinery, wooden furniture manufacture and handicrafts.

In the paper and paper products sub-sector, HMG/N could assist by encouraging mergers towards larger and more efficient production units able to reap benefits from economies of scale.

In the publishing and printing sub-sector, HMG/N could remove a negative trade protection by lowering the import duty rates for higher quality paper not being produced in Nepal, enabling the industry to compete in the field of higher quality printing works now being printed abroad.

In the electrical and electronic products sub-sector, HMG/N may assist in attracting foreign investment for local assembly of semi-conductors by significantly improving the business environment for foreign investors.

In addition, HMG/N also has the means to facilitate the development of manufacture of jewellery and other handicrafts with promising potential regarding both employment and exports.

3.3.3.3. Summary

The sub-sectoral reviews in the present chapter have revealed an overall strained situation and unfavourable development trend for most manufacturing sub-sectors in Nepal. Many exogenous factors contribute to this undesirable state of conditions. However, the analysis has also demonstrated that HMG/N has at its own hands the requisite instruments to significantly change the future course of industrial development in Nepal. By appropriate policy interventions, HMG/N can nurture the development of seemingly promising sub-sectors, can facilitate necessary restructuring of other less promising sub-sectors, and can also create a business environment where private sector initiatives can lead in new directions yet unforeseen.

4. Institutions

4.1. Introduction

The objective of this section is to identify institutions in the public and the private sector supporting industrial growth, assess them and recommend measures to enable them to support a faster industrial development program. Given the importance of the education, science and technology and the IT sector, a special long section is devoted to these topics (Section 4.10). The analysis is based on review of various studies, reports and documents as well as on interviews conducted with selected public and private sector representatives.

Strong institutional support is one of the prerequisites for sustaining industrial development. The institutions can play a catalytic role of creating enabling environment and facilitating and supporting the growth process. Supporting institutions need to be efficient, capable and contributing. A number of institutions both in the public and the private sector have developed, but they do not seem to be capable enough and adequate to support industrial growth in the country. Public institutions appear to be at crossroads between the supporting and facilitating role and the regulating role. More importantly, decline in motivation, limited resources and lack of commitment appear to have eroded the confidence in public institutions. In the situation, industrial development will be very difficult. Hence, institutional strengthening is an important foundation for ensuring faster growth of the industrial sector.

Institutional metamorphosis is a pre-requisite for sustained growth of industries. The government should take initiative to bring this change. Meritocracy is the only option to promote a culture of professionalism. Public institutions must reduce their licensing and regulating roles and transform to facilitating roles. The institutions should work to welcome both foreign and domestic investors rather than harass them. In view of the balance of advantages and disadvantages with respect to competing countries, Nepal will have to out-compete them in institutional support for the productive sector.

Since there are numerous institutions relevant to the industrial sector, this chapter will only give a brief description of these institutions and highlight the important issues and recommendations for each of them.[33]

4.2. Government

For strong and sustained coordinated action towards long term industrial development, a powerful government institution should be created that can deliver implementation of decisions taken. At the same time, institutional arrangements should be made for meaningful and committed consultation on industrial development with the private sector in the form of a strong Economic Development Board as practiced in successful industrializing countries.

At present, the major macroeconomic parameters and policies for industrial development are determined outside the Ministry of Industry, Commerce and Supplies by the Ministry of Finance, the Central Bank, and the NPC. Examples are the real exchange rate, interest rates and tariffs, each of these of immediate importance for manufacturing competitiveness. The

[33] For a detailed description of the institutions see the background paper by Pushkar Bajracharya

discussion below will reveal the present dispersed nature of authority with regard to decision making for industrial development.

4.2.1. Ministry of Industry, Commerce and Supplies (MOICS)

MOICS is the key institute for designing and implementing industrial policies along with its subsidiary departments. It is the main agency responsible for planning, monitoring, coordination and policy formulation pertaining to industrial development in Nepal.

MOICS has six divisions:
- Supplies and Public Sector Industry,
- Administration, Foreign Investment and Industrial Promotion,
- World Trade Organization,
- Export Promotion, Trade and Transit,
- Planning and Management Information, and
- Technology and Environment. The MOICS lacks strong capability for independent analysis necessary to monitor and assess industrial policy and evaluate impacts.

The operational level activities and implementation of policies and programmes are carried out by departments and offices associated with MOICS. These are:
- Department of Industries (DOI),
- Department of Cottage and Small Scale Industries (DCSI),
- Nepal Bureau of Standards and Metrology (NBSM),
- One Window Committee, and
- Company Registrar's Office.

4.2.1.1. Department of industry (DOI)

DOI is the main operating and implementing wing of MOICS. It implements policies and acts, registers medium and large scale industries, monitors and evaluates industrial activities and looks after environmental standards. DOI executes policies and conducts industrial administration activities. It also operates as the secretariat of the Industrial Promotion Board.

Apart from administration, there are five sections at DOI:
- Registration and License,
- Industrial Incentives Administration,
- Technology and Environment,
- Foreign Investment and Technology Transfer, and
- Planning and Monitoring.

DOI does not appear to have necessary resources, both physical and human resources, to undertake given responsibilities. It is reported that it has not been able to undertake any notable monitoring and evaluation activities. Similarly due to confusion in roles with the Ministry of Population and Environment (MOPE) not much headway could be made in pollution control efforts.

4.2.1.2. Department of Cottage and Small Scale Industries (DCSI)

DCSI is entrusted with regulatory and supportive functions for the development and promotion of the cottage and small industries sector (CSI). It basically carries out two types of activities - promotional and industrial administration. Under promotional activities it prepares industrial schemes, conducts technological feasibilities, extends consultancy and imparts skill training. Industrial administration activities include providing license,

registration and renewal of industries and providing facilities. DCSI looks after 27 districts mainly in Terai and Kathmandu valley.

Cottage and Small Industries Development Board (CSIDB) is established to provide effective institutional support for promotion and development of the CSI sector. It also operates similar functions as DCSI and it covers 48 hill districts. CSIDB also suffers from inherent weaknesses of DCSI. Further, the organizational structure is not reported to be compatible as per the objectives and it has to operate in difficult hill districts (IEDI, 1998).

4.2.1.3. Nepal Bureau of Standards and Metrology (NBSM)

NBSM is responsible for defining standards in respect to all products produced or imported in the country, issuing Nepal standards and upgrade and promote quality. It has an important role of monitoring and quality and standards. It also provides technical help to upgrade the quality of product. It also performs the task of inspecting the quality, certifying the product in compliance with required standards and accrediting laboratories. It does have physical and technical capability but other resources including finance are reported to be limited to ensure, maintain and monitor standard and quality.

4.2.1.4. One-Window Committee

To foster inter-departmental and inter-ministerial coordination and cooperation, the Industrial Policy (1992) has established a one-window system. It falls under the authority of the Investment Promotion Board. The One Window Committee is chaired by the Director general of DOI with joint secretary representation form MOICS, MOF and the chief controller of the NRB. The committee's primary responsibility is to provide tax and incentive related services from one spot and provide license/registration facility from it. The committee is also expected to assist in availing infrastructure facilities like registration of land, electricity, water and telecommunications. In the latter one-window can at best act as a recommendation making body, which is not binding. So, investors are not getting desired services from the one-window. Most of its work refers to duty drawback, tax and incentive related issues. Even in these aspects, substantial delays are noted (Dhakal and Khanal, 2001), although recently specific deadlines are adopted for rendering these services and a new so-called passbook system is introduced.

4.2.1.5. Company Registrar's Office

The Company Registrar’s Office provides the services of company registration, monitoring and necessary advice from a single spot regarding the institutional structure of business, industry registration and the entire company business.

4.2.1.6. Issues

- MOICS cannot independently design incentives and support schemes. These are possible only through coordination or approval of MOF. In many cases, incentives provided by MOICS really have not been able to be materialized. One illustration is the inability to administer duty drawbacks on time. Sometimes, these are reported take in excess of five years (Dhakal and Khanal, 2001).
- The present mechanisms of coordination are either weak or ineffective. In the last decade or so, a large number of bodies have been created like Investment Promotion Board (IPB), Trade Board (TB), one-window committee etc. but desired coordination has simply not taken place.
- Industrial policies, support activities and acts should be reviewed regularly. This is not being done in a systematic fashion.

- Monitoring and evaluation mechanisms are very weak in all respects and among all agencies. There is a considerable need to strengthen the tasks of monitoring in the areas of industry and of assessing the impact of implemented or proposed industry policies. This requires both considerable analytical capability and access to information: the relevant institutions must be strengthened.
- One of the weaknesses is inability to address and respond to needs. A sizeable section of industry is not doing well but no policy initiatives are forthcoming until industries are labelled 'sick' and fall under the sick industry arrangement, which has not yet taken much action.
- Generally, supportive and control functions should be separated. Hence, regulating and controlling agencies like DSM and pollution control does not appear to be compatible in the umbrella of MOICS.
- No specific policies, programmes and activities appear to exist in respect to quality control and standardization due to lack of clear specification of roles and responsibilities. It is not particularly clear when the role of DSM will start. Some legal framework exists and partial responsibility has been bestowed to DSM. However, in the absence of clear mandate and poor institutional development, it does not seem to have been able to operate satisfactorily.
- It is estimated that industrial development in Nepal is associated with pollution and environmental degradation. Full environment assessment (EIA) has to be conducted. For smaller project it is necessary to conduct and initial environmental examination (IEE).
- The Department of Industry has been allocated the responsibility of examining the environmental impact studies prepared in the framework of requests for license. The Department of Standards and Metrology is entrusted with the task of preparing pollution standards. At this stage the priority tasks appear to be the formulation of practical effluent standards and to make these standards enforceable. The main type of industrial pollution appears to be discharge of effluent in the water system as well as emission of T.S.P. The control aspect should be with the Ministry of Population and Environment while the support could be given by MOICS.
- The government policy of establishing industrial estates for promoting industries in particular locations does not appear to be successful. At present a total of 355 industries are found located in 9 industrial estates. The industrial estates located in Katmandu (Balaju and Patan) and Hetauda are more or less fully occupied. Occupancy of most industrial estates outside Kathmandu is low. Industries located in industrial estates obtain substantial implicit subsidies in the form of very rental fees for the land. However, a disadvantage of occupying rented land and buildings is that they cannot be used for bank credit. High level of industrial dispute is another problem cited about the industrial estates.
- Discussion with the members of IPB, DOI and the private sector have revealed that foreign investors are bogged down by a number of deterrents:
  - They cannot identify sound partners.
  - Nepalese partners hesitate to make their part of investments.
  - Getting appropriate land is the most critical problem. Due to lack of industrial zoning, they have to get land with difficulty and in most cases facilities needed may not exist. So, they put pressure on one-window committee to supply or aid in arranging requisite infrastructure and facilities, which it simply cannot do. Foreign investors get bogged down in such activities rather than in institution building and creating industry.
  - Delays in approval because of irregular meetings of the IPB and lack of consensus in the one-window committee delay the processes and in certain cases perceived

advantages disappear before establishment. It may also be pointed that many foreign investors also come from either personal linkages or short-term perspectives.

4.2.1.7. Recommendations

- MOICS must be able to implement incentive and support schemes independently and incentives should be automatically available by clear and transparent rules.
- All agencies involved particularly MOICS, DOI and DCSI should be strengthened by incorporating necessary expertise and availing financial resources to review, implement and monitor industrial policies and industrial development.
- Institutions like DCSI and CSIDB should concentrate more on promotional activities. The present concentration on skill upgrading and training could be rationalized and made functional to skill development for industrial labour in collaboration with the private sector through in the job training and involvement of private sector training institutions.
- Clear definition of roles particularly in respect to designing environmental standards and enforcing them should be made between MOICS and MOPE with the role of control with MOPE and the role of facilitation with MOICS.
- One-window committee should be strengthened by incorporating infrastructure agencies and make their representation binding and effective.
- In industry and trade policy formulation and implementation, following approaches should be adopted:
  - NPC and MOICS must coordinate and conduct joint exercises to review and incorporate changes in industry and trade policy.
  - In case of need, there must be a mechanism to co-opt experts and private sector inputs in such review or reformulation exercises.
  - Proper discussions with private sector must be ensured before making any such changes. There must be a mandatory mechanism of incorporating private sector inputs in such reviews and policy changes.
  - Periodic assessments and evaluations of policy impacts must be ensured making it a routine exercise.
  - DOI must be strengthened enabling it to provide inputs for all decisions.
  - Policy implementation guidelines, and monitoring standards and guidelines must be clearly defined.
- Foreign investment needs to be facilitated in following ways:
  - One-window system must be strengthened as above.
  - IPB should meet frequently or substantial activities delegated to concerned agencies.
  - Industrial zoning system should be developed and the government should be able to assist in availing land to foreign investors.
  - Infrastructure and support services should be improved (see also Chapter 5).
  - Simplifying procedures and reducing unnecessary requirements must eliminate delays.
  - As the experience in many other countries shows, what is important for attracting FDI is not so much the level of fiscal and tax concessions, but ensuring an attractive enabling environment where the costs of doing business are transparent and predictable, where business-related decisions can be transacted with efficiency and speed (World Bank; 2000 a).
- Micro, cottage and small industry development require following institutional support:[34]

[34] While recognizing the significance of the micro-enterprise sector in Nepal's manufacturing industry, the Report does not adequately cover that very specific issue; it recommends instead that HMG/N initiate a comprehensive review of the sector with a view to designing supporting policies addressing its particular needs.

- Village development committees (VDCs) should be made responsible agencies to register small, micro and cottage industries. The District Development Committees (DDCs) and DCSI/CIDB should register small industries. The local bodies should inform such registration to DCSI or responsible district agencies.
- DSCI and CSIDB should give primary focus to development and promotion of the CSI sector rather than providing skill development programmes.
- To this end, DSCI's and CSIDB's capacity to monitor, supervise and regulate should be improved.
- Mechanisms for de-registration of non-performing units should be established.

4.2.2. Ministry of Finance (MOF)

MOF is responsible for all policies regarding revenues, formulates and implements annual budgets, allocates resources and monitors all activities – development or otherwise. A revenue perspective guides most of the decisions of MOF and hence sectoral interests are easily overlooked.

The major gamut of revenue policies includes income tax rates, tariffs, excise duties, and transparent forms of taxes.

- The tax rate was reduced to 25 percent for corporate organizations with incentives for public limited companies. The 1992 Industrial Enterprises Act gave tax holidays to new industries but the 1996 Act repealed all such concessions limiting to a very small segment that too at partial rates.
- Value-Added Tax (VAT) has been introduced as a transparent tax mechanism replacing sales tax, which used to be charged at the source.
- The tariff rates were simplified and reduced while the Harmonized Classification System was adopted. In respect to export duties, only nominal service charges are made for recording purposes and the rates are harmonized.

With regard to industrial development three of its functions stand out in importance: (a) its role in deciding on tariffs (the Tariff Board, with participation of the private sector and assisted by professional expertise, advises to review and determine tariff), (b) its influence on macroeconomic and monetary policy, affecting competitiveness of industries through the real exchange rate and interest rates, and (c) its role in customs administration.

4.2.2.1. Issues

A number of issues have been raised (World Bank 2000; World Bank 2000a):

- Poor utilization and sometime misuse of resources exacerbate the problem of resource shortfall further.
- Institutional mechanisms are weak suffering from high level of political interference, poor systemic structure, lack of requisite resources and low level of efficiency and morale.
- There is a pronounced deficiency in coordination mechanisms and instruments and mechanisms designed have fallen far short of the need. Coordination among even pivotal institutions like MOF and NPC and MOF and line ministries appear to be poor.
- Poor monitoring and evaluation mechanisms aggravate the problems.
- Taxation is still a serious bottleneck despite introduction of new and transparent measures like Value Added Tax, self-assessment schemes etc. It is argued that tax and custom administration is only concerned with raising revenue without concern to promote industrial development. Lack of coordination between DOI and various tax agencies does not help the matter.

- Industrial operations are still adversely affected by how the Customs Department handles both imports and exports. On the import side a major problem is the practice of arbitrary valuation of imports on the basis of which import duties are determined despite efforts to improve upon it. On the export side, there is scope for improving the operation of both bonded warehouse and duty drawback facilities. The statistical database of the department is also very poor.
- Valuation practices can be improved by developing an up-to-date database including international prices of most frequently imported items, as well as establishing contacts with appropriate organizations abroad for checking going prices for specific commodities. There is also a need for training of customs officials in the application of more objective valuation practices.
- In the area of bonded warehouse facility management the priority seems to be improvement in verification procedures to determine the use of materials in exported garments. There is also need to determine the possibility of extending the facility to other export industries. With regard to the duty drawback facility, efficient implementation procedures still remain to be developed, including the introduction of appropriate input-output coefficients and the design of effective application and processing procedures.

4.2.2.2. Recommendations

- Corruption and misuse of authority should be addressed to build up efficient and effective institutions, in particular to the customs system under the Ministry of Finance. Involving an international agency could be considered (see Chapter 3, Section 3.3.3).
- Tax Simplification:
  - Clear and detailed guidelines must be provided to ensure removal of discretion.
  - Tax regulations should be made clear and uncomplicated. Procedures and clarity should be further improved.

4.2.3. Central Bank: Nepal Rastra Bank (NRB)

NRB is the central bank of the country with the basic responsibility of designing, implementing and monitoring policy, supervise banks and operate as the central bank. In view of its role, it is a major institute influencing industrial development in the country. For industries NRB is important from the following perspectives:

- NRB is the chief architect to monetary, credit policy and exchange rate policy. Together with fiscal policies, mainly determined by MOF, it determines important macroeconomic variables such as exchange rate, interest rate, and the rate of inflation.
- NRB also influences trade activities. For specified activities NRB permission is required to open letter of credit. Industries, thus, may have to obtain NRB permission for importing.
- NRB influences commercial banking operations through guidance on interest differentials/ margin (between deposits and loans), and cash/liquid ratio variations. Thus, it can significantly influence investment climate in the country.
- More directly in respect to industrial, development, sick industry rehabilitation programme has been entrusted to NRB. It has developed guidelines regarding sick industry and developed programmes for facilitating and rehabilitating sick industries through concessionary interest rates and credit measures. The role of MOICS has not been clearly defined. Further, to what extent, such industries should/would be rehabilitated also do not appear to be clear.

4.2.4. National Planning Commission (NPC)

NPC is the highest policy making body of His Majesty's Government of Nepal. It has been entrusted with the task of formulating medium term and long- term plans and design development activities. Currently NPC formulates periodic plans as well as development activities in coordination with line ministries. Annual three- year rolling development programmes are approved by NPC. It also formulates policies in both macro-policy level as well as sectoral policies in consultation with concerned agencies. NPC basically acts as an expert advisory body.

NPC formulates plans by estimating broad macro-economic indicators and framework for the ensuing period and formulates an approach paper defining basic goals and targets, policy directions and strategies. The line ministries develop the detailed plans and programmes based on the given framework and NPC finally approves and prepare development plans.

Similarly, it formulates annual/three year rolling budgets in consultation with concerned ministries. All line ministries present development programmes on annual./three year basis. NPC approves it in conformity to periodic plans- NPC, thus, plays a significant role of approving development budgets. The total budget is prepared by MOF and NPC. The former approves regular budget while the latter approves development programme and budget.

Structurally, NPC is at par with the ministries. For instance, NPC directly manages technical assistance and thus, in respects acts as a sector ministry. But it has a special role outside the Ministry structure through its task of monitoring and evaluating development activities and coordination of national policies. Thus, NPC also acts as a supervisory unit to the functioning of line ministries.

NPC has made significant contributions in policy formulation. It was instrumental in initiating economic reforms of early nineties under which new industrial, trade, fiscal financial and privatisation policies were developed. Since the Ninth Plan, NPC is focussing on poverty alleviation as the primary objective of development activities. With the entrusting of authority to approve development programmes, there are considerable links between the roles of NPC and MOF.

- NPC prepares the annual development plan on the basis of submissions from line ministries, which then becomes the basis of the development budget.
- Both NPC and MOF have a responsibility for budget monitoring though the former is more concerned with physical achievements of development projects,
- Both require and are taking action to establish a project database;
- NPC is responsible for establishing three year rolling budgets, but the MOF is responsible for annual budgets.

Due to the diverse operation of NPC and MOF there may be gaps and duplication. If so, it will create more dilemmas and discrepancies. Besides this, NPC does not seem to be able to develop necessary supervision and monitoring capabilities. Although all sectoral ministries/projects need to submit quarterly progress reports to NPC, it does not seem to be able to verify and cross check reported project achievements.

4.2.4.1. Issues

- It is alleged that NPC acts as a super ministry.
- There is a lack of clarity in roles. It is not clear whether NPC should stick to advisory role or act as a sectoral ministry.

- Budget formulation becomes a complex activity due to work divisions between NPC and MOF.
- However, NPC has virtually no role in implementation and hence there is a persistent gap between plan formulation and implementation.
- Lack of adequate monitoring and evaluation capability restricts NPC to goad sectoral agencies to attain defined goals.
- In certain quarters, NPC is also viewed as an additional hurdle interfering in the activities of ministries.

4.2.4.2. Recommendations

- There is a need for a strong institution capable of coordinating policy implementation. NPC's role should be redefined as an Economic Development Commission in charge of policy formulation and ensuring implementation. If this is not feasible then:
    - NPC should concentrate in providing advisory and expertise services.
    - The role of NPC, MOF and other ministries should be clearly distinguished.
    - It must enhance its capability to monitor and evaluate projects in physical terms and its ability to audit physical achievements and initiate corrective actions for deviations.

4.2.5. Ministry of Population and Environment (MOPE)

MOPE is a relatively new ministry instituted in 1995. Its activities include formulating environment policies, taking initiatives to control pollution, assessing environmental impacts and monitoring environmental norms and activities.

Various organizations are mandated to implement environment conservation activities. These include the Environment Protection Council established in 1992, the Parliamentary Committee on Environment Conservation, the Ministry of Forests and Soil Conservation, and the Ministry of Agriculture and Cooperatives, the Ministry of industry commerce and Supply, Ministry of Physical Planning and Works, Ministry of Labour and Transport, and the Municipalities.

4.2.5.1. Issues[35]

The important issues pertaining to these institutions are summarized below:

- There is an obvious lack of coordination among the institutions that have direct or indirect responsibility to manage environment and a clear absence of clarity in authority, responsibility and roles.
- Institutions lack resources and investment to take desired initiatives.
- MOPE has not yet defined an overall system of environmental standards but only in respect to vehicular emission, where its implementation is highly limited.
- Environment Protection Council has not met more that two times in almost a decade raising serious doubts about the efficacy of such an institution.
- In certain areas, simply no capabilities have been developed. The concern for environmental management and pollution control is increasing, but it has not resulted in an effective institutional set-up. DOI is entrusted to monitor environmental standards and enforce them but no capability appears to have been created. In the same way, EIA and IEE, which were made essential for registration or issue sing license, are not independently verified and solely dependent upon the client's report. So, most of these

[35] See Chapter 8, Section 3 for more details, issues and recommendations.

have become illusory and no real headway has been able to be achieved in managing and controlling pollution.

4.2.6. Labour Administration[36]

Sound industrial relations and an efficient labour administration play a significant role in the industrial development. The major government institutions are Ministry of Labour (MOL) with its Department of Labour (DOL). Other labour related institutions are the Central Labour Advisory Committee, the Minimum Remuneration Fixation Committee, Labour Advisory Board, Labour Relations Committee and Labour Courts.

4.2.6.1. Issues and Problems

The major issues and problems relating to labour administration and industrial development are listed hereunder:

- There appears to exist a complete gap between industrial and labour administration, as no coordination mechanism exist at present. Labour Advisory Committee does not seem to be active as it should be in promoting coordination.
- The labour administration appears to be more involved in human resource development and skill upgrading activities.
- The structural focus also clearly indicates the absence of desirable focus on industrial relations and trade union issues. Neither the labour appears to be protected nor the investors consider the present environment as investment friendly.
- The existing capacity of the administration is inadequate to supervise and monitor industries.
- Major issues with respect to the labour market are:
  - There is a major deficiency of skilled and trained manpower for both the manufacturing and services sector especially for the former. Manufacturing industries have to train their own manpower (IEDI, 1998). A lot of duplication exists in skill development programmes but the existence does not seem to cater to the needs of large-scale industries (ILO, 1990).
  - Closure of enterprise and reducing labour force are very difficult in Nepal. The law does not spell out exit policies. So, hiring labour is meant as taking a long-term risk. As a result industries also tend to appoint on temporary or contractual basis to escape from this permanent burden.
  - Politicisation of trade unions causes industrial relations disputes and problems.
  - Employee education on issues like productivity improvement, environment management and sustainable development does not exist. Educating and awareness building programmes are required.

4.2.6.2. Recommendations

- The government must assume the responsibility to improve the industrial relations environment in the country. A mechanism should be developed to find compromise solutions between the labour and industry in the interest of both groups. Thus, the labour administration must focus on industrial relations, dispute minimization, addressing problems and gaps should be enhanced.
- The Ministry of Labour must establish a separate section to look into labour market issues and operations including the domestic labour market.
- It must develop a policy for developing industrial labour force rather than carry out skill training activities. Existing mismatch between demand and supply must be removed. All

[36] See Chapter 8, Section 1 for more details, issues and recommendations.

skill training programmes should follow the basic principle of relevance, efficiency and effectiveness. The whole skill training system is due for a fundamental overhaul.
- Labour law should be amended to make hiring and firing easier by defining clear terms and conditions.

4.3. Private Sector Institutions

A number of private sector associations have been playing critical roles to promote and strengthen industrial development in Nepal.

4.3.1. Federation of Nepalese Chambers of Commerce and Industry (FNCCI)

FNCCI is an apex body of private sector in Nepal operating as an umbrella organization of chambers, commodity associations, bi-lateral chambers and leading public and private sector enterprises. Its activities include providing information; extend advisory, consultative, promotional and representative services to business and government; and organizing training, workshops, and seminars on a regular basis either to promote business or industry or address to their problems and issues. The total number of members of FNCCI has increased from 27 in 1965 to 567 in 2001. Presently its members constitute of 85 district/municipality chambers covering 69 of the total 75 districts of Nepal, 50 commodity/sectoral associations, 423 leading public and private undertakings and 9 bi-national chambers.

At present, FNCCI is represented in an over 50 government agencies, consultative mechanisms, semi-government and other agencies and forums. It has obtained membership with seven international agencies viz. International chamber of commerce, International Organization of Employers, SAARC Chamber of Commerce and Industry, Asian Trade Promotion Forum, World Assembly of Small and Medium Enterprises, Standing Committee for the Chamber of Commerce and Industry of Group-77, and Confederation of Asia-Pacific Chamber of Commerce and Industry.

FNCCI has been actively cooperating with a large number of foreign/international organizations in carrying out various activities for the promotion of business and industry. With their assistance it has established the Agro Enterprises Centre, Industrial Relations Forum, Small and Medium Enterprise Development Project, Technology and Trade Information Project, Environment Cell, Road Management Committee and Finance Reform Implementation Committee.

Its activities clearly reveal that the scope and contribution of FNCCI are increasing at a fast pace. It is extending vital services to the community not only to protect their interest but also to enable them to be more competitive and enhance their capability. One of its notable contributions has been to assist in trade treaty dialogues with India culminating at the historical trade treaty of 1996.

However, it does not seem to have taken initiatives to inculcate professionalism in the business and industrial community of the nation, which is vital for modernization and efficiency improvement of the Nepalese business and industry sector. FNCCI combines commercial and manufacturing interests. These are often in direct conflict with one another. A final issue may be how far these activities would be sustainable without financial support from donors and consequently, to which extent its activities reflect real market demand.

4.3.2. Federation of Nepalese Cottage and Small Industries (FNCSI)

FNCSI is the apex body of cottage and small industries sector established in 1990. It basically aims at protecting the interest of the cottage and small-scale industrial sector (CSI sector) and promoting the sector in the country. FNCSI has 28000 general members (Cottage and small industries registered with HMG Nepal) including 6500 women entrepreneurs covering 68 of the 75 districts of the country. It has 14 institutional members and 6 autonomous district association members.

Its activities include providing advocacy and consultancy services, market facilitation and promotion services, disseminating business information, contributing to human resource development programmes and conducting interactive programmers.

Currently, it is operating in cooperation with various agencies like GTZ, Small Industry Promotion Program-Swiss Contact, ILO, Small and Medium Enterprise Development Project, Micro Enterprise Development Programme, Cottage and Small Enterprise Development Board and Export Promotion Board.

Within a short period of a decade or so, it has been able to create a niche in the industrial arena of he country. It appears, however, that it will have to make a significant progress in professionalism and capacity terms to be able to usher the cause of the CSI sector and play a catalytic role commensurate to the huge contribution the sector is making in the national economy.

4.3.3. Central Carpet Industries Association (CCIA)

In view of the growth of the carpet industries in the country, an association was formed in 1978. However, CCIA came into existence as a truly representative association only in 1990 coordinating policies and activities between the government and the industry (Trade Secrets 2000). CCIA has been carrying out various activities for the promotion of the industry and its markets in cooperation with various international organizations such as UNDP, UNICEF, UNCTAD, GATT/ITC, ILO, BVIO, Wools of New Zealand, GTZ, JETRO, CBI, APO and USAID/Nepal.

Its major activities include providing business information and consultancy services and initiating activities to promote Nepalese carpet. Some of its achievements included formation of the carpet and wool development board, enhancement in the growth of exports including new market explorations, and efforts initiated to combat the issue of child labour and environment protection. It has represented and lobbied both at national and international level to promote exports of Nepalese carpet and protect its interest. It has also been instrumental in fighting weaknesses and problems within the industry.

4.3.4. Garment Association of Nepal (GAN)

GAN, a commodity association, is playing a vital role for the enhancement of the garment industry in Nepal. It operates as a consultative and advisory body in the national policy formulation to the government as well as FNCCI. It basically works for the promotion of the interest of member institutions through coordinated dissemination of relevant information and providing encouragement and safeguarding the interests of the garment sector. It has developed close liaison with international organizations to strengthen and promote the interest of the industry in Nepal. Some of its activities include issuing of textile visa

recommendation, recommending in opening Letter of Credit, and cooperating in solving issues with respect to labour relations and disputes between importers and exporters. It also assists in quota-management.

GAN so far appears to have succeeded in representing the cause of the industry at various policy-making bodies. But in respect to the phase out of multi-fibre arrangement and post WTO membership scenario, it does not seem to have been able to develop any notable course of action.

4.3.5. Handicraft Association of Nepal (HAN)

HAN was established in 1971 to enhance and promote handicraft industry and trade in Nepal. It helps in improving productivity, exploring market and introducing to the international arena. It also issues certificates and no objection letters for handicraft exporters as specified in the laws. Its activities include consultancy and export promotion services, providing business information and organizing interactive programmes.

HAN has contributed in export promotion and policy formulation efforts of the government. It has also helped to diversify in new areas viz. silver and gold jewellery. However, its role in enhancing exports and developing the industry to its potential appear to be limited.

4.3.6. Issues and Problems

The private sector organizations have been playing important roles in the development of trade and industry in Nepal. However, there are certain issues and challenges, which need to be addressed.

- Nepalese business and industry to a large extent is still operated as family businesses. Changes are occurring but they do not appear to be adequate to generate competitive advantage. There is a lack of transparency in operations. The private sector organizations do not appear to be addressing to such serious issues.
- Activities of the private sector organizations are increasing but they need to be made sustainable. Like in the government activities, the question of what will happen after the expiry of the donor assistance ends persist in almost all initiatives.
- There is a potential to increase inter-industrial linkages in Nepal to generate advantage. However, no such efforts appear to be initiated including by the private sector organizations (Khadka et.al., 1999:50).
- Nepal does not have detailed information on supply and demand for industrial inputs and outputs, authentic economy wide input-output table and the value of national economic parameters. Absence of such information has hindered the selection of right firm, assessment of industrial performance, estimation of the level and nature of assistance required for promotion, and evaluation of backward and forward linkages with other sectors of the economy (Khadka et.al., 1999:50). No efforts appear to have been initiated to meet the gap by the private sector organizations.
- In many consultative mechanisms, the participation of the private sector is minimal. However, no initiative appears to have been taken to increase the proportion of private sector participation.
- The representation of FNSCI can be improved significantly. In the apex committee and consultative mechanism in the industrial sector, IPB, it is not legally represented. However, in the two seats kept for the experts, FNCSI has been represented. The anomaly was not improved even in the reforms made in the Industrial Enterprise Act in 1996. This

is not a healthy situation in view of the significant importance of the CSI sector in the country.
- Despite overwhelming domination of carpet, garment and handicrafts in Nepalese exports, CCIA, GAN and HAN are not represented in any important policy making/consultative bodies.

4.3.7. Recommendations

- The private sector organizations should work towards the enhancement of competitive advantage of the industrial sector. For this they should identify areas of competitive advantages for the Nepalese industrial sector in the domestic market as well as the international market; ways of improving inter-industry linkages; introducing and strengthening professionalism, human resource development and strategic capacity building in the private sector.
- FNCCI must find a way to separate commercial from manufacturing interests.
- FNCSI must be represented in necessary policy making and consultative bodies legally duly recognizing its importance.
- FNCCI and FNCSI should jointly develop an information system on available and appropriate production technologies with their investment, cost, input and output ramifications.
- A proper role and recognition must be given to representing important bodies like CCIA, GAN and HAN in consultative mechanisms.

4.4. Trade Unions[37]

Trade Union movement in Nepal started along with movement for democracy in Nepal in the forties. During the Panchyat period, all independent trade unions were declared illegal and a government-sponsored trade union was instituted. After the restoration of democracy, a large number of trade union groups emerged. Presently, there are three major trade union federations only:
- GEFONT: General Federation of Nepalese trade Unions
- NTVC: Nepal Trade Union Congress
- DECONT: Democratic Congress of Nepalese Trade Unions.

From the union perspective, the major issues are
- Continued deprivation of labour rights, welfare and amenities,
- Increasing employment of non-Nepalese labour to counter labour laws.
- Persistence of exploitative practices, reluctance to share benefits and lack of transparency.

According to Mr. Budhi Man Gauchan(1997), the major features of industrial relation environment are:
- Lack of general understanding of laws and rules,
- Low priority to industrial relations,
- General lack of trust and understanding between trade union leaders, labour leaders and employers/managers.
- Predominance of family-operated enterprise and lack of modern management practices.
- Tripartite relations and consultations usually influenced by political or economic pressure groups.

[37] See also Chapter 8 on Trade Union Membership

4.4.1. Issues

The following issues may be deduced from institutional perspective in this respect:

- Existing mechanisms for consultative processes between industrial and labour administration and agencies are weak.
- The environment of industrial relations is characterized by lack of trust and the prevailing institutions and instruments do not seem to be able to address the issue
- There is need to give concerted attention to improving industrial relations environment for the promotion and the development of the industrial sector in the country.

4.5. Consultative Mechanisms

Various bodies have been created as major decision making bodies as well as consultative mechanisms. The two prominent examples are Industrial Promotion Board and Trade Board.

4.5.1. Industrial Promotion Board (IPB)

The Industrial Promotion Board existed already in the eighties and the Industrial Enterprises Act (1992) reinstated the Board as the highest policy making board in the industrial sector. Basically, IPB does not seem to have been able to attend to critical issues of industrial development.

4.5.2. Trade Board (TB)

The Trade Board has been constituted under the chairpersonship of the Ministry of Industry, Commerce and Supplies with representation from related government organizations at secretary level, NPC member and NRB Governor and other representatives from the private sector and professionals.

It reviews the trade structure, gives directives and guidelines in the formulation of trade policies and designing related laws and rules. MOICS acts as the secretariat of the board.

4.5.3. Issues:

The major issues are as follows:

- The composition (persons at the highest level) makes it difficult to organize meetings as and when needed. Considerable gaps are noted in the organization of meetings delaying decisions. The trade board has not met for a long time.
- Adequate time generally is not given effecting the decisions. Generally in meetings no serious discussions and analyses take place.
- Private sector participation (in terms of the number of representatives) should be increased to make the process truly consultative.
- It must be able to oversee the implementation and take corrective actions. In the present set-up, this hardly seems to be feasible.
- The interests of the manufacturing sector are not addressed properly with diverse representation.
- IPB is mostly engaged at approving licences for local and foreign investments. Very little appears to be done in other respects as an analysis of agenda of the last five years shows. IPB has not been able to discuss pertinent issues relating to policies and the legal framework

- These bodies are also expected to operate as coordinating units. The Act has clearly specified their coordinating roles. In actual practice, however, the gap between MOF and MOICS continues and the coordination between diverse agencies is as serious as ever.
- The bodies operate in a centralized fashion with many decisions needing to go back to the boards.

4.5.4. Recommendations

- IPB must be reconstituted into a powerful Economic Development Board (EDB) focusing on domestic production and assigning commerce and trade a subsidiary role. It should encourage foreign investment, elimination of hassles and problems and creating investor friendly environment. Foreign investors must be made to feel truly welcomed and encouraged. The EDB should have a direct link with a high-level government committee that can implement measures across ministerial boundaries. Experience in successfully industrializing countries should be studied and taken into account.
- In the absence of an EDB, private sector representation in the IPB and TB should be increased possibly allocating half the share.
- The boards should be able to make some binding implementation mechanisms.

4.6. Public Sector Support Institutions

A number of public sector support institutions exist to provide necessary support and create congenial environment for industrial development

4.6.1. Industrial Enterprise Development Institute (IEDI)

IEDI was established in 1996 as an autonomous institute associated with the Ministry of Industry, Commerce and Supplies. Its mission is making contribution to the nation's efforts for sustainable social and economic development, through its enterprise, entrepreneurship, managerial and human resource development activities.

IEDI has been reported to play a crucial support for SMEs. Its training programmes are generally highly appreciated. Despite its noted contribution and accolades showered to it, the critical issue appears to be how to make the institute sustainable.

The Entrepreneurship Development Centre (EDC) falls under IEDI and operates as provider of business development services. Two other projects are also being managed under IEDI: (a) Technology Transfer and Development Project (TTDP) and (b) Institute for Environmental Support (IES) with the assistance of DANIDA supported Environment Sector Program.

4.6.2. National Productivity and Economic Development Centre (NPEDC)

NPEDC is associated with MOICS through its constitution. A national productivity council has also been established and NPEDC acts as the secretariat of the council. Financial viability will be the critical challenge to NPEDC in the near future as private sector institutions have taken a large market share in the area of their competence.

4.6.3. Industrial Districts Management Company (IDM)

The Government has established nine industrial estates in different parts of the country including three in Kathmandu Valley (Balaju, Patan and Bhaktapur). Previously, it was

managed by Industrial Services Centre and later, a new organization, IDM, was constituted to manage industrial estates.

4.6.4. Nepal Trade Promotion Board (NTPB) and Trade Promotion Centre (TPC)

TPC was established in 1971 and is working as the secretariat of NTPB constituted under the Development Board Act 1956. The primary objective of TPC is to promote Nepal's foreign trade through the expansion and diversification of exports, enhancing the export capacity of the country and exploration of export potentiality.

NTPB may also be viewed as a consultative mechanism with due representation of the private sector and professional expertise. TPC is mandated to initiate wide ranging activities including planning and man-power development, trade and product development, market promotion and research, trade information and consultancy services and administrative and publication services.

TPC, at the initial phase, made significant contribution to develop international trade of Nepal. With the gradual growth of private sector and introduction of economic reform measures, the role and scope of TPC appear to be declining steadily. The private sector has moved in all principal areas such as market development, market exploration, new product development and market information. In these respects, organizations like FNCCI, FNCSI, and commodity associations appear to be far ahead of TPC. There is a need for the creation of a new, dynamic and efficient Nepal Trade Promotion Organization with equal partnership with the private sector. TPC is now proving to be a serious financial burden to the government.

4.6.5. Issues

- Sustainability is the critical issue for all these public sector institutions. Many of them might have outlived their use. Necessary changes also could not be initiated making their roles less relevant in the changing situation.
- It must be recognized that all these institutions have made significant contribution in developing high quality person-power.
- These institutes also have not been able to change with the change in times.
- How far their roles are still required is now the issue. Especially, these institutions tend to be vulnerable after phasing out of the donor support.
- Being in the public sector, these institutions suffer from usual syndromes like lack of accountability and commitment, lack of dynamism and initiatives and static organizational structure and operations.

4.6.6. Recommendations

- For most of the business and industry support services the public sector institutions should make way either through larger participation of or privatisation to the private sector. This could be achieved by phasing out subsidies and improving their commercial operations.
- Involvement of Government and donors in the field of business development services should concentrate increasingly on developing and articulating the market for business development services by providing support to private service providers and facilitating and mobilizing demand for private services.

- Where the activities of some institutions are found redundant such as NPEDC, TPC and NTPB, the government should not continue such operations in the present form. Public-private partnership could be developed in these areas. Where this is infeasible, the institutions should be encouraged to earn their own income and/or downsize.

4.7. Financial Institutions

Financial Institutions act as direct support services to industries without the strong financial institutions and their ability to support industries may not be feasible. See Chapter 2 section 2.6.5 for a detailed description.

4.8. General Issues

Some of the general issues pertaining to governance and administration are discussed below:

- The central constraint on Nepal's development over the last few decades has not been the paucity of financial resources, but the lack of effective governance and well functioning institutions. There are many manifestations of the problem viz. weak institutions and procedures, lack of ownership of development projects and programmes, lack of accountability and mismanagement of resources, failure to provide effective delivery of public service, including law and order and the absence of well – functioning judicial system (World Bank, 2001).
- Persistent institutional weaknesses at virtually all levels are a major impediment to effectiveness resulting in deficiencies in all aspects from planning to implementation and monitoring. The key reasons are unmotivated civil service and increased political interference. This has seriously hindered institutional processes (World Bank 2001).
- Corruption is increasingly a pervasive problem in Nepal at many levels (World Bank 2001; ADB 1999). It has seriously eroded the institutional capability and objective performance.
- A critical issue is the inability to develop institutional processes in the public sector institutions. The systems are there but not followed. Personal relationships tend to overwhelm the processes. On top of that, the political environment and resulting influences seriously deter institutions to deliver results in a desired way. Corruption, despite rhetoric and efforts, does not decline. The overall result is inability to obtain defined goals.
    - On the one hand, there is no mechanism to develop high-level expertise in the government institutions and on the other available expertise is not used properly. This prevents public sector institutions from building necessary capacity. Due to a lack of specialization and an attractive promotion system, the scope for developing specialists will be very limited. The issue is lack of meritocracy and a genuine reward and punishment system.
    - Political interference in appointments and transfers has undermined the efficiency and effectiveness of the civil service (World Bank 2000 b). Interpersonal relationships still dominate. Its persistence means that prospects are determined less by performance than by private relationship.
    - Salaries despite recent increases are inadequate. For those posted outside Kathmandu, particularly in the more remote areas, conditions can be arduous. Field service, moreover, removes an individual from Kathmandu and thereby from the orbit of important personal contacts. Personnel evaluation systems, moreover, offer little basis for merit assessment—job responsibilities have not been systematically defined,

complicating any clear understanding of expectations and of whether these have been properly met.
    - This does not augur well to attract the best talents in the public sector institutions.
- Despite efforts to establish mechanisms and institutions, coordination among various government ministries, departments and agencies are far off things. Institutions and agencies like IPB, trade board, one-window committees have been established to establish and promote coordination and cooperation. Implementation is especially difficult if interdepartmental cooperation is required.
- Socio-historical factors are often advanced as a prime reason for poor civil service performance in Nepal.
- Poor programme implementation is also related to the Government's tendency to attempt more than limited budgetary and manpower resources permit, a problem emanating from established planning and programming procedures. Any project undertaken in Nepal has to be included in the Five-Year Plan; making mid-plan exceptions is a complex affair. Line ministries have therefore tended to submit for inclusion more projects than they are able to manage, and usually enter all those for which donor funding might become available (a process exacerbated at the central level by HMG's understandable reluctance to forego the prospect of confessional assistance). A strong resistance to prioritising projects is thereby created, and has been reinforced by an absence, until recently, of any mechanism for systematic and consistent comparison of economic and other benefits between projects and across sectors. A cycle of over-commitment, under funding and/or understaffing and ad hoc arrangements for obtaining resources during implementation is the result. The convention whereby donor-finance for recurrent expenditures is included in the development budget has made it almost impossible to budget organization and management accurately, causing under-budgeting on the O & M account and sustainability problems once donor commitments to an activity come to an end.

4.9. General Recommendations

Government needs to be competent, focused and dedicated. Thus:

- Bureaucracy must be strengthened. While policies and guideline must come from the political process, they should not be allowed to interfere bureaucratic processes except in case of breach of operations or violation of policies and guideline. Political interference must be eliminated. Human resource upgrading is required and there should be a system of retaining such manpower. The existing regulations do not easily allow for merit-based promotions. Adequate incentives should be given to motivate personnel along with clear definition of their roles and responsibilities. A merit-based, performance oriented reward/promotion system should be introduced at all levels. The right person must be placed at right jobs without nepotism.
- While government policies can be well designed, they are often changed, and implemented so inconsistently that they contribute to an unpredictable and risky business environment. In addition, manufacturing sector is suffering considerably from excessive government red tape and long delays in provision of government services. These problems are often compounded by lack of clarity in laws and regulations. The implementation of tax regime, imports and exports regime and labour laws are specific areas that affects the manufacturing sector most, and need to be addressed by the government. The proposed EDC, EDB and APRI would provide leadership in these areas.
- The prevalence of corruption has substantially deteriorated performance and outputs. A political consensus must be build among all parties to make anti-corruption measures effective. Strong political commitment from the top is essential and anti-corruption

programmes should start at the top to be credible. All rules, laws and processes should be made clear, and simple and define elaborately as far as practicable. Discretionary powers in the allocation of incentives must be curtailed to reduce corruption. Transparency should be promoted at all steps.

- The organization structure to facilitate industrial development and deliver required services should be as follows:
  - NPC should be strengthened to enable to coordinate policies and ministries and other institutions and entrusted with the task of monitoring and supervising.
  - IPB and Investment Promotion Board should be made more active to facilitate creation of conducive environment for investment and industrial growth. These should be strong representation of the private sector to enable it to make truly efficient consultative mechanisms. These bodies should under take all decisions pertaining to the industrial development and investment promotion. MOICS and DOI to strengthen these bodies should provide adequate supports.
  - The government agencies should concentrate on core activities to facilitate industrial growth and extend necessary services. Services performed efficiently by the private sector should be left to the private sector.
  - MOPE should be entrusted the task of fixing standards and executing them.
  - NPEDC and IEDI should be strengthened to provide other support services for industrial development. Private agencies should also be motivated to involve in such activities by providing incentives and facilities.

4.10. Knowledge Base for Industrial Development

4.10.1. Introduction

The focus of this section is to highlight the importance of the knowledge base as a catalyst for development of the industrial manufacturing sector. It will discuss education (Sub-section 4.10.2), science and technology (Sub-section 4.10.3) and the role of information technology (Sub-section 4.10.5). Problems associated with the development of the knowledge base for industrial growth and the government initiatives towards this end will be discussed and recommendations will be made accordingly.

The expansion of knowledge through its management within a firm is of fundamental importance for survival and growth. However, substantial research would have been required for an adequate treatment of this area. Since that was outside the scope of this report, this issue could not be covered.

4.10.2. Education

This section will focus on Nepalese formal and non-formal education system and their potential contribution to the knowledge base and human resources development of the country and the government expenditure on education.

4.10.2.1. Education System of Nepal

At the policy, institutional and legislative level all the required measure exist for the efficient development of the education sector as a major thrust sector to the knowledge base generation, expansion and development of manpower to utilize knowledge.

In 1999 Nepal's adult literacy rate is 40.4 percent (percent of age 15 and above) and Youth literacy rate was 58.5 percent (percent of age 15-24) (HDR, 2001). Also, in 1997 tertiary students in science, math and engineering was 14 percent (percent of all tertiary students). This is low even when compared to SAARC nations like India and Sri Lanka as indicated by the Table 4.1 below.

Table 4.1: Comparative Education Indicator for SAARC nations

	Adult Literacy rate (%) (Yr.1970/93)	Primary enrolment (1970/93)	Secondary enrolment (1970/93)	Combined enrolment (1970/93)	Tertiary natural & applied sciences enrolment (as % of total tertiary) for 1992	Public expense in education (as % of GNP) (1970/93)
India	34/51	73/102	26/44	40/55	26	2.3/3.7
Pakistan	21/36	40/46	13/21	19/37	Na	1.1/2.7
Bangladesh	24/37	54/77	Na/19	30/40	25	0.6/2.3
Nepal	13/26	26/102	10/36	28/57	14	0.4/2.9
Sri Lanka	77/90	99/107	47/74	58/66	34	3.8/3.3
Bhutan	N/a/40	$30^{*}/70^{+}$	$2^{!}/6$	7/31	Na	Na/3.4
Maldives	$91^{\#}/93$	146/142	Na/44	Na/70	Na	Na/6.6
Developing countries	43/69	-- --	-- --	46/55	30	2.5/3.9

Source: Haq, 1997. #1985 data, * 1979, +1994, !1980

The education system in Nepal provides facilities at the primary, secondary, higher secondary and tertiary level for lifetime learning. These various layers will be discussed in this section. The problems in each of the levels will also be highlighted.

At the primary level: Children under 15 years of age constitute about 43 percent of the total population. Approximately 928 thousand (out of a total of 2,858,956) children in the age group of 6-10 do not have access to education (based on 1995 population census data). Also, 1994 data show that 63 percent of the children will drop out from primary school before the completion of the primary grades. Only about 37 percent of primary school age children are expected to complete their primary education within a period of 5-13 years. Overall, the number of primary schools increased three fold between 1971 and 1995 (from 7634 to 21473). Between 1991 and 1995 an average of 600 new primary schools were added each year (MOE, 1997).

Some of the problems reported at the primary level are (MOE, 1997):

- The rate of repetition and as well as dropping out is very high
- The rates of promotion-within each primary grade- is very low as well as completion of primary education
- There is gender biased inequality in enrolment (60 percent Boys; 40 percent Girls)
- Schools are ill-equipped both physically and educationally
- On average have only four teachers despite the fact that most of them run five separate grades concurrently
- The mean student/teacher ratio is at 39, which is considerably higher than would be conducive to the educational development of a child at the primary level
- Low quality of education and inefficient supervisory system

Non-formal education (NFE): The NFE programmes organized under State policies, however, are relatively recent in origin. Two types of large scale NFE being implemented:

those that cater to adults and those that cater to school-age children. NFE for adults focuses on literacy, and sometimes links it up with post-literacy as well as skill and income generation. NFE for school children focuses on the basic literacy of children who did not enrol in or dropped out of primary schools.

This activity is more of a priority activity implemented and sponsored by INGOs and NGOs and parastatal bodies as well as the Basic and Primary Education Project (BPEP of MOE has been the main provider of non-formal education to school age children). The adult literacy programme is much larger in scale than out of school literacy programme for children. During 1992-97, nearly 1.4 million people registered in literacy classes, of which 934 thousand acquired literacy (Smith *et al.* 1996). The government (including district) as well as several parastatal bodies, many CBOs, and more than 500 INGO and NGO are involved in the programme (CERID 1997).

Some of the problems associated with this sector included the following:

- There is little sharing of experience and mutual learning among the disparate programmes. The government led NFE Council, has been particularly ineffective. Of late it has assumed an implementation role that is contrary to its role. The participation of local people, political parties, and local representatives and expert bodies in NFE remains neglected, this has laid to failure to materialize in the form of a national movement.
- Concerns have been voiced that significant portion of these NEF educated neo-literate adult's relapses into illiteracy after couple of years due to the lack of use of literacy skills.

Secondary Education: The secondary education system is divided into three levels: the lower secondary (grades 6-8), secondary (grades 9-10) and higher secondary (grades 11 and 12) levels.

Lower secondary: In 1995, 26 percent of all children aged 11-13 were enrolled at the lower secondary level. Number of lower secondary schools increased by more than seven times between 1971 from 677 to 5041 in 1995 (MOE, 1997). Between 1991 and 1995 on the average approximately 200 new lower secondary schools were added each year. The urban areas have been the primary beneficiaries of such expansion.

Secondary education: The number of secondary schools between 1991and 1995 increased at an average of 110 new schools a year. It increased more than five fold from 494 in 1991 to 2654 in 1995. The distribution of secondary schools shows a distinct urban bias and only one sixth of the appropriate age (14 and 15 years) students have access to those secondary school facilities

Higher secondary education: It is a new concept in Nepal. It has two distinct streams: general and technical.

The Higher Secondary Education Board (HSEB) established in 1989 is limited to overseeing the development of the general stream of this level of education. The Council for Technical Education and vocational Training (CTEVT), on the other hand, oversees the development of the technical stream. At present education and training parallel to the higher secondary level in both general and technical streams is also being offered at the proficiency Certificate level in Tribhuvan University. However, the government plans to gradually transfer this level to the higher secondary and the CTEVT.

Higher secondary educational consists of five separate educational streams *i.e*. general, professional, technical, polytechnic and Sanskrit education but only general education with specialized streams in education, humanities, science and management has been instituted. 1997 data indicated that only 40,000 students were enrolled in higher secondary education. In Nepal, Technical education is offered through five approaches:

- To a minimum extent through general secondary schools. It provides students with a general orientation to various vocational areas and practical instruction and skill acquisition are almost absent.
- Under the CTEVT system, there are now nine technical schools in the nine different sub-regions of the country. The schools provide instructions in 16 different skills. Access to these schools is highly limited. In 1996 the 9 CTEVT schools provided training to 100 students (CTEVT 1996). It provided annual short-term training to approximately 6000 trainees on specific trades (CTEVT 1996a). At present 188 technical schools are affiliated to CTEVT.
- Besides Ministry of education other ministries like labour, women and social welfare, industries, communications, tourism and water resources also provide vocational training on related themes.
- Through NGOs and INGO
- Through the technical institutions of Tribhuvan University it produces killed technicians at the post-secondary level.

Tertiary education: Tertiary education is provided through five higher centres of learning: Tribhuvan University, Mahendra Sanskrit University, Kathmandu, University, Purbanchal University and Pokhara University. The extent of access and quality of tertiary education plays a critical role in the shaping of the future of the country for both the human development front as well as creating and expanding the knowledge base for the industrial manufacturing sector as well as for the whole country.

Table 4.2 provides data on number of tertiary establishments in the country. It shows that there are a total of 268 institutions under the five higher centers of learning catering to the knowledge base of our country.

Table 4.2: Number of Tertiary Education Establishments

Universities	Own Campus	Affiliated	Total
Tribhuvan University, Kirtipur	61	161	222
Mahendra Sanskriti University, Dang	12	4	16
Kathmandu University, Kaver	-	11	11
Purbanchal University, Biratnagar	-	11	11
Pokhara University, Pokhara	-	8	8
Total	73	195	268

Source: MOE, 2000.

Tribhuvan University: The TU offers Proficiency certificate, Bachelors, Masters and Doctoral (Ph.D.) programmes in four faculties (Humanities and Social Sciences; management; education and law). Five technical institutes provide degrees in the discipline of medicine, engineering, forestry, agriculture and animal sciences, and, science and food technology. There are four research centres *i.e.* Centre for Nepal and Asian Studies (CNAS), Centre for Economic Development and Administration (CEDA), Research Centre for Educational Innovation and Development (CERID), and Research Centre for Applied Science and Technology (RECAST) with each being a specialty research institute. Table 4.3 provides student enrolment of TU for FY 2055/56.

Tribhuvan University and its academic disciplines contribute to the knowledge base for industrial development through formal and non-formal education and technical manpower need for the manufacturing sectors. As the table indicates in the fiscal year 2055/56 alone some 122957 students were enrolled in different institutions and under different disciplines under the TU academic umbrella. These students (and lately the students of other universities) are the backbone to our knowledge base that will be catering to the manufacturing industries requirement whether it is as technical manpower, skilled manpower, or as those who provide knowledge base services.

Table 4.3: Student enrolment of TU for FY 1999/2000

Institutes	Lower	Intermediate	Bachelor	Degree	Grand Total
Technical	--	9,641	6,706	2,144	18,491
Engineering	--	1388	884	97	2,369
Agriculture	--	130	519	57	706
Medicine		816	402	153	1,371
Forestry	--	207	228	0	435
Science and Tech	--	7,100	4,683	1,837	13,620
Non-Technical	1,142	46,463	40,665	16,196	104,446
Law	--	0	4,655	90	4,745
Management	--	15,010	14,983	6,044	36,037
Education	--	6,339	6,941	1,700	14,980
Art	1,142	25,114	14,086	8,362	48,704
Grand Total	1,142	56,104	47,371	18,340	122,957

Source: MOE, 2000

Other Universities: Other, rather small universities are: Mahendra Sanskriti University (1353 students enrolled), Kathmandu University (570 students enrolled), Pokhara University (608 students enrolled in 8 affiliates), and Purbanchal University (40 students enrolled). Table 4.4 provides student enrolment of these universities by subject. The Kathmandu University is the only private sector university in Nepal, established in 1991.

Table 4.4: Student enrolment Other Universities by Subject, FY 1999/2000

Institutes	Education & Arts	Engineering	Management	Science	Total
Mahendra Sanskriti University	1318	--	--	--	1,353
Kathmandu University	402	121	26	11	570
Pokhara University	--	369	193	46	608
Purbanchal University			40		40

Source: MOE 2000.

In addition, large numbers of Nepalese students receive training in higher learning institutions worldwide especially in the country of USA, Australia, USSR, Bangladesh, Pakistan and India. In 2056 alone more than 1377 students went for higher education to these countries. In 1999/2000 alone more than 40 students went to study medicine, engineering, forestry, veterinary, post graduate courses and pure science in Bangladesh, China, Russia and Australia (Bajracharya, 2001). International scholarships and exchange programmes have provided key support to the development of the skilled manpower requirement of the country as well as has been a key player in developing the knowledge base on Nepal.

4.10.2.2. Education Expenditures

Government investment on technical and vocational education has decreased from 4 percent in 1995/96 to just 1 percent in 1999/00. But overall there seems to be no significant change in the total budget allocation for the education sector, with an average budget allocation of 13.4 percent of the total budget in the past 7 fiscal years. R&D expenditure in the S&T section of the education sector has received the least investment.

4.10.2.3. Problems/Challenges

Some of the problems seen in the secondary and tertiary education sector can be summarized as follows:

- Rather poorly developed technical education system and the low level of student recruitment in that area;
- The qualities of schools are questionable as there is no effective monitoring mechanism on a regular basis;
- The low quality of education has been linked, in turn, to the rapid expansion of the public school system, the highly inadequate physical facilities in most schools, the disjunctions existing between school curricula, on the one hand, and knowledge, attitude and skills required to perform everyday responsibilities during studentship and after school-years, on the other;
- The low quality education has also been linked to the increasing alienation between the school system, and the community, the high level of absenteeism and unprofessional conduct among schoolteachers, the effective school supervisory system, the faculty student evaluation system and a number of other shortcomings.

4.10.3. Science and Technology (S&T)

This section will shed light on the status of S&T in terms of government policies, existing institutions, and problems and challenges experienced in the S&T sector.

In Nepal, science and Technology has yet to receive the due priority it deserves in government initiatives that could be a result of lack of understanding of the role of S&T among all section of public life in Nepal. Therefore it is important to analyse the various efforts in terms of policy and regulatory measures adopted by the government expenditure in S&T and R&D, for the promotion of the S&T sector.

4.10.3.1. Policy

The Ministry of Science and Technology (MOST) was only recently established (in 1996), reflecting a rather late concrete awareness of the importance of Science and Technology. The Ministry's science and technology policy aims to achieve following key aspects related to manufacturing industry and knowledge:

- Achievements in S&T will be systematically applied for the development of the country;
- Manpower needed for development of S&T will be identified, developed and mobilized and efforts will be made to fill up the gap;
- Financial resources and means will be extensively mobilized for the development of S&T and the fields related to it. By the end of 9th Plan provisions will be made for investing about one percent of GDP in the development of S&T;
- In order to develop S&T administrative and legal provision will be made to attract sufficient skilled personpower;
- The application of alternative energy and information technology will be promoted.

The Ninth Plan emphasises mobilizing existing human resources; strengthening institutional and managerial aspect for activating research agencies; attracting the private sector in research; encouraging rural, indigenous appropriate and advanced technology research; and developing the capacity of S&T of the nation. It places special emphasis on the development and application of alternate energy and IT for catalysing the advance of S&T sector.

Problems with S&T policy level is as follows:

- Lack of adequate political commitment and continuity in government has led to implementation problems of the policy as well as various recommendations made by seminars, workshops and conferences organized by the concerned institutions.
- Long-term plans similar to those initiated in the agriculture (APP), forestry and energy sectors have been lacking and this has not provided the vision and a platform for concentrated efforts for the development of S&T
- Lack of clear vision of the role of S&T for the industrial manufacturing sector
- Lack of skilled manpower at the MOST

4.10.3.2. Government expenditure in R&D in the S&T sector

Economic well being of a nation depends upon its capability to apply S&T and the extent of the R&D activities. Developed countries have accordingly invested heavily in R&D activities and reaped its economic benefits. In developing countries like Nepal, investment in R&D activities does not fall under the government priority.

Table 4.5: R&D Expenditure in S&T sector (% of GNP) for Nepal.

Year	Total GNP (Rs. in millions)	R&D Expenditure (Rs. in millions)	R&D Expenditures as % of GNP
1980's Average	65481	146	0.22
1990	135480	377	0.28
1991	152200	559	0.37 (0.25)
1992	174617	834	0.48 (0.37)
1993	203079	822	0.41(0.18)
1994	224399	742	0.33(0.16)
1995	254349	686	0.27 (0.15)
1990 Average	190687	670	0.36 (0.22)

Source: Bajracharya (2001); Adhikary and Ranjit (1987); Ranjit and Joshi (1998)
Note: Figures in parenthesis indicate foreign contribution.

Table 4.5 above provides R&D expenditure in S&T sector for the past 20 years. It is clear that the R&D expenditure has substantially increased since the 80s. In the 1980's there was no foreign contribution but in the 1990's foreign investment has been a major portion of our R&D budget expenditure in the S&T sector. The figures show that R&D expenditures have been on the decline since 1992.

Table 4.6 provides a sectoral overview of R&D expenditure as percentage of the total budget allocated to that sector.

Table 4.6: Research and Development Expenditures in Selected Sectors (1997)

Sector	Total budget	R&D Expenditure as % of Total Budget
Agriculture sector	2356	13.3
Forest & Plant Resources	750	6.1
Industry and Mines	932	26.8
Health	807	1.9
Water and Energy	2992	1.5
Land Survey	152	5.8
Education	2782	1.8

Source: Based on Adhikary *et al.* (1998)

R&D investment in the agricultural sector reached a level of 13 percent in 1997. However, increase in agriculture production has been marginal (Adikary and Ranjit 1998). Most of the expenditure was for the National Agricultural Research Council (NARC), while the largest part was foreign financed.

The impressive investment in R&D in the Industry and Mines sector was mainly for exploratory research. The data also indicate very low investment in the R&D of the water, energy and education sector.

Despite the acknowledgement by the MOST policy paper that it would raise the R&D expenditure to at least 1 percent of GNP within the next five years, the Nepalese contribution in R&D is considered low even by regional comparisons. For example, the ratio of average gross R&D expenditures and GDP (%GERD/GDP) for India and Central Asian Countries stands at 0.6, for north America t 2.5 and Japan at 2.8 which is respectively nearly two and a half time times, ten times and eleven times, that of Nepal (Adhikary *et al.* 1998).

4.10.3.3. Institutions

Gradually a number of institutions were established. Before 1951, the notable institutions of S&T were the Department of Agriculture, a Technical School, the Department of Livestock Services and the Nepal Forest Institute. The National Council for Science and Technology was established in 1976 to coordinate S&T activities in the country. After 1980, several modern S&T institutions were created such as the Department of Irrigation, Hydrology and Meteorology, Geology and Mines, Survey and Medicinal Plants. The Royal Nepal Academy of Science and Technology (RONAST) was established in 1982 to promote and apply science and technology for the all round development of the country. Several research laboratories exist such as the Food Research Laboratory, Forest Survey and Research Laboratory, Royal Drug Research Laboratory, Research Centre for Applied Science and Technology (RECAST), and the National Agriculture Research Council (NARC), while various educational universities provide general and specialized courses in science and technology.

Currently there are at least 42 institutions in the country. The major problems with these institutions are that their activities are limited to basic routine works and carrying out certain services assigned to them. Most of these institutions lack adequate support services and function mostly in isolation without much coordination and collaboration with other like-minded institutions. There were no real practical applications of the research findings by these institutions for the benefit of common people whether it is the poor farmers or the people involved in the manufacturing sector. These institutions operate in a

government/bureaucratic mode and not in a business mode, with the spirit to serve clients of the industrial sector.

The MOST is the focal point for Information Technology, which will be addressed in a separate Sub-section 4.10.5 of this report.

4.10.3.4. Professional Societies

Professional societies are an integral part of the knowledge base for a country. Their contribution in terms of publications, collective activities for awareness building or adoption of new technology, subject specific trainings and the potential advisory role they can play in a certain technology or processes helps to expand the knowledge base of the country as well as the manufacturing industries. So far, their role in policymaking process has not been very strong. A study estimates that, there are about 155 societies that are related to Science and Technology out of which 90 are exclusively related to S&T while the rest are connected to business organizations/social works (Shrestha, 200).

4.10.3.5. Problems/Challenges

To summarize following could be the problems faced in the S&T sector:

- Absence of sound political commitment for the promotion of S&T;
- Large number of small S&T institutes lacking critical mass and (many of them) practical orientation;
- No official government long-term S&T policy;
- Most of the S&T organizations function in isolation. Lack of coordination amongst the implementing agencies has not been able to properly utilize science and technology to increase production and productivity;
- No indication exists that government (or any other agency) will coordinate efforts to strengthen/empower the MOST;
- No serious exercise has been made to assess the kind of S&T manpower that the country needs for all round development as well as for the manufacturing industrial sector;
- Lack of involvement of scientists and technologists in the policy and decision making process in matters related to the S&T sector;
- Lack of national policy to stop the brain drain;
- Inadequate foreign investment to foster the development of the S&T sector;
- Science education has not been given a priority at any level. Quality of labs need improvement;
- R&D in the S&T sector has not received the priority it deserves.

4.10.4. Issues in Education, and Science and Technology

There are various issues in the education and the S&T sector that has been an impediment for the development and expansion of knowledge base and its ultimate utilization for the growth of the manufacturing sector. Some of the industry specific issues are explained in this section.

4.10.4.1. Industry-specific

Human Resource Development: Skilled Labour versus Non-Skilled Labour

The practice of human development it has gained considerable popularity in a short span of time. Many professional organizations have initiated human resource activities in their organizations, which is a positive indication of the application of professionalism within the internal environment, helped by the fact that many colleges here have introduced Human Resource Management in their curriculum.

Table 4.7: Manpower Engaged in Manufacturing Establishments in 1996/97

	Male	Female	Total
Working Proprietors and family members	7,665	1,727	9,392
Employed workers			
A. Operative & Contract			
Nepali/Foreigner	112,482/11,186	38,248/1,035	150,730/12,221or 8%
Total	123,668	39,283	162,951
B. Administrative			
Nepali/Foreigner	17,060/608	864/51	17,924/659 or 4%
Total	17,668	915	18,583
C. Technical			
Nepali/Foreigner	4,788/773	212/9	5,000/782 or 14%
Total	5,561	221	5,782
D. Total (A+B+C)			
Nepali/Foreigner	134,330/12,567	39,324/1,095	173,654/13,662 or 7%
Total	146,897	40,419	187,316
Total persons engaged	154,562	42,146	196,708

Source: CBS Census, 1996/1997.

The poor skill development of the Nepalese workforce shows up in the number of foreign workers in the country. Table 4.7 above shows that the total number of foreigners engaged is on average 7 percent of total workforce of the manufacturing sector. The percentage of foreigners engaged is highest in the technical at 14 percent followed by Operative and contract at 8 percent and administrative 4 percent.

S&T Manpower:
Nepal has been a late starter in the generation of science and technology manpower. In the past the existing S&T institutions had foreign advisors to run these institutions but these institutions have become almost fully self reliant in terms of professional expertise and are capable of managing their affairs with help of indigenous experts (Jequir, 1988). Today, Nepal produces high-level manpower, including PhDs in natural sciences, medicine, agriculture, engineering, forestry etc.

However, with only about 0.4 scientists and engineers per 1000 population (Bajracharya 1998), manpower involved in the Sciences and Technology sector is still very low, even by South Asian standards. Also, with an average investment in less than 0.2 percent of GNP over the decades (Adhikary *et al.* 1998), the investment in Science and Technology is till low for it to make a visible impact on the manufacturing sector and for that matter the national economic development. Table 4.8 shows that even by the standards of our regional neighbours Nepal belongs to countries with very low number of scientific personnel engaged in research and development. This is less than the minimum critical number required for S&T, which has been suggested at 1 per 1000 of population if S&T is to make a visible impact on national development.

Table 4.8: Scientists and Engineers Engaged in R&D in Selected Countries

Countries	Number (per million people)
Japan	5,667
USA	3,732
Germany	3,016
Republic of South Korea	2,636
UK	2,417
Singapore	2,512
Sri Lanka	173
India	151
Pakistan	54
Nepal	22

Source: World Development Report 1998/99.

The total number of foreigners engaged is on average 7 percent of the total workforce of the manufacturing sector. The percentage of foreigners engaged is highest in the technical at 14 percent followed by operatives and contract at 8 percent and administrative 4 percent. Manpower in the S&T sector is very low compared to the total work force this corresponds, it could be inferred, to low numbers of S&T workforce available for the manufacturing industry.

Linkage with institutions

Most of the S&T institutions are bureaucratic organizations involved in protecting their own domain and employees seem concerned with protecting their institution and jobs rather than making the fruits of research and education available for the benefits of the common people and the industrial sector let alone engage in activities for the generation and dissemination of knowledge and information.

In both the education and the S&T sector the low quality of education and inaccessibility of the results of R&D results in the S&T sector indicates that there exists a big absence in linkages between the education sector, S&T sector, common people and the industrial sector.

In both the sectors institutional linkages for the generation and dissemination of knowledge for the country (currently, its benefit for the industrial is not even conceived of) is limited to few independent and isolated activities. No concerted action plan is in place. Definitely, politicisation of these institutions has had a great impact on the existing of weak institutional linkages in the education and S&T sector.

R&D: Industrial sector Vs. the Government

Currently, majority of the R&D activity in the education and the S&T sector and is mostly government sponsored. Involvement of the private sector in R&D in the both the sectors especially for the generation and expansion of the knowledge base and its dissemination is currently non-existent. This could be an area where private sector involvement could lead to the boost in the application of knowledge base for industrial development.

Traditional Vs. New Technologies

Nepal is rich in traditional technologies. Some of the traditional technologies of Nepal are at least two thousand years old. A survey of traditional technologies of Nepal reveal that the country possessed good technical know-how in several fields such as metallurgy, architecture and civil engineering, textile and paper manufacture, dyeing and printing, food technology,

water management, agriculture, pottery and medicine to name a few (Gajurel and Vaidya, 1983).

The contribution of traditional technologies in the overall socio-economy of the country is still significant and cannot be totally ignored. In spite of this fact, it is being felt that not enough efforts are being made to preserve, promote and improve these technologies.

Today Nepal is engaged in hybridisation of crops, adoption of new technologies, alternative energy and fuel initiatives, biodiversity research, biomedical research, health science research (ex. cancer and diabetes research and treatment), adoption/ research of cleaner technologies available for the manufacturing industrial sectors and the information technology has taken the country by a storm and is revolutionizing the way government and private sector business is being conducted on a daily basis.

New technologies specially IT posses the potential to collect and disseminate knowledge to the rural and urban population as well as businesses thus expanding the knowledge base so that future efforts are built upon it.

4.10.5. Information Technology and the Manufacturing sector

In the past decade, the process of globalisation has made the world smaller by integrating markets and brining people into one single umbrella of global economy. This process has been further accelerated by the rapid growth in the information technologies (IT), which has changed the world beyond all recognition. It is difficult to grasp the scale and pace of the changes but IT is emerging as one of the major and the most contributing sector to the GDP of developed nations. It is estimated that the Internet traffic doubles every three months with e-commerce growing by 100 percent a year. International Scenario estimate that (UNDP, 2000):

- The number of Internet users will increase from 50 million in 1997 to 700 million by 2001;
- E-business will contribute 10 percent of the world GDP of industrialized nations by 2005; Internet will influence 25 percent of consumer spending, 70 percent of business-to-business spending by 2004, and 94 percent of all online transactions in these countries (19:1 ratio against Africa, Asia and Latin America).

Similarly, even at the regional level, more and more countries are using IT for the vitalization of their manufacturing industries by promotion of their exports and for conducting electronic on-line transactions. In India it is projected that IT software exports will alone contribute over US$100 billion by 2005 to the Indian economy.

However, despite international and regional boom in IT, the use of IT for promotion of exports of Nepalese products and its application for disseminating knowledge and information to the manufacturing sector is still in its infancy. There are some isolated cases of dot.com and software business with no visible impact on the manufacturing sector. There is no concrete data as to what is the extent of the business these dot.com and software are conducting and contributing to the national economy but it is clear that there is no concentrated efforts from either the government or the private sector to utilize IT for promotion of Nepalese exports as well as vitalizing the manufacturing industry as a tool to disseminating knowledge and information. The World Bank projects that Nepal will be able to export around US$1 billion worth of software in 15 years.

IT can provide formidable and cost effective tools for the development and transfer of knowledge to the manufacturing industries. This section will address IT from the perspective of as a tool for knowledge base management.

4.10.5.1. Background

IT industry and service is understood as encompassing Software Development, Hardware manufacture and assembling, Internet services, Internet content, multimedia production, Data processing, Computer raining, consulting and maintenance. This section will describe IT manpower scenario, government initiatives (policy, regulatory levels) and commitments, importance of IT and problems associated with utilizing it as a tool.

The IT sector in Nepal is still in its infancy. Telecommunication services in Nepal started with the introduction of Magneto sets in 1914 in the form of Private Branch Exchange (PBX). Modern telecommunication did not start until 1963 when the first automatic telephone exchange was introduced. Consistent telecommunications development programmes started with the First Phase of World Bank (WB) credit assistance in 1969. In the government activities, the organized use of computers started with establishment of the National Computer Centre in 1990 (NPC, 2000).

Similarly, the private sector participation in computers started with the introduction of Apple microcomputer in 1982. Currently, the private sector is active in providing skill oriented training in ICT and engaged in the business of data transcription, limited software production and providing other IT services like establishment of cyber cafes around the country. The establishment of CAN in 1992 has provided for the further development of IT in Nepal.

Nepal has an inadequate communication infrastructure with low rates of computer penetration (less than 0.2 percent) and telephone penetration (less than 10 percent). Most of these services are concentrated around the Kathmandu valley and a few other cities like Biratnagar, Butwal and Pokhara. There are only 25,000 Internet users and the software market is not developed. On average only 25,000 PC units are sold in Nepal each year. Any investment in IT has a high up-front cost (NPC 2000). There are no services with local language content. Among rural population, there is very little public awareness of IT. As a result, IT facilities are a luxury, currently accessible only to the English speaking, educated, urban population. There is a major need to make IT available to the non-English speaking masses as well as to the rural areas. Accessing IT services especially by rural people in the form of on-line services (in local language) such as tele-medicine and distant education is still a distant reality.

To date, there are no projects targeting rural connectivity and providing on-line services to develop ICT both as a means and as a tool in Nepal’s development initiatives.

4.10.5.2. IT Education and Manpower

In Nepal there is great demand for skilled systems designers, software developers, systems engineers, communication and network engineers, data managers, data supervisors, computer teachers and skilled computer operators. The number of university graduates in computer related subjects each year is far less than required. IT education and training are provided at formal (school level, polytechnic diplomas, bachelors, post graduate diplomas) and non-formal level (industrial qualification/ on the job-training). Formal and non-formal education is provided through institutions under the Tribhuvan University, Kathmandu University,

Pokhara University and Purvanchal University. So far these institutions have produced about 734 IT operators and are expected to produce 2010 professionals by 2003 (NPC, 2001)

The first IT education was provided to the staff of National Computer Centre (NCC) by the British and US government to assist in the 1981 census. The NCC was the first government institution in the country that generated IT professionals. It provided training to 1000 mid level manpower per year until it was terminated in 1998.

Currently and government sector is offering IT knowledge based programmes and the private sector is offering skill oriented programmes. It is estimated that there are more than 1000 private sector institution (5 in collaboration with the foreign IT companies) offering IT skill training, online testing facilities and distance learning programme (NPC, 2000). There is no quality control on private sector conducted training.

Also, there is not a single IT program, or government initiatives that is catering to the need of the manufacturing industries either in terms of export promotion or providing market related, process related, raw material related or environment related knowledge and information. Nobody knows the exact amount of IT professionals in the country but with the kind of international and regional and national growth that is being observed, it can be assume that there is a great demand for these types of professionals. Experts agree that there is a tremendous market for IT professionals nationally and regionally.

4.10.5.3. Government Initiatives

Realizing the problems associated with this sector, the government has taken various initiatives.

The IT Policy of Nepal is being implementation since year 2000 and other regulatory mechanisms like the IT Act, Strategy and Guidelines are still to be formulated. Also, in terms of infrastructure, there are some institutional structures in place that form part of the regulatory framework for IT. At present, the relevant institutions are not well equipped and sufficiently trained to undertake the task of formulating and reviewing the ICT Policy, Strategy, Acts and Guidelines. Similarly, these institutions do not have the trained manpower to implement and monitor e-commerce, e-governance, distant education and tale-medicine activities; to name a few of the IT related activities that HMG is envisioning launching.

The Ministry of Science and Technology (MOST) is the lead ministry entrusted with the overall responsibility for implementing ICT development in Nepal. The National Planning Commission (NPC) had been active in formulating IT Policy and Strategy. The Nepal Telecommunication Authority (NTA) has been formed as the regulatory agency for Information Technology. The Nepal Telecommunication Corporation (NTC) is responsible for the development of telephony networks.

A high level National Information Technology Development Executive Committee (NITDEC) under the Chairmanship of the Minister for Science and Technology was established in 1999 through a Cabinet decision. The NITDEC formed three sub-committees to facilitate the development of the ICT sector as a whole: Concept Development and Policy Formulation Sub-committee, Cyber Law Draft Sub-committee and the Sub-committee on Information Technology Park.

The Concept Development and Policy Formulation Sub-Committee, chaired by the NPC, has completed its task and produced the National IT Policy for Nepal. The Cyber Law Draft Sub-committee (Chair: Ministry of Law and Justice) that is responsible for the drafting of the Cyber Law has not yet completed its task. The Sub-Committee on Information Technology Park, under the leadership of the Ministry of Science is responsible for the land acquisition and establishing of the basics for the execution and operation of the National IT Park. It has completed the design of the National IT Park and land acquisition for the project is complete.

On the regulatory front, most of the infrastructure needed to sustain IT activities, for example the IT Park, is being developed by the Ministry using government resources, the license for IT related activities is being provided by the NTA and the NTC is dealing with the telecommunication infrastructure. However, the IT Act and Guidelines has yet to be materialized to further enhance the IT regulatory mechanisms.

Policy Level
In the past five years, Nepal has taken serious steps to harness the powers of ICT to meet the development challenges of the country.

"IT Strategy for Nepal: A Preliminary assessment and recommendations" (May 1999) prepared with assistance from the Asia Pacific Development Information Programme (A PDIP), a regional programme of UNDP, is the first policy level document prepared for the organized development of the IT sector. This document recommended that an IT strategy for Nepal for the next 20 years should be formulated. The document further recommended focusing on the following four key phases were identified:

- Prepare a conducive environment for IT business
- Develop a global framework for IT by building the necessary infrastructure to support a North-South, Alternative Information Highway
- Accelerate internationalisation
- Complete Nepal's computerization.

The document has been approved by the NPC as a resource paper but has not received legal status, as the Cabinet of Ministers has not endorsed it. However, the IT Strategy recommendations have been influential in deregulating Internet prices and formulating the IT Policy for Nepal.

The IT Policy 2000 for Nepal has been prepared and endorsed by the government and now is now a legal document. Currently, HMG is working in the direction of preparing the legal framework to recognize digital documents and to protect intellectual property rights, as part of the second phase of work to develop a global framework for IT. The policy elaborates on several institutional, legislative and programme level activities to be carried out for the development of the IT sector.

Institutional Level
At the institution level, to further facilitate IT development, the Policy calls for the establishment of a National Information Technology Development Council (NITDC) and a National Information Technology Co-ordination Committee (NITCC). With the Prime Minister as the Chairman, the NITDC has the authority to review and revise information technology policy, appraise annual progress, solve problems that may arise, and carry out other necessary tasks, as it may deem necessary for the development and expansion of the information technology sector. Similarly, with the MoST as the Chairman, the NITCC has the

authority to carry out research and development (R&D) on human resource and curriculum development, and to improve the quality of computer training operated by the private sector. It will also be responsible for fixing norms, monitoring IT activities and establishing relations with international educational institutions. To date, neither the council nor the committee has been activated.

The Policy also calls for the establishment of a National Information Technology Center (NITC) that would act as the data bank and Information Technology Park Development Committee (ITPDC) to manage and co-ordinate the building of an IT Park, info-cities and info-villages in various places in/through out the country. Similarly, the Policy outlines the need to produce policies and/or review existing policies on e-commerce, e-governance, e-government, national education policy to meet the target of universal computer education by 2020, human resource development, and public-private partnership development. Delivery of on-line services, empowerment of concerned authorities and private sector involvement are the areas of thrust that the government has identified for development in the IT sector. These activities are yet to be materialized.

In academia, ICT is yet to be endorsed by the education policy of HMG. however, both private sector and government universities and training institutes are providing knowledge based and skill based programmes in ICT.

The Policy also mandates the establishment of various key infrastructures such as the National Information Highway, North South Assistant Information Highway, National ICT Center of Excellence and Alternate Information Network using fiber-optic technology together with setting up national and regional IT Parks. The design of the national IT Park and land acquisition is complete. The Asian Development Bank is already helping the MoST with the development of appropriate IT Infrastructures. Support for the establishment of other required infrastructures is still forthcoming.

The Policy also mandates that Internet nodes should be established in all development regions by 2057/58 (2001-2002) and in all district headquarters by 2060/61(2004-2005). At the regional level, establishment of Internet nodes is complete as NTC and private sector ISPs are providing Internet services in all five-development regions at local costs.

Programme Level
At the programme level, the government has identified the need to develop ICT to provide knowledge based (on-line) services in various development sectors and provide rural connectivity to ensure that these services are delivered to help make people aware of the basic information which would be useful in their daily lives.

Accordingly, HMG has identified the development of agriculture information system (AIS) to expanding markets for agricultural and industrial products; increase in sale of agricultural as well as industrial products to the rural population; provide increased market access for the rural population eventually leading to increased income for the rural population. It has called for the development of Distance Learning using IT to improve the quality of education, develop skilled manpower and increase access to education and telemedicine for the improvement of the quality of health care services available to the rural population and increase their access to health care facilities.

4.10.5.4. Government Commitment

The recent budget speech for FY 2001/2002 of the HMG has allocated substantial amount of funds for the development of the ICT sector. Some of the important features of the budget speech pertaining to the ICT sector include the commitment to:

- Identify ICT as a priority sector and provide soft loans to entrepreneurs
- Establish a venture capital trust fund to minimize risk associated with the production of IT hardware and software
- Provide Internet services to additional public schools
- Provide different level ICT training to 50 youth over the next three years.
- Allocate NRs.12 million for the development of the IT Park in the next two years
- Distribute 90,865 additional telephone lines through the country and expand the radio and television coverage to various parts of the country.

Most of the Donors have concentrated in building telecommunication infrastructure. To date, there is no donor assisted or HMG s own initiated project that has been implemented targeting e-commerce activities for the promotion of Nepalese exports, specially rural indigenous products, or knowledge and information dissemination to the manufacturing industries in both the rural and urban areas of Nepal. Rural connectivity using ICT for disseminating knowledge and information for manufacturing industries located in rural (even urban areas for that matter) areas can often help provide the critical knowledge needed for this sector.

It is clear that the government is strongly committed to developing the ICT sector for the benefits of development and poverty reduction. But there are some impediments in the development of the IT sector for the benefit of the manufacturing industry:

- The policy and regulatory measures are inadequate;
- Lack of strong Institutional for implementation of programmes;
- Lack of rural connectivity;
- Lack of adequate infrastructure;
- It is costly.

4.10.5.5. Problems/Challenges

There are inherent problem associated with the development of IT Nepal so that it can be utilized for the benefit of the manufacturing sector. Given the current status of IT in Nepal it is clear that there needs to be a clear comprehensive and strategic approach to developing the IT sector and building and disseminating the Knowledge base with the help of IT as a tool. With the ultimate objective of creating a knowledge and information society i.e. one with the ability, capacity and skills to generate and capture new knowledge and effectively access, absorb and use information, data and knowledge with the support of IT. Therefore, some of he challenges faced are:

- Lack of awareness, advocacy initiatives and slow policy formulation initiatives
- Lack of connectivity *i.e* absence of affordable and equitable access to telecommunications infrastructure, ICT hardware, software and networking facilities.
- Inadequate initiatives for capacity and institution building
- Lack of local language content and cultural diversity as English language dominate more than 80 percent of the web.
- Lack of ideas to make the internet available for the illiterate mass

4.10.6. Conclusion and recommendations

This section will address the collective challenges faced in the effort to utilize knowledge base for industrial development, vision 2020 and make recommendation on the application of knowledge base for industrial development.

4.10.6.1. Challenges

The challenges and problems faced in developing the knowledge base for the benefit of the manufacturing sector in terms of education, science and technology and IT has been discussed in each of the individual section. Based on the problems outlined for each of the sectors the collective challenge here will to make the government realize the benefits of knowledge base and its management so that the realization is:

- Translated into development of a education system that focuses more on quality education producing academicians and technicians who will be the backbone of the Nepalese knowledge base and decrease our dependency on foreign experts except for highly specialized areas; an education system that will meet all human resource requirement of manufacturing industry sector and actually initiates programmes tailored to address information and human resource needs of this sector.
- Translated into development of the S&T sector that will lead to increased spending on R&D, producing S&T technical manpower required by industries and stimulates growth of professional societies that produce scientific journals and not just play politics but solicit political commitment as well.
- Translated into utilizing IT as a tool for generation, storage and dissemination of knowledge base and making these knowledge and information available at a stroke of a computer button to the manufacturing industrial sector.

In the days to come, the challenge will be successfully overcome if these concerns will be addressed in the Government policies and programmes.

4.10.6.2. Recommendations

In order to address the problems and challenges faced the following is recommended:

- In terms of the education sector, efforts should be made to improve the quality of education at all levels with the idea that these are future manpower responsible for generating, assimilating and disseminating knowledge and information for the manufacturing industries. Scattered, small universities lack the critical mass to provide high quality training unless strict specialization is feasible. This should be translated into legal and policy measures that sets strict standards in terms of physical and academic facilities, teacher/student ratio and effective monitoring system and make sure the government enforces it.
- The poor development of and low student enrolment in the technical training system in Nepal is a serious handicap for manufacturing development. The government should take steps to redesign the system of technical training and skill development in collaboration with representatives of the productive sectors and undertake promotional efforts to stimulate new students to undertake technical topics required by the productive sectors.
- In terms of the S&T sector, efforts should be made where due political commitments are sought from communities outlined above, expenditures in S&T increased, traditional and new technologies be recognized and utilized for the benefit of our industrial sector, human resource development be addressed fully to meet the needs of the manufacturing industries and tailored programmes in R&D be developed in conjunction with need assessment of the manufacturing sector.

- In terms of the IT sector, a full policy and regulatory measures needs to be in place with emphasis on development of on-line services in the area of agriculture information system, distant education, telemedicine and e-commerce keeping in mind the need assessment of the manufacturing sector. Also, proper connectivity including rural connectivity, local language content development in the NET so that majority of the knowledge and information (except few specialized areas) are available for industrialists and entrepreneurs in Nepali language, and extensive advocacy and awareness campaign area initiated to realize the benefit of IT as a tool for knowledge generation, assimilation and dissemination for the benefits of the Industries.
- If Nepal is to take advantage of the knowledge and information, it must also offer educational opportunities to all citizens, including students, farmers, fisherman, men and women in uniform and prison inmates, to enhance their knowledge and information capabilities. Nepal needs to build the national information superhighway networks and provide high-speed Internet access to most elementary, middle and high schools for free. It needs to combine conventional industries such as metal, textiles and even agricultural industry, with information capabilities.

5. Infrastructure for the Manufacturing Sector

5.1. Energy

This Section will address the adequacy of energy supply to the industrial sector. To that end it will discuss

- consumption trends and type of energy consumed,
- problems faced by manufacturing industries in terms of energy availability,
- environmental aspect related to energy sector,
- a presentation of a long-term view on replacing the traditionally sources of energy with renewal ones such as development of the hydropower sector, and
- appropriate recommendations.

5.1.1. Energy Supply

Forest and hydropower are two major indigenous energy sources in use in Nepal. All the requirements for petroleum-products and coal are met by importation. Nepal's energy resources consists of traditional and commercial sources including fuel wood, agriculture residues, animal wastes, hydroelectricity and solar. Nepal is still overwhelmingly dependent on traditional fuel such as fuel wood, agriculture residues and animal dung.

As shown in Table 5.1 below, about 7.4 million toe energy was consumed in Nepal in 1999/00, almost 88 percent of which came from the traditional sources and only remaining 12 percent from commercial sources such as electricity, petroleum products and coal. Electricity accounted for less than 1.5 percent of total energy consumed (FNCCI, 2000).

Table 5.1: Structure of Energy Consumption ('000 Ton of Oil Equivalent: toe)

Energy Sources	1991/92	1996/97	1997/98	1998/99	1999/00*
Traditional sources	5,555	6,185	6,321	6,458	6,598
Fuel wood	4,962	5,525	5,646	5,769	5,894
Agricultural waste	222	248	254	259	265
Animal dung	371	412	421	430	439
Commercial sources	346	677	791	892	959
Petroleum products	248	533	554	635	681
Coal	48	72	160	174	189
Electricity	50	72	77	83	89

Source: FNCCI 2000, * Provisional data

This section will provide an overview of the use of various types of traditional (fuel wood, biogas, agriculture residue) and commercial energy sources (petroleum products, coal, solar, wind and hydropower).

Fuel wood: Fuel wood is used for household purposes as well as by the manufacturing industries. Fuel-wood is gathered from public forests, shrubs and grasslands, as well as private holdings. Out of an estimated gross 9.92 million hectares of potentially productive forest, shrub and grass lands, 4.3 million hectares is assumed to be accessible for collection of fuel wood and forests products. In the FY 1991/92 the quantity of fuel wood consumed was nearly 5 million toe. In the past 10 years between 1990-2000 there has been a steady increase of 2 percent every year in the amount of total energy consumed from fuel wood (FNCCI,

2000). As shown in Table 5.2 below the industrial sector only accounts for an average of 1.7 percent of total fuel wood consumption compared to 98.3 percent for the domestic sector (UNEP, 2001).

Table 5.2: Fuel Wood Consumption: Industry Vs. Domestic.

Year	Total Fuel-wood ('000toe+): tons of oil equivalent	% of Fuel wood Consumption	
		Industry	Domestic
1985	4361	1.9	98.1
1990	4816	1.3	98.7
1995	5408	1.9	98.1
1998	5769	1.5	98.5

Source: UNEP 2001. Domestic sector also includes commercial consumption

Biogas: Animal dung is the primary raw material used for biogas. Biogas holds tremendous future potential for the supply of energy needs especially of the rural sector mainly in terms of household consumption. Besides being an industry in itself, Biogas does not hold much value as an alternative energy sources for the manufacturing sector. The potential number of biogas plants in Nepal has been estimated at about 1.3 million.

Agriculture residue: Agriculture wastes like rice husks, rice straw, maize cobs, maize stalks, bagasse and jute sticks have been long used by the rural population for cooking and heating, particularly in fuel-wood deficient areas. In terms of industrial application, rice husk has been used a boiler fuel to generate steam or to produce electricity in for example parboiling rice mills, strawboard factories and solvent mills. Recently, some factories have been set up to produce briquettes out of rice husks. Bagasse is used in sugar mills to raise steam in the boiler and is considered a cheap reliable source of energy. On average only 4 percent of total energy consumed comes from agriculture residues.

Petroleum products: All petroleum products consumed in Nepal are imported. There are no known commercial resources of fossil fuels in Nepal. It is a dominant form of energy (diesel and petrol) especially in the transport sector. Kerosene is mostly used for household consumption. 4 percent of the total energy consumed (i.e. 72 percent of the commercial energy consumed) came from petroleum products in 1992 compared to 9 percent in 1999/2000. Indicating that the amount of petroleum product consumed in the past 10 years have more than doubled.

Coal: All coal consumed is imported from India and Nepal has no know commercially exploitable coalmine, though scattered occurrences have been reported. Coal is imported as steam coal, slack coal, bridge coal and briquette. Used mostly as boiler fuel in manufacturing industries. In 1991/92 energy from coal accounted for less than 0.2 percent (i.e. 14 percent of the commercial energy came from coal) compared to 1999/2000 where it accounted for nearly 2.5 percent (i.e. nearly 20 percent of the commercial energy came from coal) of the total energy consumed. Indicating that the amount of coal consumed in the past ten years has increased nearly 4 fold.

Solar and wind: It is estimated that 26.6 million MW of solar energy can be generated in Nepal, which is 300 times that of the water resources (PEP, 1995). A WECS (1998) study identifies Hardinath, Biratnagar, Kathmandu, Parwanipur, Parasi, Khajura, Tarahara,

Rampur, Jumla, Gorkha, Dadeldhura, Surkhet, Bhairahawa and Mustang as some of the suitable locations for solar energy generations.

There is evidence that wind energy has great potential in some mountain regions. There have been random efforts to utilize wind energy in Nepal. Wind power development in Nepal is still at the experimental stage and so far no contribution has been made by wind energy in meeting the energy needs.

Hydropower: Hydropower in the form of hydroelectricity currently forms close to 1 percent of total energy consumed in Nepal and only 16 percent of the population has access to electricity. In the past ten years the supply of electricity has nearly doubled.

Hydroelectricity is recognized as the best form of renewal energy with no adverse effect to the environment. The theoretical and economically feasible potentials are estimated at 83000MW and 42000MW respectively. Therefore, it holds great potential for the manufacturing sector as an alternative fuel (and cheap fuel) to petroleum products or fuel wood. However, it is ironic that in a country bestowed with such a high potential for hydroelectricity, nearly 99 percent of our consumed energy still consists of environmentally unfriendly and no-renewal types and it is not a primary form of energy used by the manufacturing industries.

Experts believe that ideally hydroelectricity has the most potential to act as an engine of growth that will not only help in doubling the GDP as envisioned by the Ninth Plan but to achieve the revolutionary growth bringing Nepal in par with at least the ASEAN nations. However, there are some problems such as high cost of production of hydroelectricity (further explained in section 5.1.4).

5.1.2. Environment aspect of energy

There are three broad but distinct environmental issues relevant to energy: (1) pollution related to energy mining and transportation comes under the first category, (2) the problem of clean air and related health hazards, and (3) the problem of greenhouse gases for global warming.

There are no studies that directly analyse the impact of energy related emission from the manufacturing industrial sector on the human health. It is estimated that the annual deforestation of 26,602ha has emitted 7.77 million tones of carbon into the atmosphere (SEAMCAP, 2000) but no estimates exist for emission of carbon from the use of commercial fuel as well as specifically from the manufacturing sectors. But it can be assumed that the manufacturing industries in Nepal contribute its fare share of CO2, TSP, HC, NO2 and SO2 emissions to the environment as nearly 50 percent of their fuel requirement (as shown by the CBS survey analysis) is fulfilled through the use of non-renewable sources of energy.

Energy-related emission of greenhouse gases by the manufacturing sector in Nepal is small, with total per capita emission of carbon only at about 900kg of carbon equivalent compared to 4200kg in the US. However, per capita carbon release in FY 2017/18 is projected to be 1572 if the current trend is maintained (PEP, 1995).

5.1.3. Energy Issues

This section will discuss the general and industry specific energy issues in terms of trend in consumption pattern based on government reports, the Human Development Report 2001 of UNDP, CBS surveys of 1986/87, 1991/92 and 1996/97.

In Nepal, fuel-wood is still the main source of energy for cooking and heating purposes and forests remain the single most important source for firewood, particularly for rural people. In 1997/98 Forests account for 78 percent of energy consumption followed by Petroleum-9 percent, Animal Dung-6 percent, Agricultural Waste- 4 percent, Coal-2 percent, and Electricity-1 percent. . The pattern of energy consumption is changing along with economic growth and urbanization. However, the major percentage is still fuel wood. As indicated below in Table 5.3 this trend has been persistent for the last two decades.

Table 5.3: Pattern of Energy Use

Year	Commercial energy as % of total energy used**	Total energy used ('000 toe)	Traditional Energy as % of total energy used	
			Fuelwood	Excluding fuelwood*
1980	3.9	4,591	74	22
1985	5.1	5,149	85	10
1990	5.2	5,688	85	10
1995	8.1	6,604	82	10
1998	11.6	7,340	79	9
2001		-	89.6	-

Source: WECS (1998); * Cow dung and agricultural residues; ** Economic Survey (1998/99)

The Human Development Report 2001 provides comparative data on traditional fuel consumption, electricity consumption per capita and GDP per unit energy use. The more a country is developed the less it depends on traditional forms of energy and the more on the fossil based energy and renewable electrical energy. However, there was nearly a 4-fold increase in the per capita electricity consumption in Nepal compared to nearly 1.5 times for Norway. This increase is encouraging even when compared to other SAARC nations that had (on average) 3 fold increase in electricity consumption per capita from 1980 to 1997. There is a clear indication that our programme and policies are somewhat effective in making this structural shift from non-renewable energy to the renewable energy types.

Only 10 other countries use more traditional fuel and only three countries have lower per capita consumption of electricity than Nepal, in the world.[38]

5.1.3.1. Energy Consumption by the Industrial Sector

An analysis of energy use over time using CBS Surveys reveals some interesting patterns.[39] The electrical energy and traditional fuel energy consumption pattern exhibited by industrial category in the 1986/97, 1991/92 and 1996/97 census were similar. These pattern include the following:

- Food/beverage, textiles and non-metallic mineral products category of industries are heavy consumers of electricity as well as traditional fuel.

[38] For the full analysis, see the background paper on Environment and Energy by Prakash Silwal.
[39] Idem.

- Paper/pulp product, chemicals products, basic metals categories of industries consumed moderate amount of both the electricity as well as traditional fuel
- The rest of the categories consumed less than 3 percent of both the electricity and traditional fuel.
- There is steady trend of generating its own electricity by categories of industry that were heavy consumers of energy. This could indicate that the industries do not get an adequate or reliable supply of electrical energy.
- There is general trend that the number of establishment of the most of the industrial categories increased from 1986/87 and 1991/92, and declined between 1991/92 and 1996/97.
- The number of establishment pattern indicates that there is a substantial decrease in the number of food/beverage, paper/pulp products and publishing/printing, 50 percent decrease in tobacco and 5 percent decrease in wood and wood industries. These decrease were followed by an increasing trend of industrial establishments like leather and chemical product categories.
- The number of establishment for carpets and garments increased from 1986/87 to 1991/92 but actually declined from 1991/92 to 1996/97. This could be the overwhelming concern shown by the people because of the industries adverse impact in the environment and human health and subsequent effort on the sides of the government to discourage the establishment of polluting industries. Overall, the big polluting industries like carpets, rugs, garments have declined except for leather and chemical product categories.

5.1.3.2. Adequacy of energy supply to the manufacturing sector

A separate study by FNCCI/WB (2000) on industrial establishments reports that electricity is the most significant infrastructure problem they face. It is also the second largest obstacle to increasing capacity utilization. Table 5.4 shows extent of the electricity problem faced by the manufacturing industries. It shows that Chemical and Paints, Pharmaceuticals, and Metal industries have severe problems with electricity. The non-metal fabrication industries have reported fewer problems as these industries type include for example brick manufacturers that use wood and coal and concrete manufacturers that use mobile and oil.

Table 5.5 shows the adequacy of electric service by size of the industry. It shows that the percentage of industries facing problems related to adequacy of electricity was highest in industrial categories like metal & metal production, chemical & paints and pharmaceuticals and they were the ones that provided for their own services.

Table 5.4: Adequacy of Electric Service by Industry

Industrial Category	Percentage firms with problems	Percentage firms with severe problems	Percentage firms providing own services
Food & Beverage	69	42	57
Wood & Wood Production	72	33	25
Chemical & Paints	85	54	93
Carpets	68	47	71
Textile	65	39	65
Garments	71	38	61
Metal & Metal Production	97	54	46
Pharmaceuticals	80	36	70
Non-metal Fabrication	50	30	55

Source: FNCCI/WB (2000)

Table 5.5: Adequacy of Electric Service by Firm Size

Size of the Industry	Percentage firms with problems	Percentage firms with severe problem	Percentage firm providing own services
Micro	65	37	9
Small	77	28	42
Large	72	41	78
Conglomerate	74	52	82
Super	83	57	92

Source: FNCCI/WB (2000)

Table 5.6: Adequacy of Electric Service by Location

	Percentage firms with problems	Percentage firms with severe problem	Percentage firm providing own services
Kathmandu	71	42	62
Biratnagar	79	35	72
Pokhara	64	43	40
Butwal	100	80	30
Birgunj	87	60	80
Nepalgunj	56	24	63
Hetauda	67	33	64
Dhangadhi	75	18	25

Source: FNCCI/WB (2000)

Table 5.6 shows the adequacy of electric service by major industrial locations in Nepal. On average nearly 60 percent of the firms considered for the study reported that they had their own generators. Most of the industries (over 60 percent) in Kathmandu, Biratnagar, Birgunj, Nepalgunj and Hetauda had their own generators. All the firms in Butwal and 87 percent of firms in Birgunj reported problems with electricity. The problems in these areas are also more severe compared to other areas. However, fewer firms in Butwal and Dhangadhi have installed their own generators.

Some interesting conclusions can be derived from this study as follows:

- Electricity is the most significant infrastructure problem they face. It is also the second largest obstacle to increasing capacity utilization.
- Chemical and Paints, Pharmaceuticals, and Metal industries have sever problems with electricity. The non-metal fabrication industries have reported fewer problems as these industries type include for example brick manufacturers that use wood and coal and concrete manufacturers that use mobile and oil.
- Larger the firm the more problems they face with adequacy of electricity and hence greater drive for the firms to provide their own services. Also, it suggests that large firms are spending more money on equipment like generators and other equipment that will ensure reliable supply of electricity. As an example, the study cites that a large establishment under consideration is considering of investing 4 percent of its US$7 million investment generators, and other equipment for ensuring a reliable supply of power.
- Adequacy of electric service by major industrial locations in Nepal shows that on average nearly 60 percent of the firms considered for the study reported that they had their own generators. Most of the industries (over 60 percent) in Kathmandu, Biratnagar, Birgunj, Nepalgunj and Hetauda had their own generators. All the firms in Butwal and 87 percent of firms in Birgunj reported problems with electricity. The problems in these areas are

also more severe compared to other areas. However, fewer firms in Butwal and Dhangadhi have installed their own generators.

- The study also reported that the quality of service is a more acute problem during the dry season corresponding with low generation capacity of Nepal Electricity Authority (NEA).

5.1.4. Hydropower and the industrial sector

Having established the severity of problems with the supply of energy to the industrial sector, this section will discuss potential for hydropower development in Nepal. It will discuss the trend in electricity supply, consumption and growth of consumers, problems associated with hydropower development, government initiatives for its development in terms of the various policy, institutional and legal measures that have been developed.

5.1.4.1. Trends in electricity supply, consumption and growth of consumers

Currently approximately 0.3 percent of the potential hydroelectricity capacity has been exploited. There is huge potential for this sector to catalyse the growth of industries.

The peak demand in hydroelectricity has been increasing on average of 7.8 percent and available energy on an average of 8.71 percent. Over the financial year 2000/2001, the available system peak of the interconnected system was recorded on January 18, 2001 at the level of 391MW registering an 11.11 percent increase over the last winter system peak. The available energy is also increasing at a similar pace.Out of the available energy for 2000/2001 fiscal year 60 percent was electricity supplied from the hydroelectric plants, 39 percent purchased by NEA from India and Nepali private hydropower developers and 1 percent came out of their thermal diesel plants.

Average consumption by the industrial sector has remained quite steady over the years at nearly 30 percent of the total available electrical energy as compared to an average of 27 percent consumption of the total available energy by the domestic sector. Despite the fact that the number of industrial and domestic consumers of NEA using electricity has increased 1.8 fold and 1.9 fold, respectively, in the past nine years between 1993 and 2001. Similarly, the consumption has grown at a steady pace of 7.93 percent and 8.76 percent for the industrial and domestic sectors, respectively.

According to the NEA load forecast for an integrated power system, there will be a 4-fold increase in peak load from 2001 to 2020. Interesting point about this forecast is that the average growth of the peak load and available energy is at 7.7 and 7.9 percent that is comparable to the figures for the growth of the same parameters between 1993 and 2001.

However, the Long-term projection estimates carried out in the Ninth Plan indicates that Nepal will have installed capacity of 22000 MW of electricity by the twelfth plan. And will have achieved 50 percent population coverage to electricity. This is a nearly 50 percent of the economically feasible generation of Nepal.

However, there are some inherent problems associated with the development of hydroelectric power.

5.1.4.2. Problems associated with hydropower development

There is significant gap between sustainable energy supply and the present demand. In terms of energy resources endowment, hydropower occupies first place, but due to large initial investment needed, traditional sources of energy still play a dominating role.

The major limiting factor in the development of the hydropower sector is that the sector has not really developed in such a way so that it encourages industrialists and entrepreneurs to establish electricity intensive industries. This could be a result of various factors such as:

- inefficient power system planning,
- insufficient private investment,
- inadequate rural electrification and
- high cost of production as explained below.

Inefficient power planning: Traditionally power planning has been targeted to meet the domestic demand for electricity rather than the manufacturing sector demand. The NEA load forecast for 2017 and the consumption pattern observed since the first five year plan till 2000 also indicates that the power planning is still done with traditional mentality of meeting the domestic sector electricity demand. There is no planning accommodating certain measure like captive utilization of power or regulating electricity price. There are huge price distortions between the market price and economic price of energy forms especially in the rural areas. Traditional, coal and petroleum product related energies appear cheaper from an individual viewpoint. This is further reinforced by problems like increase in tariff of electricity, electricity loss, inability of the population to use electricity despite investment in rural electrification, inability to utilize surplus electricity of the monsoon season and decrease in supply in the dry season and the resultant load shedding.

Insufficient private investment in hydropower: Traditional hydropower development has been the activity of the government. To a large extent Nepal Electricity Authority has had the monopoly for the development, transmission and distribution of electricity. There was also the Butwal Power Company but its share was limited 5-20 MW of electricity production. Of late there are the new power project that is being constructed by private sectors like the Bhote Kosi and Khimti. Currently, the concept of captive utilization of power or prospect of selling the hydropower generated to manufacturing industries or export to neighbouring countries does not exist. The only promising buyer is the NEA. Selling electricity to NEA is a short-term solution and a very unhealthy one as NEA already has more electricity than it can sell. Therefore, lack of market, besides the huge investment that is needed, has been a major limiting factor in the development of hydropower with private sector investment.

Inadequate rural electrification: Currently, electricity is a mainly an urban fuel and it is only available to 16 percent of the country. The rural electrification process has been undertaken with the view to meeting the domestic demand rather than catalysing the establishing the manufacturing industries in the rural areas.

High cost of production: Huge amount of investment is needed to develop hydropower in a commercial scale so that it can supply electricity to energy intensive industries on a sustainable basis. Government has not been able to raise this huge amount of investment needed for the building of hydropower projects.

Therefore, the focus should be to address the problems and constraints that exist in the development of hydroelectricity. Realizing this the government has undertaken policy, institutional and legislative measures to promote the development of the hydropower as well as the energy sector in general.

5.1.4.3. Government Initiatives

The government of Nepal has recognized hydropower as an impetus for balanced development of the nation. This section will describe the various policies, institutional and legislative measures undertaken by Government towards this realization.

Policy and Planning

The Ninth Plan has identified the power sector as one of the key thrust sector of our economy. It recognizes the need to supply energy at an affordable price as it can play an important role in balanced development of the agriculture, industry and other sectors. It outlines need for institutional reforms, power export, promoting private sector involvement, rural electrification, reliable power supply, preservation and management of hydropower development related watershed, adjustment of legal provisions, utilization of local resources/talent/raw materials, control of power linkage and control of power tariff.
It also outlines major programmes for implementation in this sector that include:

- Survey, Feasibility study and engineering design of power projects both for external export as well as internal consumption purpose
- Power generation and supply system
- Transmission and extension of electricity
- Completion of Kulekhani Conservation Project
- Institutional strengthening of NEA
- Studies carried out attract private sector in hydro-power development

The Perspective Energy Plan was prepared in 1995 primarily to provide perspective on the energy implications of alternative strategies for economic growth and development. These energy implications are meant to include a comprehensive understanding of implement able strategies for the development of energy resources with plan period between FY 1991/92-2017-18. The PEP, secondarily, is to design a framework for an on-going process of energy planning linked with performance of the economic sector that is somewhat more detailed and model oriented. Finally, the PEP represents an important first step in establishing an integrated sustainable economic and energy planning process, based on the collaborative efforts of national, sectoral and energy planning agencies of the government and the private sector organizations.

The thrust of the **Hydropower Development Policy** 1992 was similar to the planning documents summarized above. Some of the shortcomings of the policy included:

- It focused on single product electricity but did not consider by products emanating from non-power benefits such s irrigation, flood control etc;
- Assumption of single buyer NEA and not multiple buyers; and
- Concentration more on generation and overlooked the role of private sector in transmission and distribution.

However, recently the government has formulated the **Hydropower Development Policy 2001**. Many of the shortcomings mentioned above that were not addressed by the 1992 policy have been taken into consideration the 2001 policy. But further elaboration of this new policy is needed to accelerate the facilitation of hydropower development in Nepal. The basic objectives of the Hydropower Policy 2001 are as follows:

- To generate electricity at low cost by utilizing the available water resources of the country;
- To extend reliable and qualitative electricity services all over the country at reasonable price;

- To link electrification with the promotion of economic activities;
- To support the development of rural economy by extending rural electrification;
- To develop hydropower as an exportable commodity.

The Agriculture Perspective Plan (APP) argues that if the rural sector is to play a leading role in agriculture production, as an engine of growth and in precipitating the multipliers to employment from that growth, then there must be a far larger increase in power generating capacity than is being discussed in Nepal at present. Currently, electricity is very much an urban fuel covering only 16 percent of Nepal's population. More than 84 percent of the population is still do not have access to electricity.

Therefore, the APP has put a major emphasis on rural electrification as an engine to boost agriculture growth rates especially in the rural areas. By the end of the APP in 2004/05, demand for electricity in rural Terai is estimated at around 590 megawatts of additional generating capacity. For Terai, hills and mountains, it is assumed that all areas covered by the agriculture roads will be placed on electric network (means virtually all of Terai). The portion of hills and mountains to be covered by national grind will require an additional 89 MW of generating capacity. The total of 670 megawatts is equal to nearly twice the current national capacity.

The APP demand estimates indicate 41 percent of the energy will be consumed for residential purposes followed by industrial consumption of 31 percent, irrigation 21 percent and commercial 6 percent. It also proposes for higher electricity prices in the urban areas and lower subsidized rates in the rural areas. This is clearly not in the interest of the urban-based manufacturing sector.

Legislation
A number of acts relate to hydropower development. This section will provide a brief overview. For the private sector development of hydroelectricity a combined act covering all aspects of investment, generation and distribution would be required.

Electricity Act 1992 and Electricity Regulation 1993, Water Resources Act 1992 and Water Resources Regulation 1993: In these legal provisions establishment and operation procedures of power industry were standardized, time-bound and transparent, and the facilities, subsidies and co-operation to be provided to the private sector were made legal. The Electricity Act 1992 was enacted to develop electric power (from water, mineral oil, coal, gas, solar energy, wind energy, atomic energy or from other means) by regulating the survey, generation, transmission and distribution of electricity and to standardize and safeguard the electric services. The Water Resource Act 1992 legalizes arrangements for determining beneficial uses of water resources, preventing environmental and other hazardous effects thereof and also for keeping water resources free from pollution.

Mahakali Treaty 1996: A new era of bilateral cooperation began with the signing of the Mahakali treaty in February 1996. This opened the door for hydropower development in Nepal under bilateral cooperation with India through cost sharing based on the project benefit ratio. However, the inability of both governments to complete the Detail Project Report (DPR) has prevented them from exploiting the full benefit of the treaty. The major issue in this treaty responsible for the deadlock has been the site location for the re-regulating dams and water sharing.

Power Trade Agreement 1996: The instrument of ratification has been exchanged whereby the Government of India has ratified the agreement but it has not been ratified yet by the Nepalese Parliament, although it has been endorsed by the government. The Electric Power Trade Agreement on power trade between Nepal and India allows government, semi-government or private party of one country to make an agreement on power trade with government, semi-government or private parties of another country. As part of this agreement, the parties are allowed to fix terms of conditions, the quantity and the price and in accordance the prevailing statutory provision of each other country, the parties will get facility for power trade in their countries and the respective government will assists them. This agreement has opened door for private parties as well as NEA to directly consult with Indian parties about export and import of electricity.

Industrial Enterprise Act 1992: It recognizes the need to make arrangements for fostering industrial enterprises in a competitive manner through increment in productivity by making environment of industrial investment more congenial, straightforward and encouraging. This Act identifies hydropower generation and distribution as a national priority industry. The Act classifies various industrial types and explains facilities and concessions that each industry will be awarded in Nepal. It provisions for a high-powered One-Window Committee for making available facilities and concession.

Foreign Investment and Technology Transfer Act 1992: The Act recognizes that in the process of industrialization of the country, it is expedient to promote foreign investment and technology transfer for making economy viable, dynamic and competitive through the maximum mobilization of limited capital, human and other natural resources. Hydropower is one of the industries provisioned for permission for foreign investment.

Institutional

A number of government agencies deal with the development of hydropower and the supply of energy to the nation. The role of these agencies could be enhanced and timely availability of energy for the manufacturing sector could be ensured if further efforts towards institutional strengthening could be implemented.

The Ministry of Water Resources (MOWR) has overall responsibility for activities related to electricity generation and supply. Key agencies assisting MOWR in this task are NEA, the Department of Electricity Development (DOED), Hydropower Development Council Chaired by the Prime Minister and the Water and Energy Council (WEC).

The DOED is responsible for all the licensing of the hydropower while WECS serves as the technical advisory for the overall development of the water resources in Nepal.

Similarly, supplying energy in the form of petroleum products and coal in Nepal is the prime responsibility of the Nepal Oil Corporation (NOC), which falls under the purview of the Ministry of Industry, Commerce and Supplies. Also, the Nepal Timber Corporation (NTC), under the Ministry of Forest and Soil Conservation, has been the lead semi-government agency trusted with the authority to collect and supply fuel-wood in the Nepal.

Recently, the involvement of the private sector has been opened in the activities of NEA, NOC and NTC.

5.1.5. Recommendations for energy development

The general energy supply analysis indicates that Nepal holds the potential for sustainable energy supply to meet its national demand, whether it is the demand from the manufacturing or the domestic sector. Therefore the energy development policy of the industrial perspective plan should be as follows:

- To produce electricity at a low cost and minimum environmental impact to meet the demand of the manufacturing sector;
- To replace traditional fuel consumption practice by utilizing the existing water resources to the extent possible;
- To expand reliable and quality electricity services nation wide at an appropriate price;
- To tie up electrification with economic activity;
- To expand rural electrification providing support to the rural areas (both in terms of domestic consumption as well as promotion of industrial growth);
- To promote the consumptive-use of electricity and develop it into an export commodity to meet the energy demand of neighbouring countries especially that of India.

The feasibility of replacing fuel wood and fossil fuel with hydroelectricity significantly is bleak at least for the next 10 years under the present conditions of development. Therefore, until the hydropower sector is able to substantially replace the traditional fuel, a general strategy of mixing large hydropower with mini/micro hydro, fossil fuel, solar and wind energy for the rural as well as urban areas should be adopted. Mini/micro, solar and wind energy could help boost cottage industries as well as agro-based industries.

The specific strategies proposed to address the above challenges in satisfying fuel demand (traditional, commercial, solar, wind and hydropower) of the manufacturing sector are as follows.

Traditional fuel:
The strategy should be to promote the successful community forestry programme in place in many parts of Nepal. The consumptive use of forest should be promoted and not deforestation for energy, housing and resettlement as is the current trend. Implementation of a strong land-use policy taking into account that not all people in the country can own land and realization that fuel-wood is not the only benefit out of the forestry sector can help in further realizing the importance and help reduce the impact on the forestry sector.

Solar and wind:
The theoretical potential of solar energy is enormous while wind energy is feasible in some parts of the country, Government needs to undertake market research for available technology and take stock of development approaches appropriate to users in Nepalese conditions to harvest this immense power.

Hydropower development:
At the present rate of development of the hydropower sector, it can be assumed as mentioned above, electricity will not be a catalyst for industrial or other sector growth at least for the next 10 years. Even the implementation of the APP will not catalyse our industrial sector in the rural areas. The large and medium manufacturing industries will require a lot of energy that could be supplied by the development of the hydropower sector. The following issues need to be addressed to foster a conducive environment for the development of the hydroelectricity both quantitatively and qualitatively so that by 2020 this will be the dominant energy in use and promoting large manufacturing industries:

Improving power system planning: This improvement is needed to achieve balance between demand and supply as well as make system generation cost effective by reducing or making use of spill energy. The following is suggested to address the issue:

- Long term option-Consideration of only hydropower plants in the generation expansion in the future to meet the demand of and catalyse the manufacturing sector.
- Short term option-generation mix with hydropower plant and diesel or gas fired thermal plant or mix hydropower with imported thermal power from India.
- The short-term option can be a cost effective one to meet the current demand of the manufacturing as well as other growth sectors but it requires dependency on Indian imports and thermal generation is not cost effective. As part of the energy sector planning captive utilization of energy for industrial development should be promoted.

Encouraging private investment in hydropower: Currently, the private sector in Nepal has a very high liquidity problem. Creating a secure environment for investments could attract the national as well as international private investors. Certain changes in institutional (like creating one window policy to assist the private sectors, developing a strong inventory of projects, transparent mechanism for techno-economic clearance) and legal (open access to grid, access to distribution) aspect need to be initiated and placed for the attraction of private investors. Also, a standard implementation (water rights issue in the river stretch, sovereign guarantee against nationalization, guarantee against the change of laws, and guarantee of all the facilities mandated under the policy) and power purchase agreement (transparent price fixing mechanism, risk sharing mechanism, handling of resettlement/rehabilitation) needs to be developed.

Public-private partnerships need to be developed. Inadequacy of legal and regulatory provisions has limited the involvement of the private sector in developing hydropower. The involvement so far has been limited to acquiring a license with the intention to sell it to NEA. This is a very unsustainable and unhealthy practice as NEA is not in a position to sign PPA with any private parties as it already has more energy than it can evacuate. There for provisions should be made where the monopoly of NEA needs to removed where private parties can be involved in generation, transmission, distribution and export of power to neighbouring countries.

Rural electrification—increasing access to electrification in rural areas: As envisioned by APP and emphasized here as well, rural electrification not only can provide electricity access but also help promote industrial development to the rural sector. Given the scenario the following options can be considered:

- Micro hydro and Mini hydro based local grid: A very short-term option that is feasible only in identified areas where government will never promote grid based rural electrification. : Feasible only in some selected areas and could catalyse the small and cottage industries. For example drying of cardamoms to produce high priced crop using electricity from these sources in contrast to the present practice of smoke drying it thus converting it to a high value crop.
- Solar energy: A very expensive option but an option, if proper technology could be developed to harness it could solve the entire energy problem of the nation.
- Grid based rural electrification: This could be targeted to areas with potentially high resources for industrial development. The extension of the Grid for electrification in areas has proved to be cost effective.

Reducing cost of development: A two-pronged strategy should be developed, first to reduce the cost of developing hydropower projects and second to deliver cheap or low cost electricity to consumers.

In the long term, to develop cheap electricity hydropower plants with high head, high sustained base flow throughout the year, less seasonal hydrological fluctuation, less sediment load and dependable geology needs to be promoted even if it means building roads in that area as part of the development activities. All the plants in the Arun Valley, and the higher reaches of Trisuli and Dudh Kosi rivers fall in this category for development. These projects, although their delivery cost might be higher, in balance will be cost effective.

In the short term projects that produce appropriate generation mix like series of high head run-off plants, a medium size storage plant and limited thermal generation may produce an optimum generation mix allowing cheap energy delivery.

However, the strategies need to be supported by:

- Developing small/medium sized projects using local manpower, skills and resources as much as possible, to minimize the cost of financing of the project and foreign exchange variation;
- Reducing the seasonal and daily imbalance between demand and supply of electricity through appropriate pricing;
- Effective implementation of environmental rules/regulations;
- Initiation of the public-private partnership to develop low cost plants.

The long-term option is a self-sufficient option and is based on indigenous renewable source. Also, if the present system planning is considered using only hydropower than simple improvements like developing storage as well as runoff the river plants, runoff the river with poundage basin, emphasize in cascade development of plants and demand side management to reduce spillage of energy could help Nepal reach self-sufficiency in power generation.

Captive power development and power trading with India: Currently, the problem with hydropower development is directly related with the lack of potential industry that will utilize the huge hydropower that can be produced. The government needs to identify project and programme that will utilize (or promote industries for that matter) the generated energy and private sector developers need to feel confident as to the market of the power generated. The two potential areas where power developers and industrialists could focus on could be the promotion of captive power utilization and power trading prospect to India to meet its energy demand.

One example of captive power generation could be development of a hydropower plant and promotion for the establishment of aluminium smelting plants or fertilizer plant or tourism related cable car industry. This kind of approach could be a win-win situation for both the power developers as well as industrialists.

5.2. Transport, Telecom, Water and Industrial Estates

5.2.1. Introduction

After discussing energy in Section 5.1 above, this section will discuss the remaining infrastructural sectors important to manufacturing industries:

- Transport,
- Telecom Services,
- Water Supply and
- Industrial Estates.

In particular it will:

- Assess the overall progress made in providing the above infrastructure services to the manufacturing sector;
- Provide an overview of the constraints to industrial development arising from poor infrastructure in these areas as experienced by entrepreneurs;
- Formulate general recommendations for infrastructure development for dealing with the constraints identified.

5.2.2. Infrastructure and Industrial Development

Based on FNCCI/WB 2000, infrastructure is the fourth biggest problem of doing business in Nepal, ranked after government, inadequate demand and finance.

Better infrastructure is a precondition for broad- based growth in Nepal. Good infrastructure raises productivity and lowers production cost. To counteract the disadvantages that come with being a land-locked country, Nepal will have to aim at enhancing competitiveness by providing efficient, reliable infrastructural services at reasonable costs and where possible at low costs.

Agricultural linkages with industry cannot develop without a more comprehensive all-weather road network access to agricultural inputs; Export trade needs reliable and cheap freight services by air or road to be able to respond quickly to new market developments; Expanded electricity network accompanied by competitive pricing, and undisrupted supply will enhance rural industrialization and add to the competitiveness of manufacturing industries with regard to imports as well as in export markets; Telecom and IT services are essential for doing business and its nation-wide coverage will lead to more linkages between different sectors with positive growth effects; Industrial estates providing land and buildings at optimum locations with regard to the internal and external market can give more competitive edge to manufacturing firms. These brief observations are quite straightforward and not new. However, the reality is that much needs to be done in the field of physical infrastructure to put manufacturing industry on a competitive footing.

In the past, the various plans, from the first plan (1956-61) to the Ninth Plan (1997-2002), have given priority given to the area of infrastructure development, also in terms of budget allocations. As a result of these efforts over more than five decades some achievements have been realized in developing basic infrastructure in the country in the area of transport, communication, Industry, electricity, and water supply. Also the draft report of Tenth Plan has given priority to developing infrastructure through private sector involvement in building infrastructure (hydro-power, road, airport etc.).

However, large parts of the country still lack basic infrastructure and given the level of income in the rural areas, Governments role in providing the necessary infrastructure to the rural areas will remain essential.

5.2.3. Constraint to Manufacturing Competitiveness in Infrastructure[40]

Table 5.7 provides the overall picture on constraints in infrastructure to manufacturing firms as established by FNCCI/WB (2000). The extent of problems with electricity supply, the major problem, becomes evident from the large number of firms providing their own electricity by using generators.

Table 5.7: Adequacy of Infrastructure Services

	Percent of firms with problems	Percent of firms with severe problems	Percent of firms providing own service
Electricity	71	42	57
Roads	35	20	12
Water	31	19	71
Trucking Service	24	10	32
Security	22	11	85
Postal Service	22	11	NA
Air Freight Service	19	14	NA
Telecom	17	8	NA
Water Disposal	15	6	59

Source: FNCCI/WB (2000)

More details on infrastructural problems in transport, water, telecom and industrial estates are provided below.

5.2.4. Transportation

As identified by the Ninth Plan (NPC/1998) the following general constraints exist in the transportation area:

- Lack of master plan and programme outlining interrelationship among different means of transport;
- Lack of measures to expand economic activities for providing immediate relief to remote areas through air transport and tourism activities in environment friendly manner;
- Absence of institutional structure, geared towards the development of transport system;
- Inadequate research and training activities;
- Absence of reliable air transport to remote areas.

Table 5.8 below gives the overview of the available transport systems in the country. Of the total length of road, 30 percent is black-topped, 24 percent gravelled, and 46 percent fair weathered. Apart from roads the only other main transport system consists of airfields.

Effectively, the railway consists of a stretch of 52 km, built in 1934, from Janakpur to Jayanajar. The Inland Container Depots (ICDs) or “Dry Port” currently being built in Birgunj in combination with the railway link between Raxaul and Birgunj will ease the movement of goods between Nepal’s border and Calcutta seaport.

[40] This section draws heavily on FNCCI/WB (2000)

Table 5.8: Availability of Transport Systems in Nepal

Type of Transport Systems	Unit	Total
Road Facility Available	Length/km	15458
Trolley Bus	Length/km	13
Ropeway (not operating)	Length/km	42
Railway	Length/km	100
Number of Airfield	Nos.	44

Source: Economic Survey, 2000/01

Below, the various components that make up the transport sector will be discussed in more detail. The components are:

- the road sector,
- trucking services, and
- the aviation sector.

5.2.4.1. The Road Sector

This section will first discuss the general status of the roads system. This will be followed by a summary of the views of the private sector on the adequacy of the roads system.

General Status and role of private sector[41]

Given the country's difficult topography, the existing road network is reasonably extensive and well maintained. However, many population centres are not well connected, and most importantly the links from Kathmandu to the Indian border are weak. In addition, roads tend to be narrow, slowing down traffic flow and creating safety hazards. This is a major problem for manufacturing exports (including their imported inputs) since road transportation represents the main commercial link for the country in the absence of an adequate railway system.

The maintenance and construction of roads is the primary responsibility of the Department of Roads in the Ministry of Works and Transport. The budget available for road investment is quite limited. In addition, it is very dependent on outside sources; up to two-thirds of the budget of the Department of Roads comes from bilateral and multilateral agencies in the from of grants and loans. In recent years, these agencies have focused on maintenance work, leaving the financing of construction, primarily feeder roads, to resources from the general budget. To strengthen maintenance work, the government is in process of establishing a road fund in combination with a toll system for major roads. However, this process has just started and is not yet firmly established. A major problem for private investment is formed by low traffic flows. Forecasts of how traffic flows might pick up with better roads tend to be uncertain.

At present there exists no direct link from Kathmandu to the Indian border, despite the fact that this represents the major flow of commodity and passenger transport. The existing road connection to Hetauda is 220 km long, requiring substantial travel time due to narrow, two-lane roads. A direct link to Hetauda would reduce the travel distance to only 70 Km, representing a major reduction in travel time. But the projects would require a 10-Km tunnel segment, resulting in estimated project cost US$160 million. Some cooperation between Government and the private sector is required to realize this project. This is the stumbling block at present. ADB might assume a leading role in this project. Similar problems exist for

[41] Extract from the Report of World Bank/International Finance Corporation (1998) and World Bank/FNCCI (2000)

other roads project with the Government taking a too passive approach to private investment in roads.

Regarding existing roads, the government also does not seem to be particularly interested in the involvement to private investors in upgrading and maintenance work on concession basis. The approaches to Kathmandu from the east and west close to their capacity limits, and expansions or by passes are urgently needed. However, the government appears to rely on bilateral and multilateral support first to undertake these works under its own authority.

The initiative within the Ministry of Works and Transportation to form a special committee to study private sector alternative is encouraging, and more preparatory work is needed to develop a clear strategy regarding the involvement of the private sector in roads. This initiative will have to be embedded in overall strategy on improving transport services by involving the private sector.

Rural roads present another picture altogether since no private sector involvement is likely to come forward at all. In this area the role of local authorities needs to be strengthened in combination with central guidance and donor support.

Taken together, these observations suggest that the Ministry of Works and Transportation is not providing sufficient leadership and vision to work towards along term solution.

Opinions of road users: the business enterprises

FNCCI/WB (2000) found that ground transportation services consisting of roads and trucking services is the second largest infrastructure problem for firms. About a third of the firms report problems with roads, while a quarter reported problems with trucking services. With the exception of short access roads build by a handful of firms, there are not privately built roads. Instead, most firms have located in areas accessible by road, for instance along the East-West Highway or along one of the North-South corridors.

About a third of firms have their own trucks for transporting their goods. Larger firms ship their output to more cities and more customers within each city and consequently depend on the road network and trucking services more than smaller firms. They also complain about the services more than smaller firms.

The percentage of firms that indicating that they had problems with roads in each location and within each industry and group size are summarized in Table 5.9 to Table 5.11. Roads are a greater problem for firms located in Kathmandu, Birgunj, Nepalgunj, and Dhangadhi compared to other survey locations. While firms in Kathmandu reported concerns about local roads and highways, firms located elsewhere was primarily concerned about the closure of major highways.

While firms in Kathmandu were concerned about the major highways, they also expressed broader concerns regarding the poor state of the local roads in Kathmandu and the road network in India. Firms in Kathmandu that do not export were concerned primarily with the local road network. In contrast, experts were also concerned about the condition of roads in India.

The quality of the roads affects firms in the food and beverage, carpet and pharmaceuticals industries the most leading to damaged vehicles and products. Firms also have major

concerns with the related problem of poor management of traffic, or conversely the lack of roads to fit all of the existing traffic.

Larger firms (greater than 100 employees) are more likely to have problems with roads than smaller firms mostly because they produce more goods and ship their outputs to more cities and more customers within cities. Larger firms also tend to be exporters who rely even more on the road network.

Firms in the western parts of the country (Nepalgunj and Dhangadhi) were primarily concerned with the inaccessibility of the major highways especially during the monsoon season. Firms anticipate that completion of the last two bridges on the East West Highway during the coming year will make unhindered year round access to the east possible. Firms in Nepalgunj reported significant loss in sales during the summer months when major roads to the west and to the north are not accessible.

Table 5.9: Adequacy of Roads by Location

Locations	Percent of firms with problems	Percent of firms with severe problems
Kathmandu	46	27
Biratnagar	24	15
Pokhara	29	29
Butwal	15	5
Birgunj	47	7
Nepalgunj	47	35
Hetauda	18	0
Dhangadhi	36	27

Source: FNCCI/WB, 2000

One of the major concerns of firms in Birgunj is the frequent closure of highways going into Kathmandu due to accidents. Kathmandu is the major market for most goods produced for domestic consumption and is also the only gateway for international air shipments. Firms reported that the major highway between Kathmandu and Birgunj is shut down about 3 days every month due to accidents creating delays scheduling problems for the firms.

Table 5.10: Adequacy of Roads by Industry

Industries having road facilities	Percent of firms with problems	Percent of firms with severe problems
Food and Beverage	44	30
Wood & Wood Products	28	11
Chemicals & paints	28	1
Carpets	53	47
Textile excluding carpet	28	17
Garments & Leather	41	16
Metal & Metal Product	26	9
Pharmaceuticals	55	27
Non-Metal Fabricate	22	20

Source: FNCCI/WB 2000

Table 5.11: Adequacy of Roads by Firm Size

Types of Firms with Adequacy of Roads	Percent of firms with problems	Percent of firms with severe problems
Micro	22	15
Small	28	14
Medium	22	12
Large	43	22
Conglomerate	52	29
Super	71	50

Source: The World Bank/ FNCCI, 2000

5.2.4.2. Trucking Services

The reliability of trucking services very much depends on the overall infrastructure development particularly, of course, on roads. FNCCI/WB (2000) found that about a quarter of firms reported problems with obtaining trucking services. Larger firms (greater than 50 employees) have a greater demand for trucks because of their local and national markets. Many are also exporters with the need to ship goods expeditiously. The availability of trucks is a bigger problem for these firms than for smaller firms.

The percent of firms that indicated that they had problems with trucking services in each location and the firms with their own trucks is shown in Table 5.12. Trucking services were a greater problem in Hetauda and Dhangadhi than in order of the country, Hetauda has a syndicate of truck operators that has significant market power, which is used to charge higher prices than elsewhere. Because of a small market, the supply of trucks is limited and is not sufficient to peak demand. Firms are more likely to own their own trucks in Dhangadhi due to the thin market in these services. Firms also noted that trucking services is more expensive because trucks return empty after delivering goods to market in the east.

The problematic performance of trucking service created problems for all sorts of firms ranging from micro to super. In response an increasing trend was noted of having own trucking services (Table 5.13).

Table 5.12: Adequacy of Trucking Service by Location

Firms Location	Percent of firms with problems	Percent of firms with severe problems	Percent of firms providing own service
Kathmandu	22	10	24
Biratnagar	26	18	36
Pokhara	14	0	38
Butwal	10	0	37
Birgunj	27	7	7
Nepalgung	24	12	53
Hetauda	58	33	33
Dhangadhi	40	9	64

Source: The World Bank/ FNCCI, 2000

Table 5.13: Distribution of firms with problems with trucking services by size

Type of Firms	Percent of firms with problems	Percent of firms with severe problems	Percent of firms providing own service
Micro	12	4	21
Small	19	7	36
Medium	29	17	38
Large	27	8	36
Conglomerate	32	17	21
Super	29	15	33

Source: The World Bank/ FNCCI, 2000

5.2.4.3. The Aviation Sector

Aviation is more efficient than road transport in several parts of the country. In some part of the Western region of the country the cost of road construction is estimated at about 7 times that of air transport (World Bank 1994). In this sense there is an important role of aviation in the process of infrastructure development of the country. Aviation is the only mechanized transportation for carrying passengers, food and construction materials etc. to the inaccessible areas. Despite a significant increment in the passenger traffic, and load of transported goods, the majority of the airfields is not adequately equipped for regular traffic and most of the aircrafts are aged.

The busiest airports are Kathmandu, Nepalgunj, Pokhara and Biratnagar, which together account for close to 40 percent of the passenger tariff (World Bank/1994). There are significant variations in the quality of airports of the country. Only five airports, including the Kathmandu Airports are classified as all weather airports. Seven of the airports of the country are unpaved fair weather airport, and the rest are high altitude and short take off landing fields. Now the private sectors are gradually being encouraged to enter this sector.

The FNCCI/WB Report (2000) identified some of the issues in this sector as:
Garments and carpet exporters ship their products by land when feasible and resort to air shipments only when they need to meet imminent customers deadlines. Garments manufactures were most unhappy about the limited number of international cargo flights, the cost of the service and lack of capacity in the crucial October- December peak season, the RNAC premium for shipments made through another airline, the mandatory 24 hour cooling period at the airport before shipments can be loaded onto planes, and the need to transfer cargo to a second airline in Europe. Carpet firms also reported similar concerns with this service.

The high cost services preclude most firms using airfreight to transport goods within the country. It is primarily limited to reaching the remotest parts of the country that either are not yet connected to the exiting road network or do not have all- weather roads. Because of the difficult terrain and limited infrastructure, helicopters provided most of this service. Firms in the metal and metal products industries use this service more than any other group of firms. Most of these are shipments of cables, pipes and other metal- based products that are used in construction projects. The primary problem on domestic airfreight is the unavailability of helicopters as aircraft and the cost of the services.

The study has revealed that the use of airfreight services by manufacturing firms varies with industry and is concentrated in five industries group. Table 5.14 shows that about 85 percent

of firms in the garments, carpets and pharmaceuticals industries and 60 percent of the firms in the textile and metal industries use airfreight services. In contrast less than one-third of the firms in the remaining sectors use this services. The primary motivation for using airfreight also varies with industry. With the notable exception of garment manufacturers, most firms using were happy with services that the services that they received.

Table 5.14: Use and Adequacy of Airfreight Services by Industry

Type of Manufactures	Percent of manufacturers using Air Freight	Percent of manufacturers using Air Freight who have problems
Food and Beverage	45	4
Wood and Wood Products	29	20
Chemicals and Paints	21	0
Carpet	90	18
Textile Excluding Carpet	63	10
Garment & Leather	87	47
Metal Basic & Fabricate	60	82
Pharmaceuticals	82	0
Non-metal Fabricate	10	0

Source: The World Bank/ FNCCI, 2000

The domestic airline Royal Nepal is extremely inefficient, and only privatisation or liquidation seems to be viable options (FIAS/World Bank 1998). The airport infrastructure is equally weak. The country has one international airport in Kathmandu, and 44 domestic terminal facilities, and ground handing capacity.

All airport operations are the responsibility of the Department of Civil Aviation under the Ministry of Tourism and Civil Aviation. But a reform process is currently underway to transform the Department into autonomous Nepal Civil Aviations Authority (NCAA).

The new authority will have the ability to develop projects in conjunction with private investors, primarily in the form of joint ventures. The NCAA management appears quite interested in involving private investors, even if no individual projects have been developed in detail.

The Kathmandu airport expansion is presently the largest ongoing project, including the doubling of terminal and car park facilities as well as the construction of a new cargo terminal. Besides future projects at the Kathmandu airport, the NCAA also envisions private involvement in the construction of a second airport near the capital. While traffic is currently low, peak time problems already arise, and due to its geographic location there is no possibility of building a second runway.

5.2.5. Telecommunications

Nepal's rugged terrain and much dispersed population make it very difficult and costly to layout a nationwide wire-line infrastructure. New services like cellular and satellites started only recently and are still very expensive. So far, NTC is the sole provider of telephony services and unless there is competition in this field consumers are unlikely to see any price drop. NTC, the government owned monopoly, has 230,000 telephone lines in service and has 260,000 applications waiting for telephone connection.

The report of FNCCI/WB (2000) found that around one fifth of the firms have problems related to telecommunication services and nature of the problem depends largely on location. Table 5.15 provides the breakdown on firms' problems in different sampled districts.

Table 5.15: Adequacy of Telecom Services by Location

Location	Percent of firms with problems	Percent of firms with severe problems
Kathmandu	8	3
Biratnagar	8	6
Pokhara	27	7
Butwal	5	0
Birgunj	47	27
Nepalgunj	35	29
Hetauda	42	14
Dhangadhi	27	0

Source: The World Bank/ FNCCI (2000)

Firms outside the Kathmandu complain about the unavailability of phone lines more than the firms located in Kathmandu.

One of the hindrances to growth of Internet in Nepal used to be the high cost. Until a few years ago, subscribers had to pay NRs.5.00 to NRs.10.00 per minute of use. ISPs complained that NTC charged them too high for international connectivity. However, recently the rates have dropped significantly.

Although projects have started to bring internet into the rural areas, the illiteracy rate in Nepal is still high and it is unlikely to see much growth in the use of computers or internet growth in the villages where the majority of Nepalese live. Even educated Nepalese generally do not use computers either because they can get by without using it, or because they lack the skills.

However, for rural businesses and schools it is extremely important to continue with the expansion of these facilities. Dispersed and low demand will influence the pace of expansion of Internet services in the more remote areas. Supportive measures would be required to make Internet access available for all (such as special long-distance telecom rates for rural Internet providers).

The private sector has moved in rapidly in urban areas where business opportunities are available. Internet cafes have sprung up and many computer-training institutes have mushroomed in the cities reacting to the demand for computer training.

5.2.6. Water Supply

The Ninth Plan (1998) identifies some of the major problems related to water supplies as originating from lack of a clear legal framework, no provisions for private sector involvement, inadequate decentralization to local authorities, poor technical and administrative capabilities.

FNCCI/WB (2000) reports that nearly one-third of the studied firms indicated that they have problems with the water supply in each location (Table 5.16). The problem is more acute in Kathmandu and to a limited extent in Pokhara and Butwal. It is interesting to note that due to limited public water supply system all firms in Nepalgunj and Dhanghadi were found having own water sources. Besides, even other cities of Terai most firm have their own well.

Table 5.16: Adequacy of Water Services by Location

Location	Percentage of firms with problems	Percentage of firms with severe problems	Percentage of firms having own service
Kathmandu	58	41	75
Biratnagar	3	0	80
Pokhara	57	21	7
Butwal	25	10	52
Birgunj	0	0	93
Nepalgunj	12	6	100
Hetauda	17	0	36
Dhanghadi	10	0	100

Source: FNCCI/WB, 2000

Table 5.17 and Table 5.18 assess the adequacy of water according to the type of industry and Industry size.

The industries most affected by the unavailability of water are carpets, garments and textiles (World Bank/FIAS 1998). All three of these industries require water in their washing and dyeing processes. Most firms in the carpet and garment industries are located in Kathmandu despite the water shortages because of the need to access export- related facilities. The water situation is expected to worsen with the growth in these major exporting sectors.

Table 5.17: Adequacy of Water Supply Services by Type of Industry

Type of Industries	Percent of firms with problems	Percent of firms with severe problems	Percentage of firms having own service
Food & Beverage	26	16	78
Wood & Wood Product	39	6	40
Chemicals & Paints	0	0	71
Carpets	56	44	76
Textile excluding carpets	22	22	94
Garments & Leather	47	26	68
Metal & Metal products	23	15	65
Pharmaceuticals	26	18	80
Non-Metal Fabricate	40	20	64

Source: FNCCI/WB, 2000

Table 5.18: Adequacy of Water Supply Services by Firm Size

Type of Industries	Percent of firms with problems	Percent of firms with severe problems	Percentage of firms having own service
Micro	23	7	42
Small	31	14	67
Medium	27	17	76
Large	32	20	76
Conglomerate	48	29	79
Super	42	36	93

Source: FNCCI/WB, 2000

The percentage of firms investing in their own wells increases with the size of the firm. Larger firms have a greater need for water and are unlikely to be obtaining adequate supplies from the system. They also have resources available enabling them to set up their own well.

Small firms are at a disadvantage. To separate out problems related to access and cost of water service from problems related to the availability of supply, the survey asked firms to report the number of days per month that they received an inadequate supply of water. Nearly two-fifths of firms in Kathmandu reported that they do not receiving enough water everyday. A small fraction in the other cities reported not receiving an adequate supply regularly. Most of these supply system, hence they do not have access to it.

5.2.7. Industrial Estates

The Government has developed a number of industrial estates in the country to provide land and requisite infrastructure services. Although Government has not so far been able to apply industrial zoning, development of industrial estates to a large extent facilitated industries to establish and operate. Land in the industrial estates is given on lease and the government develops necessary infrastructure in these estates. Nine industrial estates were established in different parts of the country including three in Kathmandu Valley (Balaju, Patan and Bhaktapur). Previously, it was managed by Industrial Services Centre and later, a new organization, Industrial Districts Management Company (IDM), was constituted to manage industrial estates.

Setting up an industrial estate requires considerable investment on the creation of physical facilities; efficient transportation network, communication, housing, electrical power, water supply, sanitation and waste disposal. Because of the lack of such facilities and services in most part of the country it is quite difficult to establish industrial estates in remote areas. Providing rural roads and rural electricity will enable district towns to have their own industrial sites where the demand from industry for industrial land exists.

Initially the attention of these industrial estates was great and a large number of industries grew. But gradually trade unionism prevailed at higher levels in the estates. Problem in one enterprise tended to affect the operation of the whole estate. In such a scenario, investors preferred to establish industries outside the estates reducing the attraction and charm of these estates. One example is Rajbiraj industrial estate, which could not attract a single industry for decades. Hence, the viability of industrial estates is becoming a serious issue.

Some of the major problems are:

- Firms cannot own the land in the industrial estate. This can be a constraint for firms in need for a collateral when acquiring loans. Moreover, investment in improvement of the facilities is limited resulting in poor conditions of buildings within the industrial estates.
- Firms are not satisfied with the supply of infrastructural services through the industrial estate. They rather deal directly with the service providers.
- Lack of industrial land particularly in the prime locations near Kathmandu, Biratnagar, etc.
- Industrial estates act as focal points for labour unrest. Problems starting in one firm easily affect other firms in the same estate. High concentration of labour increases the strength of trade unions. Because of this, investors prefer to locate outside the industrial estates.

The Inland Container Depots (ICDs) or “Dry Port” currently being built in Birgunj in combination with the railway link between Raxaul and Birgunj will ease the movement of goods between Nepal’s border and Calcutta seaport. Plans have been proposed to build container facilities (dry ports) at Bhairahawa and Biratnagar as well. This would bring about major improvements in industrial inputs supply and export transport facilities. Industrial

policy would have to make use of such facilities by combining them with export processing zones. However, the movement of goods under present ICD framework has not materialized yet in the absence of the necessary agreement with India.

5.2.8. General Business Climate for Infrastructure Projects

Large differences exist among infrastructure sectors in terms of efforts by the government to involve private sector investors. In electricity and telecommunications, the government has made headway in developing a policy framework designed to attract private investors. In transport and water little work has been done.

To a large extent this reflects market realities. The introduction of cellular telephone in a country with very limited fixed- wire services clearly is a commercial opportunity. The hydropower potential in the country is enormous, and the lack of sufficient reliable electricity supply within the country as well as the massive market of India makes for potentially very attractive investment.

Accordingly the government has focused on reforming the sectors with the largest potential for private investment. But it has not yet developed an overall strategy to incorporate private financing into its overall development strategy. Especially in the transport and water sector, government authorities still tend to rely on traditional public sector financing, primarily driven by the availability of funding from bilateral and multilateral donors. Private financing alternatives only seem to be considered as a last resort when everything else fails. Hence, no coherent financing plan has resulted from this.

At present government's support to private infrastructure investments is limited to get benefits directly granted through foreign investment in general. The existing incentive system is characterized by a large number of different benefits with a particular focus on tax holidays. This system is complicated, difficult to implement, costly to the treasury, and most importantly, not effective in attracting additional investment.

Under the existing policy, there is a limited benefit for infrastructure development. Theoretically high-sounding provisions like tax holidays are introduced but this is not applicable in the country like Nepal, where many things has yet to be constructed for infrastructural components.

Infrastructure projects due to their long time-horizon as well as there dependence on government policies are subjects to particular risks (such as force major, changes in law, or credit worthiness of state-owned enterprises), many of which are outside the control of private investors. Furthermore, some projects might only become financially attractive after a sharing of project risks with the government as for example, minimum revenue guarantees for toll roads with questionable traffic flow. However, the inability of mitigating specific risks clearly can be deal breaker, making a particular investment unattractive. Hence, rather than providing general tax benefits, the government might be well advised to focus on developing specific guarantee and support arrangements that could be made available on a case-by-case basis.

5.2.9. Recommendations

The Draft Tenth Plan has given priority to involve private sector in the area of infrastructure development. But the private sector has been found reluctant because of the risk involved in

infrastructure development. If the government intends to make private sector a central pillar in its overall strategy to develop country's infrastructure, a framework will be needed to combine public and private financial resources so as to maximize the available financing for infrastructure development.

The existing institutional structure will need to be strengthened to facilitate the implementation of private infrastructure projects by improving the coordination and cooperation within government and by making available technical, legal and financial skills needed to be improved. Infrastructural development policy should be formulated in accordance with national, regional, and international commitments.

Dispersion

Industries should be free to locate at the most advantageous place. Some types of industries might prefer to locate in rural areas: close to their market, close to their input supply, or close to their labour force. Many agro-based industries would fall in this category but basic infrastructure such as roads, electricity and telecom services are still lacking. Only when these are in place rural industrialization will be able to contribute to poverty alleviation and regional balance.

Industrial Estates-zoning/belting

Modern and urban-based industries need a certain degree of concentration to benefit from positive externalities. For efficient commercial and other business services to industry to develop a certain level of demand is required which can only be realized with sufficient concentration of industries. Activities such as labour training, exchange of information on market developments and technology changes, lobby services to government, will only flower with concentrated proximity to urban areas.

Thus the existing industrial estates in viable areas must be improved to deliver up to date services. Industrial estate legislation (by-laws) should be updated to allow for land ownership within existing estates and to allow for private estate developers.

Industrial zoning appears a more flexible instrument to cater for investors needs. The Ministry of Industry should coordinate with local governance bodies and relevant line Ministries to select industrial zones based on land use pattern, assessment of basic infrastructure and competitive market including other facilities such as postal, banking etc. Cost can be minimized by selecting areas where all relevant physical infrastructure is already available or when integrated into urban development plans.

Thus, “Infrastructure Planning” at the national and local level should be integrated with urban or rural planning to facilitate the manufacture sector in order to assure essential infrastructure requirements. Multi-sectoral collaboration, co-ordination with line agencies stakeholders, and infrastructure facility providers is essential from the very early stage of planning.

The Inland Container Depots (ICDs) or “Dry Port” currently being built in Birgunj in combination with the railway link between Raxaul and Birgunj will ease the movement of goods between Nepal’s border and Calcutta seaport. Plans have been proposed to build container facilities (dry ports) at Bhairahawa and Biratnagar as well. This would bring about major improvements in industrial inputs supply and export transport facilities. Industrial policy would have to make use of such facilities by combining them with export processing zones. However, the movement of goods under present ICD framework has not materialized yet in the absence of the necessary agreement with India.

Transport

District headquarters, potential manufacturing growth centres including agro-based rural farms should be linked up by national road or agriculture roads or feeder roads etc as planning of District Transport Master Plan (DTMP). Priority should be given to areas with agricultural and industrial potential.

The private sector direct investment in the transport sector (construction and operation of roads, toll fee roads, tunnelling, airports, railways) should be facilitated by reforming the transport related acts including the Public Road Improvement Fee Fund Act 1996, Municipality Act of 1992, Municipality Regulation of 1993 and others. Government should formulate an integrated National Transport Act, incorporating all forms of transport infrastructure into one act including possibilities for private sector involvement.

The East West Highway should be improved and maintained to provide the services in line with Asian standards for the crucial linkage to markets of South Asian Countries and their ports.

Recently the ADB has taken initiative to form South Asia Growth Quadrangle (SAGQ) encompassing Bhutan, Bangladesh, India and Nepal. Modelled after the Greater Mekong Sub-regional Development Programme (GMSDP), another regional initiatives of the ADB, the prime aim of SAGQ is to harness external finance for funding infrastructure projects of mutual benefit to two or more of these countries. Like in the case of GMSDP, the Japanese government has expressed willingness to provide infrastructure development projects under the interest in participation.

Based on this experience, the SAGQ has the potential to be of great value for the two landlocked countries (Nepal and Bhutan), in harnessing Japanese development aid to solve some of their perennial transportation problems. Nepal should strive to place the proposed access route to the Chittagong port in Bangladesh via India on the policy agenda of SAGQ.

Telecommunications

The legal framework of the telecommunication sector (1997) should be reviewed for quality and sustainable expansion of the system for the different part of the country by encouraging the role of private investors. This is needed after government's decision to introduce the possibility for private investment in local and long distance fixed wire operations as well as cellular and value added services such as fax, internet or pager in (1995).

Establishment of National Information Centre under the Ministry of Science and Technology for the development of policy, technology formulation and, establishment of industries related to communication, software, telecommunication as recommended in the draft document of the Tenth Plan.

Water Supply

There is a need of reviewing the existing regulatory provisions regarding the water sector and water supply system including the Water Resources Act of 1992 and the Water Resources Regulations of 1993 to define ownership rights at community users level, municipal and VDC level and to facilitate manufacturers needs for private access to water. Private sector's role in water supply development should be incorporated in the legal framework.

6. Performance of Nepal's Manufacturing Sector

This chapter will focus on the performance of the manufacturing sector of Nepal. First, Section 6.1 will compare Nepal's manufacturing sector with a number of selected countries, from the region and other relevant benchmark countries. The second section presents an analysis of productivity performance Nepal's manufacturing sub-sectors in terms of their relative performance in productivity level and growth and the factors explaining these differences.

6.1. Nepal's Industrialization Compared

6.1.1. Introduction

This section compares Nepal's manufacturing performance with its South Asian neighbours and Southeast Asian countries, and also with selected countries elsewhere in the world, by means of selected indicators of industrial progress. It is part of a larger effort at producing a comprehensive Industrial Development Perspective Plan (IDPP) for Nepal for the period 2002-2020. During this period and with the help of a long-term vision and appropriate policies, strategies and programmes, the contribution of the manufacturing sector is expected to double from the current 10 to around 20 per cent of GDP by 2020. Since GDP itself is targeted to grow at 7 per cent per year, the implied growth rate of the manufacturing sector is relatively high at around 10 per cent per annum, much higher than the 6 per cent average annual growth rate achieved in the 1985-2000 period.

This section is divided into four sub-sections. Following this introduction, section 6.1.2 compares the manufacturing performance of Nepal with other countries in terms of industrial growth and structural change, technology level of manufacturing production, and level and patterns of production in metal and engineering industries. It then compares Nepal's labour costs in dollars with other countries, and discusses the relationship between labour costs, labour productivity and cost of labour as a share of gross output. It ends with a brief review labour productivity differentials by establishment size. Section 6.1.3 compares Nepal's trade performance, and discusses in turn the overall balance of trade in manufacturing and other goods, the market positioning and revealed comparative advantage of Nepali exports, growth and structural changes in manufacturing exports, and their technology level. Finally, Section 6.1.4 summarizes the major findings of the paper, and discusses prospects for the future manufacturing development of the country.

The following major data sources were used. First, extensive use was made of the *UNIDO Industrial Statistics 2001*, compiled on the basis of establishment surveys and censuses of medium and large manufacturing industries, and undertaken by the countries' own statistical agencies. In general, these surveys do not include cottage and household industries, though a small number of countries include establishments employing as little as five workers. Second, UNIDO has produced a set of indicators for assessing industrial development in a report entitled *Measure for Measure: Building UNIDO's System for Industrial Development Indicators* (SIDI) in 1999, and which contains much relevant manufacturing GDP and manufacturing trade data for a number of countries[42]. Third, where data gaps appear for Nepal, the paper has made use of in-country statistical sources such as the *Statistical*

[42] Helmut Forstner, UNIDO, provided updated tables from 1995 to 1997.

Yearbook of Nepal 2001 produced by the Central Bureau of Statistics, the *Economic Survey 2001* produced by the Ministry of Finance, the *Nepal and the World – A statistical Profile 2000*, produced by the Federation of Nepalese Chambers of Commerce and Industry (FNCCI).[43]

6.1.2. Manufacturing Performance

6.1.2.1. Manufacturing Level, Productivity and Output Share

Manufacturing level

The single most important indicator of industrial development is the industrial output per head of population. Highly industrialized countries have a very high manufacturing output per capita even though manufacturing employment as a share of the total workforce is relatively small or declining, as in the USA, most European countries and Singapore, while service employment is relatively large and rising.

Nepal's per capita manufacturing value-added stood at US$18 per day in 1997 (1990 prices, see Figure 6.1). This placed the country among the lowest industrial producers in the world, along with African countries such as Nigeria and Tanzania ($12-15). It was lower than that of Bangladesh ($22). Compared with medium-low industrial producers, Nepal's level was a third of that of Pakistan ($59), a fourth of that of its large neighbour India ($75), and a sixth of that of Sri Lanka ($116). The level of medium industrial producers, such as of Philippines, Indonesia and China, was 10-15 times higher than that of Nepal. That of medium-high industrial producers, such as Thailand and Malaysia, was 40-60 times higher than Nepal. Finally, highly industrialized countries such as Korea, Taiwan and Singapore produced respectively 150-300 times more industrial goods per head of population as Nepal.

While Nepal's industrial output level was the same as a number of African countries, there was an important difference. Per capita industrial output of many African countries, including Tanzania and Nigeria, did not grow in the period 1985-1997, while Nepal posted a respectable 6 per cent annual growth rate in this period.[44] This growth rate was higher than that of Pakistan and India, and on par with that of Sri Lanka. Nevertheless, it was half the level of several Southeast Asian countries, including Indonesia, Thailand, China and Malaysia. Catching up with high industrial performers will be doubly difficult since they continued to grow at some of the highest rates in the world.

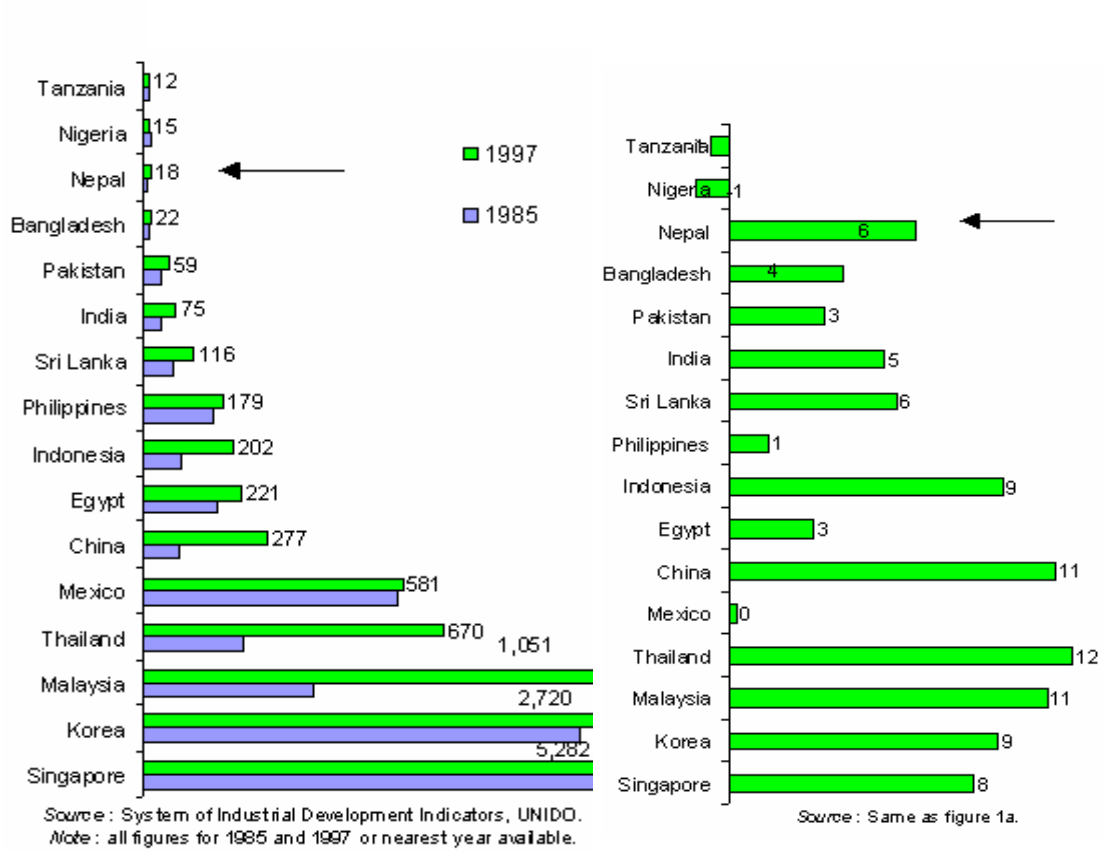
Labour productivity

Manufacturing value-added per employee for Nepal stood at US$2,000 per annum in 1996-97, one of the lowest in the world (6.3). It was two thirds of the level of China and half the level of Sri Lanka and India. It was a fifth of that of Poland and Indonesia, and around a tenth of that of Thailand, Philippines and Malaysia. As discussed later, the chief reason for this appears to be the paucity of capital that manufacturing workers had to work with in Nepal, especially in small and medium industries, which employed the majority of manufacturing workers.

[43] Shyam Upadhyaya kindly provided comments and feedback on the reliability of Nepali data sources.
[44] All growth rates, unless mentioned otherwise, are point-to-point compound growth rates per year.

Figure 6.1: Manufacturing value-added per capita (US$/year, 1990 prices) [left]

Figure 6.2: Growth rate in MVA per capita 1985-1997 (% p.a.) [right]

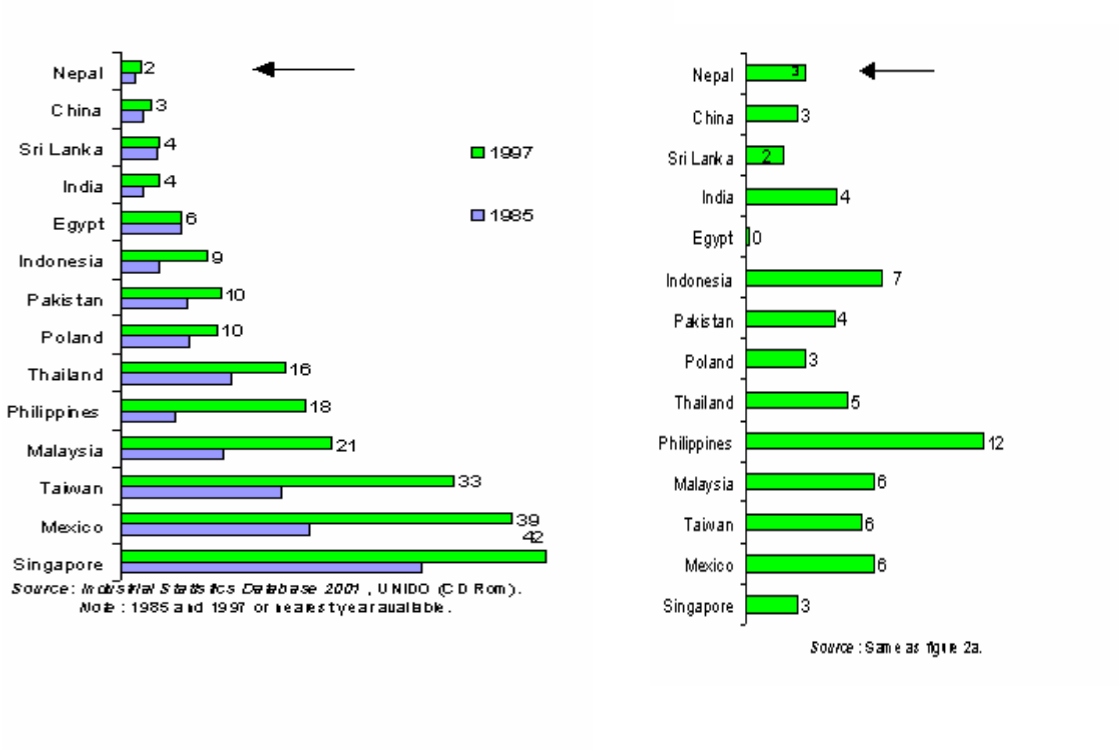


Differences in labour productivity between countries were smaller than those observed above for manufacturing level per head of population. This reflects in part the size of the labour force engaged in manufacturing relative to other sectors such as agriculture, trade and services. It is also a reflection of the industrial mix of a country. At the high end of industrial producers, labour productivity in Korea and Singapore, at around $40,000 per worker, was about 20 times higher than that of Nepal.

Nepal averaged a growth rate in manufacturing labour productivity of 3 per cent per annum between 1986 and 1996 (Figure 6.4). This was similar to the rate of neighbouring India, Pakistan and China, but lower than medium industrial nations such as Indonesia, Thailand, Philippines, Malaysia and Mexico (5-7 per cent).

Figure 6.3: Manufacturing Value-added/Employee (US$1000/year, current dollars) [left]

Figure 6.4: Labour Productivity Growth 1985-1997 (% p.a., current US$) [right]



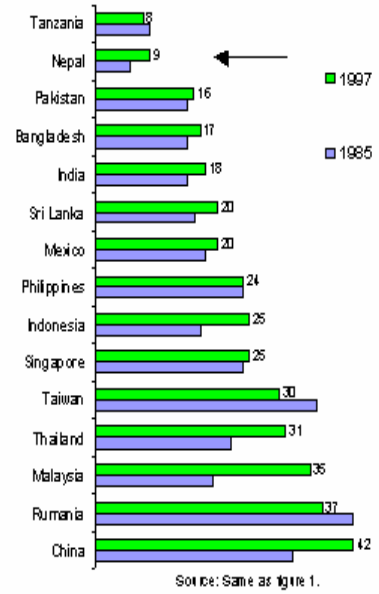
Manufacturing output share

The manufacturing sector accounted for 9 per cent of total GDP in Nepal in 1997, on par with Tanzania (Figure 6.5). This was about half of that of Pakistan, Bangladesh, India, Sri Lanka and Mexico (16-20 per cent), and a third of middle industrial producers Philippines, Indonesia (24-25 per cent). The manufacturing share of high industrial producers Taiwan and Malaysia was even higher at 30-35 per cent. China had the highest share at 42 per cent, followed by Eastern European countries such as Rumania (37 per cent).

As in many countries, the manufacturing sector grew faster than the rest of the economy in Nepal. As a result, this sector's share in GDP increased by 3 percentage points over the period 1985-1997 (Figure 6.6), a rate of structural transformation similar to that of India and Sri Lanka, and faster than Pakistan and Bangladesh. However this was nowhere as rapid as in Indonesia, Thailand and China (8-10 per cent), or Malaysia (16 per cent). Structural changes such as the above were by no means the norm in the world, as observed by the stagnant share of the manufacturing sector in Philippines and Pakistan, and even decline in some South American and Eastern European and African countries.

Figure 6.5: Share of Manufacturing in GDP (%) [left]

Figure 6.6: Change in Share of Manufacturing in GDP, 1985-1997 [right]



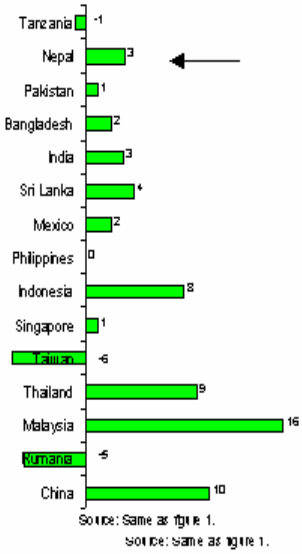
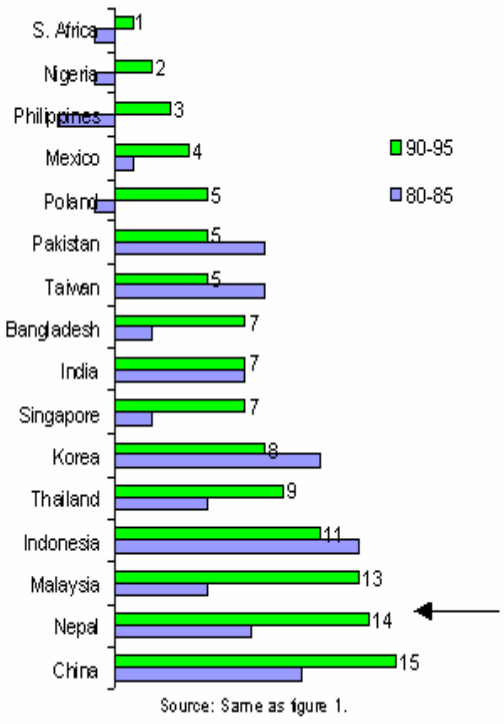
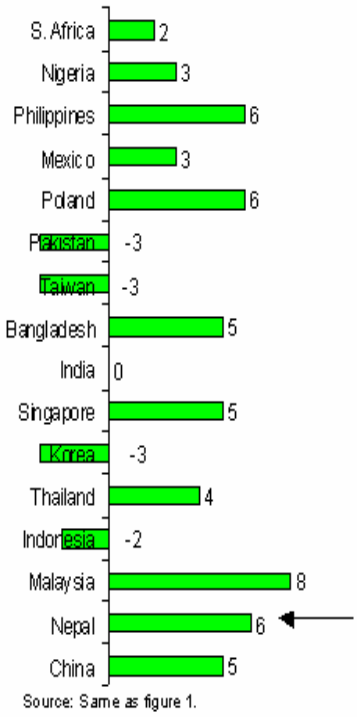


Figure 6.7: Growth in MVA 1980-85 and 1990-95 (% p.a.) [left]

Figure 6.8: Change in MVA Growth Rates 1980-85 and 1990-95 (% p.a.) [right]





In Singapore and Taiwan however, the rest of the economy grew just as rapidly, leaving manufacturing's share in GDP unchanged. Patterns of structural transformation were different now than say two decades ago, as also witnessed by the declining output share of manufacturing in several industrialized countries. Nevertheless, for countries with similar resource endowments and at about the same stage of development as Nepal, structural transformation provides an indication of the degree of industrialization of an economy.

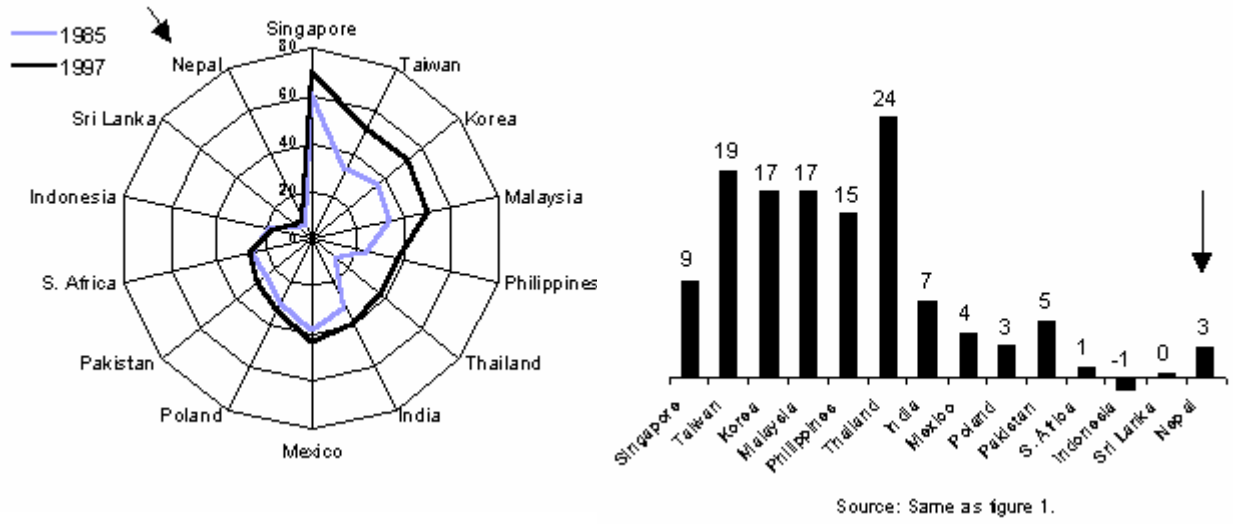
Manufacturing output growth
Starting from a relatively small base, the rate of growth of Nepal's manufacturing sector doubled from 7 to 14 per cent per annum between the first half of the 1980s and the first half of the 1990s, in the latter period comparable to the high rates of China and Malaysia (Figure 6.7 and Figure 6.8). The 1990s growth rate was faster than Thailand and Indonesia (9-11 per cent), and much higher than India, Pakistan and Bangladesh (5-7 per cent). In some African and Eastern European countries, but also in Philippines, the manufacturing sector contracted in the 1980s, before growing again in the 1990s.

6.1.2.2. Technological Level of Manufacturing Production
To assess and compare the technological capabilities of production in different countries, manufacturing industries can be classified into three categories. The first one consists of *higher technology* industries including pharmaceuticals, chemicals, office and computing equipment, consumer electronics (and parts), communication equipment, motor vehicles and other transport equipment (and parts), and machinery. The second category consists of *medium-technology* industries including rubber and plastic products, cement, petroleum refinery products, basic metals and simple fabricated metal products. The third category consists of *low-technology* industries such as, food, beverages, tobacco, textiles, garments, footwear, wood products, furniture and paper and printing.

The technology level of manufacturing in Nepal was among the lowest in Asia (Figure 6.9). The share of higher technology industries in Nepal reached 9 per cent in 1997, similar to that of Sri Lanka (8 per cent). It was less than half of that of Indonesia and South Africa (20-26 per cent), and a third of that of Pakistan and Poland (29-33 per cent). The share of higher technology industries of middle industrial producers Mexico, Thailand and Philippines was four times as high as in Nepal (40-43 per cent), a share matched by India. Higher technology industries accounted for 50-53 per cent in more industrialized Malaysia, Korea and Taiwan, and 70 per cent in Singapore.

Figure 6.9: % Share of Higher Technology [left]

Figure 6.10: Change in Share of Higher Technology [right]



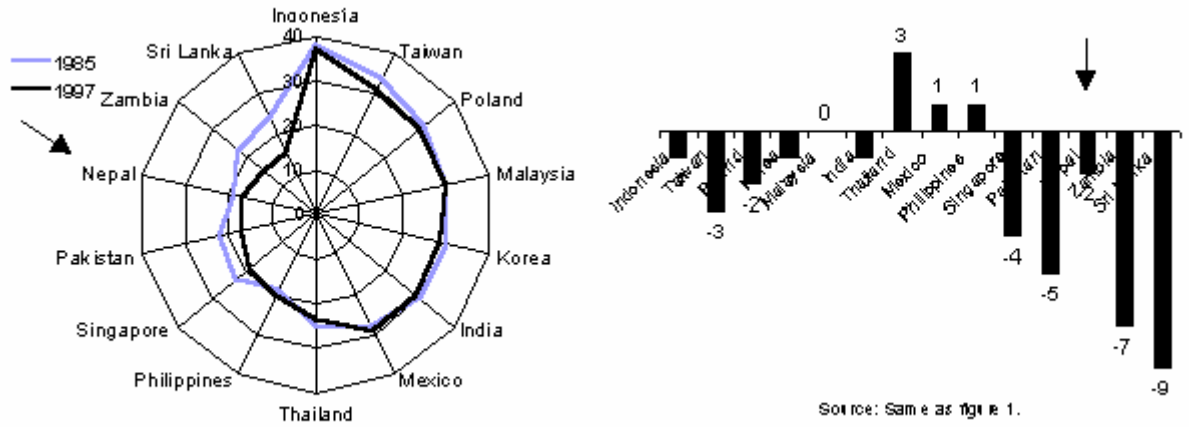
Nevertheless, the share of higher technology industries rose from 6 to 9 per cent in Nepal, while it stagnated in Sri Lanka in the period 1985-1997 (Figure 6.10). With the exception of Indonesia, which specialized in the production of labour-intensive exports, Southeast Asian countries experienced the fasted structural change in this respect, the share of higher technology industries rising by 15-17 per cent in most cases, and reaching 24 per cent in the case of Thailand.

It is important to note that the simple classification scheme above may overstate technological level and upgrading of some Southeast Asian countries. This is because it does not distinguish between final assembly (using mainly imported components) on one hand, and production using domestic intermediate inputs on the other. Since countries such as Thailand, Philippines and Indonesia rely to a significant extent on imported inputs, particularly in the electronic and motor vehicle industries, much of so-called higher technology industries were in fact relatively simple labour-intensive operations, relying mainly on good quality assembly labour. Nevertheless, in order to attract such industries, these countries also provided security, a stable political and macroeconomic environment, efficient infrastructure, stable labour relations and good trading links in the region.

The share of medium-technology industries including rubber, plastic, cement and basic metals declined slightly from 19 to 17 per cent of total manufacturing value-added (Figure 6.11). This share, which includes most basic industries, has generally remained quite stable for most countries shown here.

Figure 6.11: % Share in Medium Technology Industries in MVA, 1985-97 [left]

Figure 6.12: Change in Share of Medium Technology Industries in MVA, 1985-97 (%) [right]

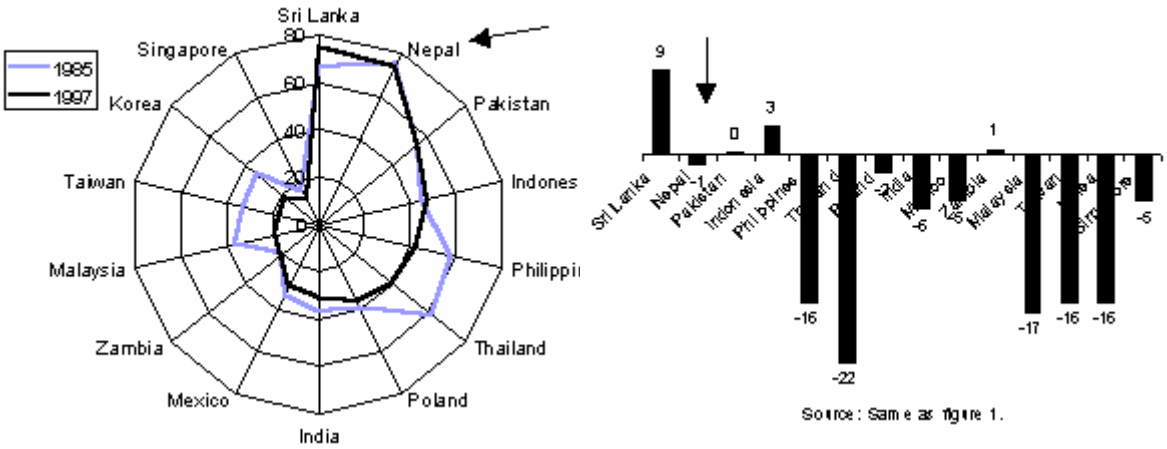


Source: Same as figure 1.

Finally, 74 per cent of the industrial output of Nepal was accounted for by low-technology industries, the highest in Asia with Sri Lanka (75 per cent) in 1997 (Figure 6.13 and Figure 6.14). Furthermore, along with Pakistan and Indonesia, this share remained stable or increased during the 1985-97 period. This was unlike the experience of most countries, especially in Southeast Asia, where the production of lower technology industries diminished in importance in favour of higher technology industries.

Figure 6.13: % Share of Low Technology Industries in MVA [left]

Figure 6.14: Change in % Share in Low Technology Industries, 1985-97 [right]



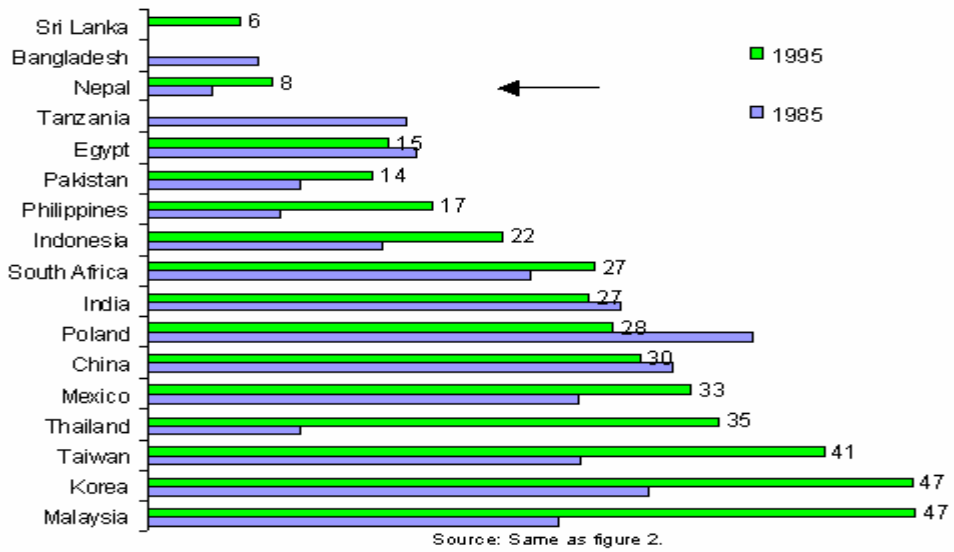
6.1.2.3. Metal and Engineering Industries

Industrial sub-sectors differ in the intensity of their technology development activities. Sectors such as pharmaceuticals, aerospace and electronics engage more intensely in R&D than footwear and steel in industrial countries. However, cross-sectional observations such as this do not easily translate into policy prescriptions over time, though it is commonly believed that it does. Thus the import-substitution strategies of the 1950s and 1960s, the domestic production of capital goods in the 1970s, the location of electronic industries in the 1980s, and particular parts of the electronic industries such as wafer fabrication in the 1990s, brought the manufacturing production capabilities to industrializing countries but not the associated innovative activity, which remained behind in the industrial countries. Similarly the use of IT systems in the 'new economy' of the 2000s, though an important change in production activities and competitiveness, is unlikely to lead automatically to the deepening of innovative capabilities and activities in industrialising countries.

Nevertheless, there are links between manufacturing production and innovation. First, domestic manufacturing production of more technologically advanced products and processes is the necessary base, though not sufficient, upon which to build incremental design and engineering changes to adapt and improve upon, activities which are the most important ones for industrial technology development. Technology development has to be undertaken in close proximity to where production and marketing operations are located. Second, entry into industries which are growing rapidly in the world economy offer greater opportunities for deepening local technological development capabilities. In both cases, appropriate policies must be in place to stimulate and support firms' awareness for technology development and response capability, and to turn such opportunities into practical realities through incentives and support mechanisms.

With respect to the potential for manufacturing goods that are growing rapidly in world trade, it is useful to first look at the share of the metal and engineering industries as a whole in total manufacturing value-added (ISIC sector 38). This share stood at 8 per cent for Nepal in 1997, a figure comparable to Sri Lanka and Bangladesh (6-7 per cent), but much lower than that of Pakistan and India (14 and 27 per cent). This share was in the 20-35 per cent range for middle industrial producers Indonesia, South Africa, Poland, China, Mexico and Thailand), and in the 40-50 per cent range for high industrial producers Taiwan, Korea and Malaysia.

Figure 6.15: % Share of Metal Industries in MVA (ISIC 38)



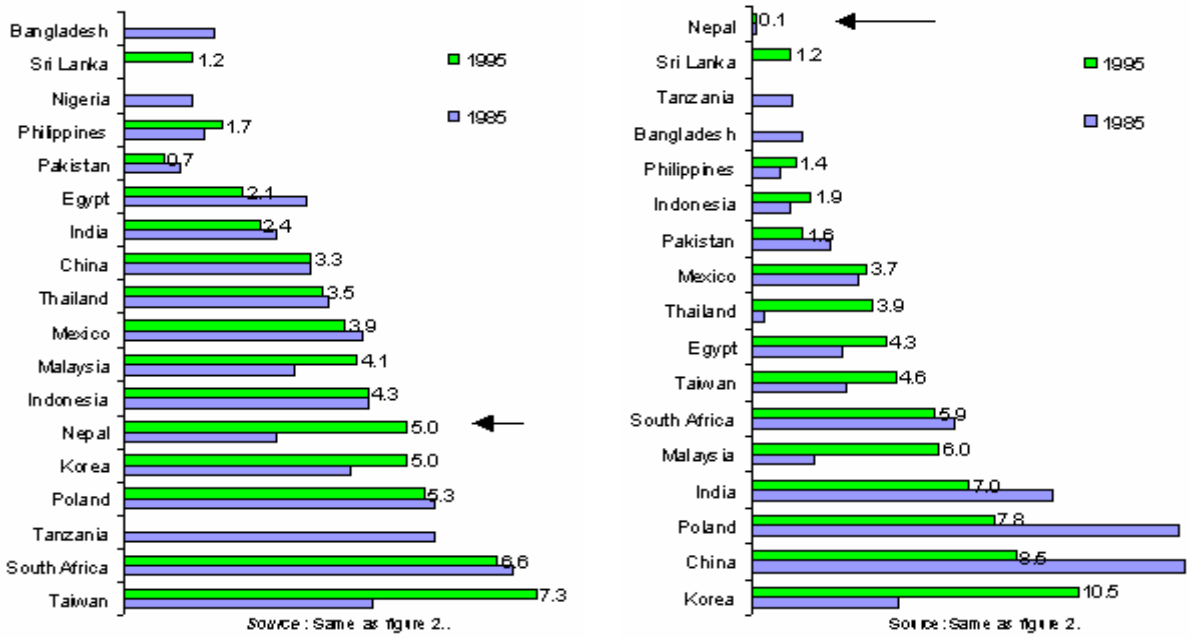
Production of machinery

The production of capital goods plays a very special role in industrialization because it engages firms in developing their manufacturing capabilities through activities such as reverse engineering and adapting foreign technology to domestic markets, products, conditions and scales of production. They also provide the technological base for further industrial diversification and the deepening of manufacturing production.

In the case of Nepal, the production of machinery was insignificant at 0.1 per cent of manufacturing value-added in 1997 (Figure 6.16 and Figure 6.17). In fact the production of simple fabricated metal products formed the bulk of the production of metal and engineering industries shown in Figure 9 above (5 out of 8 per cent). In general, the higher the industrial development of a country, the higher the share of the machinery sub-sector in manufacturing production, reaching 7, 9 and 10 per cent in respectively India, China and Korea.

Figure 6.16: % Share of Fabricated Metal Products in MVA (ISIC 381) [left]

Figure 6.17: % Share of Machinery in MVA (ISIC 382) [right]

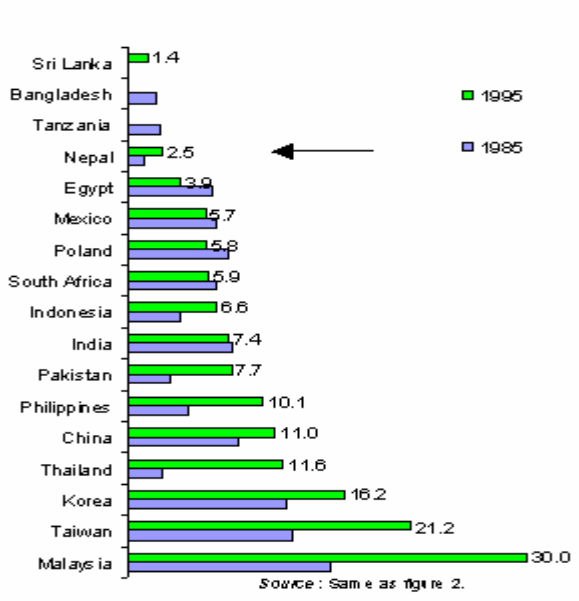


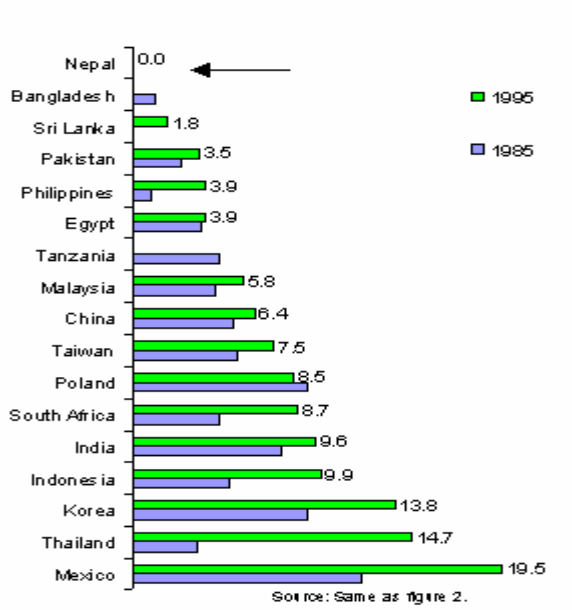
Electrical and Electronic Industries

The share of electrical and electronic goods stood at 2.5 per cent in 1997 in Nepal, up from 1.2 per cent ten years earlier (Figure 6.18). In general the higher the industrialization level of a country, the higher the share of electrical and electronic goods produced in that country, though countries such as Malaysia, Thailand and Philippines have specialized relatively more in this sub-sector than most other countries.

Figure 6.18: % Share of Electrical and Electronic Products in MVA (ISIC 383) [left]

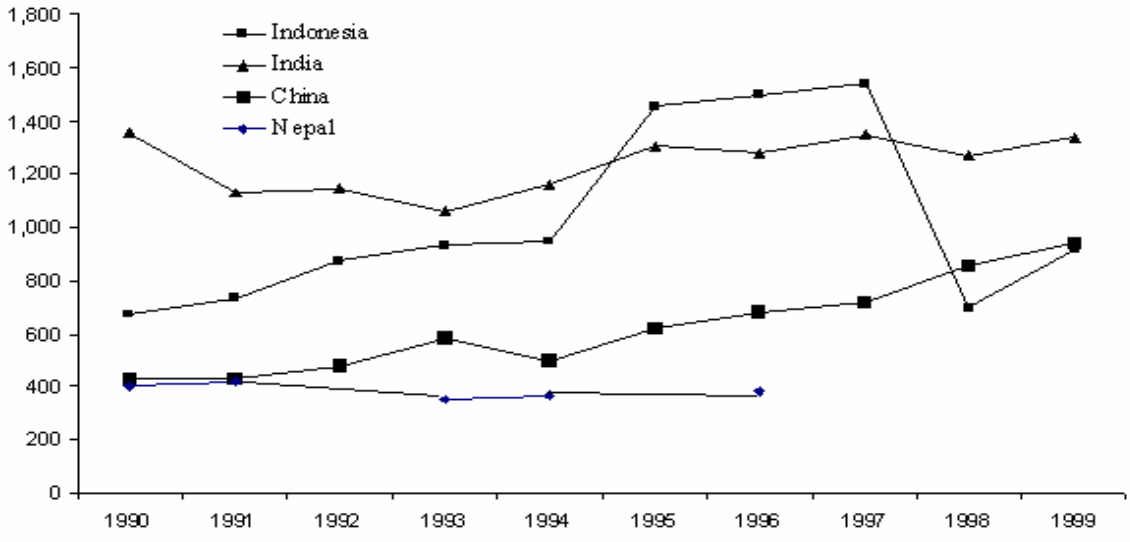
Figure 6.19: % Share of Transport Equipment in MVA (ISIC 384) [right]





Finally, Nepal produced virtually not transport equipment (Figure 6.19), while this share was in the region of 10 per cent for India and Indonesia, and 14-15 per cent for Korea and Thailand.

Figure 6.20: Cost of Labour per Employee, 1990 - 1999 (US$/year)



Source: Nepal, India, Indonesia: *UNIDO Yearbook of Industrial Statistics*, various years.
China: *ILO Yearbook of Employment Statistics*, various years (average earnings).

6.1.2.4. Labour Costs and Labour Productivity

In US dollar terms, labour costs per employee in medium and large-scale manufacturing in Nepal stood at around US$400 per employee per annum in 1996 (Figure 6.20). This were the lowest in Asian countries for which data are available, and stood at less than half the labour cost per employee of China and Indonesia (US$900) and a third of that of India ($1,300) in 1997-99. Moreover, labour costs per employee stagnated in Nepal in 1990-96, though they fluctuated in the 350-420 range in this period, while they grew by 8-9 per cent in Indonesia (before the crisis) and China, and by 2 per cent per year in India. Thus Nepal is well placed to attract labour-intensive industries from this point of view.

In contrast to stagnating wages in dollar terms, labour productivity grew by over 4 per cent per year in the 1990s (table 2.1). This resulted in a decline in labour costs per unit of gross output, from 9.5 to 7.4 per cent between 1990 and 1997, and a corresponding increase in labour competitiveness of Nepali manufacturing as a whole. Nevertheless, this ratio was still higher than that of Indonesia, Philippines, India, Mexico and Thailand (5.8-6.7 per cent), even though they experienced rapid real wage increases. These countries achieved a relatively stable ratio of labour cost per unit of gross output by increasing capital investment in their manufacturing sector and, in the case of Indonesia and perhaps China, by economies of scale in larger plant sizes.

Table 6.1 shows some other interesting features of the industrial development of Nepal compared with its neighbours as well as other countries. As in the case of value-added per worker, gross manufacturing output per employee in Nepal was one of the lowest in the table, on par with Bangladesh (US$4,900-5,100 per year), and half that of Sri Lanka, the third lowest in the table. However, manufacturing production was apparently more profitable in Nepal than in Bangladesh, because operating surplus, the difference between value-added and labour costs as a ratio of gross output, was over 30 per cent in Nepal in both 1990 and 1997, compared with just 11-13 per cent in India during this period, and 19 per cent in Bangladesh in 1990. Operating surplus in Nepal was comparable to that in Sri Lanka, Indonesia, Thailand, Philippines and Mexico.

The average establishment size in Nepal at 66 employees per establishment in 1990, and declining to 52 employees per establishment in 1997, was one of the smallest in the table. While plant size also declined in some countries including Pakistan, Brazil and Egypt, their average plant size was at least twice as large as that of Nepal.

Thus, in order to raise labour productivity, Nepal may need to increase the average size of its manufacturing establishments to benefit from economies of scale, and raise capital investment. Though moving in this direction also implies that less employment can be created per unit of value-added in the manufacturing sector, at least in the short-term, these changes may raise the overall efficiency and quality of manufacturing production, and create jobs elsewhere in the economy, particularly in supporting services.

Table 6.1: Labour Costs, Gross Output and Value-Added per Employee in Manufacturing in Selected Countries, 1990-99 (Current US$)

	Year (LY)	Labour Costs (LC), Gross Output (GO) and Value-added (VA) per Employee, 1999 or Last Year (LY) U$000/year			Change, 1990-1999 or LY [1] (% p.a.)			Establishment size (Employees/ Establishment)		Operating Surplus (VA-LC)/GO %		Labour costs/ Gross Output (%)		
		LC	GO	VA	LC	GO	VA	1990	97/99	1990	97/99	1990	1997	1999
Nepal	1996	0.4	5.2	2.1	0.5	4.2	4.4	66	52	31.4	32.5	9.5	7.4	-
China	1999	0.9[2]	14.3[3]	3.7[3]	9.0	10.1	10.0	116	146	19.3	19.6	4.8[4]	-	-
Malaysia	1999	4.8	72.8	19.1	9.1	9.2	9.9	123	-	18.6	19.7	7.0	6.9	6.6
Philippines	1997	3.0	43.1	17.7	7.4	10.1	12.0	93	88	28.2	34.2	8.2	6.9	-
Thailand	1998	2.4	36.1	8.2	8.4	10.7	7.3	158	168	28.7	21.5	8.2	6.7	6.7
Indonesia	1999	0.9	14.7	5.8	8.2	8.2	10.5	160	182	31.0	31.1	6.0[5]	6.1	6.2
India	1999	1.3	23.1	4.3	2.1	4.4	5.1	67	68	10.9	12.6	6.9	5.9	5.8
Bangladesh	1992	0.6	4.9	1.6	-	-	-	41	-	19.4	-	11.7	-	-
Pakistan	1996	2.1	34.3	10.5	2.6	5.2	5.4	130	126	22.5	24.7	7.0	6.0	-
Sri Lanka	1995	0.8	9.3	4.1	5.3	0.8	2.5	100	-	33.6	35.5	6.8	8.4	-
Mexico	1999	7.4	114.3	44.1	4.5	7.2	6.9	313	275	31.5	32.0	8.2	6.5	6.5
Brazil	1995	10.5	92.9	49.0	8.8	8.7	8.3	143	142	42.6	41.5	11.3	11.3	-
Turkey	1996	6.9	90.7	34.2	1.2	3.3	2.4	177	-	30.9	30.0	8.6	7.7	-
Poland	1999	4.0	34.1	10.4	13.7	9.3	3.5	522	437	43.3	18.8	8.2	11.7	11.7
Czech Rep.	1998	3.7	20.2	3.1	-	-	-	-	-	-	-	-	-	-
South Africa	1999	7.8	43.0	16.1	0.1	-0.5	0.7	63	-	16.6	19.4	17.1	18.0	18.1
Egypt	1999	2.6	27.4	7.4	8.4	9.8	8.5	130	117	18.3	17.7	10.4	9.5	9.4

Note: The scope of the manufacturing censuses and surveys varies from country to country (but exclude cottage and household industries in most cases) as follows: Mexico, Brazil and South Africa, all registered establishments; Pakistan and Sri Lanka, all establishments employing at least 5 persons; Thailand, Philippines, Nepal and Turkey, all establishments employing at least 10 persons; Indonesia and India, all establishments employing at least 20 persons; China, all establishments with sales of at least 5 million Yuan; Poland, all establishments with at least 50 persons, Bangladesh, not known.
Operating surplus includes depreciation and indirect taxes, and also interest on loans.
1 LY: Latest year available. Growth rate is point to point compound growth rate.
[2] Average earnings in manufacturing. [3] 1998. [4] 1986. [5] 1996.
Source: *UNIDO International Yearbook of Industrial Statistics 2001* and previous years (based on manufacturing establishment census and surveys). *ILO Yearbook of Labour Statistics 2000* (table 5B) for Chinese earnings data.

6.1.2.5. Labour Productivity in SMIs

Manufacturing employment increased from 150,000 in 1991 to nearly 400,000 persons in 1996-97 in Nepal, or by some 18 per cent per year (Table 6.2). Household and cottage industries accounted for half of total manufacturing employment, but produced just 12 per cent of manufacturing value-added (MVA). Small establishments employing 10-49 workers each accounted for about 12 per cent of employment and produced 16 per cent of MVA. Medium establishments employing 50-199 workers each employed 19 per cent of the total employment and produced 32 per cent of MVA. Large establishments employing more than 200 workers each accounted for the remaining 19 per cent of total manufacturing employment, but produced 40 per cent of MVA.

Table 6.2: Manufacturing Employment, Value-added and Labour Productivity by Establishment Size, 1996-1997

Workers per Establishment	Employment		Value-added		VA/Worker		
	Persons	%	Rs.000s	%	Rs.per year	Index (GDP = 100)	Index (Census= 100)
<10 [1]	201,753	50.6	2,940,685	11.8	14,576	23	13
10-19	22,456	5.6	1,546,550	6.2	68,870	111	62
20-49	25,948	6.5	2,374,156	9.6	91,497	147	82
50-99	35,644	8.9	2,983,183	12.0	83,694	134	75
100-199	38,507	9.7	4,913,132	19.8	127,591	205	115
200+	74,153	18.6	10,058,294	40.5	135,642	218	122
Total Census	196,708	49.4	21,875,315	88.2	111,207	179	100
LFS & GDP [2]	398,461	100.0	24,816,000	100.0	62,280	100	56

Notes:

[1] Employment in establishments employing less than 10 workers estimated as residual between total manufacturing employment in 1996/7 and census employment of establishments employing 10 workers or more

[2] Total manufacturing employment in 1996/97 estimated using compound growth rate between Population census 1991 (150,051 workers) and Labour Force Survey 1989/99 (552,000 workers) of 17.7 % per annum

Source: Census of Manufacturing Establishments 1996-1997, national level, Central Bureau of Statistics
Economic Survey 2001, Ministry of Finance.

Labour productivity thus varied by a factor of almost 10 by establishment size, from Rs.15,000 per employee in establishments employing less than 10 workers to Rs.135,000 per employee per year in establishments employing more than 200 workers each. This is probably due to a large extent to the amount of capital equipment that workers have at their disposal. In fact, those engaged in establishments of less than 10 workers each probably had very little equipment to work with, since their labour productivity was of the same magnitude as the average earnings of agricultural workers.[45]

[45] The 1989/99 labour force survey reports monthly earnings of Rs.1,246 for agricultural workers, or Rs.14,952 per year (Central Bureau of Statistics, table E.6.6.).

Figure 6.21: Employment by Establishment Size, 1996/97 (% of Total Manufacturing Employment)

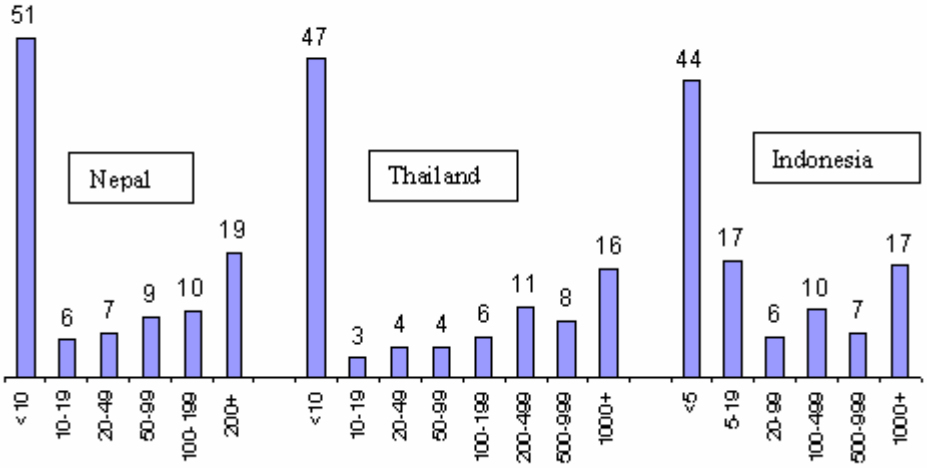


Figure 6.22: Value-added by Establishment Size, 1996/97 (% of Total Manufacturing)

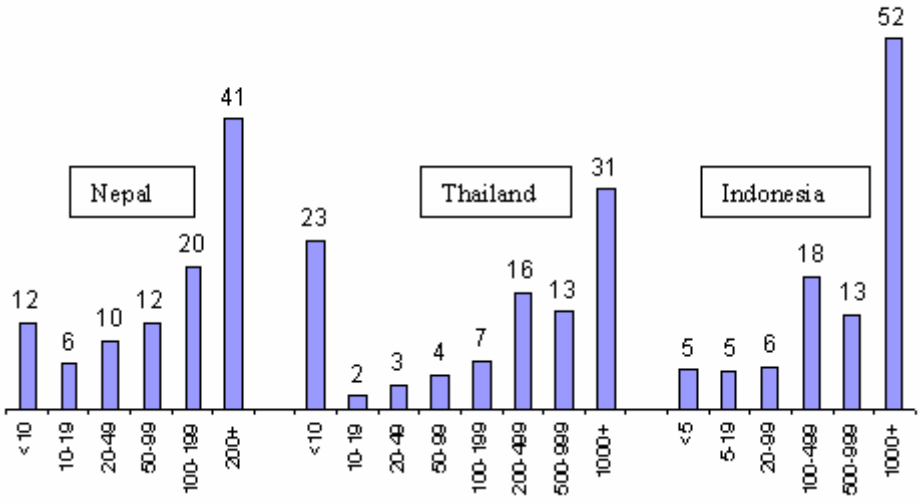
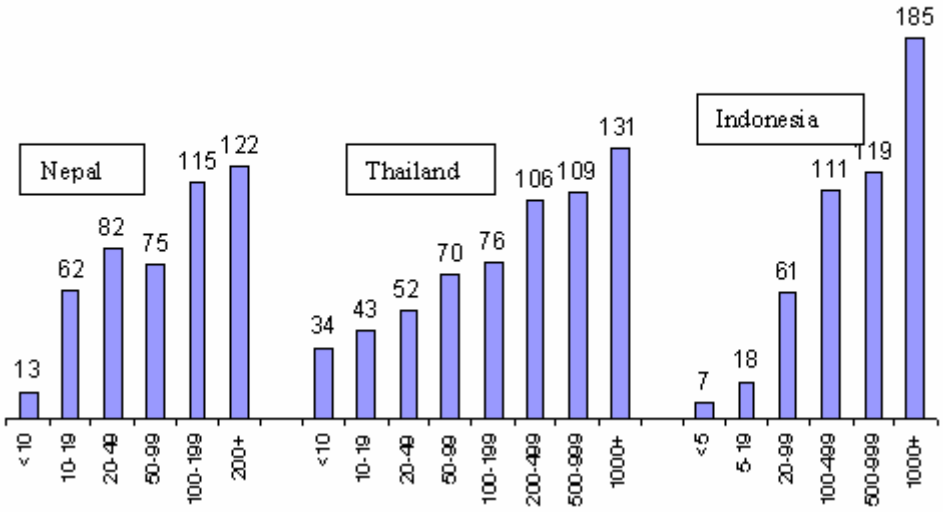


Figure 6.23: Index of Value-added/Worker by Establishment Size, 1996/97 (All Manufacturing = 100)



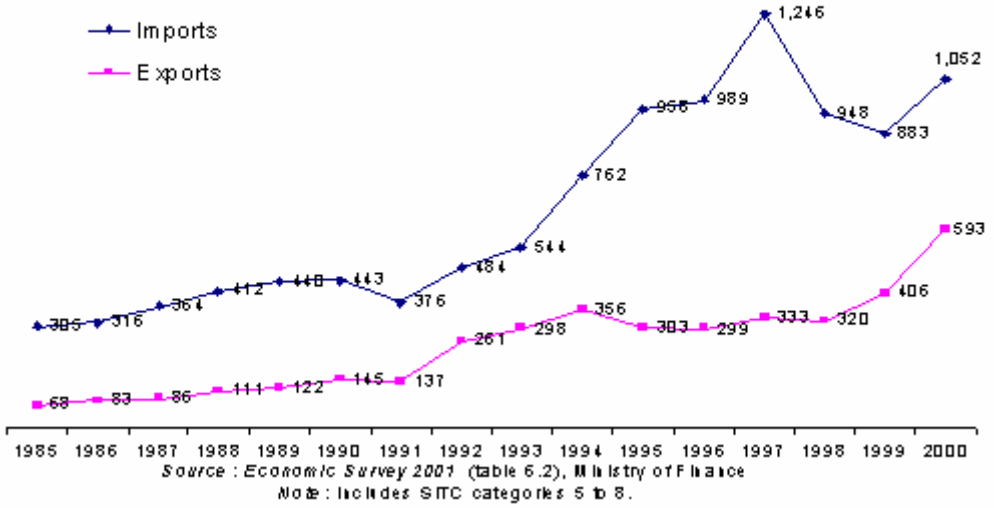
While the size composition of manufacturing employment and value-added in Nepal were comparable to other countries such as Thailand and Indonesia (Figure 6.21 and Figure 6.22), differentials in labour productivity in Nepal were similar to those of Indonesia, but not Thailand (Figure 6.23). This is because in Nepal and Indonesia, household industries and SMIs were predominantly engaged in the production of labour-intensive, low-technology final products such as food, textiles and tiles, and were virtually absent in the production of intermediate inputs and metal industries. In contrast, in Thailand, small and medium industries were involved in a variety of sub-sectors, including metal products, component manufacture and machinery production.

6.1.3. Trade Performance

6.1.3.1. Trade Balance

Nepal experienced a widening deficit in the balance of trade of manufactured goods over the past fifteen years, rising from US$240 to 913 million between 1985 and 1997 (Figure 6.24). Due to a subsequent drop in manufactured imports the deficit in manufactured goods narrowed to US$460-480 million in 1999 and 2000. Manufacturing trade deficits are not unusual in developing countries, particularly those industrializing rapidly and importing large amounts of capital equipment, as well as raw materials and components to propel labour-intensive manufacturing growth. In Nepal's case however, the imbalance between manufactured exports and imports was widest in the 1994-1998 period, when manufactured exports stagnated while manufactured imports accelerated.

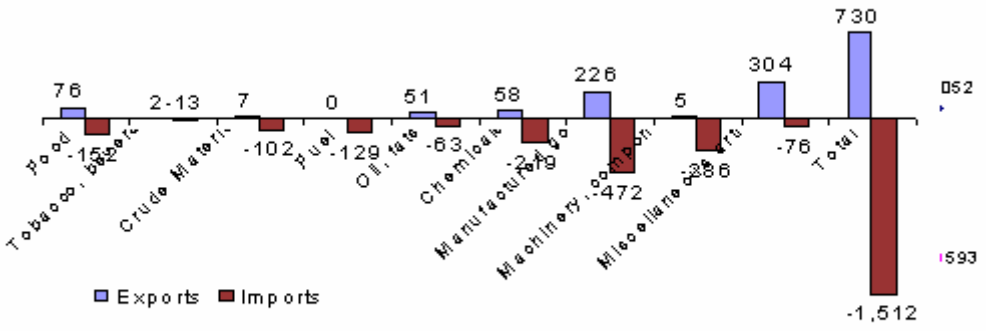
Figure 6.24: Balance in Trade of Manufactured Products, 1985-2000 (US$ million/year)



Source : Economic Survey 2001 (table 6.2), Ministry of Finance
Note : Includes SITC categories 5 to 8.

Manufactured export growth was uneven, growing by 16 per cent p.a. in the second half of the 1980s, stagnating during most the second half of the 1990s, before nearly doubling between 1998 and 2000. Nepal's deficit in the balance of manufacturing goods was compounded by a deficit in primary commodities during 1985-2000, resulting in an overall trade deficit of nearly US$800 million in 2000 (Figure 6.24). Nepali merchandise exports were only able to pay for half of the merchandise imports of US$1,510 in that year. Of the nine categories of the standard international trade classification (SITC), only manufactured articles, which include carpets and garments, posted a trade surplus. All remaining categories posted a trade deficit, starting from food, to tobacco and beverages, crude materials, fuel, oil and fats, chemicals, manufactured goods, and finally to machinery, parts and components.

Figure 6.25: Trade Balance, 2000 (US$ million)



Source : *Economic Survey 2001* (Table 6.2), Min. Finance.

The deficit in the balance of trade was to a large extent compensated by net receipts in services, including tourism, and transfers, including remittances and official grants, amounting to around US$1 billion in 1997 (Table 6.3). Nevertheless the current account remained in deficit by about US$300 million in that year, though it narrowed to US$80 million in 2000, due to the sharp decline in manufacturing imports and improved manufactured export performance during 1998-2000 noted earlier.

Table 6.3: Trade and Current Account Balance in Selected Countries, 1996-97 (US$ million)

	Manufacturing trade (SITC 5-8)	Other goods	Trade balance	Services	Transfers	Current account balance
Nepal (1997)						
Exports	333	4	397			
Imports	1,246	23	1,641			
Balance	-913	-19	-1,244	691	265	-290
% Exports/Imports	(27)	(17)	(24)			
Thailand (1996)						
Exports	39,929	16,010	55,939	22,648		
Imports	57,478	14,698	72,176	20,850		
Balance	-17,549	1,312	-16,237	1,798	-14,350	
% Exports/Imports	(69)	(109)	(78)			
Indonesia (1996)						
Exports	26,209	23,979	50,188			
Imports	31,525	12,715	44,240			
Balance	-5,316	11,264	5,948	-13,749	125	-7,676
% Exports/Imports	(83)	(189)	(113)			

Source: Economic Survey 2000, Ministry of Finance, Nepal, Economic and Financial Statistics June 2001, Bank of Thailand, Bank Indonesia Annual Report 1999, Indonesia

Countries such as Thailand and Indonesia also experienced persistent deficits in manufacturing trade. Indonesia was able to produce an overall trade balance surplus by producing a large surplus in primary commodities and fuel. However, its large service deficit produced an overall current account deficit. Thailand on the other hand managed only a small surplus in other goods, and thus maintained a large deficit in the balance of trade. Like Nepal, Thailand posted a surplus in services, which was relatively small and resulting in a significant current account deficit. Both countries relied on external borrowing and private investment flows, at least in the pre-Asian crisis period, to balance their payments.

6.1.3.2. Manufactured Exports

Market Positioning of Exports

In market positioning terminology, products sold on the world market are classified in four categories: competitive, non-competitive, dynamic and non-dynamic. A product is competitive when the country's share of this product in the world market increases. A dynamic product is one whose share in world trade increases faster than the average for all products. This classification produces a matrix consisting of 'rising stars' (competitive, dynamic), 'falling stars' (competitive, non-dynamic), 'lost opportunity' (non-competitive, dynamic), and 'retreat' (non-competitive, non-dynamic). Ideally, the highest share of exports should be 'rising stars', where the country is gaining market share in fast-growing products.

In Nepal's case, the largest share of export products, 53 per cent, fell in the 'retreat' category in 1999. That is to say, Nepali exports in this category not only lost world market share, but

also the world demand for such products itself declined between 1995 and 1999 (Table 6.4 and Table 6.5).

Table 6.4: Export Market Positioning, Selected Countries, 1996 (% of total manufacturing exports)

Country	Rising Stars	Falling Stars	Lost Opportunity	Retreat
Nepal (1999)	35.3	6.3	5.2	53.2
India	19.3	65.6	7.6	7.6
Pakistan	14.6	71.0	5.0	9.4
Thailand	54.1	37.8	2.8	5.3
China	47.4	46.5	0.7	5.4
Malaysia	72.7	23.8	0.6	2.8
Indonesia	34.7	47.4	16.3	1.6
Korea	41.6	39.7	8.9	9.8
Taiwan	50.9	20.6	20.1	8.4
Singapore	68.6	15.2	5.3	10.9

Source: Lall S. (2000); Nepal: International Trade Centre (see table 3.3).

Note:

Share of country's export in world trade	Share of product in world trade: Falling (stagnant)	Rising (dynamic)
Rising (competitive)	Falling stars	Rising stars
Falling (non-competitive)	Retreat	Lost opportunity

This category was led by carpets, but also included men's cotton shirts and women's dresses. The second category of 'rising stars' accounted for 35 per cent of Nepali exports, and included men's and women's trousers, shawls and scarves of fine animal hair, and other textile and garment products. The remaining two categories consisted of 6 per cent of 'falling stars' and 5 per cent of 'lost opportunity' exports.

In contrast, Malaysia, Singapore and Thailand's exports were for the most part 'rising stars' (73, 69 and 55 per cent of the total). This was a better market positioning than even Korea and Taiwan (42 and 51 per cent). Only 3 per cent of Thailand's exports fell in the 'lost opportunity' category, a performance comparable to China and Malaysia (less than 1 per cent). 'Lost opportunity' is the least desirable outcome, since they products in this category lose market share in dynamic products. Exports from Taiwan and Indonesia had the highest share of lost opportunity, losing market share in dynamic products. A large proportion of Thailand's exports, 38 per cent, fell in the falling star category, where they gained market share in stagnant products. Thailand shared this less desirable outcome with China, Indonesia, India and Pakistan (47-71 per cent).

Table 6.5: Market Positioning and World Market Shares of Nepali Exports (1995–1999)

H.S. Rev. 0		US$ million. 1999	Share in total export (%)	Trend 95-99 (% pa) Nepal	Trend 95-99 (% pa) World	World Market Share %	RCA 1997
	All goods (mirror statistics)	**347.0**	**100.0**	**4**	**2**	**0.0**	
	'Rising stars'	**122.4**	**35.3**				
420292	Containers	1.1		13	4	0.0	1.14
610510	Men's shirts, cotton, knitted	4.5		50	4	0.1	38.80
610910	T-shirts, singlets of cotton	5.9		42	7	0.1	7.66
611710	Shawls, scarves of silk, knitted	2.2		168	13	0.9	1.41
620293	Women's anorak, man-made	1.3		65	3	0.1	1.72
620342	Men's trousers/shorts, cotton	35.1		27	6	0.3	25.0
620462	Women's trousers/shorts, cotton, not kn.	24.8		36	14	0.3	19.61
611020	Pullovers, cardigans of cotton	5.0		26	10	0.0	9.44
620821	Women's nightdresses, cotton, not kn.	2.1		5	1	0.4	1.91
620920	Babies garments, cotton, not knitted	1.2		90	3	0.1	2.09
621420	Shawls, scarves of animal hair	23.3		193	3	8.7	1.87
630260	Toilet, kitchen linen of terry towel	3.0		44	5	0.1	13.94
630710	Floor cloths, dish cloths, etc.	2.7		12	9	0.5	11.59
650590	Hats, headgear, knitted	2.3		31	2	0.1	14.67
711311	Jewellery, silver	3.2		17	16	0.2	3.08
711319	Jewellery, precious metals	3.2		85	2	0.0	1.16
970600	Antiques, over 100 years	1.5		28	11	0.0	5.50
	'Falling stars'	**21.9**	**6.3**				
110100	Wheat or meslin flour	4.2		181	-16	0.6	7.92
151590	Vegetable fats and oils	2.2		13	-2	0.8	9.06
410619	Goat skin leather	1.3		5	-8	1.4	16.19
611010	Pullovers, cardigans of wool	3.7		3	0	0.1	12.46
621410	Shawls, scarves of silk, not knitted	3.0		187	-11	1.0	-
620721	Men's pyjamas, cotton, not knitted	1.7		21	0	0.6	1.56
621142	Women's garments nes, cotton, not kn.	5.8		25	-7	0.8	1.38
	'Lost-opportunity'	**18.1**	**5.2**				
620530	Men's shirts, man-made, not knitted	2.1		0	1	0.1	5.80
620630	Women's blouses, cotton, not knitted	16.0		-1	1	0.6	27.10
	'Retreat'	**184.6**	**53.2**				
620520	Men's shirts, cotton, not knitted	25.8		-1	-2	0.4	23.0
570110	Carpets of wool, fine animal hair	148.4		-4	-5	10.2	905.60
620462	Women's dresses, cotton, not knitted	7.9		-3	-7	1.0	19.61
620444	Women's dresses, man-made, not kn.	2.5		-32	-8	0.3	4.03

Note: Exports based on partner countries' statistics.
Source: Trade Map, International Trade Centre, UNCTAD/WTO (www.intracen.org); RCA from Karmacharya B. (2000) *Export Potentials of Nepal: Comparative and Competitive Advantage Analysis*, National Planning Commission and Asian Development Bank: Kathmandu.

Revealed Comparative Advantage

Revealed comparative advantage (RCA) is a measure of relative market share and success in world trade. For a particular product and country, RCA is the ratio of the share of the export of this product in the country's total export to the share of world export of this product in total world exports. To the extent that this ratio is higher than one, this is expected to reveal a

comparative advantage that this country has in the export of this particular product. A ratio of one is considered the dividing line between comparative advantage and disadvantage.[46]

Nepal's most successful exports, carpets and garments, had RCA of well above one in 1997 (905 and 27-39, Table 6.5, last column). In fact, all exports listed in Table 6.5 had an RCA above one, indicating comparative advantage. A comprehensive study of RCA for other product categories which Nepal exports but does not have comparative advantage, and of products that neighbouring India, Pakistan, Bangladesh and Sri Lanka export and also have a revealed comparative advantage, was recently produced for the National Planning Commission in collaboration with the Asian Development Bank.[47]

6.1.3.3. Technology Level of Exports

Nepal's exports, together with those Bangladesh and Pakistan, were almost entirely all manufactured goods.

Table 6.6: Technology Level of Exports of Selected Countries, 1999 (% of total exports)

	Total Exports	Manufacturing Exports		Per cent Share in Manufacturing Exports			
Country	US$ million	US$ million	%	Resource - intensive	Labour-intensive	Technology-intensive	Human capital-intensive
Nepal	390	380	98	1	94	1	4
Bangladesh	5,055	4,683	81	3	95	1	-
Pakistan	6,736	6,091	90	3	92	3	2
Sri Lanka	4,314	3,336	93	4	85	6	5
India	34,246	27,722	77	26	41	17	16
China	193,384	174,551	90	4	46	33	17
Indonesia	46,608	27,178	58	18	41	23	19
Thailand	55,934	43,507	78	5	21	55	19
Korea	138,100	133,369	83	5	21	49	25
Taiwan	117,649	114,142	91	3	21	61	16
Philippines	33,736	30,702	97	2	14	80	4
Malaysia	82,729	68,567	97	5	9	72	14
Singapore	104,528	100,006	96	2	5	83	11

Source: *Trade Map*, International Trade Centre (ITC) online database (www.intracen.org).

However, most of these exports were labour-intensive products including carpets, textiles and garments for Nepal (92-95 per cent), while technology-intensive and human capital-intensive products accounted for around 5-6 per cent of total exports in 1999 (Table 6.4). In contrast, labour-intensive exports formed only 40-50 per cent of total exports in India, China and Indonesia, around 20 per cent in Thailand, Korea and Taiwan, and less than 10 per cent in Malaysia and Singapore.

Southeast Asian countries' orientation towards electric and electronic exports offered the added advantage that the demand for such products was growing in the world market, i.e., they were 'rising stars' or 'champions'. In contrast, the world market for textiles, carpets and garments was either stagnant or falling.

[46] RCA can rise due to trade agreements and other similar non-market factors.

[47] Karmacharya B. (2000) *Export Potentials of Nepal: Comparative and Competitive Advantage Analysis*, National Planning Commission and Asian Development Bank: Kathmandu.

6.1.4. Conclusions

6.1.4.1. Main Findings

Nepal's level of industrialization was one of the lowest in the world, on par with African countries such as Tanzania and Nigeria. There was nevertheless one important difference. While the manufacturing sector of many African countries did not grow, Nepal's manufacturing sector grew by a respectable 6 per cent p.a. over the past 15 years. Its per capita manufacturing output was lower than that of Bangladesh, a third of that of Pakistan, a fourth of that of its large neighbour India, and a sixth of that of Sri Lanka. The manufacturing sector accounted for 9 per cent of total GDP in Nepal in 1997, while this share was twice as high Pakistan, Bangladesh, India, Sri Lanka and Mexico, and about two and half times higher in middle industrial producers Philippines and Indonesia. It nevertheless grew more rapidly than other economic sectors, and increased its contribution to in overall GDP.

The technological profile of Nepal's manufacturing production was one of the lowest in the world, along with Sri Lanka, with three quarters of its manufacturing production consisting of low-technology labour-intensive industries such as textiles, garments and carpets. The share of higher technology industries was just 9 per cent though, unlike Sri Lanka, this improved in the period 1985-1997. Southeast Asian countries, with the exception of Indonesia, which also specialized in the production of labour-intensive exports, experienced the fasted structural change in this respect, their share of higher technology industries rising by 15-17 per cent in most cases, and reaching 24 per cent in the case of Thailand. Metal and engineering industries accounted for 8 per cent of manufacturing value-added in Nepal in 1997, a figure comparable to Sri Lanka and Bangladesh, but much lower than that of Pakistan and India (14 and 27 per cent). Simple fabricated metal products accounted for most of this, while the production of machinery and transport equipment was virtually non-existent.

In US dollar terms, labour costs per employee in medium and large-scale manufacturing in Nepal remained relatively stable at around US$400 per employee per annum in the 1990-1996 period, though they fluctuated from year to year in this period. This was the lowest in Asian countries for which there data are available, and were less than half the labour cost per employee of China and Indonesia and a third of that of India in 1997-99. In contrast, labour productivity grew by over 4 per cent per year in the 1990s, resulting in a decline in labour costs per unit of gross output, and a corresponding increase in labour competitiveness of Nepali manufacturing as a whole.

Despite its lowest cost of labour per employee, labour costs as a share of gross output in Nepal were still higher than in Indonesia, Philippines, India, Mexico and Thailand, even though these countries experienced rapid real wage increases (7.5 vs. 6.0-6.5 per cent). They achieved a relatively stable ratio of labour cost per unit of gross output by increasing capital investment in their manufacturing sector and, in the case of Indonesia and perhaps China, by economies of scale in larger plant sizes. Thus, in order to raise labour productivity, Nepal may need to encourage an economic size of manufacturing establishments in labour-intensive industries, and encourage capital investment in all sub-sectors. Though moving in this direction implies that less employment can be created per unit of value-added in the manufacturing sector, at least in the short-term, these changes may increase the overall efficiency and quality of manufacturing production. This in turn may accelerate industrial growth and create additional jobs in manufacturing and elsewhere in the economy in the long-term, particularly in supporting services.

Turning now to international trade, Nepal experienced a widening deficit in the balance of trade of manufactured products over the past fifteen years. Other countries such as Thailand and Indonesia also experienced persistent manufacturing trade deficits, due to their large imports of capital equipment, as well as raw materials and components for assembly manufacturing growth for exports. In Nepal's case however, the imbalance between manufactured exports and imports was particularly large in the 1994-1998 period, when manufactured exports stagnated while manufactured imports accelerated.

Nepal's market positioning of export products was relatively unfavourable, with its the largest share of export products, 53 per cent, not only losing world market share, but the world demand for these products, including carpets and certain garment categories, declined between 1995 and 1999. However, 35 per cent of Nepali exports, and included men's and women's trousers, shawls and scarves of fine animal hair, and other textile and garment products increased their relative market shares. The remaining two categories consisting of 'falling stars' and 'lost opportunity' accounted 5-6 per cent of total exports each.

6.1.4.2. Future Prospects

Nepal wants its manufacturing sector to double its contribution to GDP to 20 per cent, a share similar to India, Sri Lanka and Mexico today, and but lower than present day Philippines and Indonesia. The manufacturing sector will need to grow at 10 per cent per annum, a lot faster than the 6 per cent achieved in the past fifteen years, and at a rate comparable to China and Southeast Asian countries in the 1980s and 1990s. Given its relatively small manufacturing base and low labour costs, this is certainly achievable provided the country can attract increased domestic and foreign investment, and provide law and order, stable macroeconomic and political environment, good governance and a conducive regulatory and business environment.

Nepal's most successful exports, carpets and garments, had RCA of well above one in 1997. In fact, all major exports had an RCA above one, indicating comparative advantage, and most were labour-intensive. Since Nepal's share of its major export products in the world market is still relatively small (less than 10 per cent for animal hair carpets and shawls, and less than 1 per cent for most garments categories), there is plenty of room for expansion in traditional exports, export-led growth and employment generation, notwithstanding their relatively low technology, and their relatively low demand elasticity in the world market, confirming the findings of Chapter 3.

Labour-intensive manufacturing industries, where Nepal already enjoys considerable comparative advantage, should be prioritised for employment generation and poverty reduction. In time, these industries may generate backward linkages in the production of raw materials and components. In order to facilitate market-driven manufacturing diversification and deepening, and eventually attract more technology-intensive industries over time, the government should allocate resources to producing an educated and skilled labour force. In addition, some government resources should also be allocated to support the private sector, particularly business associations, in upgrading the manufacturing and technological capabilities of existing firms, including the provision of product, market and equipment information, standards, productivity management and quality control. Finally, a joint public-private vision of what the Nepali manufacturing sector should look like in 20 years' time should be produced as soon as possible to guide future manufacturing investments by the private sector, and the provision of future supporting services and infrastructure by both the private and public sectors.

6.2. Productivity Performance of Manufacturing Industries

6.2.1. Introduction

The purpose of this section is to determine the factors impacting on productivity performance of the manufacturing sectors in Nepal in order to derive recommendations for industrial development policy. Productivity improvement is a key to higher and sustainable growth. Growth brought about by factor accumulation alone is unsustainable in the long run. Domestic policies regarding trade, investment and labour market, provision of basic education, and the quality of physical infrastructure (road, electricity) play a vital role in achieving a higher and sustainable growth in both income and productivity.

A key objective of the policy reforms in the mid 1980s was to enhance the productivity of domestic manufacturing in the context of a more competitive market setting. Although reforms have produced a positive impact on manufacturing with high initial rates of growth, the manufacturing sector has recently stagnated, while the overall achievements so far has fallen short of the levels required for substantially raising the standard of living.

This section investigates first of all to which extent the manufacturing sector is indeed free from high protection levels, analysing the results of a sample survey amongst manufacturing firms with the help of effective rates of protection; second, it will assess the level of productivity, which allows comparison of productivity of firms in Nepal to firms of other countries; and third it will analyse changes in productivity, which will allow an assessment of the effect of policy changes on productivity improvements. The structure of the remainder of Section 6.2 is as follows. Section 6.2.2 will provide a summary of estimates of effective protection (ERP) based on data from the IDPP survey (2001). Section 6.2.3 discusses the various indicators of productivity level and growth. Level estimates are presented in 6.2.4. Section 6.2.5 estimates changes in partial and total factor productivity (TFP) growth, covering the pre-liberalization (1972/73- 1986/87)[48] and post-liberalisation (1987/88-1997/98) periods. Section 6.2.6 analyses the determinants of manufacturing productivity growth using an econometric model. Conclusions are presented in Section 6.2.7.

6.2.2. Estimates of Effective Rates of Protection

Chapter two noted that after the simplification of the tariff system, the simple average nominal protection comes around 13 percent. To measure the degree of protection under which the manufacturing sector operates, the nominal tariff rates give insufficient insight because it measures the protection that firms receive on their output. However the activity of a firm is measured by its value added, which is roughly defined as its gross output minus its intermediate inputs. A firm using a high level of intermediate inputs receives a subsidy by the nominal rate of protection just by using these inputs (when the tariff on inputs is lower than the tariff on output). The extent of these subsidies, however, is better understood when expressed as a percentage of their real activities, i.e. value added. This is what the effective rate of protection (ERP) does. It takes into account the nominal tariffs on inputs and outputs

48 Strictly speaking, the cut-off point for the post-reform period should be 1985/86 as trade liberalisation began that year. However, 1986/87 is taken as the cut off point because the next manufacturing census after 1981/82 was conducted in 1986/87. Given the time lag involved in productivity improvement this is unlikely to produce any significant bias in the estimates.

and expresses this in terms of value added. A definition of ERP is then the percentage by which value added with tariffs is higher than value added without tariffs:

$$ERP = (VA_{with} - VA_{without})/VA_{without}.$$

This looks simple but in practice some complications are encountered:

- When $VA_{without}$ becomes small, the value of ERP rises rapidly. When it approaches zero, ERP takes on very high positive values; when $VA_{without}$ is just below zero ERP is very highly negative; as $VA_{without}$ becomes more negative, EPR approaches zero from the negative side. ERP is thus by no means a linear measure.
- The definition makes also clear that, when $VA_{without} > VA_{with}$, ERP is also negative. This is a genuine case of negative protection: firms would be better off without tariffs (this occurs when input tariffs are higher than output tariffs).
- Moreover, VA_{with} may be already negative despite the protection received. In all cases of the sample where this occurred, $VA_{without}$ was also negative. In this situation ERP is not so easy to interpret.
- Finally, given that these measures are calculated using firm data, VA derived from these data is partly determined by the efficiency of the firm. Lower VA because of firm's inefficiency also enters ERP. In other words, firms producing the same product using the same technology might still have different ERPs because of different levels of inefficiency. The ERP is thus a mixed measure, combining into one assessment the impact of firm's inefficiency and the impact arising from tariffs.

Despite these complications the ERP measure is very informative about the protection system. No better summary measures exist.

Table 6.7 below gives the distribution of sample firms according to classes of effective rate of protection. The manufacturing sector is highly protected with an overall level of ERP at 95.9 percent. This must be compared with the average nominal protection of 13 percent mentioned above. A major reason is the low value added ratio as compared to total output. The survey has shown to this ratio to be at around 29 percent.

Within the total, 65.8 percent of total (sample) value added produced under an ERP between 30-70 percent. Within this, 32.5 percent of total (sample) value added was produced under an average ERP of 57.5 percent. The negative value added of unprofitable firms, even at domestic prices, accounted for –7.0 percent of total sample value added (including the negative VA firms). Firms, profitable at domestic prices but not at 'border' prices, accounted for 7.7 percent. And finally firms, operating under reasonable competitive conditions, accounted 9.8 percent, including the 7 percent of firms with negative protection.

Table 6.7: Distribution of Sample Firms According to Effective Rate of Protection

ERP classes	Number of firms		Value added	Share in Total VA	Average ERP	Comment
Negative domestic and negative border value added	33	27.0%	-370420	-7.0%	-25.2%	Not profitable, even at domestic prices
Positive domestic and negative border value added	17	13.9%	407587	7.7%	-275.3%	Only profitable at domestic prices
ERP>100%	24	19.7%	1154370	21.9%	136.1%	
ERP 90-100%	2	1.6%	44013	0.8%	93.3%	24% of VA with very high protection
ERP 80-90%	3	2.5%	35977	0.7%	87.9%	(ERP > 70%)
ERP 70-80%	3	2.5%	34514	0.7%	72.4%	
ERP 60-70%	4	3.3%	348018	6.6%	68.8%	
ERP 50-60%	5	4.1%	1858973	35.2%	57.5%	65.8% of VA with ERP between 30-
ERP 40-50%	6	4.9%	394157	7.5%	46.0%	70%
ERP 30-40%	7	5.7%	847020	16.1%	35.4%	
ERP 20-30%	3	2.5%	20504	0.4%	22.9%	
ERP 10-20%	3	2.5%	85816	1.6%	13.5%	Only 9.8% of Value Added with low protection ERP<30% (including
ERP 0-10%	1	0.8%	12734	0.2%	7.7%	firms with negative effective
Negative ERP, higher VA at border prices than domestic prices	11	9.0%	402429	7.6%	-13.4%	protection)
Total	**122**		**5275693**		**95.9%****	**Overall ERP very high**

Notes: * Border prices are defined here as prices only excluding tariffs on inputs and output (without any further adjustments to obtain proper border prices)

** Effective protection results from a combination of two variables: first, the structure of nominal tariffs, and second, the proportion of domestic value addition in the total value of the good. By construction, the higher the discrepancy between the duty rates applicable to different stages of value addition, the higher the effective protection. Similarly the lower the share of domestic value added in the total value of the good, the higher the effective protection. The high rate of effective protection (95.9%) reported in Table 6.7 is derived from a survey of manufacturing enterprises, and can be explained in three ways: first, the sample of firms on which the figure is based is not representative of the population and carries a systematic bias towards firms benefiting from high effective protection; second, the liberalization efforts have failed to flatten the cascading structure of nominal tariffs; third, the domestic value addition in manufacturing remains low as a share of output levels. See Chapter 10 for the technical parameters of the survey. See in particular Section 10.3.3. on the I/O structure of manufacturing, which states that the ratio of VA to Output in surveyed firms stood at 29.4%, down from 36% in the 1996/97 *Census of Manufacturing Enterprises*.

Source: Based on data from IDPP survey (2001)

Table 6.8 provides a picture of the ERP by sector and number of firms. The first observation is that the number of firms with an ERP in the first three classes (negative domestic value added, negative border value added, and ERP higher than 100 percent) comprises 61.4 percent of total number of firms. Yet in terms of value added the same classes comprise only 25 percent. It appears that many small firms are in these classes.

The total number of firms in the lowest four classes constitutes 14.8 percent of the total number of firms in the sample. This reflects 9.8 percent of value added indicating that these are also lower than average size firms. The food sector has only a few firms in the lower four classes with the majority of firms in the areas of high protection and firms in trouble with negative value added either at domestic and/or at 'border' prices.

Only the sectors Textiles, Wearing apparel, Wood, and Paper, printing and publishing have a number of firms that are relatively competitive.

Leather products, Chemical and petrochemical products, Rubber and plastics products, and Radio, TV and communications equipment have firms only in the top three classes. The remainder of sector show firms across the whole spectrum.

Where the bulk of value added (65.8 percent) was produced in the classes with ERP between 30-70%, in terms of numbers, these classes constitute only 18 percent, indicating that here the larger enterprises are concentrated: food (6 out of 29), beverages (2 out of 5), tobacco (1 out of 2), textiles (1 out of 7), wearing apparel (1 out of 4), wood (3 out of 7), paper (2 out of 8), non-metallic (1 out of 14), basic metals (1 out of 3), metal product (3 out of 9), electrical machines (1 out of 3), furniture etc. (1 out of 5).

The overall conclusion of this analysis is that there are very few competitive enterprises, while most of the manufacturing value added is still produced under rather high effective protection reinforcing the findings of Chapter 3. As a result, inefficiencies are high. It is recommended to gradually reduce the tariff rate of 40 percent initially towards a general target level of around 20 percent and later towards 15 percent. The tariff rate of 25 percent could eventually be reduced to 10 percent. This would induce manufacturing firms to increase their productivity and value added.

6.2.3. Indicators of Productivity Level and Growth

The most widely used indicators for measuring productivity performance of firms and sectors are partial productivity (labour productivity, capital productivity) and total factor productivity. The latter is the most reliable, comprehensive indicator of productivity growth (Little *et. al*, 1988).

Labour productivity, measured as output (or value added) per unit of labour, is the most widely used (and the oldest) measure of productivity. It can be used to measure levels and changes in these levels and thus allows international comparison (for international comparison see Section 6.1). However, this concept measures both the contribution from the capital stock per worker as well as the efficiency of labour. Similarly, capital productivity (output per unit of capital) cannot abstract more efficient (use of) capital from the increased availability and quality of labour and intermediate inputs.

Table 6.8: Distribution of Sample Firms by Sector and ERP Class

	Food products	Beverages	Tobacco products	Manufacture of textiles	Wearing apparel	Leather products	Wood products	Paper and paper products	Publishing and printing	Chemical products	Rubber and plastics products	Non-metallic mineral products	Manufacture of basic metals	Fabricated metal products	Electrical machinery and appliances	Radio, TV and commun. equipment	Furniture; manufacturing n.e.c.	Total number	Share of total number
ISIC	15	155	16	17	18	19	20	21	22	24	25	26	27	28	31	32	36		
Negative domestic and negative border value added	7		1	2		1	1	3	1	2	1	7		2		2	3	33	27.0%
Positive domestic and negative border value added	8	2				1				3	1			1	1			17	13.9%
ERP>100%	4	1				5		2		1	3	2	2	2		2	1	25	20.5%
ERP 90-100%	2																	2	1.6%
ERP 80-90%												1		1				2	1.6%
ERP 70-80%				1	1		1											3	2.5%
ERP 60-70%	1				1								1				1	4	3.3%
ERP 50-60%		2						2							1			5	4.1%
ERP 40-50%	4											1		1				6	4.9%
ERP 30-40%	1		1	1			3							1				7	5.7%
ERP 20-30%	1											1		1				3	2.5%
ERP 10-20%				1								2						3	2.5%
ERP 0-10%	1																	1	0.8%
Negative ERP, higher VA at border prices than domestic prices				2	2		2	1	3						1			11	9.0%
	29	5	2	7	4	7	7	8	4	6	5	14	3	9	3	4	5	122	
																		122	
Percent of value added in sector with ERP<40%	12.4%	0.0%	0.0%	61.8%	0.0%	0.0%	95.1%	0.0%	100%	41.0%	0.0%	9.2%	0.0%	2.9%	0.0%	0.0%	0.0%		

Note 1: Number of firms with an ERP higher than 100 percent is 61.4 percent of total number of firms
Note 2: Border prices are defined here as prices only excluding tariffs on inputs and output (without any further adjustments to obtain proper border prices)
Source: Based on data from IDPP survey (2001)

Given these limitations of partial productivity indicators, the discussion emphasizes total factor productivity (TFP), which does provides estimates of productivity of factor inputs separate from the effects of growth in factor inputs on output.

The level of output is determined by the amount of capital, labour and intermediate inputs used in production and by the efficiency of using these inputs. Total factor productivity aims to measure the extent to which factor inputs are used productively. TFP is thus an extra factor that measures the efficiency of all factor inputs taken together. Measurement of TFP follows two different approaches, one using production functions to obtain levels of TFP (efficiency) and the other using the decomposition approach (and thereby assuming a constant returns to scale production function) to obtain changes in TFP.[49]

The following section provides a brief summary of the conclusions of a recent productivity study by FNCCI and the World Bank following a stochastic frontier production function approach (FNNCI/WB 2000). The next section will present an analysis of changes in productivity by discussing changes in labour productivity and the result of the decomposition approach to measure changes in total factor productivity.[50]

6.2.4. Estimates of Productivity Level

FNCCI/WB (2000) has estimated a frontier production function using a representative sample of 225 firms surveyed in 1999. The mean level of efficiency (TFP) of the firms in the sample was estimated at 52 percent, which compared to an average of 70 percent in developed countries is rather low.[51] This result reflects both a higher heterogeneity of Nepalese firms in terms of efficiency but also a lower average level of productivity compared to their international competitors.

Large firms have 25 percent higher levels of TFP than small firms. The sectoral averages and the breakdown over small and large firms are given in Table 6.9.

The pharmaceuticals sector is the most efficient sector and metals the least efficient, with a difference of 27 percent between them. With the exception of the chemicals sector in all other sectors small firms are less efficient than larger ones. In terms of other firm attributes higher levels of efficiency are found in exporting firms, firms with foreign connections, and firms that provide training for their workers. Particularly the last attribute, worker training, stands out as very significant with a mean efficiency for firms that train of 79 percent compared to 48 percent for firms that do not train their workers.

[49] Both have theoretical and practical limitations such as aggregation, measurement problems, and dealing with under-utilization of capital. The analysis also strongly depends on the particular reference years chosen. Results tend to be rough approximations, are sometimes meaningless, and in all cases need careful interpretation. Yet better alternatives do not exist.

[50] TFP growth can be estimated either in value added terms or in gross output terms. However, this study uses the latter approach in which intermediate inputs (such as energy, raw materials and auxiliary materials etc.) are treated as a separate factor of production. This is important because intermediate inputs have significant influence on TFP growth, and it may not be accurate to assume that they are separable from the primary inputs (*i.e.*, capital and labour).

[51] The range for efficiency is between 0 and 1 as efficiency is measured as percentage of the most efficient benchmark.

Table 6.9: Mean Efficiency Across Sectors – Size Within Sectors

Sector	Average efficiency	Average efficiency small firms	Average efficiency large firms
Food	.52	.51	.56
Wood	.53	.52	.57
Chemicals	.47	.54	.33
Carpets	.56	.40	.58
Other Textile	.49	.43	.55
Garments	.53	.37	.60
Metal	.44	.41	.53
Pharmaceuticals	.60	.55	.67
Non-metal fabric.	.53	.49	.64

Source: FNCCI/WB (2000)

Thus for productivity improvement, the main conclusion is that firms must invest more in upgrading their technological capabilities through training and other learning mechanisms. To quote FNCCI/WB (2000:75):

> 'The survey finds that private as well as collective learning mechanisms are weak. In-house firm training is very limited, buyers and suppliers are not coming to Nepal in some industries, the availability of local experts is limited, and there are few foreign investors or experienced local firms to serve as role models for "benchmarking" the competitiveness of firms operations. Good public and private business training sources external to the firms are also limited, and government technical support services are either non-existent or under-financed and poorly managed. NGO, business association, and donor programmes to assist in enterprise learning are also limited, although, where they exist, they make a positive contribution. All these inadequacies indicate that the enterprise learning environment in Nepal needs attention if firms are going to upgrade their technical capabilities and be globally competitive in the future.'

This is a clear recommendation that is of great relevance for long-term industrial development of Nepal.

6.2.5. Estimates of Productivity Growth

This section presents the estimates of labour productivity and total factor productivity growth at the four-digit NSIC. The share of wages in value added and the price cost margin (defined as the ratio of value added-wages to output) are also reported to see the impact of policy reforms on the redistribution of income. The share of wages in value added is a commonly used indicator of the distribution of gains from output expansion between labour and capital. The price cost margin is a widely used proxy measure of competitive pressure on business performance.

6.2.5.1. Labour Productivity

The estimates of labour productivity, together with estimates of wage are in value added and price cost margin are reported in Table 6.10.

Table 6.10: Labour productivity, Wages to Value Added Ratio and Price Cost Margin: 1986/87, 1991/92 and 1996/97

	Labour Productivity			Wages/Value added			Price Cost Margin		
	1986/87	1991/92	1996/97	1986/87	1991/92	1996/97	1986/87	1991/92	1996/97
Dairy Products	102.53	88.89	229.16	0.20	0.33	0.12	0.30	0.13	0.33
Canning/ Preserving Fruits	41.28	115.02	35.18	0.34	0.11	0.25	0.15	0.44	2.69
Vegetable Fats	372.47	123.28	260.75	0.06	0.20	0.08	0.46	0.10	0.19
Grain Mill Products	43.84	82.17	106.42	0.26	0.15	0.13	0.08	0.15	0.15
Bakery Products	43.01	80.27	48.99	0.39	0.22	0.35	0.14	0.31	0.19
Sugar	27.86	70.98	54.21	0.53	0.29	0.35	0.14	0.30	0.19
Cocoa and Confectionary	38.86	44.95	39.43	0.29	0.26	0.34	0.22	0.31	0.18
Mfg. Of Food Pro. nec.	47.93	58.42	91.43	0.28	0.27	0.17	0.20	0.28	0.34
Animal Feeds	110.13	140.31	154.65	0.19	0.11	0.12	0.16	0.26	0.37
Distilleries	171.13	324.13	604.22	0.13	0.06	0.03	0.44	0.75	0.77
Beer	Na	440.96	1071.45	Na	0.05	0.02	Na	0.67	0.68
Soft Drinks	150.44	266.32	422.52	0.19	0.17	0.07	0.36	0.56	0.48
Bidi Manufacturing	10.64	18.77	18.22	0.82	0.43	0.80	0.08	0.34	0.15
Cigarette Manufacturing	764.62	479.25	206.63	0.06	0.08	0.12	0.67	0.67	0.64
Tobacco Manufacturing	17.03	69.00	691.12	0.22	0.25	0.03	0.28	0.32	0.33
Spinning/ Weaving & Textile	60.17	96.67	77.02	0.27	0.22	0.26	0.26	0.34	0.27
Non-wearing Textile	62.33	117.12	44.17	0.26	0.13	0.24	0.27	0.34	0.28
Knitting Mills	36.86	79.49	38.00	0.33	0.23	0.38	0.26	0.32	0.23
Carpet & Rugs	42.08	57.74	56.39	0.37	0.34	0.28	0.26	0.30	0.37
Jute Manufacturing	32.08	34.69	56.57	0.56	0.63	0.27	0.21	0.16	0.36
Wearing Appl. Except Footwear	81.25	76.53	71.73	0.22	0.34	0.26	0.74	0.31	0.28
Leather & Leather Products	253.54	194.74	284.15	0.06	0.10	0.07	0.31	0.26	0.38
Footwear Manufacturing	27.29	94.83	71.62	0.64	0.29	0.22	0.14	0.31	0.32
Saw Mills	41.09	90.23	83.19	0.43	0.18	0.20	0.19	0.35	0.29
Wood Cork Products, nec	17.74	47.80	52.83	0.78	0.40	0.30	0.09	0.30	0.35
Wooden Furniture	28.92	64.93	59.67	0.49	0.31	0.37	0.22	0.29	0.21
Paper & Paper Products	35.12	73.03	222.07	0.42	0.29	0.08	0.14	0.26	0.86
Printing	44.53	36.33	97.36	0.48	0.39	0.21	0.23	0.17	0.46
Drug & Medicine	27.40	81.13	132.01	0.68	0.28	0.20	0.10	0.36	0.27
Soap	368.35	182.44	328.97	0.04	0.10	0.06	0.89	0.26	0.35
Chemical Products, nec	59.57	128.10	209.96	0.30	0.15	0.11	0.22	0.33	0.29
Rubber Products	47.95	118.11	387.80	0.40	0.15	0.07	0.12	0.35	0.43
Plastic Products	69.26	109.03	107.16	0.27	0.17	0.16	0.20	0.28	0.24
Structural Clay	11.67	12.73	12.66	0.26	0.49	0.57	0.43	0.31	0.25
Cement	157.51	183.71	177.88	0.12	0.14	0.16	0.48	0.55	0.44
Non-metallic Mineral Products	29.55	132.30	61.17	0.77	0.32	0.31	0.15	0.47	0.35
Iron & Steel	119.38	247.17	242.32	0.17	0.10	0.09	0.17	0.22	0.18
Metallic Furniture	33.10	70.47	42.13	0.63	0.31	0.44	0.11	0.29	0.24
Structural Metal Products	63.28	132.93	69.86	0.30	0.16	0.30	0.24	0.24	0.28
Non-mach. Fabricated Metal	46.87	92.73	206.74	0.48	0.18	0.11	0.15	0.18	0.25
Radio & TV	165.00	228.86	165.21	0.13	0.11	0.12	0.31	0.25	0.36
Electric Apparatus	116.44	195.38	238.93	0.21	0.13	0.09	0.19	0.32	0.25
Jewellery	78.99	78.99	44.19	0.26	0.46	0.18	0.31	0.27	0.33
Other Manufacturing, nec	42.90	49.16	64.95	0.31	0.32	0.30	0.20	0.25	0.30
Total Manufacturing	44.79	69.72	88.31	0.27	0.25	0.18	0.28	0.32	0.33

Note: Price-cost margin is defined as follows: (Real output - costs of intermediate inputs - wages)/ real output
Source: Computed by the authors based on data obtained from the CBS

The measures are given for three time points, 1986/87, 1991/92 and 1996/97, for the purpose of pre- and post-reform comparison, and as well as to identify possible adjustment lags in productivity performance over the post liberalization period.

As shown in Table 6.10, there has been an improvement in labour productivity over the years. Labour productivity in overall manufacturing almost doubled from 1986/87 to 1996/97. The period saw relatively high levels of investment, which had a positive effect on labour productivity through increased capital labour ratios. To which extent this also reflects improvements in efficiency of labour cannot be assessed on the basis of these data[52].

At the sectoral level, nineteen of the 44 manufacturing sub-sectors recorded labour productivity below the average for total manufacturing in 1996/97. These include public sector dominated industries (namely, jute manufacturing and sugar) and export-oriented industries (namely, carpets and rugs, knitting and wearing apparel).

The wages to value added ratio declined from 0.27 in 1986/87 to 0.18 by 1996/97, suggesting a tendency to use capital rather than labour intensive technology (columns 5, 6 and 7 in Table 6.10). This pattern is consistent with the fact that the reforms introduced from the late 1980s failed to implement appropriate labour market reforms to redress rigidities in the labour market (Sharma, 1999). Moreover, the resulting capital-intensity of production in combination with an abundant supply of labour suppressed wage rates.

Of the 44 manufacturing sub-sectors, wages to value added ratio was below the manufacturing average in 21 industries by 1996/97. All of these were import competing industries. Among export-oriented (EO) industries, the ratio fell in jute manufacturing and jewellery but rose in knitting, wearing apparel and leather and leather products during 1986/87 to 1996/97.

The price-cost margin for overall manufacturing increased from 0.28 in 1986/87 to 0.33 by 1996/97 (last three columns in Table 6.10). At the sectoral level the rate of increase in the price cost margin is relatively higher in highly protected industries (namely, distilleries, beer, soft drinks and paper and paper products), and lower in export-oriented industries. Among export-oriented industries, price cost margin fell substantially in wearing apparel but increased in carpets and rugs, jute manufacturing and leather and leather products following the implementation of the liberalisation program.

6.2.5.2. Changes in Total Factor Productivity

Following the decomposition approach, TFP is defined as the output growth net of the weighted average inputs growth, where the weights are the value shares of each input.[53] This section provides a summary of conclusions of the analysis for the pre-liberalisation period and gives the full analysis for the post-liberalisation period. The analysis is conducted at the four-digit NSIC level to investigate the detailed impact of policy liberalisation on manufacturing productivity performance.

The estimation of TFP growth requires data on growth in output, intermediate inputs, capital input and labour input as well as the average value shares (weights) of all three factor-inputs.

[52] Note that due to rigidities in the Labour Act of 1992, which makes firing a worker extremely difficult, firms are increasingly relying on capital-intensive technology.

[53] See background paper by Kishor Sharma for an overview of the methodology used and a discussion of the database.

Thus, for the pre- and post-liberalisation periods, initial and terminal year observations were used to obtain continuous growth rates in output and the three factor inputs. The average of the factor shares in the first and the last year of the period under consideration were used to obtain the weighted average growth in factor inputs.

Pre-liberalisation period

The analysis of TFP growth for the pre-liberalisation period (1972/73-1986/87) leads to the following general conclusions.[54]

The expansion of manufacturing output during the pre-reform years of the period under study was rather slow. Manufacturing output grew at about 2 percent per year during the period from 1972/73 to 1986/87 and the share of manufacturing in total GDP was a mere 4 percent by the mid 1980s.

Overall manufacturing productivity declined at a compound rate of 1 percent per year between 1972/73 and 1986/87. At the sectoral levels productivity performance was rather mixed. All industries dominated by MPEs (except for drug and medicine) experienced positive TFP growth. Similarly, export-oriented industries (except knitting and jewellery) also recorded substantial TFP growth. There were fifteen industries, which reported an absolute fall in productivity growth. Most of these were import-substituting industries.

The contribution of intermediate inputs to output growth was the largest in almost all industries, the exceptions being bidi, jute manufacturing, wooden furniture, printing, and metallic furniture.

The major portion of output growth in manufacturing was explained by growth in capital input (126 percent), while the contribution of labour input was small (about 27 percent). With the exception of a few industries (namely sugar, bidi, jute manufacturing, footwear, wearing apparel, printing, and structural clay) the contribution of labour input to output growth in most cases was less than 20 percent, contrary to the expectations in a labour abundant country like Nepal. Even in traditional labour-intensive industries, such as carpet and rugs, wearing apparel, spinning/ weaving and textile, knitting mills and grain mills, the contribution of labour inputs to output growth was minimal.

The overall contribution of TFP growth to manufacturing output growth was negative at about -1 percent, though it contributed significantly to output growth in a few industries, namely canning and preserving of fruits, vegetable fats, food manufacturing, jute manufacturing, wearing apparel, chemical and rubber products.

Post- liberalisation period

Estimates of TFP growth as well as the contributions of weighted intermediated inputs, weighted capital, weighted labour and TFP changes to output growth for the post-liberalisation period (1987/88-1996/97) are reported in Table 6.11.

[54] See background paper by Kishor Sharma for the complete analysis

Table 6.11: Growth in Output, Factor Inputs, TFP and the Contributions to Output Growth in the Post-Liberalisation Period (1987/88—1996/97)

	Annual growth of					% contribution to output growth of			
	Output	Inputs	Capital	Labour	TFP	Inputs	Capital	Labour	TFP
Dairy Products	12.68	12.20	8.85	3.36	2.03	61.34	21.08	1.59	15.99
Canning/ Preserving Fruits	-0.57	-8.29	-9.21	3.33	7.35	726.22	702.11	-38.58	-1289.75
Vegetable Fats	16.46	15.41	17.65	10.95	0.84	78.64	14.68	1.57	5.11
Grain Mill Products	4.04	3.94	1.71	-1.41	0.56	81.19	5.94	-0.97	13.83
Bakery Products	-0.81	-1.40	4.30	1.70	-0.71	125.65	-93.57	-20.23	88.15
Sugar	7.67	9.13	17.83	0.57	-2.42	78.12	52.61	0.88	-31.61
Cocoa & Confectionary	7.51	8.03	18.06	7.82	-2.58	75.23	49.81	9.38	-34.42
Mfg. Of Food Products, nec	14.90	11.65	14.49	11.62	2.60	54.96	22.53	5.07	17.44
Animal feeds	10.62	7.44	20.86	15.22	-0.72	48.31	51.57	6.90	-6.79
Distilleries	-1.78	-5.69	-4.19	-2.73	2.75	80.86	168.96	4.18	-154.00
Beer	10.38	13.92	7.84	21.13	-0.05	46.41	46.55	7.49	-0.45
Soft Drinks	4.53	7.37	5.87	-3.51	-1.48	69.52	67.26	-4.12	-32.66
Bidi Manufacturing	-17.72	-23.88	-12.78	-14.66	0.11	51.34	13.20	36.09	-0.63
Cigarette Manufacturing	-0.28	-0.97	-2.30	13.07	0.63	96.44	542.32	-312.94	-225.83
Tobacco Manufacturing	78.94	70.46	77.43	48.34	6.18	38.97	49.78	3.42	7.83
Spinning/ Weaving & Textile	6.43	7.31	7.09	4.52	-0.53	68.86	32.26	7.15	-8.27
Non-wearing Textile	14.35	14.02	22.32	32.56	-3.46	62.59	43.63	17.93	-24.15
Knitting Mills	0.33	2.17	4.65	-6.17	-0.97	380.39	342.11	-328.89	-293.61
Carpet & Rugs	14.30	11.44	28.50	12.37	-1.69	45.64	51.27	14.90	-11.82
Jute Manufacturing	2.90	9.70	7.90	-2.47	-3.39	129.74	106.06	-18.90	-116.89
Wearing Appl. except Footwear	8.61	10.40	18.29	5.49	-3.46	69.56	62.28	8.33	-40.17
Leather & Leather Products	5.37	2.85	-17.25	2.23	8.38	35.89	-93.27	1.40	155.98
Footwear Manufacturing	10.35	9.79	17.11	8.77	-1.28	56.94	44.42	10.97	-12.32
Saw Mills	6.92	9.04	-2.71	0.53	2.47	75.48	-12.12	0.86	35.78
Wood Cork Products, nec	10.78	7.86	8.68	3.05	3.59	42.71	18.84	5.10	33.35
Wooden Furniture	-20.73	-17.93	-19.08	-25.44	-1.47	50.58	25.75	16.60	7.07
Paper & Paper Products	11.01	-12.77	13.35	8.60	8.03	-44.24	64.46	6.82	72.96
Printing	5.05	2.33	7.05	0.99	1.26	22.54	49.37	3.11	24.98
Drug & Medicine	21.33	21.61	21.01	11.28	1.05	65.65	23.38	6.06	4.91
Soap	9.63	9.82	14.40	3.15	-1.52	63.88	50.76	1.12	-15.76
Chemical Products, nec	-2.01	-1.88	14.26	-12.70	-3.95	62.13	-196.24	37.35	196.77
Rubber Products	10.48	9.54	23.56	-2.49	-3.84	51.43	86.47	-1.21	-36.69
Plastic Products	12.44	13.27	15.46	6.78	-0.95	73.47	30.59	3.56	-7.62
Structural Clay	0.59	-0.52	1.76	-2.60	1.31	-37.89	66.49	-151.20	222.60
Cement	0.92	1.80	-3.70	-1.40	1.89	89.55	-181.23	-13.23	204.90
Non-metallic Mineral Products	18.46	22.46	22.66	15.18	-1.59	49.04	31.71	27.86	-8.61
Iron & Steel	9.93	10.65	5.94	0.91	0.47	83.47	11.55	0.26	4.71
Metallic Furniture	15.08	15.42	19.91	15.54	-1.40	57.34	30.59	21.36	-9.29
Structural Metal Products	-6.30	-5.02	-9.77	-1.50	-0.03	44.66	52.54	2.39	0.41
Non-mach. Fabricated Metal	23.84	24.96	20.26	8.61	1.39	71.14	19.91	3.11	5.84
Radio & TV	2.87	-1.41	-9.39	-0.16	7.59	-26.20	-138.24	-0.25	264.69
Electric Apparatus	7.88	9.88	5.18	2.63	-0.31	82.19	20.68	1.04	-3.90
Jewellery	10.60	2.86	4.95	25.46	1.95	10.89	17.51	53.24	18.36
Other Manufacturing, nec	2.70	2.84	31.91	2.36	-9.47	59.47	381.18	9.66	-350.31
Total Manufacturing	8.25	8.34	9.70	3.41	-0.11	57.60	40.11	3.66	-1.38

Note: The 1996/97 Census of Manufacturing Establishment does not provide data for canning and preserving of fruits, bidi, cigarettes and jewellery. Hence, data for these industries are extrapolated using 1987/88 to 1993/94 data

Source: Estimated from the CBS, Survey and Census of Manufacturing Establishments (various issues)

Following the liberalization reforms manufacturing output grew at 8 percent per year (1987/88 to 1996/97) as against about 2 percent per year in the pre-liberalisation period (1972/73 to 1986/87). Growth in output took place in response to the liberalized environment with increased investment, increased access to intermediate inputs and the removal of a bias against the production of exportables and importables. The MPEs also recorded positive output growth, with the exception of cigarette manufacturing. Both jute and footwear industries recorded growth in output.

But despite an impressive growth in manufacturing output, much of this growth came from factor accumulation rather than TFG growth. Productivity growth in total manufacturing continued to decline by 0.11 percent per year in the post-reform period, though at a slower rate, with only few sectors indicating significant productivity improvement (Table 6.11).

On the whole, IS industries demonstrated better productivity growth performance than EO industries. The improvement in productivity performance of the IS industries following the liberalisation programme appears to be due partly to the elimination of import controls and easy availability of imported inputs, leading to increased capacity utilisation improved in most industries.[55] The continuing high levels of effective protection shielded these industries from competition by imports over domestic market shares.

While still at higher absolute levels of efficiency (FNCCI/WB 2000), almost all export-oriented industries (namely knitting mills, jute manufacturing, carpets and rugs, and wearing apparel) recorded an absolute fall in TFP growth, with the exception of jewellery, and leather and leather products. Apart from declining overall capacity utilization, another possible explanation for poor productivity growth performance of export-oriented industries is that most of these industries are operating under 'easy' market conditions provided by the generalized system of preferences (GSP) and the Multifibre Arrangement. Given the ready market access under these arrangements the producers of exportables are not under pressure for striving to achieve productivity improvement.

The estimates of sources of output growth (columns 6, 7, 8 and 9 in table 5.3) suggest that in the post-liberalisation period growth in intermediate inputs explains about 58 percent of output growth as compared with only 3 percent in the pre-liberalisation period. However, the contributions of capital and labour input declined substantially during this period. The share of capital input declined from 126 percent to 40 percent, while the share of labour fell from 27 percent to about 4 percent in the post-liberalisation period. Except for a few industries, growth in capital contributed more than labour to output growth. Even in many traditional labour-intensive industries, such as carpet and rugs, wearing apparel (garments) and knitting mills, capital growth contributed significantly more than labour to output growth.

The relatively lower contribution of labour compared to that of the other two inputs to output growth in a labour abundant country like Nepal requires explanation. The manufacturing sector experiences a the shortage of semi-skilled labour due to poor labour market training programmes and generally low levels of investment in human capital. Despite the growing need for such labourers, labour market training programmes have not been directed to meet

[55] Capacity utilisation remained low: as liberalisation took place some new industries came into operation and capacity utilisation of the existing industries improved which increased the demand for electricity. However, supply was not enough as power generation was reserved for the public sector. Another constraint to capacity utilization was the deterioration in industrial relations climate For example man-days lost due to strikes, lockouts and layoff increased four folds from 52,108 in 1993/94 to 229,879 by 1999/20 (FNCCI, 2001).

the needs of the manufacturing sector.[56] Thus, as demand for semi-skilled labour increased firms adopted labour saving technologies rather than increased employment of labour (though some increase in employment did occur). The stringent Labour Act of 1992, which makes the firing of a worker more difficult and costly, also has contributed to use labour saving technology.

Thus, in the post-reform period, output growth of 8 percent per year was mainly brought about by factor accumulation rather than productivity growth. This suggests that liberalisation in trade and investment policy alone does not guarantee higher productivity in the absence of reforms in factor markets, lack of efficient institutions and infrastructure, and basic education.

Table 6.12 shows negative TFP growth for IS industries and positive TFP growth for EP industries during the pre-reform period, while a reversal took place during the post-liberalisation period.

In the post-liberalisation period, among the IS industries TFP growth was higher in those which had enjoyed relatively low protection in the earlier sub-period The only exceptions are distilleries, canning and preserving fruits, and radio and TV. TFP growth was lower in the highly protected industries, including MPEs (namely sugar, cement, textile and jute manufacturing). Within MPEs only drug and medicine, which earlier received a relatively low level of protection, recorded an improvement in productivity[57]. Among the privatised industries, productivity improved in paper and jute industries, but deteriorated in footwear manufacturing.[58]

Table 6.12: Productivity Performance of EO and IS Industries the Pre- and Post-Liberalisation Period

	Pre-reform Period 1972/73-1986/87			Post-reform Period 1987/88-1996/97		
	EO Industries	IS Industries	Total Mfg	EO Industries	IS Industries	Total Mfg
TFP Growth	3.45	-1.13	-0.96	-0.82	2.02	-0.11

Source: Computed from data from the CBS

Leather and leather products, and jewellery are the only EO industries to record productivity growth in the post-reform period. Traditional EO industries, namely wearing apparel and carpet and rugs, contributing over 70 percent to manufacturing exports experienced an absolute fall in productivity. Jute manufacturing also experienced a decline in TFP in the post-reform period.

6.2.6. Determinants of Manufacturing Productivity Growth

6.2.6.1. The Model

This section undertakes a regression analysis to examine determinants of inter-industry variations in total factor productivity growth during the post-reform period. A single-equation model is presented, estimated and analysed in the light of the theoretical and empirical literature on the determinants of factor productivity growth.

[56] See Chapter 4.
[57] Due to unavailability of data we do not have TFP growth estimates for cigarette manufacturing for the earlier sub-period.
[58] Note that footwear manufacturing experienced TFP growth until 1993/94 (Sharma 1999).

The literature suggests a number of sources of productivity growth. Verdoorn's law postulates a positive link between output growth (OUTPUTGR) and TFP growth.[59] A fast growing sector will have higher rates of capacity utilization and might expand though larger production units, which would have higher economies of scale.

Export growth can also be a source of higher productivity growth. Export-oriented firms are familiarity new technologies and, with foreign exchange earned from export growth, firms would have better access to imported inputs and new technology, particularly under restrictive foreign exchange regimes. Export expansion brings local firms close to foreign firms, which gives them opportunities to become familiar with better management practices. International exposure also encourages domestic firms to better train their workers and increase the number of skill-intensive jobs, leading to productivity growth, which occurs through more efficient use of technology [60] Thus, as exports grow productivity improvement takes place. Therefore, a positive link between export-orientation (XPORTORI) and TFP growth is expected.

In contrast, protection discourages external competition, innovation and the use of best technology, leading to lower productivity. This suggests a negative relationship between protection (PROTECT) and TFP growth.

Public sector dominated industries (PUBLIC) receive more non-market incentives than the private sector industries. Furthermore, they are subject to bureaucratic interventions and their decisions are not guided by market forces. These considerations suggest that industries dominated by the public sector are the industries with the lower level of productivity growth (Krueger and Tuncer, 1982).

It is plausible to argue that in a labour abundant country like Nepal productivity growth is higher in labour-intensive and lower in capital-intensive industries. This is due to the fact that the former are typically export-oriented industries and hence exposed to external competition, while the latter tend to be heavily protected and often under public sector management. Furthermore, the lack of efficient infrastructure facilities in LDCs, such as a reliable electricity supply and technicians, may lead to poor capacity utilisation in capital-intensive industries. Thus, one would expect a lower level of TFP growth in those industries where capital intensity (CAPITAL) is high, implying a negative sign.

Technological advancements in production, distribution and marketing that have taken place over the past few decades demand a certain level of labour skills. This suggests that industries that have relatively higher level of semi-skilled work force are the industries with the higher level of productivity growth.

The above discussion leads to the following specification of a model of TFP growth. The expected signs are given below the equation in parentheses.

[59] The relationship between output growth and TFP growth is known as 'Verdoorn's Law' named after P. J. Verdoorn.

[60] One large survey of 48,000 manufacturing firms in Taiwan has confirmed this finding (World Bank, 1993: 202-203).

$$TFP_i = a_0 + a_1 OUTPUTGR_i + a_2 XPORTORI_i + a_3 PROTECTION_i + a_4 PUBLIC_i$$
$$(+) \qquad (+) \qquad (-) \qquad (-)$$

$$+ a_5 CAPITALINT_i + a_6 SEMISKILL_i$$
$$(-) \qquad (+)$$

where:

TFP_i	Total factor productivity growth
$OUTPUTGR_i$	Output growth
$XPORTORI_i$	Export intensity, ratio of manufactured exports to output
$PROTECTION_i$	The effective rate of protection (ERP)
$PUBLIC_i$	Public sector dominated industry dummy (manufacturing public enterprise dummy), 1 for the public sector dominated industries and 0 otherwise
$CAPITALINT_i$	Capital/labour ratio: ratio of fixed capital to total employment
$SEMISKILL_i$	Semi-skilled intensity, ratio of technical worker to total Employment
i = 1,.....N	refer to sub-sectors
a_i (i = 0, ... , 6)	are parameters to be estimated
U	is a standard classical error term

6.2.6.2. Results

The estimation results are reported in Table 6.13. The estimated equations are significant at the 1 percent level in terms of the standard F test. The overall explanatory power (in terms of R-bar squared) is 36 percent, which is high for a cross-sectional analysis of this nature. The equations also pass the standard diagnostic tests for residual whiteness and functional form choice.

To improve the explanatory power of the model, variables with statistically insignificant coefficients were deleted and the model was re-estimated. However, it did not change the results significantly. For comparison purposes, results of both the full as well as reduced models are reported in Table 6.13 below.

Table 6.13: Determinants of TFP Growth: Regression Results

Independent Variables	All Variables	Excluding insignificant coefficients excluded
Intercept	0.118	-0.220
	(0.171)	(-0.291)
OUTPUTGR	0.076	0.071
	(4.817)***	(4.651)***
XPORTORI	-0.009	-
	(-0.552)	
PROTECT	0.003	0.004
	(1.747)*	(2.110)**
PUBLIC	-1.799	-1.990
	(-2.336)**	(-2.971)**
CAPITAL	-0.007	-0.007
	(-3.163)**	(-2.982)**
SEMISKILL	0.264	0.278
	(4.326)***	(4.537)***
No. of Observations	44	44
F (K-1, 44-K)	3.500***	4.207***
R^2	0.36	0.35
RESET F (3,41-K)	0.613	0.629
Heteroscedasticity	Corrected	Corrected

Note: Linear equations. t-ratios (heteroscedasticity corrected using White's procedure) are given in parentheses. K is the number of explanatory variables including constant. Significant levels are: *** = 1%, ** = 5%, and * = 10%.

As expected, the coefficient of output growth is statistically significant and has a positive sign, which is consistent with the 'Verdoon's Law'. To which extent this must be contributed to higher capacity utilisation for sectors experiencing output growth or to scale effects cannot be asserted on the basis of this analysis. Earlier studies on the Nepalese manufacturing by Sharma (1999 and 2001) and Sharma *et al.* (2000), and the studies on the Indian manufacturing by Ahluwalia (1991) and Golder (1987) observed similar results.

The coefficient of protection (PROTECT) - measured as the ERP- is statistically significant and has an unanticipated positive sign, indicating that industries with the higher the level of protection are the industries with the better productivity performance.

This confirms the finding of Table 6.12 showing higher productivity growth in protected IS industries. This suggests that trade liberalization has improved productivity performance by allowing them higher degrees of capacity utilisation through a more flexible foreign exchange system. The more heavily protected sectors were less affected by competition for market shares. By contrast export-orientation variable (XPORTORI) failed to achieve statistical significance and has an unanticipated negative sign. Thus, the analysis cannot establish a relation between export orientation and productivity growth, indicating a mixture of positive and negative productivity development in that sector.

The coefficient of manufacturing public enterprises (PUBLIC) is statistically significant and has an expected negative sign, providing support for the view that public sector domination results in poor productivity performance. This finding is similar to the results obtained by Krueger and Tuncer (1982) for the Turkish manufacturing.

The coefficient of capital intensity (CAPITAL) is statistically significant and has an expected negative sign. Thus productivity growth is lower in sectors with higher capital labour ratios. Further analysis would have to reveal the explanation for this finding.[61] Capital-intensive industries are more susceptible to problems with infrastructure such as electricity breakdowns. They might face more competition from imports in a liberalized environment or they are concentrated in public sector dominated sectors.

The coefficient of semi-skilled intensity (SEMISKILL) is highly significant and has an expected positive sign, suggesting that productivity growth is higher in those industries, which employ relatively semi-skilled workforce. This provides support for the view that labour market training programmes in Nepal need to be focus on providing basic skills to manufacturing workers rather than focus on training for the service sector or cottage industries only.

To sum up, the econometric results suggest that output growth, industry protection and the availability of semi-skilled work force contribute positively to TFP growth, while capital intensity and public sector domination leads to poor TFP growth.

6.2.7. Conclusions

This section has presented an analysis of partial and total factor productivity growth in the Nepalese manufacturing at the four-digit NSIC level. Results indicate an improvement in labour productivity.

With regard to TFP growth, there has been an absolute fall in both the pre- and post-liberalisation periods. However, the rate of decline in TFP growth was lower in the post-liberalisation program. Most of industries that recorded better productivity growth in the post-reform period were IS industries, with the exception of jewellery and knitting. Improved productivity performance of the IS industries could be attributed to increased access to imported intermediate inputs which improved capacity utilisation. In addition, protected industries were less exposed to import competition for market shares.

EO industries as a whole recorded a fall in productivity, despite growth in exports and output. However, despite this decline, the FNCCI/WB report showed that the level of TFP in exporting firms in 1999 was still higher than non-exporting firms. The precise reasons for this decline are not clear. Structural changes in the export sector took place over the period of analysis, extending into the present. Yet these results show that trade liberalisation *per se* is unlikely to promote productivity growth in export manufacturing in the absence of concrete policies to improve the overall investment climate.

The econometric evidence suggests higher productivity growth in those industries, which are able to produce on a large scale, have higher protection and semi-skilled work force, but lower capital intensity and no public sector domination. The main policy recommendation arising from this analysis is very much in line with the conclusions by the FNCCI/WB report.

[61] Earlier studies on the Nepalese manufacturing by Sharma (2001), Sharma *et al.* (2000) and Karmacharya (2000) as well as studies by Ahluwalia (1991) for the Indian manufacturing, Perkins *et al.* (1993) for the Chinese manufacturing, Okuda (1994) for the Taiwanese manufacturing and Kwak (1994) for the Korean manufacturing also found similar results.

Based on these findings, the major recommendation is in line with Chapter 4 that the system of labour training needs to be seriously strengthened and that a policy should be developed to encourage firms to engage in firm level training, for example by issuing training vouchers or giving tax concessions to firms conducting such training. Suppliers of training should get all the support needed and the market for business development services should be given high priority attention.

6.3. The Technology Development System

6.3.1. Ten types of industrial technology acquisition and development

Industrial technology development is not just concerned with research and development (R&D) activities. In fact R&D form a minor component in the range of technological development activities, often accounting for just 20 per cent of total expenditure even in industrialized countries. The remaining 80 per cent are spent on non-R&D activities such as design, engineering, and reverse engineering. One can distinguish ten types of technological activity falling into three groups: a first group of technology acquisition; a second group of technology development based on incremental design and engineering activities; and a third group more narrowly focused on research and development at the international frontier as follows[62]:

Technology acquisition:
- New units of equipment or machinery in existing plants,
- New materials and components for existing designs and specifications,
- Turn-key plants,
- New product technology embodied in existing designs and specifications.

Design and engineering activities:
- Engineering-based incremental improvement in process technology,
- Incremental improvement in product specifications and designs,
- Continuous improvements in logistics and supply chain with existing suppliers,
- Design and reverse-engineering, and linkages with new suppliers of equipment and materials.

Research and development:
- Technology search and research close to the international frontier,
- Technological R&D, plus design and engineering for new products and processes.

The first four types of technology acquisition share the common characteristic that they involve the introduction of standard designs, specifications and machinery already used elsewhere. Industrializing countries such as Nepal acquire rather than develop their technology, and the sources of capital equipment and product technology are usually located in industrialized countries. However, studies suggest that industrial growth relying on technology acquisition only, without some of the other six types of technology development, which typically have to be located in the domestic country, misses out on a very large source of enhanced productivity growth and other forms of competitiveness.

[62] See Arnold E., Bessant, J. and P. Brimble (2000). Enhancing Policy and Institutional Support for Industrial Technology Development in Thailand: Overall Policy Framework and Development of Industrial Innovation System. Bangkok: National Science and Technology Development Agency (NSTDA) and World Bank

A technologically shallow growth path of industrial growth is one of limited investment by industry in the capabilities required to undertake activities in categories five to eight. Those in categories nine and ten are less important for the majority of industrial firms in Nepal. It is important to stress that the first two groups of activities, technology acquisition and design and engineering development, are rarely substitute for each other, but complementary.

In the current model of technology development of Nepal, industrial firms are considered as the 'demand side', while the 'supply-side' is provided by technology institutes and universities. In fact, in industrialized countries, industrial firms not only generate the demand for technology, but also account for a very large part of the supply as well. In other words, the vast majority of technology development takes place in industrial firms. They supply much of the new technology they use themselves, especially of types 5-10, and they also supply a very large proportion of the technology used by other firms.

Two areas of technology policy need to be addressed: policy measures to strengthen the capabilities and activities of firms concerned with undertaking their own technology development; and policy measures to strengthen support institutions in undertaking scientific and technological activities for the benefit of industrial firms.

6.3.2. Firm-based technology development

At the current stage of Nepal's development, the most important thresholds of technological capability that firms need to cross are not concerned with formally organized R&D activities. For most large firms and a few SMIs, they are about building their design and engineering capabilities as a basis for starting significant technology development activities. For the majority of SMIs, especially in the more traditional industries, the most important capability thresholds are concerned with increasing the efficiency with which existing technologies are acquired, used and operated.

Nepal's industrial technology development system has relied almost exclusively on public institutions as suppliers of technology on behalf of industrial firms. In contrast, Korea, Taiwan, Singapore, and to a lesser extent Malaysia, have developed a dual structure which, alongside public institutions, have promoted firms themselves, not just as users of technology and skills, but as the creators of technology and the generators of skills and capabilities to do so. In these countries, as well as in more technologically advanced countries, firms now account for the larger proportion of industrial technology development. A large part of the process of technology development does not involve R&D. It is generated by design and engineering activities. Firms draw much of their knowledge from other firms, and knowledge flows embodied in people are very important.

However, transition towards a firm-centred structure of technology development does not take place automatically as time passes and industry grows. Many industrializing countries have experienced industrial growth for long periods without any significant change in this direction. Substantial demand for technology development at the level of individual firms is needed, even when strong government policies are in place, as in Brazil or India. This demand can be stimulated by at least four factors: competition, effective demand from firms, structure of production and foreign direct investment.

First, competition generates the pressures and opportunities in both the domestic and export markets and stimulates investment in technology development. Industries exposed to

international competition have made the most striking transition such as Korea, Taiwan and Singapore. Trade liberalization in Thailand has almost certainly contributed to encouraging some firms towards deepening their technological capabilities and activities. However, it is less evident that the new market opportunities have had the same positive effects. In particular, even in domestic markets, firms have been very slow to exploit opportunities to supply more technologically demanding goods and services to the expanding automobile and electronic industries.

The second is awareness of firms of the role of technology development for competitiveness. This ranges from firms who do not realize or recognize the need for change and do not know where and what they might improve ('do not know what they do not know'), to firms which recognize the need for change but are unclear about how to go about it ('know what they do not know, but do not know what'), firms with active demand who know what has to be done but which do not know where and how to obtain the relevant new technology ('know what, but do not always know where and how'), and finally firms with effective demand ('high capability and absorptive capacity'). Firms in the last category are the minority in any industrial sector, and more so in industrializing countries. An emphasis on competition as both a necessary and sufficient condition to stimulate technology development implicitly assumes that all firms are in this category. In reality, most firms in fall in the first and second categories, and need a prior learning process before they can generate effective demand for technological change. Yet most technology suppliers assume that most firms want to change.

The third factor is related to changes in the structure of industrial production. Sectors differ in the intensity of their technology development activities. Sectors such as pharmaceuticals and aerospace engage more intensely in R&D than footwear and steel in industrial countries. However, cross-sectional observations such as this do not easily translate into policy prescriptions over time, though it is commonly believed that it does. Thus the import-substitution strategies of the 1950s and 1960s, the domestic production of capital goods in the 1970s, the location of electronic industries in the 1980s, and particular parts of the electronic industries such as wafer fabrication in the 1990s, brought the manufacturing production capabilities to industrializing countries but not the associated innovative activity, which remained behind in the industrial countries. Similarly the use of IT systems in the 'new economy' of the 2000s, though an important change in production activities and competitiveness, is unlikely to lead automatically to the deepening of innovative capabilities and activities in industrialising countries.

Nevertheless, there are links between manufacturing production and innovation. First, domestic manufacturing production of more technologically advanced products and processes is the necessary base, though not sufficient, upon which to build incremental design and engineering changes to adapt and improve upon, activities which were earlier identified as the most important ones industrial technology development. Technology development has to be undertaken in close proximity to where production and marketing operations are located. Second, entry into industries that are growing rapidly in the world economy offer greater opportunities for deepening local technological development capabilities. In both cases, appropriate policies must be in place to stimulate and support firms' awareness for technology development and response capability, and to turn such opportunities into practical realities through incentives and support mechanisms.

The fifth factor is the role played by foreign direct investment. In industrialized and increasingly in industrializing countries, the roles and strategies of MNC subsidiaries and

joint venture partners seem to be shifting towards a greater localization of technology development activities. When MNC subsidiaries play a technology development role, they can generate spillovers to the rest of the economy. This opens up the potential for linking this process more strongly to local institutions and for increasing the spillovers generated within the economy.

6.3.3. Public technology institutes

Several institutions have been established to develop industrial technology. The Royal Nepal Academy of Science and Technology (RONAST) was established in 1982 to promote and apply science and technology in all areas of economic development. A Research Centre For Applied Science and Technology (RECAST) also exists. Research laboratories include the Food Research Laboratory, the Forest Survey and Research Laboratory, and the Royal Drug Research Laboratory. Universities also have science and technology research facilities.

In fact there are no less than 42 institutions involved in science and technology. They have had little or no impact in developing practical applications whether in manufacturing or other sectors to date, because of their government/bureaucratic structure and poor management, lack of vision, lack of adequate resources, lack of coordination and collaboration with other like-minded institutions, and more importantly, lack of clear mandate to provide direct services to clients in the manufacturing sector. The public technology development system therefore needs a complete overhaul and streamlining, so that the remaining institutions can be adequately funded, and re-orientated towards serving private sector clients.

6.3.4. Industry associations

The apex Federation of Nepalese Chambers of Commerce and Industry (FNCCI) plays a critical role in promoting industrial development. It is represented in 55 government agencies and consultative mechanisms. A notable contribution in recent years was to assist in dialogues with India, culminating in the historical 1996 Nepal-India Trade Treaty. Nevertheless, it represents both commercial and manufacturing interests, which can often come in direct conflict with one another. While it arranges training workshops and seminars on a regular basis, the specific issues of special relevance to manufacturing firms, such as technical information on equipment, products and processes, and upgrading of their technological capabilities, are not adequately addressed at present.

There are also several specific federations. The Federation of Nepalese Cottage and Small Industries (FNCSI), established in 1990 and now counting some 28,000 members, aims to protect the interest of the cottage and small-scale industrial sector through advocacy, dissemination of business information, and human resource development programmes in cooperation with various donor projects. The Central Carpet Industries Association (CCIA) also cooperates with various donor agencies to provide business information and consultancy services, and to promote Nepali exports. Its achievement includes the formation of the Carpet and Wool Board, the diversification of export markets, and its contribution in addressing child labour issues and environmental protection.

The Garment Association of Nepal (GAN), besides managing garment quotas, also provides relevant information to producers, in close collaboration with international organizations, and recommendations for visas and letters of credits. It cooperates with other agencies to solve labour disputes. The Handicraft Association of Nepal (HAN) provides market information

and assistance, productivity services, and technical help in new areas such as silver and gold jewellery.

Industry associations in Nepal face a number of common constraints. The most serious one is that they are not adequately represented in government institutions. For instance, FNCCI his not officially represented in the Investment Promotion Board, and CCIA, GAN and HAN are not represented in many government agencies and consultative mechanisms. An important constraint is their lack of capacity to deliver technological capability services to their members. Though they are active in providing market and business information services, they do not provide technical services such as plant visits, technical consultations, equipment advice and so on. Finally, they are quite dependent on donor assistance, and therefore raise issues of sustainability after donor assistance comes to an end.

7. International Trade Agreements and Foreign Investment

This Chapter contains two main sections related to international aspects of industrialization. Section 7.1 discusses international agreements on trade, while Section 0 discussed the role of foreign direct investment in the economy. Section 7.3 summarizes the main findings and provides recommendations.

7.1. International Trade Agreements

This section will discuss the implication for Nepal arising from the changing parameters in international economic relations as a consequence of changes in and accession to various international trade agreements. Since the late 1980s Nepal's development policy has emphasized greater integration of its economy into world economy, in a sharp departure from the historic closed-economy emphasis. Given its geography, economic relations with India are on the top of the policy agenda. However, in the long run the success with outer-oriented growth strategy also depends crucially on the effective participation in regional co-operation initiative and in the rule-based global trading system under the World Trade Organization. Accession to WTO membership has the potential to formalise Nepal's economic relationship with India in the context of a rule-based world trading system. Section 7.1.1 will discuss the economic relations with India, followed by other regional international institutions in Section 7.1.2 (SAARC and SAFTA) and Section 7.1.3 (South Asia Growth Quadrangle). Section 7.1.4 will discuss the implication for accession to WTO and related changes in MFA.

7.1.1. Economic Relation with India[63]

Given Nepal's land-lockedness, its economic future is shaped by three main interactions with India.

First the long and virtually open border with India constrains Nepal's ability to pursue an independent trade policy with a view to integrating the national economy with the global economy. For instance any significant deviation in trade taxes from the levels applied by India invariably leads to deflection of imported goods from Nepal to India (in the case of significantly lower import duties in Nepal) or smuggling from India to Nepal (in the case of higher Nepalese import duties). Likewise, any lucrative export incentives in Nepal can result in exports of Indian goods via Nepal or other way round. Hence, Nepal's ability to integrate its economy with the rest of the world through an independent trade and investment policy is limited.

Second, excess cost of access to sea has forced Nepal be a high-cost economy. Apart form the long distance to Indian ports (the Calcutta post is about 1000 kilometres at the closest route), in efficiencies of the Indian railway and ports add to Nepal's cost of transportations relating to international trade. It is also widely alleged that shipments from Nepal receive unfair treatments in priority order at the highly congested Indian pots. According to some tentative estimate the additional cost disadvantaged faced by Nepalese exporter compared to their counterparts in countries in the region is around 7 percent of the FOB value. The Nepalese clothing exporters claim that their overall cost disadvantage compared to their competitors amounts to 20 to 25 percent (Bagchi 1998).

[63] The bilateral trade treaty between India and Nepal was renewed on 05 March 2002, that is, after the field mission that produced this document. Hence some of the points raised in this section are superseded by events.

Third there are problems associated with cross border labour migration. There is a long history of Nepalese workers migrating to India for short-term employment. However, following liberalisation reforms in Nepal, Nepalese authorities have become increasingly concerned that migrant workers from India have taken up a significant number of newly created jobs in the economy. Under the Nepal-India Treaty of Peace and Friendship (signed in 1950) Nepal has to give 'national treatment to Indian citizens with regard to participation in Industrial and other economic activities'.

Historically Nepal-India relations have been far from smooth. The renewal of the trade and transit treaties and changes in their terms and conditions have always been contentious, infusing considerable uncertainty into Nepal's trade with India and the rest of the world through transit routes via India (Subedi 1998). In December 1991 two separate treaties on trade and transit for period of 5 and seven years respectively were signed. Following the liberalisation reforms in initiated in that country in the early 1990s, India began to adopt a more liberal approach to trade with Nepal. For instance under the 996 Trade Treaty, India provided Nepal with free access to her vast domestic market. But periodic negotiations of the two treaties and unpredictable changes in terms and conditions have continued to be sources of uncertainty to the Nepalese business community. When the 1996 Trade Treaty expired in December 2001, it was extended by another 6 months pending the negotiation of a new treaty.

Whether India would continue with her liberal policy stance in negotiating the new agreement remains unclear. Recently India has expressed serious concern about deflection of Indian imports via Nepal because of relatively low tariffs in Nepal on a number of intermediate imports.[64] As a precautionary measure, the India government has already introduced a 50 percent value added requirement for imports of goods process in Nepal. In principle, tariff harmonization (maintaining Nepalese import tariffs more or less at par with the Indian tariff) seems to be an effective way of avoiding trade conflicts. Implementation of such a policy is difficult for Nepal because raising import duties to the levels applied in India invariable involve high economic cost, both in terms of adverse implications for domestic manufacturing and reduced consumer welfare. However, fortunately, a move towards tariff harmonisation would become more practical in the future because of the on-going process of tariff reduction in India under her WTO commitments.

7.1.2. SAARC and SAPTA

The South Asian Association for Regional Cooperation (SAARC) – comprising Bangladesh, Bhutan, India, the Maldives, Nepal, Pakistan and Sri Lanka – was founded in December 1995 under charter signed by the Heads of States in at Dhaka. Its aim was to accelerate the process of economic, social and cultural development, and to promote and strengthen collective self-reliance through join action in certain agreed areas of economic cooperation.

During the fist ten years, SAARC activities remained confined to the promotion of non-economic relations, mainly sport, cultural and educational activities. In 1993, SAARC Preferential Trading Area (SAPTA) was launched. The agreement aimed at periodic negotiations to exchange trade concessions on a sectoral or product-by-product basis. In the first round of negotiations held in 1994, a limited range of tariff concessions involving very

[64] See Chapter 2 for more information on tariff structure in relation to India and in general.

narrow preference margins were offered on a commodity-by-commodity basis, without removing the existing Non Tariff Barriers (NTB). At the second and third SAPTA Rounds in 1996 and 1998, some member countries moved from commodity-by-commodity approach to sectoral liberalisation and offered tariff concessions involving relatively wider preference

7.1.3. South Asia Growth Quadrangle

Recently four South Asian countries—Bhutan, Bangladesh, India and Nepal—have formed the South Asia Growth Quadrangle (SAGQ), a sub-regional cooperation initiative. Modelled after the Greater Mekong Sub-regional Development Programme (GMSDP—another regional initiative of the ADB), the prime aim of SAGQ is to harness external finance for funding infrastructure projects of mutual benefit to two of more of these countries. As in the case of GMSDP, the Japanese Government has expressed willingness to provide infrastructure development projects under the interest in participation.

Since its inception in 1992, the GMSDP has successfully implemented a number of sub-regional road projects linking the countries in the Greater Mekong Sub-region (comprising Thailand, Myanmar, Laos, Cambodia and the Yunnan Province of China). Based on this experience, SAGQ has the potential to be of great value for the four countries, the two landlocked countries among them in particular (Nepal and Bhutan), in tapping on Japanese development aid to solve some of their perennial transportation problems. Two potential projects, which Nepal should strive to place on the policy agenda of SAGQ, are the proposed access route to the Chittagong port in Bangladesh via India and a sub-regional hydroelectricity-generating project with the aim of exploiting hitherto unexploited potential in Nepal with a view to selling excess production to India (and perhaps to Bangladesh). Relating to the latter a successful example from Asia is the recent expansion of the hydroelectricity industry in Lao PDR, with arrangements to sell excess production to the national electricity-supply grids in Thailand and more recently in Vietnam.

7.1.4. WTO and Nepal

7.1.4.1. WTO: An Overview

The WTO, which came into being on 1 January 1995 on the basis of an treaty ratified by members at the conclusion of the Uruguay Round, has the same legal and organizational standing as the IMF and the World Bank. The WTO provides the world trading system with an effective institutional and legal framework for the design and enforcement of trade rules.

The WTO is a permanent international organisation with a solid institutional framework. The Most-Favoured-Nation (MFN) principle ensures an equal treatment of all members at the border.

Three important exceptions to this general rule in favour of developing countries concern (a) trade amongst members of regional trading arrangements subject to preferential rates, (b) the General System of Preferences (GSP), which gives developing countries a margin of preference in tariff rates for their exports to developed countries, and (c) the principle of Differential and Special Treatment (DST), taking into account that developing countries might have difficulties in complying with all WTO rules and providing for exceptions as regulated under almost all GATT agreements.

The National Treatment (NT) rule secures an equal treatment between imported and domestic goods. To provide the security and predictability of market access, any member must not change its confessional rates of duty agreed and specified in its Schedule annexed to the WTO Agreement.

For settlement of disputes, under the WTO regime, efforts made by the parties to settle dispute cases through bilateral consultations are respected. Only if this process fails, these cases are taken up at WTO under an internationally agreed system, known as Understanding on Rules and Procedures Governing the Settlement of Disputes (DSU).

7.1.4.2. Why is WTO Membership Important?

The WTO now has 147 member countries (China being the newest member), including more than 100 developing countries, all of which have agreed to the same set of trade rules contained in various WTO agreements. These countries account for over 90 percent of world merchandise trade. For those developing countries that have remained outside the membership of the GATT system, whether by choice or due to historical reasons, membership in the WTO represents the first step towards integrating into the world trading system. Developing countries have a compelling reason for wanting to join a rule-based system. Under such a system, the economically powerful nations could not impose their will unilaterally on smaller trading partners.

Why is it important for developing countries to join the WTO? The most obvious reason is that non-members are denied the MFN status that automatically comes with membership. This means that trading partners may apply discriminatory tariffs on that country's exports at levels higher than those applied to similar products imported from other countries.

Second, as mentioned above, GSP and DST apply to developing countries, giving them more privileges as compared to developed countries.

Third, members have legitimate access to contingent trade policy instruments such as anti-dumping, countervailing duties, and safeguard measures through the dispute settlement mechanism of WTO. This is an important protection against arbitrary action against importing countries.

Fourth, the Article V of the GATT has been specifically designed to help land-locked countries in resolving problems of transit rights. The accession to the WTO will enable Nepal to have recognised rights [and obligations] from transit trade under this Article and to turn to the WTO Dispute Settlement Mechanism for resolution of any disputes in a more transparent and efficient manner (compared to the current process of direct bilateral negotiation with India.

Finally, membership in the WTO might also attract FDI, as many (but not all) foreign investors prefer to invest in countries that are bound by world trade rules rather than in countries whose trade policies are subject to erratic changes owing to national policy choice.

7.1.4.3. Nepal's Accession to WTO Membership

Nepal applied for GATT membership in 1989 and a Working Party was established for considering the application Nepal's membership in the same year. Accession negotiations were however suspended pending the conclusion of the Uruguay Round of trade negotiation. Following the establishment of the World Trade Organisation (WTO) in place of the GATT

at the successful conclusion of the Uruguay Round, the Working Part was reconstituted in December 1995. The Working Party Working Party consists of representatives from eight individual countries - the USA, Canada, New Zealand, Australia, Austria, India, Sri Lanka, Malaysia and the European Union (EU).

According to the requirement for WTO accession under Article XII, Nepal submitted to the Working Party a Memorandum of Trade Regime, the base document, in 1998. Nepal responded to queries/questions (364 of them!) raised on the Memorandum in 1999 and 2000. The First meeting of the Working Party was held on 22 May 2000 and Nepal submitted the revised schedule of tariff concessions and the schedule of initial commitments on services sector liberalisation in July 2000. The second meeting of the Working Part is to be held in the second half of 2002. If the Working Party becomes satisfied with Nepal's tariff binding commitments and the services sector liberalisation offers, the Working Party will then prepare a Draft Decision and Protocol of Accession for presentation at the General Assembly of the WTO. A two-third clear majority vote of the General Assembly is required for the accession.

Table 7.1: Nepal: State of the WTO Accession Process

Process	Date
Application for accession to GATT	May 1989
Establishment of the Working Party	1989
Conversion of GATT Working Party in to WTO Working Party	December 1995
Submission of the Memorandum on Foreign Trade Regime (MFTR)	July 1998
Clarification on MFTR	June 1999 – June 2000
First meeting of the Working Party	May 2000
Tariff and service offers	July 200
Bilateral negation process (continues)	Commenced in September 2000 (continues). Revised tariff commitments, services commitments and other legislative commitments are to be submitted by February 2002.
The second meeting of the Working Party	To be held in the second half of 2002
Draft Decision and Protocol of Accession	To be decided
Vote in the General Assembly (two-thirds clear majority vote is needed for accession)	To be decided

Source: Compiled from various news items on the accession process posted on the WTO Website (www.wto.org).

There are three issues yet to be resolved in the negotiation process:

- Nepal has proposed multiple tariff bindings in the rage of 10 percent to 45 percent, with the majority of bound rates clustering at the upper end. Some members of the Working Part have questioned the rationale for binding tariff at higher levels compared to the existing tariff rates. The Nepalese negotiators argue that the tariff bindings, even though in most case higher than the current rates, are significantly lower than the existing bound rates of many other developing county members of the WTO, including India, Pakistan and Bangladesh.
- Under services sector liberalisation, Nepal has proposed to open up three sectors: hotels and resorts, health and telecommunication. The Working Party members are of the view that the coverage of liberalisation commitments here are inadequate. Most members are of the view that banking and finance sector should be added to the list. The USA has

requested inclusion of the entertainment industry, while Sri Lanka and India have specifically asked for adding legal and consultancy services.

- The third unresolved issue relates to the time period for the implementation of the liberalisation commitments after accession. The WTO practice so far has been to require the newly acceding members to fulfil commitment at the time of accession. The Nepalese authorise have informed that this is not practical because of socio-political considerations; sudden implementation of significant economic opening may not be socially disruptive and politically unpalatable. They also argue that it is not reasonable to set additional requirements for newly acceding countries beyond those required/fulfilled by the original WTO members (For instance, acceding countries are required to bind all of their tariffs on accession, although many original WTO members have not bound tariff in several sectors. Similarly, existing Least-Developed member countries of the WTO enjoy Differential and Special Treatment (S&D) provisions under various WTO agreements. For example, LDCs that are original WTO members have been given until 2006 to set up the complex legal mechanisms needed to enforce the provisions of the Trade Related Intellectual Property Rights (TRIPs) Agreement. Acceding LDCs on the other hand have to undertake to comply with all TRIPs obligations from the date of accession.)

Relating to the first issue it can be argued that in binding tariffs Nepal should go by her own policy priorities rather than by what other WTO members have done. The country has embarked on a trade liberalisation and tariff reduction process with the conviction that this is appropriate policy. Then the correct policy is to make use of the WTO accession to give credibility to the liberalisation process by binding tariffs at levels closer to the existing rates.

As regards services sector liberalisation, Nepal should make use of this opportunity to improve the efficiency of the services sector through greater private sector participation (including foreign direct investment). It is therefore gratifying to note that Nepalese authorities have already decided to include banking and insurance, and computer services as additional areas of services liberalisation. Another suitable sector for inclusion seems to be hydroelectricity generation, a sector where Nepal has considerable potential for output expansion through private sector participation.

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Relating to the third issue, Nepal's concern appears reasonable. In this connection, it is important to note that the WTO Agreement does not specify any conditions for accession. Accession is simply on the terms agreed upon by the between the applicant and the WTO members (WTO Agreement, Article XII: 1) The idea behind ensuring drastic concessions and liberal commitments from acceding countries is to minimize the number of countries that depart from free trade principles, which is the ultimate goal of the WTO. However, the early accession of the remaining non-member countries is only the first step towards their integration into the world trading system. Unnecessary delay in accession not only harms the credibility of the process but also risk further marginalizing some of the world's poorer economies.

The ministerial declaration issued at the conclusion of the recent WTO Ministerial Meetings has recognized the need to facilitate the accession negotiation process for LDCs and requested the WTO Secretariat to take appropriate initiatives. Many observers anticipate that this may lead to a more flexible approach to the time commitment for the implementation of agreed reforms in future accession negotiations.

7.1.4.4. The Multifibre Arrangement (MFA), WTO Agreement on Textiles and Clothing and Clothing Exports from Nepal

MFA

The Multifibre Arrangement (MFA) remained a much-debated anomaly in the pre-WTO world trading system. In violation of the most favoured nation (MFN) principle of the GATT, it effectively restrained the participation of developing countries in world trade in textiles and clothing, an area of pivotal importance for these countries in export-oriented industrialization. A major outcome of the Uruguay Round multilateral trade negotiations concluded in August 1994 was the Agreement on Textiles and Clothing (ACT) under which the developed countries agreed to phase-out the MFA quotas with a view to bringing textile and clothing trade under multilateral discipline.

The MFA proved to be a highly discriminatory system, which nurtured significant inefficiencies on both the production and consumption sides. The MFA was not just a system of quantitative restrictions against developing countries. It was *a discriminatory system*, both between countries liable to restraints and those that are not, and among those liable to restraints. There were different restraint levels for different suppliers, with first comers and the politically powerful tending to be the most rewarded, subverting the GATT's intention of providing opportunities to the most competitive.

The early introduction and the subsequent tightening of MFA quotas on exports from the NICs in the 1970s played an important role in the geographic spread of garment industry in Asia. Entrepreneurs from these countries (especially those from Hong Kong) moved production to other locations (mostly in Asia) as a result of MFA. In this way they could plan exports from a number of different sources simultaneously (as a cushion against possible export disruptions caused by future tightening of MFA quotas), at the same time, when quotas are imposed on the hitherto unrestrained suppliers, they could expect to obtain them. The same process also guided the global sourcing decisions of large buying groups in developed countries.

This was however only a qualified, short-run benefit for the latecomers such as Nepal. In the longer run new export restraints were imposed on these countries at levels well below those enjoyed by established suppliers.

It is important to note that quota restrictions imposed on exports from the NICs was not the sole factor behind the expansion of T&C exports from the newcomers in the region. Market-oriented policy reforms in these countries, coupled with mounting cost pressure in NICs, have also played a key role. Export takeoff in clothing in countries like Bangladesh, Sri Lanka, China and Indonesia and more recently in Nepal occurred only after these countries embarked on market-oriented reforms.

Liberalisation Commitments under the Agreement on Textiles and Clothing

The Agreement on Textiles and Clothing (ATC), which entered into force on 1 January 1995, envisages phasing out of MFA in three stages over the ensuing ten-year period, with the aim of bringing trade in all textiles and clothing products under WTO discipline by the year 2005. Products accounting for not less than 16 percent of total imports in 1990 (the 'reference year') were to be integrated into the GATT with immediate effect (Stage 1). Stage 2 entails integration of an additional 17 percent by January 1998. Stage 3 involves further integration of 18 percent by January 2000, and sage 4 will integrate all remaining products by 1 January 2005. The agreement also set minimum limits on annual growth in import quotas on those

products that are still under restraint during each stage; 16 percent over MFA IV in stage one (until 1998), by no less than 25 percent over Stage 1 in Stage 2 (1998-2001), and 27 percent over Stage 2 in Stage 3 (2002-2004).

The Agreement has left the choice of products to be integrated at each stage to the discretion of individual countries. This provides importing countries with more room to design phase-out strategy with a view to minimising possible adjustment pain. Moreover much of the liberalisation will be postponed until late in the transition period. Products accounting for as much as 49 percent of the value of 1990 imports could still be under quota restrictions as of the end of the 10-year phase- out period.

So far the major importing countries have integrated mostly those items (such as yarn) on which they had no binding quotas. By the end of Phase 1 (1 January 1998) no importing country other than Norway and Canada had eliminated more than a tiny percentage of their actual MFA quotas, as against a target rate of between 33 percent product integration by that time. The progress remained well short of this target even by the early 2001. The industrial countries have the ability to make use of the safeguard provisions of the agreement to water-down promised liberalisation if they choose to do so. The potential for such new form of protection to counterbalance MFA abolition is vividly illustrated by the safeguard actions recently taken by the EC. There are also indications that industrial countries are likely to rely increasingly on anti-dumping provisions as a new form of protection, like it has happened in many other manufactured good markets in recent year.

In addition to these changes and discussed in more detail in Chapter 3, the US Caribbean/Sub-Saharan Facility that entered into force as of 1 January 2001 provides very large quotas and duty free exports to USA for 42 Caribbean and Sub-Saharan countries, significantly changing the competitive situation of Nepal vis-à-vis Sub-Saharan African countries and Caribbean countries.

How to prepare for the post-MFA Era?

Assuming that the industrialised countries will honour their undertakings under the ATC, world textile and garment industry is bound to under go a dramatic reshuffle after 2005. A very competitive export market will emerge, affecting individual countries in different ways depending on their relative competitiveness.

On one hand exporting countries that are currently in a strong competitive position and whose market access has been tightly restricted will benefit. On the other, two groups of countries are likely to suffer transitional adjustment pains. These are:

- Countries such as the East Asian NICs whose competitiveness has been eroded over the years by rising domestic cost of production and/or the emergence of low cost suppliers among the newcomers, and
- Countries that have taken advantage of MFA restrictions on supplying countries to enter the trade, without possessing a true competitiveness.

Recent studies of the impact of MFA abolition on exporting countries predict significant long-term welfare gains to efficient exporting countries such as China, Indonesia, Sri Lanka, Indonesia and Thailand at the expense of most of the countries in Latin America, the Middle East, North Africa, Eastern Europe and the former Soviet Union. The latter countries have so far looked in low-end clothing categories thanks to quota protection under the MFA. Countries such as Bangladesh, Lao, Vietnam and Nepal may also encounter significant adjustment problems given their excessive reliance on low-end quota-protected clothing

categories. Nepal will be particularly vulnerable because of the excessive transport cost arising form her land-lockedness (see above) as well as the quota-driven nature of investment in the garments industry.

7.2. Foreign Direct Investment in Nepal

The purpose of this section is to provide guidance for future policy reforms towards foreign direct investment (FDI). Market-oriented policy reforms in Nepal over the past decade or so have placed major emphasis on attracting foreign direct investment as a means of achieving rapid industrial growth. The section begins with a stage-setting overview of the nature and determinants of FDI emphasizing opportunities available for latecomer host countries. The sub-sections that follow deal with FDI policy in Nepal and the current state of investment, trends and patterns of FDI inflows to the country, and its developmental implications.

7.2.1. Analytical Framework

7.2.1.1. Definition and the Nature of FDI

FDI contributes to the development of a host country by increasing the country's investment level beyond what would be permitted by domestic saving alone. In addition, FDI enhances entrepreneurial capability when the foreign firm brings with it some firm-specific knowledge (in the form of technology, managerial expertise, and marketing know-how) that cannot be effectively leased or purchased on the market by the host country; FDI allows new local entrants to learn about export markets; it provides training for workers, and stimulates competition with local firms. The later potential cumulative benefits of FDI can be far greater than the direct benefit in the form of augmenting domestic investment alone (*e.g*. Markusen and Venables 1997, Borensztein *et al.* 1998).

FDI is a flow of long-term capital based on long-term profit considerations that, once, received, is not likely to be quickly withdrawn. Thus, in comparison to portfolio and other types of investment flows, FDI is like to be a relatively stable source of funds.

Finally, thanks to their parent firms, multinational enterprise (MNEs) affiliates are less vulnerable to economic crises in host countries since do not suffer lowered credit ratings, and experience less difficulties in importing raw materials or trade financing as compared to other domestic firms. Given the access to a vast international trade and production network, they are also better placed to switch sales from the domestic (host-country) market to export markets as a cushion against possible output disruption caused by a crisis (Blomstrom and Lipsey 1993, Lipsey 2001).

7.2.1.2. Determinants of FDI

It is important to distinguish between three categories of FDI in terms of their decisions to locate in a given host country. These are, producers largely engaged in serving the domestic market ('market-seeking' investors), firms involved in extraction and processing of natural resources both for selling in the domestic market and exporting (usually for the latter purpose) (resource seekers), and exporters of manufactured goods or components in vertically integrated global industries ('efficiency seeking' investors).[65]

[65] Efficiency is broadly understood to include cost factors, regulations and all other aspects of the investment climate that provide for a conducive production environment.

For market-seeking FDI, a major (if not the key) determinant is given by restrictions on international trade. Given the small domestic markets in many developing countries in comparison to the efficient scale of production the only reason to invest would be to obtain compensation by higher prices through tariff protection (the 'tariff jumping' motive). For the second form of FDI, resource-seeking foreign firms will go where the resources are, if the production conditions are right in comparison with other resource locations.

The third form of FDI, export-oriented or ‘efficiency seeking’ investment has been the key focus of FDI involvement in developing countries pursuing export-led industrialisation over the past two decades or so. The relative attractiveness of a given country for FDI depends on both its comparative advantage in international production and the general investment climate. For the purpose of clear identification of the comparative advantage of a given host country in attracting export-oriented FDI, the related export products can be divided into four categories (Table 7.2).

Table 7.2: A Typology of MNE Participation in Export-Oriented Manufacturing in Latecomer Developing Countries

Product category	Product characteristics		Potential role of MNEs in export expansion
	Technology	Factor intensity	
Resource-based manufacturing – Local processing of primary products previously exported in raw state	Diffused	Mostly Capital intensive	Of selective importance.
Differentiated final goods: chemicals, cosmetics, pharmaceuticals, motor vehicles, computers, radios, television sets, computers etc	Partly diffused and partly internal to MNEs. Brand names are critical	Capital and skill intensive	Of limited importance
Light standardised consumer goods – clothing, shoes, sporting goods.	Well diffused, but brand names are critical	Labour intensive	Important
Component production and assembly within vertically integrated production systems: semi-conductor assembly, parts of electrical machinery, motor vehicle parts etc.	Mostly internal to MNEs	Labour intensive	Extremely important

Source: Athukorala (1998)

In the first category (resource based manufacturing) the ability of a given country to attract FDI depends of course on the nature of its natural resource endowment. Even if resources are available, there are other factors, which may render policies to entice foreign investors irrelevant or ineffective. For instance, some processing activities, particularly those in the mineral and chemical industries, are characterized by high physical and/or human-capital intensity and may not be economic in a low-income country. A further major deterrent is cascading tariff structures in industrialized countries (ICs), which still provide heavy effective protection to domestic processing industries. However, depending on the specific resource (*e.g.* specific climate) there might be a niche for nearby regional markets within the developing world.

In the area of differentiated final goods (category 2), overseas production units of MNEs are mostly located in other ICs or in more advanced NIEs. In these products labour costs, while significant, are of secondary importance compared to the availability of world-class operator, technical and managerial skills; a good domestic basis of supplies and services; relatively free

access to world-priced inputs including capital; and excellent infrastructure. Also, when faced by heavy initial fixed costs, in making investment decisions in this sphere, investors attach significant weight to the existence of a large domestic market that can absorb a substantial proportion of output at the initial stage of market entry.

For latecomers, standardized labour-intensive consumables (category 3) and labour intensive component production and assembly within vertically integrated international industries (category 4) are the most promising growth areas in their export-expansion endeavours. Availability of relatively cheap, easily trainable labour is perhaps the most important host country characteristic needed for attracting FDI into these product sectors. However, this precondition alone is not going to guarantee success; it needs to be appropriately combined with an appropriate domestic investment climate.

The term ‘investment climate’ is used here to cover both policy induced incentives and general business environment. Policy induced incentives (‘incentives, for short) encompasses everything from straightforward incentives such as cash grants, tax holidays and low interest loans to various disguised subsidies such as low public utility rates. General business environment, on the other hand, is a catchall term for various considerations impinging on investment decisions such as political stability and the attitudes of the host countries towards foreign enterprise participation, macroeconomic environment, and stability and clarity of rules governing foreign investment. Most economists today accept the argument that general investment climate is much more important than specific incentives. Tax concessions and other profit-related incentives are relevant only if the general business environment is conducive for making profit. Moreover, as countries compete for attracting investment, the incentives offered by a given country are generally counter-balanced by similar moves by other competing countries. Thus investment incentives may matter only when other conditions are roughly similar as between alternative host countries (Section 7.1).

7.2.2. FDI Policy in Nepal

For over three decades until the mid-1980s, Nepal pursued an import-substitution development strategy with a highly protectionist trade and investment regime. Dismal outcome of this strategy, coupled with pressure by international lending agencies, paved the way for a decisive policy shift in favour of market-oriented, outward-looking, development strategy, starting with the Structural Adjustment Policy (SAP) package of 1985. These reforms emphasised the need to promote the role of private sector in the economy. The encouragement of private foreign investment has received policy emphasis as an effective means of promoting private sector led growth.

The Industrial Policy and Industrial Enterprise Act promulgated in 1987 (HMG 1987) marked the beginning of Nepal’s attempt to attract FDI. The Act provided a legal framework for facilitating FDI in medium and large-scale ventures in every industry with the exception of defence activities. A new Foreign Investment Promotion Division was created at then the Ministry of Industry to act as the central body for the approval and monitoring of foreign investment projects. Joint ventures were the preferred form of investment and limitations were set on the level of foreign equity holdings. Foreign investment was not allowed in small-scale industries while in medium-sized industries, foreign equity of up to 50 percent was permitted. In large industries with at least 90 percent export sales there would be 100 percent foreign ownership. In other large industries 80 percent was normally the maximum; if

the remaining 80 per cent of equity was not taken by Nepalese, foreign shareholders were could subscribe up to 100 percent.

The Act contained a new set of incentives, which were similar to and, in some respects, even more attractive than those in other countries. Full remittance of profits from FDI ventures in convertible currency was permitted. Repatriation of capital was possible, but an annual limit of 20 percent of the initial investment was set (or 25 percent if shares are sold through the Securities Exchange Centre). Foreign workers could be brought into the country, where national are not available. A five- year tax holiday from profits taxation was introduced for investment in most activities and firms involved in production for export were allowed to import inputs duty free either through a duty drawback or bonded warehouse facility.

The democratic government that came into power in 1990 re-emphasized the importance of FDI and technology transfer in the development process. In 1991 the tax holiday period was extended to10 years for investments in national priority activities. The priority sectors were defined to include industries producing goods that meet basic need (food, clothing and housing and so forth), export promotion activities (where exports are 50 percent or more of total sales) and hotels and tourist projects. The Foreign Investment and Technology Transfer Act of 1992 opened up foreign investment in all sectors excepting some industries such as defence, cigarettes, bidis and alcohol. Development of hydropower was also opened to foreign investment. The Act guaranteed 100 percent repatriation of equity invested, dividends obtained from foreign investment and amount received as payment of principal and interest on foreign loans in convertible currencies (table 2). The Act also made provisions for easing visa problems and the settlement of disputes.

Under the Foreign Investment and One-Window Policy Act (1992) approval and licensing procedures were simplified, with the aim to approve investment applications within a stipulated time period of 30 days following the receipt of the application. A One Window Committee was set up at the Department of Industry to provide institutional facilities and services under one roof.

As part of the FDI policy, the Nepalese government entered into investment protection agreements with Germany, France and the UK. Agreements for avoiding double taxation have been signed with India, Norway and Thailand. To settle foreign-investment related disputes, the law of the country has made explicit provisions for arbitration within the framework of the United Nation’s Commission for International Law (UNCTRAL)

The Foreign Investment and Technology Transfer Act of 1992 contained a ban on the entry of FDI into cottage industries and projects with fixed assets amounting to less than 20 million Nepalese rupees. A 1996 amendment eliminated the fixed assets limit and expanded the scope of foreign investment in all industries except those few in the negative list. To expedite the approval process, the Department of Industry was authorised to approve projects involving Rs.500 million or more fixed assets.

More recent changes into foreign investment law include, abolishing tax holiday (by the first amendment to the foreign investment act in 1997) following a reduction of company tax rate for all industries to 20 percent. Export oriented ventures have the option of either paying 0.5 percent of export value (FOB) or 8 percent of profit (two fifth of the rate applicable to domestic market oriented firms). A 5 percent tax was introduced on profit remittances by foreign firms by the 1999/2000 Budget. This new tax, which was introduced on balance of

payments exigencies, is however at odds with the government commitment to promote foreign investment.

Table 7.3 compares the key elements of the Nepalese FDI policy with that of the other countries in South Asia. It is evident that in general Nepalese policy regime compares favourably with the other countries in the region. However, it is important to note two peculiarities in the Nepalese regime. First, after the 1997 amendment to the investment Act, Nepal does not offer tax holiday for foreign investment project. In that what Nepal now offers is a concession on forfeit tax estimated at 8 percent on business profit of 0.5 percent on total export value (in the case of export-oriented projects).

Second, Nepal has not set up free trade zones as a means of promoting export-oriented FDI. The Nepalese authorities are of the view that there is little need for an EPZ given the significant import tariff cuts in recent years and existence of the wide-ranging import duty rebate scheme. This argument however ignores the important point that provision of imported inputs at world market price is only one aim of an EPZ scheme. As the successful export-led industrialisation experiences of countries like Taiwan, Malaysia, Dominican Republic and Sri Lanka, and more recently in Vietnam clearly demonstrate, EPZ schemes have a useful role to play as focal points of providing much needed infrastructure facilities and fashioning export-oriented firms against bureaucratic inefficiencies and delays (Johanson and Nilson 1997). Moreover, there is ample evidence that the present duty rebate scheme in Nepal is far from perfect and exporters normally experience considerable delays (between 3 to 6 months, and at time even beyond that) in receiving duty refund. Thus, there is a strong case for considering setting up of an EPZ in the vicinity of the dry port in Mirgunj.

7.2.3. Trends and Patterns of FDI

During the period from 1987 to October 2001, the Nepalese Foreign Investment Board approved a total of 721 projects. Total capital commitment of these projects amounted to US$1153.8 million (Nepalese Rupees (NR) 65191 million) of which US$980.8 (26.3 percent of the total) came in the form of capital contribution by the foreign partners of the projects. Total envisaged (planned) employment of these projects amounted to 86,425 (Table 7.4).

Table 7.3: Foreign Investment Policy Regimes in SAARC Countries

Areas	Bangladesh	India	Nepal	Pakistan	Sri Lanka
Govt. Agency dealing with FDI	Board of Investment	Foreign Investment Promotion Board and Council	Investment Promotion Board	Board of Investment	Board of Investment
Limits on Foreign Equity Participation	100%	Up to 51% in most industries; Up to 24% in small scale industries; and 100% in export-oriented industries, power, electronic and software technology parks	100% foreign owned or joint venture in all sectors, except for a negative list industries	100% without any permission of the Govt.	100%
Fiscal Incentives	i) Tax holiday for industries located in Dhaka and Chittagong Division (for 5 years), and Rajshahi, Khulna, Sylhet, and Barisal District (for 7 years) ii) Tax exemption on royalties, interest on foreign loans and capital gains from the transfers of shares iii) 5% import duty on capital equipment and sparse parts for initial installation	i) Income tax holiday of 10 year for EPZ firms and 5 year for other investors. ii) Access to finance for export-oriented industries at confessional interest rates iii) Tax relief under Avoidance of double taxation agreements iv) 10 year income tax holiday for firms located in EPZ.	i) Corporate tax rate for export-oriented industries is 8% of profit or 0.5% of export earnings ii) Corporate tax rate for import competing industries is 20% iii) 2.5% duties on imports of M/E and spare parts iv) 5-10% duties on most industrial intermediate inputs refunded to export-oriented industries under the duty draw back scheme	i) No custom duty on imports of plant, machinery & equipment for export-oriented and hi-tech industries ii) Zero import tariff on plant and machinery (not available locally) used for agriculture	i) Exempted from income tax on capital gains arising from share transfers ii) Duty draw back for export-oriented industries
Repatriation of Profits and tax on expatriates income	100% repatriation of capital and dividends is allowed	100% repatriation of capital, profits and dividend is allowed after payment of tax	100% repatriation of dividends and capital is allowed	100% repatriation of capital, dividend and profits is allowed	i) 100% repatriation of profits and dividend is allowed ii) Expatriates income is taxed at a confessional rate of 15% for 5 years
Protection of Foreign Investment	i) Guarantee against nationalisation ii) International convention for settlement of industrial disputes	i) Settlement of disputes is governed by the Indian Arbitration Act 1940 ii) UN Convention for the recognition and enforcement of foreign arbitral awards	i) Guarantee against nationalisation ii) Dispute settlement through mutual consultations and in accordance with the arbitration rules of UN Commission on International Trade Law	i) Guarantee against nationalisation ii) Settlement of dispute through the International Commission on Settlement of Investment Disputes	i) Protection against nationalisation under the bilateral investment agreements and constitutional guarantee ii) International Convention for the Settlement of Investment Disputes

Source: Compiled from various country sources

Table 7.4: Foreign Direct Investment Approvals (1988-October 2001)

Year*	No. of Projects	Total Investment (US$ million)	Total Fixed Investment (US$ million)	% Share of FDI in total investment	Employment
1988	59	160.0	68.3	8.6	10,586
1989	30	64.9	31.9	16.3	9,515
1990	23	20.0	10.3	47.0	2,974
1991	38	54.7	43.3	17.0	5,615
1992	64	301.1	241.6	17.2	13,873
1993	38	55.2	47.3	36.9	4,734
1994	19	22.3	18.6	29.3	2,386
1995	48	120.7	140.1	22.1	8,032
1996	77	104.4	99.7	28.0	9,347
1997	77	65.2	76.6	35.9	4,336
1998	51	56.0	65.4	31.3	2,146
1999	68	27.3	27.7	54.1	4,659
2000	99	82.8	92.7	38.9	6,893
2001 Oct	30	19.2	8.1	41.2	1,329
Total	721	1,153.8	971.6	26.3	86,425

Note: *Nepalese fiscal year, from16 July of the previous to 15 July in the reported year
Source: Investment Promotion Board, Department of Industry, Commerce and Supplies, Kathmandu

There was a steady increase in the number of project approval from 1998 to about 1996, with the exception of 1994 when there was a temporary dip in the number due to uncertainty in the political climate (with the formation of a short-lived communist government). Since then the time pattern of approvals has been erratic, with all years except 2000 recording a decline compared to the levels in the mid-1990.

As discussed earlier, Nepal now allows full ownership in FDI projects, with ownership limits only in few areas. Despite this the share of foreign ownership in individual projects, the share of foreign capital in total approved investment during 1988-October 2001 has averaged to a mere 26.3 percent, with the share in annual approvals varying in the range of 8 percent to 54 percent. Based on the experience in other developing countries, the apparent inclination of foreign investors to settle for partial, mostly minority, ownership positions perhaps points to the unsettled nature of the investment environment in the country.

It is important to note that foreign investment *approval* data give an exaggerated picture of the actual FDI participation in the Nepalese economy. Of the 721 projects approved during the period covered by the study only 270 were in operation by the end of the period (October 31, 2001), with 49 projects under construction (Table 7.5). The total realisation rate of approved project (projects in operation, under construction and those closed down after starting operation as percentage of total approvals) for a period is 46 percent.

Table 7.5: Status of Total Approved Investment Projects, 1988- October 2001

Year*	No. of Projects	Total Investment	Total Fixed	% Share of FDI	Employment
Operational	270	536.1	479.2	18.7	41,310
Under-construction	49	82.0	73.1	30.3	6,210
Licensed	135	214.1	172.7	31.9	15,399
Agreement signed	183	182.6	126.0	39.9	13,214
Closed	19	17.4	14.4	24.1	1,798
Cancelled	65	121.4	106.1	27.1	8,494
Total	721	1,153.6	971.6	26.3	86,425

Note: *Nepalese fiscal year, from16 July of the previous to 15 July in the reported year
Source: Investment Promotion Board, Department of Industry, Commerce and Supplies, Kathmandu

It is a universal pattern across all developing investment-receiving countries that a significant number of FDI projects never reaches the implementation stage. However, the Nepalese realisation rate of projects is exceptionally low from a comparative perspective. For instance the realisation rates in Malaysia, Sri Lanka and Vietnam (for varying periods during the decades of 1980s and 1990s) have been estimated as 80 percent, 75 percent and 70 percent (Athukorala and Rajapatirana 2000). This may be because of various administrative bottlenecks that the prospective investors have to confront in Nepal.

Data on the source country patterns of FDI is provided in Table 7.6. The geographic origin of FDI in Nepal shows a clear developing country bias. Among the developing country investors, India has been by far the most important largest investor in Nepal. Of the total number of approved projects, 249 are of Indian parentage. A large number of these firms are ‘quota-hoppers; in the export-oriented garment industry, firms set up in order to circumvent quota restrictions imposed by importing developed countries on garment exports from India. A major inducement for the bulk, in not all, of the other Indian investors has been opportunities for profit making through ‘import deflection’. Because of successive tariff cuts form the late 1980s, tariffs on many intermediate products imports in Nepal are much lower than in India. This, combined with virtual open border between the two countries, has made simple processing industries in a number of product area (including vegetable ghee, copper wires (check) and some cosmetics) geared to the Indian market highly profitable. An overwhelming number of project with capital participation from developed countries are small-scale projects with mostly the participation of individual (rather than business) investors. None of the well-know firms from the developed country investors appear on the approval list of the Nepalese investment approval agency. FDI from developed countries has mainly came in to the service sector where production is relatively more capital intensive. Nepal’s ability to attract efficiency seeking FDI (export-oriented) from developed countries is rather limited presumably due to poor investment climate, in particular the absence of high-quality infrastructure. Almost all export-oriented projects are by developing-country inventors (mostly Indian firms) who are generally used to operate under these conditions.

Table 7.6: Approved FDI Project by Source

	No. of Industries	Total costs (US$ million)	Fixed Investment (US$ million)	FDI share in total investment (%)	Employment
Developed Countries	**309**	**425.9**	**380.5**	**25.6**	**27,487**
Japan	77	40.6	35.0	32.0	4,842
USA	74	174.1	159.1	29.9	6,915
Germany	31	9.1	7.6	37.4	2,262
UK	26	27.7	23.8	8.1	5,153
France	19	6.4	5.5	23.6	993
Other developed countries	82	167.6	149.2	22.0	7,322
High Performing Asian Economies	**119**	**197.5**	**169.6**	**29.9**	**14,144**
China	57	113.6	95.2	29.1	6,716
S. Korea	29	22.6	18.7	49.1	2,552
Hong Kong	12	18.2	15.9	35.8	2,064
Singapore	8	23.9	23.1	20.7	1,135
Thailand	7	14.2	12.1	9.5	1,106
Taiwan	6	5.0	4.5	42.5	571
SAARC Countries	**271**	**430.3**	**330.9**	**26.1**	**40,301**
India	249	419.7	324.9	25.9	34,553
Bangladesh	9	4.9	2.6	29.9	3,401
Pakistan	7	4.1	3.1	39.0	2,166
Sri Lanka	3	1.2	0.8	47.3	83
Bhutan	3	0.4	0.3	13.2	98
Other Developing Countries	**75**	**99.9**	**186.9**	**26.2**	**11,169**
Bermuda	6	29.8	25.3	5.9	1,474
British Virgin Island	4	51.3	49.3	37.3	1,210
Philippines	3	13.9	12.8	5.3	1,329
United Arab E.	1	2.7	0.6	25.2	93
Others	8	2.2	2.6	29.0	387
Total	**721**	**1,153.6**	**971.6**	**26.3**	**86,425**

Note: Under each country group, the difference between the total and the sum of the figures listed against each
Source: Compiled from data from the Department of Industry, Commerce and Supplies

Data on the sectoral distribution of approved projects are summarised in Table 7.7. Manufacturing accounts for roughly half of the approved projects and 65 percent of the total planned investment in these projects. Among the other sectors, hotel and tourism shows a large concentration of project given the attractiveness of Nepal as a tourist destination. There are only two medium-sized firms have so far entered the hydroelectricity sector where Nepal has immense potential for output expansion though foreign capital participation.[66] The government monopoly in electricity distribution and the compulsion for private-sector electricity producers to supply to the national supply grid (owned and managed by the Nepalese Electricity Authority is considered to be a major hurdle for FDI in this industry.

[66] Total hydropower generation potential in Nepal has been estimated at MW 83,000 and 50 percent of this is considered commercially viable. However, the current installed capacity is only MW 253, and only 25 percent of Nepalese households have access to electricity. Intermittent interruption of power supply is a major constraint on manufacturing and business activities.

Table 7.7: Sectoral Distribution of Foreign Investment in Nepal, 1987- October 2001

Product sector	Number of projects	Total investment (US$ million)	Total fixed investment (US$ million)*	Share of FDI in total investment (%)	Total employment
1. Agriculture	12	5.2	4.7	1.3	842
2. Manufacturing	369	492.7	363.1	128	55996
2.1 Food, beverages and tobacco	61	124.4	109.2	24.1	…
2.2 Textile and wearing apparel	123	118.6	75.8	39.1	…
2.3 Wood & wood products	5	1.2	0.9	0.4	…
2.4 Paper & paper products	17	24.9	21.5	3.8	…
2.5 Chemical and plastic products	68	89.8	67.1	27.6	…
2.6 Non-metallic mineral products	13	46.6	27.7	9.7	…
2.7 Basic metal products	21	30.2	20.4	9.3	…
2.8 Fabricated metal products	48	44.8	31.6	11.4	…
2.9 Machinery and equipment	0	0	0	0	…
2.10 Other manufacturing	13	12.1	8.7	2.7	…
3. Electricity, water and gas	14	243.4	230.2	41.7	…
4. Construction	16	12.8	11.2	7.7	…
5. Hotel & resorts	168	228.6	217.3	62.3	…
6. Transport& communication	24	53.5	37.5	21.7	…
7. Housing and apartments	15	3.6	1.4	2	…
8. Services	104	103.6	96.1	33.1	…
TOTAL	721	1153.6	971.6	26.3	86425

Notes:* At the period average exchange rate of $/NR= 67.1; … Data not available

Source: Complied from data from the Ministry of Industries, Commerce and Supplies, Kathmandu

Table 7.8 presents data on the spatial distribution of operational FDI projects. Of the 270 operating projects, in the Kathmandu Valley alone 153 projects (57 percent) are located, which absorbs 48 percent of total employment created by FDI projects. By contrast, only 32 projects (12 percent) accounting for 14 percent of total employment are located in the Hilly and Mountain rage regions where more than 50 percent of the population live. These special patterns of FDI location clearly points to the importance of transportation and other infrastructure facilities, and access to administrative services in determining investment location.

Table 7.8: Spatial Distribution of FDI Project in Operation Nepal as at 31.10.2001

Region	No of Project	Total Project Cost (US$ million)	Employment
Kathmandu Valley	153	303.85	20,049
Terai	85	112.10	15,612
Hilly and Mountain Range	32	63.35	5,649
Project	270	479.30	41,310

Source: Complied by authors from data provided by the Ministry of Industries, Commerce and Supplies, Kathmandu

Despite the heavy emphasis placed on FDI as a vehicle for export expansion, much of the realised projects are engaged in domestic-market oriented product sectors (Table 7.9). Of the 270 operational projects, 116 (43 percent) are in various services activities (mostly those relating to tourism). Among 154 firms engaged in manufacturing, only 27 (18 percent) are in export-oriented industries, with the balance of 127 (82 percent) producing predominantly for the domestic market. Thus, clearly Nepal's record in attracting efficiency enhancing FDI has so far been rather limited. Various deficiencies in investment climate, such as lack of flexibility in labour market and the lower level of physical infrastructure appear to be the main reasons for this. As can be expected, the export-oriented firms show a greater concentration in Kathmandu valley compared to domestic market oriented forms. None of the export-oriented firms are located in the hilly and mountain regions.

Table 7.9: Distribution of the Number of FDI by Region and Market Orientation

Region	Manufacturing		Service	Total
	Domestic	Export		
Kathmandu Valley	53	21	74	148
Mountain	10	-	27	37
Terai	64	6	15	85
Total	127	27	116	270

Source: Complied by authors from data provided by MOICS

Finally, Table 7.10 places Nepal's performance in attracting FDI in international perspective. Among the South Asian countries, Nepal's performance both in term of the volume and the trends in FDI inflow is superior only to Bhutan. Nepal is of course in a less advantageous position in attracting FDI because of its land-lockedness. But, even in a comparison with other land-locked least-developed countries for which data are available Nepal stands out to be a 'below-average' performer. While it is not possible to draw firm inferences from a simple inter-country comparison, the data reported in the table do suggest that Nepal's poor record in attracting FDI cannot be explained solely in terms of land-lockedness.

Table 7.10: FDI Inflows: Nepal in International Context, 1989-2000

	1989-94*	1995	1996	1997	1998	1999	2000
World	**200,145**	**331,068**	**384,910**	**477,918**	**692,544**	**1,075,049**	**1,270,764**
Developed countries	**137,124**	**203,462**	**219,688**	**271,378**	**483,165**	**829,818**	**1,005,178**
South Asia							
Bangladesh	6	2	14	141	190	179	170a
Bhutan	1	-	1	-	…	…	…
India	394	2,144	2,591	3,613	2,614	2,154	2,315
Maldives	6	7	9	11	12	12	12
Nepal	**4**	**8**	**19**	**23**	**12**	**4**	**13****
Pakistan	304	719	918	713	507	531	308
Sri Lanka	102	65	133	435	206	177	217
Land-locked LDCs							
Chad	13	13	18	15	16	15	50**
Lao PDR	19	95	160	91	46	79	27**
Lesotho	169	275	286	269	262	136	223**
Malawi	12	25	44	22	70	60	51**
Mali	2	123	47	74	36	51	56
Mongolia	71	10	16	25	19	30	25**
Niger	17	16	20	25	9		11**
Paraguay	79	98	144	230	336	66	96
Uganda	23	121	121	175	210	222	254
Zambia	90	97	117	207	198	163	200**
Zimbabwe	13	118	81	135	444	59	30**

Notes: * Annual average; ** Estimate; — Negligible; … Not available

Source: UNCTAD, *World Investment Report 2001*, Geneva: United Nations

7.2.4. Developmental Implications

A systematic analysis of the developmental implications of FDI in Nepal is not possible because of data deficiencies. The Annual Survey of Manufacturing Establishments, which is the main source of data for analysing manufacturing performance, does not provide for cross-tabulation of data by ownership. The foreign investment approval authority has not so far undertaken any assessment of the operations of relished investment projects. The following tentative inferences are made in the light of scanty available data and the existing literature on the FDI operations in developing countries.

As already noted after more than a decade of FDI promotion, by the end of October 2001 total employment in FDI project stood at 41,310, with firms in the manufacturing projects which amounts to a mere of total employment in organised manufacturing in Nepal. Based on data relating to investment approval, total investment per worker in FDI projects is around US$14,000, which is rather high for a labour surplus and capital scarce country like Nepal. For example, in Malaysia, a country, which is at a much advanced level of development with virtual full employment from the early 1990s, average investment per worker in foreign firms in manufacturing is as low as US$18,000 (Department of Statistics 1992).

The data on the sectoral distribution of FDI projects in manufacturing points to a high concentration of projects in relatively more capital intensive sectors which receive relatively high protection.

No data were made available relating to export performance of FDI firms. However, based on sectoral distribution of the number of firms, foreign investors seem to have played an important role only in clothing industry. Even in this sector, much of the FDI activities have been driven my MFA quota, giving rise to doubts about such export activities when the quotas are abolished under the WTO Agreement on Textiles and Clothing. Perhaps because of the uncertain business climate, foreign firms in the export-oriented garment industry have largely focused on reaping easy, short-term gains in a quota-restricted market without making effort to diversify into competitive non-quota markets. According to interviews conducted with some key informants in the business sector, the non-quota exports currently accounts for only about 10-20 percent of total garment exports from Nepal.

7.3. Concluding Remarks and Policy Recommendations

Nepal has made a promising start in implementing market-oriented reform and promoting FDI as part of it, but it has a long way to go to in reaping the benefits from the greater global integration though FDI. Despite abundant supply of labour, Nepal has attracted very little FDI in the labour-intensive EO industries with the exceptions garments. This was largely motivated by the GSP and MFA quotas more than the country's intrinsic comparative advantage. Hence, employment creation through FDI has not been impressive despite abundant supply of labour in the country.

A large number of FDI projects are based on a shaky foundation, motivated by quota-hopping motive propelled by the MFA and import deflection opportunities created by vast tariff differential between Nepal and India (the major investor in Nepal).

An obvious, but important, inference coming from the analysis is that trade liberalisation and generous investment *per se* in the absence of basic pre-conditions cannot achieve anticipated developmental objectives in this arena. The provision of required supportive services, political stability and policy certainty and a flexible administrate mechanisms administrative have an equally, and perhaps even more, important role to play.

The realization rate of FDI projects (the percentage of projects actually implemented out of total project proposals initially approved) is very low (46 percent) by international standards. This may be because of various administrative bottlenecks that the prospective investors have to confront in Nepal. It is important to examine this issue closely and take appropriate remedial action.

Unlike other developing countries in the region, Nepal has not set up free trade zones as a means of promoting export-oriented FDI. There is convincing evidence from a number of countries which have impressive expansion of manufactured exports that EPZ schemes have a useful role to play as focal points of providing much needed infrastructure facilities and fashioning export-oriented firms against bureaucratic inefficiencies and delays. Moreover, there is ample evidence that the present duty rebate scheme in Nepal is far from perfect and exporters normally experience considerable delays (between 3 to 6 months, and at time even beyond that) in receiving duty refund. Thus there is a strong case for considering setting up of an EPZ in the vicinity of the dry port in Birgunj.

As emphasized above, success in attracting FDI depends on differences between countries in government attitudes toward regulation of business, foreign trade and investment regimes, provision of social overhead capital, and taxation and other related aspects of the investment

climate. Moreover, the access to world-class imported input within a short lead-time is crucial for the successful operation of export-oriented clothing manufactures. Thus, concomitant trade and investment liberalisation is particularly important given that international market linkages are crucial for export success in a highly competitive global market.

There are strong reasons to argue that the East Asian pattern of local-entrepreneur dominance in exports may not be replicated in latecomer countries. The East Asian experience was unique in terms of the entrepreneurial background of these countries. Hong Kong, Taiwan and to some extent Singapore started with a stock of entrepreneurial and commercial talents inherited from the pre-revolution industrialization in China. Likewise, Korea's export take off has been explained by the considerable industrial expertise accumulated over the period of Japanese occupation. Therefore, there was not such a large difference between domestic firms in these countries and foreign firms with regard to knowledge of and access to production technologies and market channels.

It is not unrealistic to surmise that many, perhaps all, of the present-day newcomers are not comparable with these countries in terms of the initial level of entrepreneurial maturation. Domestic firms are generally weakly oriented towards, and have limited knowledge of, highly competitive export markets.

Secondly, since around the mid 1980s, successful exporting firms in the East Asian NIEs have begun to play an important role as direct investors in the latecomers' labour-intensive export industries, especially in East and Southeast Asia. There are indications that, consistent with rapid structural transformations that are taking place in the NIEs, this intermediary role of these "new" investors in linking late comers to world markets may become increasingly important in years to come. A major advantage which investors from these new countries possess is that, unlike TNCs from developed countries they are familiar with and/or easily adaptable to the more difficult business conditions (*e.g.* poor infrastructure, bureaucratic red tape, unpredictable policy settings) in latecomers. Given that NIE firms have developed considerable specialised knowledge of small scale and labour-intensive production procedures in the manufacture of standardised products, they have a powerful competitive advantage over both local firms and TNCs from industrial countries in these latecomer environments.

In Nepal, and other late starters, no linkage exists between the textile sector and the garments-exporting sector, because of the importance of high-quality imported inputs according to buyers' requests. Only when the volume of exports had reached sizeable levels to support efficient domestic input supply industries and the buyers had become fully satisfied with the quality of such inputs, exporters will begin to reduce dependence on imported inputs and turn to local supply sources. Latecomer exporters like Bangladesh, Sri Lanka or Nepal have a long way to go before having such an environment suitable for the emergence of competitive supplies of clothing inputs. Thus attempts to promote input linkages though direct government intervention can indeed be counterproductive (Athukorala 1998; Kelegama and Foley 1999).

Judging from the performance record of SAFTA/SAPTA, it is unrealistic to anticipate tangible gains in the area of market enlargement and regional trade liberalisation. However, SAARC has the potential to play a useful role as a regional policy forum. Another potential

role is to act as a unified force in international policy forums, particularly in WTO negotiations and in participation in the WTO dispute settlement mechanism.

As discussed in more detail in Chapter 3, the US Caribbean/Sub-Saharan Facility that entered into force as of 1 January 2001 provides very large quotas and duty free exports to USA for 42 Caribbean and Sub-Saharan countries, significantly changing the competitive situation of Nepal vis-à-vis Sub-Saharan African countries and Caribbean countries. HMG is advised to initiate negotiations with USA in order to obtain the same preferential access to the US market for Nepal as has been provided to the Caribbean and selected Sub-Saharan African countries.

8. The Incidence of Industry on Labour, Poverty, Gender and Environment

This chapter discusses the impact of industrial development on employment, poverty and the environment, whereby the first two issues are discussed in terms of their gender aspects.

8.1. Economic Empowerment: Industrial Development, Employment and Gender Equality

This section discusses how industrial development can contribute to economic empowerment of the poor. To start with, Sub-section 8.1.1 explains the demand and supply for labour followed in Sub-section 8.1.2 by a review of (a) institutions relevant to labour, including government and (b) employment policy. Sub-section 8.1.3 projects future employment in manufacturing sector in terms of sub-sectors, skill-category and gender for the next two decades. Gender aspects will be discussed in Sub-section 8.1.4. Sub-section 8.1.5 concludes this section.

8.1.1. Labour Market in Nepal: Demand and Supply

Like other developing countries, factual assessment of employment and labour market conditions in Nepal is difficult for two well-known reasons. Firstly, there is the methodological difficulty because of the excessive prevalence of informal sector activities. In the situation of self-employment and causal wage employment, the labour supply creates its own demand to a great extent. Therefore, there is generally a tendency to correlate the labour market situation with poverty and underemployment. Secondly, the assessment of employment and labour market from poverty and underemployment ground requires extensive statistical data that are also difficult to generate to the extent required (ILO 1997).

In Nepal, reliable statistical data on employment are even scarcer than elsewhere. There is an urgent need of developing labour statistic in the country. Time series data on real wages in different economic sectors and sub-sectors, labour mobility, etc. are not available. Studies on employment have relied on population census data to the greatest extent possible. Nepal Living Standard Survey 1996 and Nepal Labour Force Survey 1998 have played a significant role to fulfil these data needs. In addition, this study has used data from the Censuses of Manufacturing Establishments (1976/77–1996/97).

Currently, the population growth rate in Nepal is slightly more than 2 percent as revealed by the National Census 1991. It puts thousands of new entrants into the labour market every year. Traditional agriculture can no longer absorb this growing labour force nor can provide sufficient off-farm work opportunities for additional labour. Thus, high population growth rate, stagnant agricultural growth, and slow industrial/manufacturing growth are the major causes of high unemployment and underemployment in the country. Many studies show that 40 - 60 percent of total available work-time in the country remains under-utilised (ILO 1997).

The Population Census 1991 shows that almost 81 percent of the labour force in Nepal are engaged in agriculture sector. This sector about 40 percent of GDP and women's contribution constitutes more than 60 percent. Therefore, women form the majority in the least productive sector. More specifically, they are mostly unpaid family labourers involved in traditional

household (production) activities, which are generally not integrated to the market and accounted for in national income.

In addition to unemployment and underemployment, low labour productivity is another problem reflected by the low real wages of casual labour, particularly females. Though minimum wage legislation has been enacted, it has not been implemented in all sectors of the economy. Particularly, women and children are the victims of unorganised labour markets.

Child labour is another major problem in Nepalese labour market. A study carried out by Central Department of Population Studies (CDPS), Tribhuvan University, has estimated that of all the children in the age group of 5-14 years, 41.7 percent regularly work. The work force participation rate was estimated at 47.6 percent for girls and 36.1 percent for boys. Of these children, 28 percent (32 percent of girls and 22 percent of boys) work for more than 42 hours per week. Moreover, the bulk of economically active children is not paid for its work. Approximately, 95 percent of working children are involved in rural agricultural sector, while the rest work in construction, transportation and communication (UN/Nepal 1999:18-19).

The status of human development is very poor in Nepal. Because of poor nutrition and health services, the infant mortality rate is high. Moreover, due to deficiency in nutrition, their physical and mental developments compare negatively to normal standards. The majority of women have no education and training, and live without information and knowledge about the wider world. Moreover, polluted water and minimum health facilities are amongst the causes for Nepalese to have long illnesses. Generally, they possess little vigour to work according to their capabilities even during the absence of illnesses.

In addition, the quality of education in Nepal is very low and there is no good congruence between education and economic structure. Thus, there is unemployment among educated youths and capable manpower in the country is forced to go outside the country in search of employment (NPC 1998).

8.1.2. Institutions and Employment Policies

8.1.2.1. Institutions Related to Labour Market

Ministry of Labour (MOL)
MOL was created as the apex body of labour administration in 1981 segregating the function from the Ministry of Industry and Commerce. Its basic responsibility is to formulate and implement labour policies. It has two major operating sections: (a) Research, Foreign Employment and Man Power Development. Section and (b) Labour Policy, Planning, Monitoring and Industrial Relations Section.

Current Labour Policy has focused on training, social security, promoting self-employment, abolition of bonded labour and child labour, and facilitation to the foreign employment. However, it is quite silent on how the policy could be conducive to the generation of more jobs to absorb the increasing labour force in the country and how labour productivity could be increased. Moreover, the policy should also address how to induce establishments to provide appropriate skill training for their labourers and how to co-ordinate investment policy and the employment policy.

Despite all these weaknesses, the current labour policy is more lucid in promoting private sector in providing skill training and generating more employment. The policy is also coherent with the liberal economic policy of the government

One prominent gap appears to be lack of a focus on labour market development and activities. Despite the focus on industrial manpower development, the ministry and department appear to be involved in skill training and preparing manpower for foreign employment but no focus appears to exist in producing industrial labour force.

Labour Act

The Labour Act has specified the rights and duties of labour and employers in organised sectors (although the majority of labourers are in traditional and unorganised sectors). The focus of the Labour Act is on labour rights. Employers are facing various difficulties because of frequent strikes and lockouts in organised sectors. The Act put little emphasis on creating conditions for employment promotion. According to business groups, Nepalese labour act and policies are more regulatory than promotional. To protect Nepalese labour from competition from Indian workers, the Act has stipulated that workers need to be given permanent employment status after 6 months of employment. The Act makes it rather difficult for employers to lay off workers when forced to do so by economic conditions. This might be in the short-term interest of labour but in the long-run this acts as a deterrent for investment and firms may be forced to close doors altogether rather than adjust and survive by down-sizing.

Department of Labour (DOL)

The main functions of DOL are to implement policy and legislation on labour and assist the process of increasing production and productivity, promote congenial industrial environment and develop basic skills of labour for employment opportunities. Its fundamental tasks include maintenance of industrial and stability; enforcing the provisions relating to minimum wages, safety and working conditions, welfare amenities; compensation and social security and develop human resources. It operates through its ten zonal labour offices, thirteen skill development training centres, one employment and exchange service project and two vocational training centres.

It has the principal role of looking into labour relations and labour security issues but in operation terms, significant resources and efforts are put for skill development activities.

Other labour-related institutions

The Central Labour Advisory Committee is headed by Minister of Labour and includes secretary level representation from various government agencies, employer's associations, trade unions and labour experts. It is designed to formulate policies and laws related to labour and in coordinating activities. Other bodies are the Minimum Remuneration Fixation Committee, Labour Advisory Board, Labour Relations Committee and Labour Courts.

Issues and Problems

- The major issues and problems relating to labour administration and industrial development are listed hereunder:
- There appears to be a complete gap between industrial and labour administration, as no coordination mechanism exist at present. Labour Advisory Committee does not seem to be active as it should be in promoting coordination.
- The labour administration appears to be more involved in human resource development and skill upgrading activities.

- The structural focus also clearly indicates the absence of desirable focus on industrial relations and trade union issues. Neither the labour appears to be protected nor the investors consider the present environment as investment friendly.
- The existing capacity of the administration is reported to be inadequate to supervise and monitor industries.
- Labour supply and market are another issues noted. Labour market has not developed resulting in difficulty to get right kind of labour for the industries despite increasing unemployment. The major issues in this respect are:
  - There is a major deficiency of skilled and trained manpower for both the manufacturing and services sector especially for the former. Manufacturing industries have to train their own manpower (IEDI, 1998). Available trainings are limited to skill development from micro-level and self – employment perspectives. DOC mostly appears to be preparing human resources for exports. A lot of duplication exists in skill development programmes but the existence does not seem to cater to the needs of large-scale industries (ILO, 1990).
  - Closure of enterprise and reducing labour force are very difficult in Nepal. The law does not spell out exit policies. So, hiring labour is meant as taking a long-term risk. As a result industries also tend to appoint on temporary or contractual basis to escape from this permanent burden.
  - Politicisation of trade unions are reported to causes the growth of industrial relations disputes and problems.
  - Employee education on issues like productivity improvement, environment management and sustainable development does not exist. Educating and awareness building programmes are required.

Recommendations

- There must be a mechanism to coordinate between the labour and industrial administration to protect the interest of both groups and improve the industrial relations environment in the country.
- The labour administration must focus seriously on balanced policy and law formulation as well as implement them efficiently, including a sharper focus on industrial relations and dispute minimization.
- The Ministry of Labour should establish a section to look into labour market issues and operations including the domestic labour market.
- It must focus on development of industrial labour force in more general terms rather than limited skill training activities.
- Labour:
  - There must be a mechanism to develop industrial labour. Existing mismatch between demand and supply must be removed. All skill trainings should follow the basic principle of relevance, efficiency and effectiveness. Skill trainings should be imparted by making need assessments. The whole skill training system is due for a fundamental overhaul.
  - Labour law should be amended to make hiring and firing easier by defining clear terms and conditions.

Private Sector Institutions[67]

A number of private sector associations have been playing critical roles to promote and strengthen industrial development in Nepal. Employers organizations are: Federation of Nepalese Chambers of Commerce and Industry (FNCCI), Federation of Nepalese Cottage

[67] For a more detailed description and discussion of issues and problems, see Chapter 4.

and Small Industries (FNCSI), Central Carpet Industries Association (CCIA), Garment Association of Nepal (GAN), and the Handicraft Association of Nepal (HAN).

Table 8.1: Trade Unions in Nepal and their Membership

Confederation	Number of trade unions		Membership
	Local	National	
General Federation of Nepalese Trade Unions (GEFONT)	867	15	310,575
Nepal Trade Union Congress (NTUC)	651	18	194,000
Democratic Confederation of Nepalese Trade Unions (DECONT)	-	11	17,670
Independent	322	6	100,000
Total	1840	50	621,845

Sources: Ministry of Labour and Offices of respective confederations

Workers organizations are: General Federation of Nepalese trade Unions (GEFONT), Nepal Trade Union Congress (NTVC), and Democratic Congress of Nepalese Trade Unions (DECONT). There are about 50 are national level unions as compared to 29 in 1990. Women participation is very low (less than 20%) in the executives of the national confederations. There are three national confederations of Nepalese trade unions (Table 8.1).

It shows that altogether 6.8 percent of the total working population has been unionised. However, women participation in these trade unions and in policy-making bodies of these confederations is very low (Table 8.2).

Table 8.2: Women Participation in the National Confederation and Federations

Union	National Committee Members			Participation in the central committees of member union		
	Male	Female	Total	Males	Females	Central committee members
GEFONT	32	3	35	192	13	205
NTUC	16	5	21	204	25	229
DECONT	19	2	21	119	22	141
Total	67 (87)	10 (13)	77 (100)	515 (90)	60 (10)	575 (100)

Sources: Respective Trade Union offices
Note: Figures in the parentheses are the percentages of the total

8.1.2.2. Employment Promotion Policy and Strategy of the Government

At the end of the Eighth Plan (1997), the size of the economically active population was 11.669 million in Nepal. Of the total labour force, 4.9 percent was recorded as fully unemployed, while 47 percent of the total labour force was estimated under-employed.[68] Together with the 4.9 percent unemployed this constitutes more than half of the workforce. Of the total employed, 81 percent was engaged in agriculture and 5 percent in industry.

The current Ninth Plan has set itself as objectives for manpower development and employment promotion to promote self-employment, mobilise capable and skilled manpower, develop the competitive capability of the manpower for foreign employment, and establish an employment campaign centre for the ultra poor group (NPC 1998:214).

[68] This unemployment figure must be interpreted cautiously since even in developed countries such a figure would imply a tight labour market situation.

The employment promotion policies include commercialisation and diversification of agricultural sector; promotion of private agro-based industries; promotion of private sector in non-agricultural employment also; and emphasis on creating more income generating employment through the development of tourism, trade, and education/skill training. Employment strategies are firstly fulfilling the basic needs like primary education, basic health facility and safe water for promoting physical and mental health of the working population. Secondly, a policy of "one employment for one family" has been adopted to give full employment at least to one individual from each family. Thirdly, public sector, private sector as well as NGOs are to extend their services in skill development and capital mobilization for the development and expansion of labour intensive cottage industries. Fourthly, construction works related to rural infrastructure development are to be linked with local plan to promote employment with labour intensive technology. In all these strategies, the Ninth Plan envisages the priorities to backward groups and women.

The coming Tenth Plan has classified the overall unemployment problem in Nepal into rural unemployment and urban unemployment. Effective implementation of the Perspective Agriculture Plan would be a big step forward in tackling rural unemployment.

To promote employment in the urban sector the Tenth Plan proposes training of semi-skilled and skilled workers with emphasis on training opportunities for women, ensuring consistency between the nature of labour demand and provisions for training, providing training to the persons going for foreign employment, especially to unskilled and semi-skilled workers and developing on-going monitoring of the institutions sending labour to foreign employment (NPC 2001:10).

All employment promotion programmes/activities are kept under a common umbrella of Poverty Alleviation Fund to provide co-ordination between employment promotion strategies and poverty alleviation.

8.1.3. Projection of the Future Demand for Labour

8.1.3.1. Determinants of the Demand for Labour

The demand for labour in manufacturing sector is basically determined by the growth of the manufacturing sector in terms of value added and by changes in factor intensity, which might be induced by changes in the wage rate.

Growth of value added in both large and small-scale industrial sectors is the main determinant of employment. Manufacturing value added has been increasing substantially over the last two decades (see Chapter 2). Changes in capital-intensity did not influence employment in many large-scale industries.[69] Therefore, the volume of investment played a greater role than the capital intensity of investment in determining employment. The small-scale manufacturing sector is quite similar in this respect. This corroborates the findings of Chapter 6 that manufacturing in Nepal is in its early stage of technological development.

Real wages have marginally increased during the last two decades and even declined in some industries during 1990s, reflecting stagnant labour productivity in the Nepalese manufacturing sector. The decline in wage rates in the large manufacturing establishments (industrial establishments employing more than 10 persons per establishment) was associated

[69] See background paper by Sanjaya Acharya for a more detailed analysis.

with decreasing employment in 1990s (Table 8.3 and Table 8.4). In the case of small manufacturing establishments (employing less than 10 persons per establishment), the wage rates have marginally increased during 1990s but the total employment has declined (Table 8.5 and Table 8.6).

Table 8.3: Wage Rates in Large Scale Manufacturing Industries (1986/87 – 1996/97)

	Year		
	1986/87	1991/92	1996/97
Manufacturing sectors producing			
Exportables	703.66	895.68	708.53
Importables	475.17	571.45	628.84
Total	613.89	754.59	693.55

Source: Census of Manufacturing Establishments 1986/87, 1991/92, 1996/97, CBS
Note: Monthly wage rates in Rupees at constant 1986/87 purchasing power

Table 8.4: Employment and Value Added in Large Scale Manufacturing Sector (1976/77-96/97)

Year	Employment (in number)	Industrial value added at Constant (86/87) prices (Rs. in 000)
1976/77	59037	756378.3
1981/82	80153	2572071.0
1986/87	127288	3154677.0
1991/92	211265	7426030.0
1996/97	186598	7997093.5

Sources: UNIDO (1987), and *Census of Manufacturing Establishments*, 1986/87, 1991/92 and 1996/97, CBS, Kathmandu.

Table 8.5: Wage Rates in Small-scale Manufacturing Industries (1991/92 – 1999/2000),

	Year	
	1991/92	1999/2000
Manufacturing sectors producing		
Exportables	513.31	662.46
Importables	554.64	810.88
Total	575.94	840.74

Source: Survey of Small Scale Manufacturing Sector, 1991/92 and 1999/2000, CBS
Note: Monthly wage rates in Rupees at constant 1986/87 purchasing power

Table 8.6: Output and Employment in Small-Scale Manufacturing Sector (1972/73 – 1999/2000)

Year	Total Production in mln Rs.(1986/87 prices)	Employment
1972/73	959.9	16265
1991/92	4099.9	54081
1999/00	8209.9	46052

Source: Survey on Small Scale Manufacturing 1972/73, 1991/92 and 1999/2000, CBS

Sectoral Trends

Changes in wage rates, employment and value added in large scale manufacturing sector during 1986/87–1991/92 and 1991/92–1996/97 were rather similar across all sub-sectors. However, there are some exceptions. Industries producing grain mill products were paying higher wages but decreased employment over the years. Cocoa, chocolate, sugar and confectionary products showed similar trends. Industries producing cement, lime and plaster gradually increased wage rates with fluctuating employment trends. Pharmaceuticals saw

wage rates, value added and the level of employment all increasing. In total, industries producing for the domestic market provided increasing wage rates but showed fluctuating levels of employments and value added. Export oriented firms did not show any clear trend. Small scale industries offered higher wage rates in both export oriented and import substitution industries, although relatively higher in case of latter.

Employment Projections

Employment projections in this study have been based on the projections of the value added assuming a simple constant relation between employment and value added.[70]

Projection of Future Demand of Labour in Large Scale Manufacturing Sector

Following the projected growth trend of industrial value added, 9.1 percent annually as per the target of the Tenth Plan, and assuming the constant value-added elasticity of employment (average during the period 1976/77 – 1996/97), the projected level of employment is summarized in Table 8.7:

Table 8.7: Actual (1976-1996) and Projected Employment in Nepal's Manufacturing Sector (1996-2021)

Year	1976	1986	1996	2001	2006	2011	2016	2021
Value	59,037	127,288	18,6598	207,887	231,605	258,029	287,468	320,266

Source: UNIDO calculations

Breakdown by skill

While projecting employment by skill category, a constant proportion rule has been followed, because of the lack of regular surveys on the distribution of labour by skill category. Based on the data from FNCCI (1997) labour projections in terms of skill categories are given in Table 8.8 and Table 8.9, assuming manufacturing value added growth of 9.1 percent annually for the coming 20 years.

Table 8.8: Projection of Employment in Terms of Administrative and Production Workers in Manufacturing Sector (1976/77 – 2021/22)

Workers type	1976/77	1981/82	1986/87	1991/92	1996/97	2001/02	2006/07	2011/12	2016/17	2021/22
Administrative	6,929	9,407	14,939	24,795	21,900	24,399	27,182	30,284	33,739	37,588
Production	52,108	70,746	112,349	186,470	164,698	183,488	204,423	227,746	253,730	282,678
Total	59,037	80,153	127,288	211,265	186,598	207,887	231,605	258,029	287,468	320,266

Source: UNIDO calculations

[70] See background paper by Sanjaya Acharya for alternative scenarios.

Table 8.9: Projection of Employment of Production Workers in Terms of Skill Category

Skill category	1976/77	1981/82	1986/87	1991/92	1996/97	2001/02	2006/07	2011/12	2016/17	2021/22
Highly skilled	17,605	23,902	37,958	63,000	55,644	61,993	69,066	76,945	85,724	95,504
Skilled	11,737	15,935	25,305	42,000	37,096	41,328	46,044	51,297	57,149	63,670
Semi skilled	11,100	15,071	23,933	39,723	35,085	39,088	43,547	48,516	54,051	60,218
Unskilled	11,666	15,839	25,153	41,747	36,873	41,080	45,766	50,988	56,805	63,286
Total	52,108	70,746	112,349	186,470	164,698	183,488	204,423	227,746	253,730	282,678

Source: Own calculations

Gender Perspective

The male-female ratio of the employees in Nepalese large scale manufacturing sector shows an interesting trend. It was about 7.71 during 1976/77—1981/82, and it declined to about 3.43 for the period 1986/87–1996/97. The rise of the garments industry has contributed to this positive trend.

Projection of Future Demand of Labour in Small Manufacturing Sector

Three national level surveys have been conducted on small scale manufacturing sector, employing 10 or less than 10 people per industrial establishment, in Nepal. Table 8.10 has used these surveys to project future demand of labour in small scale manufacturing sector (based on the level of production), assuming three different scenarios (Optimistic 17 percent, Tenth Plan Target 9.1 percent, and Pessimistic 7.9 percent.

Table 8.10: Projected Level of Employment under Alternative Growth Scenarios in Small Scale Manufacturing Sector

	Year							
Employment under	1972/73	1991/92	1999/00	2003/04	2008/09	2013/14	2018/19	2023/24
Optimistic trend	16,265	54,081	46,052	54,356	64,158	75,727	89,383	105,501
Tenth Plan target			46,052	51,133	56,774	63,038	69,993	77,715
Pessimistic growth trend			46,052	50,432	55,229	60,482	66,235	72,535

Source: UNIDO calculations

8.1.4. How to Address the Gender Gap in Employment?

Government has undertaken a number of initiatives to address the gender gap since the beginning of Ninth Plan. Initiatives were developed on women's property rights. Some indicators have been developed to measure women participation in national development. Skill training programmes for income generating activities have been started. Minimum wages to agricultural workers, majority of women workers belong to this category, have been fixed for the first time. Moreover, the government has ratified most of the international conventions related to equal and better economic independence to women and girls *e.g.* CEDAW, CRC, ILO etc. These measures have basically followed the norms of the Beijing International Conference on Women Development in 1995.

NGOs in Nepal have contributed significantly to uplift women's awareness and influencing public opinion on issues related to women's access and control over their property right. At the local level, NGOs are helping women to establish saving and credit groups. Nearly 150 NGOs work as micro-finance organization. The Financial Intermediary Act, recently passed by the parliament, is also supports these initiatives. However, NGOs have very limited

outreach to more women at the marginal socio-economic situations. Likewise, very thin network and coordination exists among NGOs working on saving, credit and micro enterprise for women.

According to the Tenth Plan, Government will promote the access of women in formal and informal education (especially technical education) by providing scholarships, and by amending the acts and regulations that treat unequally to males and females.

8.1.4.1. General Trends in Employment by Gender

Classifying the overall employment in large-scale manufacturing establishments into operative, technical and administrative works, the male-female ratio in technical works is increasing (Table 8.11). As technical works are relatively higher paid, this trend is pushing women in comparatively disadvantaged position. The male-female ratio in case of exportables is relatively lower than that of importables. This is explained by the high level of employment of women in producing traditional handicrafts, carpets, and garments. However, overall, the gender gap in employment in large-scale manufacturing sector is wide with almost four times more males compared to females.

Table 8.11: Male-Female Ratio in Employment by Type of Work in Large Scale Industries

	Male-Female Ratio		
Type of Work	1986/87	1991/92	1996/97
Operative	4.21	2.72	3.15
Technical	17.25	19.73	25.16
Administrative	18.21	13.46	19.31
Sector			
Exportable	3.08	1.98	2.12
Importable	11.89	4.45	6.06
Total	3.61	3.04	3.63

Source: Census of Manufacturing Establishments 1976/77 - 1996/97, CBS

The gender gap in the level of employment is even more pronounced in small-scale industries. The gender gap in employment in small manufacturing sector is widening in each aspect. The gap is narrower in industries producing exportables as compared to importables.

Table 8.12 shows that the percentage women engaged in the total workforce by manufacturing sub-sector is increasing over the years in large-scale industries. In 1996, they comprised approximately 22 percent of the total labour force in manufacturing sector as compared to only four percent in 1986. However, majority of them work as lower paid workers as compared to males. According to the 1991 Population Census, only 27 percent of the female labourers were literate, six percent of them had received secondary education and four percent had finished secondary and higher education. A survey of 66 women engaged in nine industrial establishments located in Kathmandu valley indicated that almost 77 percent of them were working because of dire need to supplement family income. Moreover, 29 percent were the sole breadwinners in their households while almost 12 percent of this was child labour (ADB 1999:31).

The last three censuses of large manufacturing establishments show that the highest percentage of women in the workforce occurs in carpets followed by textile industries, paper

and paper products and garments (Table 8.12). For the garments industry, this figure is surprisingly low.

Table 8.12: Percentage of Female Workers in Different Large Industries

Industries	1986/87	1991/92	1996/97
Food and beverage	11.32	12.66	7.50
Tobacco manufacturing	14.55	8.71	6.47
Textiles excluding carpets	26.55	24.23	21.16
Carpets	60.43	44.95	43.20
Garments	22.34	11.80	17.77
Leather and leather products	8.53	11.68	12.58
Wood and wooden products	4.68	4.35	3.06
Paper and paper products	8.72	12.67	18.56
Publishing and printing	8.26	12.81	7.35
Chemical and chemical products	12.85	15.57	8.85
Non-metallic mineral products	14.44	19.89	14.83
Basic metals	0.52	1.51	0.33
Fabricated metal products and machinery	2.30	4.03	2.60
Manufacture of electrical, industrial machinery apparatus, appliances	6.80	6.92	5.54
Others	4.37	8.41	8.19
Total	17.60	24.35	22.66

Sources: Census of Manufacturing Establishments 1986/87, 1991/92 and 1996/97, CBS

Women employment in Nepalese manufacturing sector is influenced by the firm's location, size of investment, and degree of mechanization. More women workers were found employed in industries in hill region than in Terai. Female employment is more concentrated in those industries where the fixed capital investment is lower, i.e. lower capital output ratio, such as those producing carpets and rugs, garments, spinning and weaving of textiles, and ceramic products. These industries constitute a total of 86 percent of total female employment in manufacturing sector.

8.1.4.2. Male-Female Wage Differentials

Though there is the general trend of the increase in wage level, the wage differentials between males and females are significant in almost all sectors of Nepalese economy and manufacturing sector is also not an exception in this regard. The latest national labour force survey explores this fact.

Table 8.13: Average Monthly Earnings by Occupation (Values in Rs.)

Occupation category	Average monthly earnings of		
	Male	Female	Total
Legislators, senior officials	8,068	7,525	8,037
Professionals	5,141	4,631	5,079
Technicians	3,057	2,678	2,971
Clerks	2,836	2,805	2,832
Service workers	2,506	2,525	2,507
Agriculture Workers	2,756	957	2,109
Craft and related trades	2,973	1,393	2,773
Plant and machine operators	2,995	2,037	2,981
Elementary occupations	1,692	1,054	1,491
Armed forces	3,258	4,250	3,306
Total	2,389	1,368	2,143

Source: Nepal Labour Force Survey 1998, CBS, 1999

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Table 8.13 shows that gender differential in income is prominent in each and every sector of the economy except in military service. Higher income of females in the latter might be because of their involvement basically in technical fields, like nursing. In rest of the cases, females are working in comparatively lower paid jobs. The manufacturing sector is not an exception. The major reason of the lower wage of women in the manufacturing sector is because they generally work as semi-skilled and unskilled workers. In food, drink, tobacco and match industries, female workers are largely concentrated in packing the finished products and in related processes. In large-scale textile factories very few women are performing supervisory roles. The concentration of women in lower-paid and unskilled jobs may be attributed to low literacy, low skill/training and also to social bias regarding the choice of male workers in general circumstances.

8.1.4.3. Promoting Women Entrepreneurship

This section will discuss three initiatives undertaken in Nepal to promote women entrepreneurship:

- Women Entrepreneurs Association of Nepal (WEAN),
- Micro-Enterprise Development Programme (MEDEP), and
- the initiative developed by FNCCI.

The Women Entrepreneurs Association Nepal (WEAN) was established in 1987 as a non-profit association and non-governmental association established by a group of women entrepreneurs who shared a common vision of helping other women to set up new enterprises and develop their own businesses. WEAN offers training, marketing assistance, credit, networking and other extension services to women entrepreneurs irrespective of their size of businesses and locations. Moreover, WEAN provides marketing assistance to its members through WEAN Co-operative, a sister organization established by WEAN in 1991. UNDP is providing financial assistance to this co-operative to provide marketing outlets for women producers.

Though not solely working for the promotion of women in the manufacturing sector, the Ministry of Industry, Commerce and Supplies started the *Micro-Enterprise Development Programme* (MEDEP) in 1998 with technical and financial support of UNDP since 1998. The overall objective of MEDEP is to reduce poverty through the expansion and development of micro-enterprises for rural poor households. The programme covered three districts at the beginning but has since then extended into six more districts.

The evaluation of the programme for the first two years shows a very encouraging picture. A study conducted in December 2000 *(UNDP, 2000)* shows that the programme has created 1293 entrepreneurs in 10 programme districts during the first two years of its intervention. Moreover, it has generated 1627 self-employments, and the income of those small-scale entrepreneurs has increased by 257 percent in an average during this period. This programme is an example how employment and income generation could be increased by a small amount of loans to the potential entrepreneurs. The average loan size to the entrepreneurs is about Rs.4,500.

The Federation of Nepalese Chambers of Commerce and Industry (FNCCI) has established a *Women Enterprise Development Committee* at its centre, and *Women Entrepreneurship Cells* in about 23 districts so far. The Chamber wants to establish such cell in each district office.

FNCCI has also adopted the policy of including at least one woman entrepreneur in its central as well as district chambers.

In a joint effort, FNCCI and ILO will launch Women Entrepreneurship Development Programme in near future. The programme will explore the endogenous raw material based micro-enterprises, and will develop strategies how it can enhance female participation, and how market access of those products be ensured.

A successful example of an NGO promotion of women entrepreneurship is provided by the People's Rural Democratic Association (PRDA) in Sri-Lanka, established in 1989 using concept of mobile fund. Members of the association are divided into two different groups to acquire loans to establish micro-enterprises, one group to manage the fund for providing group loans to others. The group for undertaking the fund management is for a specified period. Once it completes its assignments for loan disbursement and recovery, the responsibility of fund management is transferred to another group. The second group also performs the same duty. In this way, the fund becomes a mobile fund. A small common fund, thus, can help establish numerous micro-enterprises. The NGO has established 883 small rural enterprises within the five-year period (1993 – 1997). As long as the amount in mobile fund goes on increasing, the pace for the establishment of micro-enterprises also goes on increasing (Samuhik Abhiyan 1997).

These programmes show how entrepreneurship among women and poorest of the poor could be promoted. However, these are very few associations/programme involved in the entrepreneurial development among poor in Nepal. These programmes need promotion, extension and replication in the future to have a large impact on the development of the small-scale manufacturing sector.

8.1.4.4. Recommended Future Course of Action

Rural-urban peculiarities still seem prominent in women entrepreneurship; therefore, strategic issues to promote urban women entrepreneurship and rural women entrepreneurship should be different.

Lack of integration of similar activities is also a distinct problem in connection with the monitoring of the trend of women participation in entrepreneurship till now. Small Scale Business Promotion Project, Cottage and Small Industries Development Board, Department of Cottage and Small Industries, Association of Nepalese Cottage and Small Industries, and Agro Enterprise Centre should be under one umbrella to monitor and make on-going evaluation of women entrepreneurship in manufacturing sector.

Co-ordination of banking institutions and NGOs should be promoted. Credit from banking sources should be extended in those areas where NGOs have provided basic entrepreneurial development training.

The recent trend of women activities in small-scale businesses shows that there should be some entry point activities to start with the business. The activities include spices and flour milling, vegetable drying, production of fruit-based products, mushroom farming, poultry farming, bee keeping, hand-made paper making, and cloth weaving, etc.

Replication of the mobile fund model would be beneficial to promoting women in small-scale entrepreneurial activities.

8.1.5. Summary and Conclusions

The new strategy of the government is to launch employment generation programmes as part of an overall strategy to poverty alleviation and to keep all the employment programmes within the common umbrella of Poverty Alleviation Fund.

Employment in large scale manufacturing sector in Nepal showed an encouraging trend during the period 1976/77—1991/92, thereafter, it declined sharply during the period 1991/92—1996/97. During 1976/77—1981/82, it increased by about 36 percent, during two successive five years after that it increased by 59 and 66 percentages, respectively. Data of the last two manufacturing census in 1991/92 and 1996/97 show that total employment in large scale manufacturing sector declined by about 12 percent. Regarding the small scale manufacturing sector, data on total employment is still not available. Three were surveys conducted to this sector in 1972/73, 1991/92 and 1999/2000. They show that employment in small scale industries increased by about 12 percent annually during 1972/73—1991/92, and it declined by about 2 percent annually during 1991/92–1999/2000.

Based on the trend of the last twenty years (1976/77—1996/97), the projection of employment in Nepalese manufacturing sector is that about 45000 new employees will get job in the large-scale manufacturing sector. Similarly, small-scale industrial sector would accommodate approximately 60,000 additional workers during the coming 20 years.

The female employment in Nepalese manufacturing sector is low but the situation has improved in large-scale industries over the years. Male-female ratio in employment was more than 7.5:1 during the period 1976/77—1986/87, but it averaged 3.5 for the period 1986/87—1996/97. Women are more involved as operators, less in administrative and least in technical work. The male-female ratio for importables is almost three times higher than in exportables. However, this is different in small-scale industries. The gender gap in employment has been widening over the years. However, also here, the gap is narrower in case of industries producing exportables than in industries producing importables.

Though the Nepalese Labour Act does allow employers to discriminate in wages, women are generally employed in lower paid jobs, due to the lower educational status, lack of skill trainings and socio-cultural barriers.

Regarding the activities of NGOs, though an overwhelming majority of them are working in areas of women empowerment, they are generally covering the issues like awareness raising and social empowerment. Very few NGOs are working with the objective of promoting entrepreneurship among women.

WEAN and MEDEP seem to have success in promoting self-employment, and entrepreneurship among women. WEAN, MEDEP and the FNCCI/ILLO initiative need to be expanded and intensified. Mere non-discriminatory policies of the government are not sufficient to promote women in productive employment.

Recommendations
There must be a mechanism to coordinate between the labour and industrial administration to protect the interest of both groups and improve the industrial relations environment in the country.

- The labour administration must focus seriously on balanced policy and law formulation as well as implement them efficiently, including a sharper focus on industrial relations and dispute minimization.
- The Ministry of Labour should establish a section to look into labour market issues and operations including the domestic labour market.
- It must focus on development of industrial labour force in more general terms rather than limited skill training activities.
- Labour:
  - There must be a mechanism to develop industrial labour. Existing mismatch between demand and supply must be removed. All skill trainings should follow the basic principle of relevance, efficiency and effectiveness. Skill trainings should be imparted by making need assessments. The whole skill training system is due for a fundamental overhaul.
  - Labour law should be amended to make hiring and firing easier by defining clear terms and conditions.
- NGOs and Government should give continued support to women development. Particular efforts should be directed at improving the outreach of existing programmes.
- The revolving fund approach in Sri Lanka has shown to be an effective strategy and its effectiveness should be explored in the Nepalese context.

8.2. The Long-Term Goal: Industrial Development and Poverty Alleviation

This section will discuss to which extent manufacturing sector growth will be able to contribute to poverty alleviation. Sub-section 8.2.1 gives a brief overview of the incidence of poverty in Nepal. This is followed in Sub-section 8.2.2 by poverty alleviation policies as adopted by the national development plans. Current poverty alleviation programmes place special emphasis on gender aspects. This is discussed in Sub-section 8.2.3. Sub-section 8.2.4 addresses the question how industrial sector development can contribute to poverty alleviation. Sub-section 8.2.5 provides the summary and conclusions.

8.2.1. Poverty in Nepal

Nepal is one of the countries in the world with the lowest per capita income (about US$250) though the economic growth has remained at 3.9 percent per year from 1970s to 1990s.

The first attempt to estimate poverty in Nepal was in 1976/77 (Table 8.14). The poverty level was specified in terms of basic minimum calorie intake at 2250 calorie per head per day in an average. A per capita minimum income level of US$57.60 per annum could fulfil this requirement. This poverty level estimated about 36.2 percent of the total population living below the poverty line.[71]

[71] People whose per capita income does not cover the cost of the minimum specified calorie intake are considered below the poverty line. This gives the well-known Head-Count Index (HCI). Likewise, the percentage of poverty line income that is required to raise per capita income of people in a country which could bring all people out of absolute poverty is called Poverty Gap (PG). Foster-Greer-Thorbecke Index (FGT Index), which is called the severity of poverty, measures the distribution of income among the poor. This is also called the Squared Poverty Gap.

Later surveys were conducted in 1984, 1992 and 1996, using the same poverty line, *i.e*. 2250 per capita per day calorie intake.

Table 8.14: Poverty Trends in Nepal (1976 - 1996)

Survey	Population below the poverty line	Population below poverty line (% of total population)	Per capita poverty line income (Rs.)	Per capita poverty line income (US$)
NPC, 1976/77	4,730,468	36.2	720	57.6
NRB Household Survey 1984/85	7,100,048	42.6	1,971	110.7
NPC Estimate, 1992	9,250,971	49.0	4,145	97.1
NLSS, 1996	9,426,048	45.0	4,560	80.3

Note: Poverty line incomes are in current year prices. NPC (1992) figures are all estimates
Source: Suman Sharma, Nepal Country Report - Summary Report (in preparation of South Asia Poverty Monitor), ACTIONAID/Nepal, 1998

Based on the Nepal Living Standard Survey (NLSS) in 1996, regional poverty indices were derived showing that regional variation of the poverty incidence is quite alarming in Nepal. Approximately 56 percent of the households in the mountain region were living below the poverty line, whereas the percentages were 42 and 41 in case of Terai and hills, respectively. Poverty in the remote regions of the western Nepal was more severe than elsewhere. In these regions, nearly three-fourths of the households were living below poverty line (Table 8.15).

Table 8.15: Poverty Measures for Nepal (Poverty Line per Capita Income = Rs.4,404)

Region/Sector	Head-Count index (%)	Poverty Gap index (%)	Squared Poverty Gap index (%)
Ecological Belt			
Mountain	56 (0.059)	18.5 ((0.027)	8.2 (0.015)
Hills	41 (0.031)	13.6 (0.014)	6.1 (0.008)
Terai	42 (0.025)	9.9 (0.009)	3.4 (0.004)
Sector			
Urban	23 (0.058)	7.0 (0.025)	2.8 (0.012)
Rural	44 (0.020)	12.5 (0.008)	5.1 (0.004)
National Average	42 (0.019)	12.1 (0.008)	5.0 (0.004)

Note: Figures in parentheses represent standard errors adjusted for stratification and clustering in the sample
Source: Nepal: Poverty at the Turn of the Twenty-First Century, World Bank, 1999

Thus, Table 8.15 shows that poverty in Nepal is predominantly a rural phenomenon. Among the urban centres, it is least in Kathmandu valley. Income distribution among the poor is also more unevenly distributed in rural areas as compared to the urban areas. In terms of ecological belt, more mountain people are poor compared to Terai and hill people. The shortfall of income is less in Terai than in the Mountain and Hills. Income distribution among the poor is also relatively less skewed in Terai than in other ecological belts. Though the table does not incorporate indices by development regions, the table reveals that poverty incidence also varies widely across the development regions. Highest poverty incidence (head-count ratio 0.57) is in rural-western Hills followed by rural-western Terai (0.46). It is least in rural-eastern Hills.

8.2.1.1. The Feminisation of Poverty

Where almost half of the population is entrapped in poverty, women are the poorest of the poor (WB 1999). Though it is rather difficult to get gender specific poverty incidence

because of the lack of data, it is generally concluded that incidence of poverty is more among female headed households than on male headed households. Women have poorer access to gainful employment compared men. Poor literacy status, low life expectancy and gender roles ensure that poverty is more severe women than among men.

In Nepal, most women are employed in informal or least productive sectors like agriculture; they are mostly involved in unpaid family labour and traditional household production activities. In Nepal, poor women do not produce much in terms of monetary output and is therefore often underestimated. Majority of women living in rural areas are illiterate, unskilled and over-burdened with work. Government and NGOs have taken several initiatives in recent years to combat poverty specially focusing on women (see Section 8.1.4).

Although not many estimates are available on women poverty in each of the studies mentioned above, IFAD (1997) estimated that 48 percent of women are living below the poverty line, which is higher than the national average of 42 percent. Thus poverty is not gender neutral in Nepal.

During 1990s, a positive impact of comparatively high economic growth has been observed in reducing overall poverty incidence. However, the absolute number of poor has increased, especially in the rural areas. As gender disparity in rural areas is more severe and rural women are more deprived, increasing number of poor in rural areas implies further feminisation of poverty.

Due to built-in inequities of the existing economic system, the micro impacts of macro policies have hardly helped the poor women. Lack of access to resources is the fundamental factor for women's greater deprivation. Absence of property rights has adversely affected poor women from creating self-employment and generating income under their control.

The major women and poverty issues are related to various socio-economic factors. Persistent patriarchal attitudes and social discriminations are detrimental to women and hinder their empowerment. Other reasons are: failure of macroeconomic policies to address women poverty at the grass-roots level and poor trickle down effects; lack of good governance; slow development process in reaching women living in the rural areas; poor mainstreaming by both public and NGO sectors launching credit programmes for women; low participation of women in the formal sector and high involvement in the informal sector as unskilled and low-paid workers; and exploitation of women due to heavy household as well as farm workloads.

As long as these gender gaps persist, it is not unreasonable to assume that income poverty continues to affect proportionately more women than men. This would become even clearer when other measures of poverty such as entitlement measure or human deprivation measure would be used to measure poverty.

Increasing insurgency problems in several districts have further aggravated the problem of poverty. Due to deteriorating law and order situation, people are leaving rural areas in those districts and are migrating either to the district headquarters or to the urban centres of the country as well as to India in search of gainful works. This trend has created more burdens upon women by increasing household and farm workloads due to the migration of male partners in the family.

8.2.1.2. Constraints/Obstacles in Poverty Alleviation

Poverty reduction was one of the main objectives in the Eighth Plan (1992-97) and it is the sole objective of the current Ninth Plan (1997-2002). A number of programmes are being implemented to address poverty. Despite these efforts and initiatives, no perceptible improvement has been felt. The main constraints and obstacles are as follows:

- Slow economic growth, particularly in the agricultural sector; small industrial sector; few off-farm employment opportunities.
- Due to the weak governance, the resources devoted to address poverty have been used very inefficiently. A significant proportion of the resources for poverty alleviation has been wasted or diverted for personal gratifications.
- Political instability has been the most significant obstacle in the efforts attacking poverty in general and women's poverty in particular. From 1994 to 1999 Nepal experienced seven governments. Due to political instability accountability of governments has lessened, thus, adversely affecting the efforts to combat poverty.
- Lack of gender-disaggregated data has been one of the constraints in planning, implementation and monitoring of poverty alleviation programmes targeted to women. Very general macro analysis and assumption based programmes of the government, which lack clear vision of implementation, have remained mere aspirations than achievements.
- Efforts to reduce poverty in general and women's poverty in particular are fragmented with frequent duplications.
- The prevailing patriarchal culture limits access of women to family resources, land, training and employment opportunities.
- Rapid population growth of slightly over 2 percent annually adds further complexities and challenges to the task of poverty alleviation. The absolute number of poor is increasing over the years.
- Inequitable distribution of assets, especially land, is an important obstacle in the fight against poverty. Similarly, in some areas of Nepal the landlessness and the system of bonded labour are significant causes of poverty.
- The difficult terrain of Nepal, lack of transport and communication network and the landlocked situation are also serious constraints to development activities.
- Deteriorating environmental condition is further aggravating the poverty problem.
- NGO activities are concentrated in accessible areas.

8.2.2. Addressing Poverty in National Development Plans

8.2.2.1. Policy Issues in the Eighth and the Ninth Plan

Since the Eighth Plan, poverty reduction has become an overriding concern of Nepalese national development plans with set of programme and activities. Moreover, the current Ninth and forthcoming Tenth plans have the sole objective of poverty alleviation. As a poverty reduction strategy, the government's initiative is to create employment opportunities in backward, rural, and deprived communities; and provide basic minimum social services as well as the sense of security to the people.

Eighth five-year plan had three broad objectives: attaining sustainable economic growth, alleviating poverty, and reducing regional disparity. These objectives were to be achieved by expanding development infrastructure, increasing access of the poor to the means of production, and launching different targeted programmes for backward communities

However, because of slow economic growth rates poverty reduction efforts did not produce substantial results during the plan period. Institutional measures to address poverty under the on-going Ninth Plan (1997-2002) have resulted in forming the Poverty Reduction Commission, Agriculture Focused Programme Framework, Targeted Programme Framework, and developing a Poverty Monitoring System. The target of the Ninth Plan was to reduce Head Count Index (HCI) of poverty from 42 to 32 percent. In addition to this, illiteracy, infant mortality rate, maternal mortality rate, average life expectancy at birth were expected to reach specific targets.

Moreover, the current plan has adopted policies on empowering socially and economically backward and weaker sections of society, by developing physical, social and economic infrastructure in the underdeveloped and remote regions of the country.

National development plans have emphasised high economic growth rate to generate employment opportunities. With the implementation of the APP, agriculture sector is expected to play a leading role in poverty alleviation. In addition to this, uplifting the socio-economic status of those from backward, remote regions, neglected, and weaker sections of the society by accessing them to primary health, education and drinking water. Programmes such as skill development, credit flow, social mobilization, population control, women's empowerment, rural electrification, environment protection, and legal provisions against the exploitation of weaker sections are to aid the poverty alleviation programmes.

Amongst others, the Ninth Plan has adopted following strategies to achieve the objective of poverty alleviation (NPC 1998:72-74):

- Integrated development of agriculture and forestry sectors and high, sustainable and equity-oriented economic growth with a focus on those sectors.
- Acceleration of industrial development process through the advancement of such sectors as agriculture, water resources, industry, tourism, and transportation on the basis of comparative advantage and competitive capability.
- Streamlining the development and expansion of modern sectors through liberal, market-oriented economic policies while stressing the active role of the government in developing and building rural sector recognizing the fact that a single set of policies cannot resolve basic problems of the organized modern sector as well as the unorganised, backward and rural sector in the dual-structure of Nepalese economy.

Important implementation strategies for the poverty alleviation programmes are as follows:

- Developing agriculture sector through the implementation of the Agriculture Perspective Plan (APP), considering the fact that majority of the poor rely on agriculture for livelihood.
- Increasing agricultural productivity while guaranteeing the safety of land-ownership, accessing landless farmers to the land, extending the land-ownership, and alleviating poverty through the promotion of economic growth and employment by establishing and developing agro-based industries.
- Enabling the growing human resources to become entrepreneurial, self-employed and employable through human resource development and extension of entrepreneurial and skill-oriented training programmes. Such programmes will be made main instruments for poverty alleviation. In this process, services including technical assistance, consultancy and the credit flow will be extensively made available to villagers.
- Expanding income-oriented employment opportunities through outreaching the fruits of programmes in agriculture, cottage and small industries, and tourism sectors.

- Reducing inequality of income and poverty by investing more in sectors that will give greater return within shorter period, that are employment-oriented, and that will contribute to equitable distribution of development benefits (sectors like agriculture, small and cottage industries, tourism, and transportation).
- Expanding export trade through diversifying foreign trade on the basis of comparative advantage and competitive capability. Necessary legal and institutional infrastructure will be developed in order to set a competitive climate.
- Developing and expanding economic and social infrastructure for increasing production and the productivity of economy.

An "Interim Poverty Reduction Strategy Paper" (I-PRSP) published by the National Planning Commission in November 2000 is a time-bound action plan with a three-pronged strategy: broad-based growth, social sector development and targeted programmes for the backward and vulnerable groups, and safety nets. They seem to be consistent with the initial poverty alleviation strategies of the Ninth Plan.

8.2.2.2. Addressing Poverty of Women in Development Plans

The gender dimension of poverty has received increased attention since the Beijing Conference that culminated in the Beijing Platform of Action (BPA) which specifically articulated how to promote women's economic rights and independence including access to employment, appropriate working conditions, services, access to market information, and access and control over economic resources. HMG has also committed to implement these initiatives for the alleviation of poverty among women (Bahini 2000).

The Ninth Plan aims to integrate women into the development mainstream through the promotion of gender equality; increasing women's participation in every sector of the economy; genderizing formulation, implementation and evaluation of sectoral policies and programmes; accelerating the process of multi-faceted development of women by uplifting their social, economic, political and legal status; protecting and promoting the rights and interests of women; and by gradually eliminating violence, exploitation, injustice and atrocities being committed against women.

Credit is one of the major constraints faced by the poor in general and poor women in particular to uplift their living status. Some of these initiatives are: micro-credit programmes; income generating and self-employment programmes; co-operatives and cottage industries; non-formal and vocational education, and skill development programmes; and setting up of funds for poverty alleviation with target programmes. Moreover, various employment-oriented training programmes and institutional credit facilities have been initiated for generating self-employment opportunities for women. The National Plan of Action formulated by Nepal to implement the Beijing Platform of Action (BPA) includes an action plan on women and poverty including skill training and entrepreneurial development.[72]

8.2.3. Implementing Poverty Alleviation Programmes

Since early 1990s, various targeted and sectoral poverty alleviation programmes have been implemented in the country. The most recent (last year) government initiative was to establish a Poverty Alleviation Fund (PAF) last year to strengthen, coordinate, support, and monitor the activities directed to meet the goal of poverty reduction.

[72] For more details see the background paper by Sanjaya Archarya on Labour, Poverty and Gender

The main objective of the PAF is to initiate and implement various sectoral as well as targeted programmes on poverty alleviation through the adoption of coordinated and integrated approach for achieving the goal of effective and sustainable reduction in poverty. Especially, it aims to contribute towards providing necessary safety nets to the vast majority of the poor (NPC 2000:16).

PAF is an umbrella fund, not itself an implementing agency, which mobilizes resources available from the government and donor communities for launching poverty reduction programmes in an integrated and coordinated manner. Non-government organizations working at the national level are to co-ordinate with PAF Board at the centre; District Development Committee (DDC) at the district level and through Village Development Committee (VDC) at the village level.

The Rural Micro-finance Development Centre (RMDC) has also been established recently to channel the resources from the commercial banking sector to rural areas in the form of wholesale credit for the promotion of small-scale entrepreneurship.

8.2.4. Poverty Alleviation through Industrial Development?

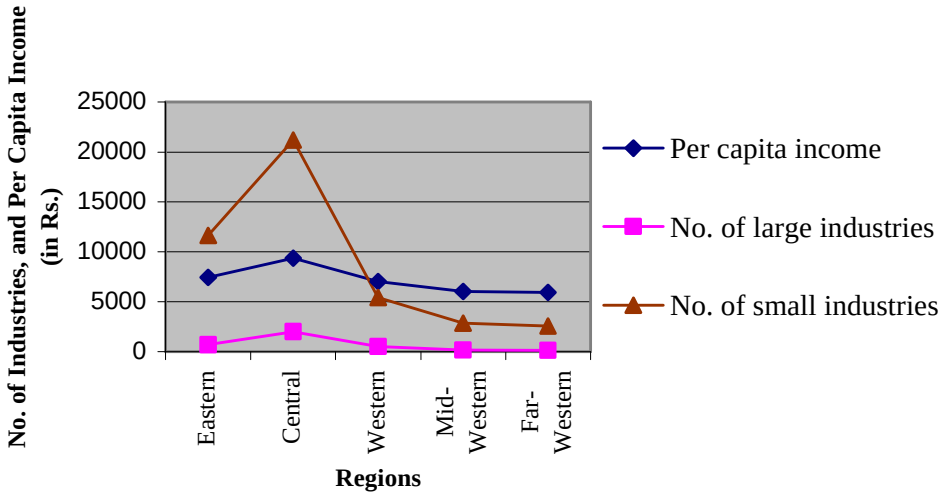
Although the industrial sector does not seem to play a big role in poverty alleviation programmes, per capita income in Nepal in different geographical regions seems highly correlated with the number of industrial establishments in the region (correlation coefficient = 0.99 for large scale industries and 0.98 for small scale industries). NLSS 1996 shows highest per capita income in central has been followed by eastern, western, mid-western and far-western development regions, respectively; and so does the distribution of manufacturing establishments (see Table 8.16 and Figure 8.1).

Table 8.16: Per Capita Income and No. of Industrial Establishments in Different Development Regions

Development Region	Per capita income (in Rs.) in 1996/97	No. of industrial establishments	
		Large (in 1996/97)	Small (n 1999/2000)
Eastern	7,434	704	11,639
Central	9,366	2,019	21,170
Western	7,011	519	5,448
Mid-Western	6,038	182	2,852
Far-Western	5,928	133	2,562

Source: *Ibid.*

Figure 8.1: Per Capita Income and Number of Industries in Different Development Regions



Sources: Census of Manufacturing Establishments 1996/97; Nepal Living Standard Survey 1996, and Survey of Small Manufacturing Establishment 1999/2000; CBS, Kathmandu

The manufacturing sub-sectors producing exportables are providing higher wages as compared to import substitution industries (Table 8.3). Wages in industries producing importables have gone up over the three periods. Wages in exporting industries have stagnated and even decreased during the last period.

Wages in small-scale manufacturing establishments are similar to wages in large-scale industries. For small-scale industries, the last two surveys show a higher wage for import substitution industries than for exporting industries. Wages have substantially increased between the two surveys (Table 8.5).

In addition to providing employment and income, the industrial sector can also contribute to poverty alleviation through the increase in remittance income for the family of industrial workers. Nepal Living Standard Survey 1996 shows that 23 percent of households in Nepal receive remittances. Approximately one-third of the remittances come from workers in India, one-third from urban Nepal, about 12 percent from rural Nepal and the remaining 22 percent from overseas countries (NLSS 1996:65-67).

Remittance income received from overseas, which mostly arrives in larger amounts, is generally spent on special purposes. Internal remittances contribute to recurrent expenditure in nutrition, health, education, recreation, etc. of the family members.

8.2.5. Summary and Conclusions

Poverty in Nepal is very pervasive and severe particularly in western regions, in hills and among females. The head-count poverty index increased from 36 to 49 from 1976 to 1992, thereafter, it gradually declined. Mid term review of the Ninth Plan has estimated the head count index to have declined from 42 to 38 percent within first three years of the plan.

As poverty is the function of income, increase in the level of employment with per capita income above the poverty line does make a simple and long-term strategy for poverty alleviation.

The wage rate in industries producing exportables is comparatively higher than those working in industries producing importables, higher by about 50 percent in 1986/87 and in 1991/92 and by about 13 percent in 1996/97. Therefore, expansion of the export market not only increases employment but also does so at higher wage rates. It seems that the two are converging. Internal remittances form an important addition to household income.

There is a clear gender difference in labour participation rates and wages. Only in some industries such as carpets, textiles and garments the level of female employment was high as compared to the rest. Particularly for garments however, the level is low when compared to international practice. Lower wage rate of females is attributed to lower educational status, lack of training and professional skills, and socio-cultural barriers.

Thus, industrial development can play a crucial role in poverty reduction. A two-pronged approach of rural industrialization and concentrated urban-based industrial development will maximize the short-term and the long-term impact of the industrial sector on alleviating poverty. Industrial development will affect poverty through increasing employment, productivity, and incomes, directly as well as indirectly through remittances. Higher incomes will lead to higher demand for all productive sectors. Higher demand for labour will tend to increase wage rates, leading to efforts to increase labour productivity further by employing more capital. A strong economy will also contribute to women empowerment through increased economic independence, eventually also reducing the wage gap.

8.3. A Precarious Balance: Industrial Development and Environmental Management

8.3.1. Introduction

This section will describe and analyse the relationship between manufacturing industry and the environment. In more detail, this section will

- describe and analyse the various general, direct and indirect issues elated to the environment,
- review the status of pertinent policy/planning documents, institution/implementation and legislation issues of the environment sector,
- discuss the relationship between environment and industry,
- draw conclusion, and
- derive recommendations to be adopted for the sustainable and environmentally friendly development of the industrial sector, balancing the needs and constraints of the industrial sector with protection of the environment.

With the widening of industrial base in recent years the problems of environmental degradation and industrial waste disposal has begun to receive attention as it is believed that the industrial sector is the major contributor to the problem of degrading environmental quality specially water, air, land and of late sound (transport sector) pollution.

Besides government failure to develop or implement policy and regulatory measures, environmental problems in the manufacturing sector are a result of standard practice of

locating industries along the water ways thus providing direct access to dumping industrial waste into these waterways to cut cost of production and prevalence of the traditional concept of "solution to pollution is dilution". Some of the modern industries that have been set up, that fit the above-mentioned scenario, such as cement, paper, leather, sugar, breweries etc. generate significant quantities of industrial pollutants threatening to become a pollution and health hazard to the environment. It is therefore become more imperative that appropriate action be taken to break away with traditional practices, devise appropriate policy and regulatory measures, effectively implement existing ones, and recognize the importance of environmentally friendly practices such as pollution control management and Cleaner Production (CP) in industries as conducive to industrial growth and not an extra burden that will increase production cost.

8.3.2. Industry-Specific Environmental Concerns

There are direct and indirect[73] environmental issues related to the manufacturing industry. The concern of this section is with direct issues related to the industrial environment. In an effort by government to categorize industries for the effective implementation of the pollution control programme so-called hot spots analysis has been applied. Therefore this section will discuss industrial pollution, pollution hot spots, various pollution standards, and the government efforts to categorize these establishments based on pollution.

8.3.2.1. Industrial Pollution

Major consequences of industrialization have been air, water, soil and noise pollution. Below each of these categories will be discussed in more detail.

Water Pollution

Water pollution, in terms of river pollution and contamination of drinking water, is a direct environmental issues related to the manufacturing sector. It is a result of a direct dumping, without pre-treatment, of industrial waste into the waterways. However, no current data was made available as to the extent of pollution.

The Bagmati River could be taken as an example of pollution by the industrial manufacturing sector. In the past decade, the river has been a subject of much concern owing to its presence in the Kathmandu city, its religious importance and high-level pollution from human, household as well as industrial waste generated and dumped from the city. As per the census of manufacturing establishments 1996–97 published in 1998, the three districts of the Valley have only 1339 industries out of the total of 3557 in the country. Similarly, the majority of the large-scale units are located outside the Valley.

There are no recent data available to characterize the current degree of water pollution in the river. However, old estimates show that a total of 0.764 tons of total suspended particles (TSP), 8.557 million cubic meters of waste water, 0.057 million tons of biological oxygen demand (BOD), 0.096 million tons of total suspended solids (TSS) and 0.220 million tons of solid wastes was generated by all the industrial establishments per year in the Valley (Devkota, 1997). The majority of the industrial waste produced by these industries is directly discharged into the terrestrial and aquatic system without pre-treatment. A sample survey of 36 industries throughout the Kingdom revealed pollution equivalent of industrial effluent in terms of BOD values ranges from 416 to 9540 mg/l.

[73] For a discussion of indirect issues, see background paper on Environment and Energy by Prakash Silwal

Another study indicates that the average BOD and the amount of ammonia and nitrite in Bagmati River at Teku have a high intake of sewage and human wastes. Seventy percent of the river flow below Teku is untreated effluent in the dry season and thus highly polluted (MoHPP-WB, 1994). The estimated eighty percent return flows of domestic consumption in the Kathmandu Valley having mean BOD 280 mg/l are discharge into water courses without any treatment. Normally, the waterways can only take BOD of 30-80mg/l. This shows there is massive organic pollution of these waterways.

In addition, earlier studies also indicate that toxic pollutants like heavy metals (chromium, tungsten, lead and arsenic) found in carpet dying industries along with non-point source pollution from pesticides and fertilizers have been reported for the Bagmati river. This practice has changed since and today the wool dyeing industries only use heavy metal free dyes these days, through experts believe the non-point source of pollution is still prevalent.

Similar scenarios have been reported for Bishnumati and Narayani rivers of Nepal. In the case of Narayani detectable levels of carcinogens like tri-chloro-dioxo-dibenzenes (TCDDs) have been reported in the past. Most of the water sources and rivers of Nepal follow similar trend like in the case of Bagmati, Bishnumati and Narayani.

Water pollution is of concern for a variety of reasons. Rivers and other surface water have been playing important role in the economic development of Nepal in terms of drinking, irrigation, hydropower generation and fisheries. These river systems are important ecologically, economically as well as environmentally. Polluting the water ways can impact on our food and water sources thus adversely affecting our health.

Discharge of high BOD waste from the Industrial sector, can cause oxygen depletion of the river/water source impacting the aquatic life (can even lead to death under anaerobic conditions) especially lead to a decline in the fish population. Rivers and other water sources are also major source of food for most communities living around it, as consumptive fisheries is very prevalent in Nepal.

Also, the contamination of water sources by various chemicals including heavy metals, besides organic waste, can increase the chances of polluting the drinking water. Drinking polluted water can have serious health implications to human beings.

Contamination of these river systems, along with other water sources, therefore becomes one of the major concerns of environmental pollution management strategy related to the industrial sector. Experts believe that water pollution is as a result of the absence of effective implementation of environmental policies particularly due to failure to come up with/implement the effluent discharge standards, and failure to prevent the direct discharge of effluent without pre-treatment to the river systems.

Air Pollution

Air pollution is another major direct concern of the urban industrialized centres of Nepal. Manufacturing industries are the major sources of air pollution in both rural and urban Nepal (more so for the urban environment). Emission from manufacturing industries (like brick kiln and cement factories), burning of fuel-wood by the manufacturing sector and burning of fossil-fuel by the transport sector are the major sources of air pollution in both rural and urban Nepal. However, no current data was available to characterize the extent of air pollution in Nepal.

The Kathmandu Valley could be taken as an example of air pollution by the industrial manufacturing sector. There was no data available to characterize the current degree of air pollution. However, an old study indicates in the early 1990s Kathmandu valley has reported high concentration of carbon mono-oxides and hydrocarbons up to 3.9% and 0.8% respectively emitted from automobiles, in the air (Pandey *et al.*, 1985). This is quite alarming as it is comparable (high in some cases) to the alarming high levels of urban air contaminant load reported for Mexico City in Mexico in 1993, where carbon monoxide and hydrocarbon levels of concentrations up to 4.3% and 0.21% in the air was reported.

Literature review suggests that in general, the manufacturing industries of Nepal emit a wide range of pollutants ranging from harmless to highly carcinogenic. Many industrial manufacturing processes are also potential sources of other toxic gases, heavy metals and complex organic compounds with carcinogenic potentials. Some of the major pollutants reported include suspended particulate matters (SPM) including fine solids or liquids droplets suspension in air along with large sized particulates (grit, dust, soot and fly ash), smaller sized particulates (smoke, fumes, mist and aerosols), and emissions like carbon monoxide, sulphur dioxide, oxides of nitrogen (NO2), un-burnt hydrocarbon and tar droplets resulting from the incomplete combustion of fossil fuel (petrol, diesel, kerosene and coal) related to the transport industry, are prevalent in major cities of Nepal including Kathmandu, Biratnagar, Birgunj and Narayanghat.

Smog is another serious problems associated with air pollution. It is as a result of pollutant emission from the manufacturing sectors like brick-kilns and transport industry. Smog problem, though very much prevalent in Nepal, has never been seriously addressed and has the potential to cause various adverse respiratory related health effects. Petroleum based fuels generate hydrocarbon, carbon mono-oxide, carbon dioxide, oxides of nitrogen, lead, sulphur-dioxide, and other suspended particulates and this mixed in the air in the presence of sunlight is converted to smog.

Air pollution is of concern because these by products of industrialization and urbanizations can have potential adverse health and ecological implications.

Soil pollution
Soil is the ultimate sink for all the pollutants and presence of any of the pollutants emitted by the manufacturing sector accumulating in the soil can pose a long-term exposure threats to human health.

Sound pollution
This type of pollution has not been recognized in Nepal. However, this problem is faced in connection with the transport industry and within the manufacturing industrial establishments.

8.3.2.2. Classifying Industrial Pollution by Priority Levels

Using so-called "hot spot" analysis[74], the Department of Industries has grouped the Nepalese industries (15 industrial categories) into three priority levels (conform WHO listing).

Industrial establishments such as Cement, Leather and Tanning, Paper and Pulp, Soap and Chemical, and Sugar and Kahandsari have been categorized as Level 1 Priority. These

[74] See background paper on Environment and Energy by Prakash Silwal.

industries are highly polluting to air and water, are classified as Category A by the Department of industries and are listed by the WHO as polluting industries.

Industrial establishments like Brewery, Distillery and Soft drinks, Iron and Steel, Jute, and Marble and Magnesite Quarry have been categorized as Level 2 Priority and fall under category B of the Department of industries and are also listed by the WHO.

Industrial establishments like Cigarette and Tobacco, Feed, Kattha, Rosin and Turpentine, and Solvent Oil and Vegetable Ghee have been categorized as Level 3 Priority as they have not been categorized by the Department of Industries and do not fall in the WHO listings.

8.3.2.3. Pollution Standards

Recognizing the importance of controlling pollution by from manufacturing industries, HMG has initiated the concept of affluent standards to minimize air, water, land and sound pollution. The government has set tolerance limits for industrial effluents discharged into inland surface waters for tanning, wool processing, fermentation, vegetable ghee and oil, and paper and pulp industries.[75]

Tanning Industry: The leather factories fall under this category where they use this tanning process. Chlorides, chromium, and sulphides are some of the waste products of the tanning industry and pollutants of concern because not only of their effect in our waterways and bio-diversity, but also to the human health. Equally of concern are the biological oxygen demand, chemical oxygen demand, TDS, SS, Sodium and the pH of the effluent that is discharged because of its impact on the availability of oxygen in our waterways for sustaining aquatic life. Realizing this MOPE has set tolerance limits for discharge that comes out of the tanning industry with a view to protect from/minimize the adverse impacts to aquatic life as well as human life.

Wool processing Industry: Carpet and Pashmina are the major wool processing industries. In this category specific limits have been set for sulphides, phenols, chromium, BOD, SS, Oil and grease, pH and temperature.

Fermentation Industry: These primarily include the beer, liquor and the wine industry where major pollutants of concern are basically the PH, TSS and the BOD of the effluent. The effluent if not controlled can basically kill the aquatic life of the water system it enters into.

Vegetable ghee and oil Industry: The effluent tolerance limits have been set for vegetable ghee and oil industry in terms of BOD, COD, PH, Oil and Grease, and Nickel.

Pulp and Paper Industry: The criteria set for paper and pulp industries is very flexible as the major pollutants that emerge out of the paper and pulp factories have not been addressed. As heavy bleaching process is required in this category, pollutants that are carcinogenic (even if released in minute quantities) like dioxins and furans and other organ chlorines are serious by-products of this industry.

[75] In addition to these tolerance limits there is also a generic standard catering to a range of industries; for details on both see background paper on Environment and Energy by Prakash Silwal.

8.3.2.4. The Manufacturing Sector and Environmental Policies

The government has recognized the environmental problems related to the manufacturing industries. It is conscious of the need to harmonize economic development with environmental protection and has taken various steps towards this. No substantial quantitative analysis of environmental problems has been undertaken. The various pathways for exposure and the resultant impact from environmental problems have not been defined.

The Government, based primarily on qualitative analysis, has made various environmental management efforts (in the area of policy and planning, implementation and institutional, and legislation) to mitigate possible environmental impacts by the manufacturing sectors. This section describes these efforts in the area of policy and planning, implementation and institutional, and legislation. In addition, the Cleaner Production Policy and other pollution control efforts will be discussed.

8.3.2.5. Policy and Planning

Incorporating environmental concerns in economic development planning has been addressed in all plans since the Sixth Five Year Plan (1980-85). After the Sixth Plan the National Conservation Strategy (NCS) was endorsed in 1988 for the preservation of national heritage and endowments.

In addition, the interim government of 1990 mandated that development projects be adequately assessed on environmental grounds prior to their implementation and give adequate attention to select and implement only the environmentally sound projects. Also the Constitution of Nepal 2047 (1990) defined the role of the state with regards to the protection of the environment through creating public awareness on environmental quality and providing attention to conserve rare wildlife, forest and forestry resources.

This was followed by a separate policy on environment and resources conservation as part of the main national development policy during the Eighth and the Ninth Plan.

During the Eighth Plan, the implementation of the National Conservation Strategy Implementation Programme (NCSIP) by NPC-IUCN carried out major works in the area of EIA, institutional development, programmes for identifying and preserving environmentally sensitive area, conservation programmes for natural and cultural resources, pollution control programme and programme for promoting environmental awareness. As a result, the Nepal Environmental Policy and Action Plan (NEPAP and NEPAP-II) were formulated and in 1995 Government endorsed EIA guidelines for the industrial sector.

NEPAP elaborates some recommendations for the industrial related vehicular pollution, air pollution, fuel efficiency, industrial pollution, indoor smoke pollution, pollution standards, industrial zoning, movement of industries away from population centres and environmentally sensitive sites and calls for a improved functional coordination between government, non-governmental, private sector and donors involved in the urban development and environmental protection.

NEPAP II is a sector specific document and a separate NEPAP (II) has been formulated for the Industrial sector by NPC in 1996. NEPAP II calls for the enforcement of the MOI practice of granting licensing based on types identifies by Industrial Enterprises Act 1992 for industries to be developed in Kathmandu municipality, Kathmandu Valley and in other industrial municipalities. It calls for the primary screening of pollution prone industries with

location specific planning approval, using the MOI guidelines and the Act. NEPAP II re-emphasizes the need for green-technology, implementation of the polluter pays principle, and an effective monitoring, compliance and enforcement mechanism.

The Industrial Policy 1992 was also formulated during the Eighth Plan. The policy has identified the specific industries like cigarette, bidi, modern leather, tanning, beer and alcohol industries, sugar production, pulp and paper, cement, textile, washing and dying, bitumen, chemicals, fertilizers, pesticides, lubrication oil producing industries, foam, carpet washing, soap, electroplating photo processing, tire tubes, LP gas, petroleum products related industry, mineral based large industries, stone crushing, and forest based medium and large industries, paints and brick as requiring permission for their establishment because they affect public health and the environment.

No major policy has been formulated during the Ninth Plan but recently the Government has drafted a Cleaner Production (CP) Policy 2001 with assistance from the Environment Sector Programme Support (ESPS) project supported by DANIDA and is yet to be adopted. The policy aims to promote CP in Nepalese industries, improve environmental quality through resources (material as well as energy) conservation and waste minimization, create better working environment within industries, and help industries to achieve increased efficiency and productivity.

However, the Ninth Plan (1997-2002) has made significant progress in terms of implementation of the various policies, programmes and legislative measures that have been formulated. During this period Environmental Protection Acts 1996 and Regulation 1997 was enacted and major attempts to integrate environmental concern into the industrial sector has been undertaken. The EIA process for the industrials sector has been regularized, a generic pollution standard and pollution standards for five specific polluting industrial sectors have been gazetted, major steps have been taken in the area of vehicular emission, provision of environmental inspectors for the management and monitoring of pollution by industries, development of air quality management plan for urban areas specially for Kathmandu have been under taken and extensive environmental management course and institutes within the government agencies and universities and private sector owned businesses has been initiated to generate skilled manpower for managing the growing Nepalese environmental problems.

8.3.2.6. Implementation/Institutional

There are numerous government bodies involved in the protection of the environment. To ensure the mandate identified by the Constitution of the Kingdom of Nepal 1990 a high level committee on natural resources and environmental protection, Council for Conservation of Natural & Cultural Resources (CCNCR), has been constituted in the House of Representatives. In 1992 the Environment Protection Council (EPC) was created to advise the Government on policies and strategies related to the environment in all its sectors.

The Ministry of Population and Environment (MOPE) was formed in 1995 for the better management of the environmental issues. It is the lead agency that is entrusted with the monitoring and implementation of environmental activities in Nepal. Besides some ministries, departments and other public sector agencies that include National Planning Commission, Ministry of Industry, Commerce and Supplies, Ministry of Forest and Soil Conservation, Ministry of Housing and Physical Planning, Department of Irrigation, Department of Industry, Department of Cottage and Small-scale Industries, and the Nepal Electricity Authority (NEA) have established environment units within their organizations.

MOPE is the focal point for coordination between national and international organizations, with a further mandate to monitor the performance of government agencies and NGO's on environmental program.

Currently, the Ministry of Industry, Commerce and Supply (MOICS) implements and monitors its own programmes. MOICS plays the role of the promoter as well as regulator. This dual but conflicting role of MOICS is a result of the inability of the MOPE to carryout its mandated duties due to unavailability of human resources and unhealthy rivalry between line ministries.

8.3.2.7. Legislation

There are numerous pieces of legislation that has been formulated that affect the manufacturing industries.

Before the Eighth Plan most of the acts addressed the environmental issues in terms of protection of the wildlife (both aquatic and terrestrial) and forestry. They were more concerned with protection of the soil, watershed and biological resources. These acts included Aquatic Animal Protection Acts (AAPA) 2017 (1961), National Parks and Wildlife Conservation Acts 1973 and the Mountain National Parks Regulations 1979.

In the early part of the Eighth Plan the Soil and Water Conservation Act 1992 was formulated to address overall watershed management issues. It empowers the designated authority to prohibit any person from doing anything that may result in soil erosion or washouts on lands indicated in the act as protected designated watershed area. The rule empowers the government to shift industrial commercial and even communities within any protected watershed area to other places. The rule stipulates the provision of penalty to any person who acts in contravention of the act or the rules.

Also, the Industrial Enterprises Act 1992 was formulated which had additional provisions with regards to environmental aspects. It listed solid waste or waste product processing industries, industry manufacturing pollution control devices and industry manufacturing fuel saving devices under the priority industries; and provisions for the deduction of 50 percent for the investment made by an industry from taxable income on process or equipment, which has the objective of controlling pollution or which may have a minimum effect on the environment.

The formulation of the Environment Protection Act 1996 (EPA) and the Environment Protection Regulation 1997 (EPR) was able to provide a legal status to protection of the environment and pollution control activities. Specially in relation to the industrial manufacturing sector, it proposes measures for pollution control through permitting, placing of environmental inspectors, establishment of environmental labs for the monitoring of pollution and conservation, creation of the environmental protection fund, creation of the EPC, providing of incentives to businesses, awarding of compensation for adverse environmental impacts. It mandates that IEE or EIA be conducted for only the listed industries.

8.3.2.8. Pollution Control and Cleaner Production

Industrial pollution management activities were initiated in 1993 with the Industrial Pollution Control Management (IPCM) project with the assistance of UNIDO and UNDP. The Ministry of Industry implemented this project. This project built up the capacity of the

Ministry of Industry in Industrial Pollution Management. Under the assistance of UNIDO, model demonstration tannery effluent treatment facilities were also established. A number of studies were carried in the industries of Balaju Industrial District (BID) and Hetauda Industrial District (HID) under the Pollution Prevention Demonstration Project (PPDP) with the assistance of DANIDA. Cleaner Production was assessed in some of the industries of BID and HID under this project in 1996. In the same year, IPCM project was revised to include a Demonstration Programme on Cleaner Production (CP). The demonstration was launched in 1997 in five industries namely Textile Processing, vegetable oil refining and hydrogenation, sugar mill, pipe galvanizing and carpet washing industries. The demonstration programme was named as Hidden Opportunity for Productivity and Environment (HOPE). Participatory approach was used and HOPE had vividly demonstrated that there was tremendous potential and opportunities for CP in Nepalese industries. The savings achieved from the implementation of the programme were substantial.

In 1999, the Environment Sector Programme Support (ESPS) was initiated based on the PPDP under the assistance of Government of Denmark. Under this programme, three ministries of HMG namely the Ministry of Industry, Commerce and Supplies, the Ministry of Population and Environment (MOPE) and the Ministry of Labour and Transport Management (MOLT) receive support for the improvement of industrial and urban environment. The programme has five components to look after the human resource development, promotion of CP in industries, construction of Common Wastewater Treatment Plant, institutional strengthening and air pollution management of Kathmandu Valley. The strategy of the programme is to assist and support the industries to start implementation of CP measures so that the industries could save on resources and reduce the pollution load. The programme also supports the environmental authorities to develop and enforce environmental standards. Implementation of CP by industries will make it possible for industries to comply with the standards without driving them out of competition. The results of implementation are very encouraging. Industrialists are becoming convinced that the environmental considerations are necessary and also that it provides them opportunities for saving.

Similarly under the assistance of FINNIDA, Nepal Bureau of Standards and Metrology (NBSM), a Department under MOICS, is implementing a project on environmental labelling for export-oriented industries. The project is assisting mainly the carpet and Pashmina industries to make their products more environment-friendly and to gain additional export market in developed countries.

Recently, the CP programme has been carried out in all the 35 operational industries of the Hetauda Industrial Districts (HID), Key areas in Biratnagar and Bhairahawa. The CP assessment in HID has shown that there is tremendous potentials for the savings. The energy savings amounted to Rs.28 million, the raw material savings amounting to Rs.25 million, and water savings of Rs.1 million have been estimated if all the recommended measures are implemented. It was also estimated solid waste could be reduced by 80 percent and dust pollution by 48 percent (ESPS, 2001).

8.3.3. Discussion

The relationship between industrial growth, environment and competitiveness is complex one but directly related. In recent years the liberal market policy and the overwhelming need to promote the process of industrialization and the competitive environment that exists at home and abroad has put tremendous pressure on the corporate owners and manufacturers to

produce more, and to produce goods that have competitive edges in neighbouring countries. This may have various implications for the environment.

Often, the need to compete with national, regional as well as international markets can overlook the environmental aspects. Also, there is the traditionally Nepali industrialists' thinking that incorporating environmental concerns in the manufacturing process to minimize the amount of waste is an expensive process. However, experiences from the manufacturing sectors in the developed nations have shown that production of environmentally friendly products is hype and key criteria for consumer motivation for purchase of any consumer products.

The concept of standards like ISO9000 and the eco-labelling, pollution standards, it now means that Nepali manufacturers will have to produce products that are environmentally friendly and produced with the best available technology if they are to competitive in the international and regional market under the WTO umbrella.

UNIDO, UNEP and USAEP have identified that the environmental impact of the manufacturing sector is related to the following key issues: input material, equipment and technology used, general house keeping and process control methods used in the factory, reformulation of products and creation of useful by products, and implementation of on-site recycle and reuse concept which directly affect the process of manufacturing and the ultimate generation of a industrial waste that has the potential to adversely affect the environment.[76]

The policy, institutional, and legal framework needed to ensure environmentally friendly manufacturing industries are still inadequate. Plans are well written but effective programmes are lacking. Experts believe that the lack of effective implementation of these measures is a problem:

- At the institutional level too many institutions have created confusion and unhealthy rivalry amongst the involved agencies;
- At the legislative level the problem lies in understaffing of the MOPE due to the absence of trained manpower to carryout monitoring activities, non-availability of the environmental inspectors for monitoring as mandated by EPA;
- For pollution control experts believe that a two-pronged approach should be adopted by the government. First, as CP can be applied to the existing industries, they must start with CP and the industries must be given some time to reduce pollution load by practicing CP and saving on resources before they are required to put up treatment facility. Second, for the new industries, through IEE/EIA compliance with environmental standards must be ensured;
- Also, it is recommended to initiate the concept of tradable pollution permits where industries can buy pollution rights from government, who sets the total permissible limit. Government sets initial charges according to an estimate of the social costs of pollution. When traded, the permits will go to areas where pollution will have highest returns, implying lower pollution per unit of value added. Adequate infrastructure and procedures must be developed and particularly updated information on level of emission is necessary for this to be effective. A long-term process, but definitely something for the government to consider.

[76] For more details, see background paper on Environment and Energy by Prakash Silwal.

8.3.4. Conclusion and Recommendation

The challenges, Vision 2020, strategies and proposed policy, programme and action under the Industrial Development Perspective Plan (IDPP) for the environment sector related to the manufacturing industries will be discussed in this section.

8.3.4.1. The Challenge

Based on the current assessment and future development growth of the manufacturing sectors it is recommended that following issues be considered seriously to accommodate for the environment.

Policy Issues

While developing the policy guidelines to meet the future environmental problems associated with the industrial sector the following could be the main issues to be considered:

- The stage of development of the country should be taken into consideration while permitting the type of industry for establishment.
- The existing planning process should fully integrate environmental factors leading to the development of an complete and integrated pollution control management strategy, and move away from the traditional methodology and approach of project evaluation based purely on economic consideration. Complete implementation of the concept of waste minimization or Cleaner Production (CP) put forward by UNIDO and UNEP respectively. A two pronged approach that includes both giving time for existing industries to implement CP before putting up a treatment facility, and requiring new industries to install suitable technology to comply with the mandatory environmental standards from the start of operation through the process of IEE/EIA, needs to be adopted.
- The following preventive and restorative pollution control measures should be taken into consideration:
  - Industrial locations: Need to consider aspects that take into account environmental considerations such as zoning, provision of buffer zones, use of industrial districts with centralized waste treatment facilities as part of the infrastructure, compatibility of industries within an industrial district and dispersal of industries to reduce pollution stress.
  - Standards: Standards that are not only environmentally effective but are within the economies of the industries with gradual upgrading to meet environmental quality objectives expanded to cover all the industries of the country. More specific standards to cover various types of chemicals need to be developed to replace the current broad range standards.
  - EIA: Regularizing the EIA process to make it a tool for promotion of industry and not a tool that adversely affects the industrial development.
  - Clean production/Pollution prevention: Adoption of clean and improved technology for the industrial processes that will lead to productivity enhancement, quality improvement, better environment, improvement in OHS and better company image.
  - Toxic/hazardous waste management: Adoption of appropriate policy in this regard.
  - Fuel efficiency measures to maximize the use of fuel and adopt a practice of using cleaner and renewal type of fuel.

Implementation issues

- The developed appropriate pollution control management system should be effectively implemented with more and more autonomy with decentralized concept resting on separate units within the MOICS.

- The role of MOPE needs to be more defined and the task of administrating the legislation and monitoring and follow-up activities by the environmental inspectors need to be more clearly defined and implemented.
- The appropriate manpower and expertise required to carryout the task need to be developed and available expertise/manpower with the various departments under MOICS need to be streamlined to avoid duplication efforts and unnecessary wastage of resources and manpower.
- The ambiguous role of MOICS—both promoter and regulator—should be immediately abolished. The environmental monitoring activities should be entirely the business of MOPE.
- The dual role can end up compromising the quality of environmental programmes undertaken by the MOICS and this can be counterproductive in the long run.
- Finally, pilot project needs to be followed up by more effective long term on the ground projects.

Legislative Issues
The MOICS as well as MOPE should be strengthened in terms of policy/planning, and pollution control management capabilities. Equally important is the development and widening of the current human resources base by establishing a separate institute to address these issues.

8.3.4.2. Policies, Programmeand Action under IDPP
The approach of the IDPP to the environment should address the policy level, the institutional level and the legal level.

Policy level
- Create trained manpower to meet the growing demand for environmental monitoring and compliance in the manufacturing sector.
- Reduce the level of industrial pollution and vehicular pollution by initiating more R & D work to identify pollution and improve the data availability on all forms of pollution, introducing collective waste water treatment facilities, promoting fuel efficiency with the initiation of short term strategy (of using a mix of traditional, commercial and hydroelectric fuel)/long term strategy (of using all hydro electric fuel by the manufacturing sector) and appropriate/best available technology.
- Develop realistic pollution standards for air, water, soil and sound and institutional mechanism for enforcing them
- Transform present informal system of urban land development into formal one
- Promote the use of environmentally friendly industrial development by minimizing the environmental impact of the manufacturing sector through regularizing of the EIA process, enforcement of the EPA/EPR, defining the role of MOPE, defining one window policy in terms of the government environmental requirements.
- Maximize the use of scarce environmental services by using tradable pollution permits in combination with a definite ceiling on permissible pollution.
- Minimize adverse environmental impacts of forest related manufacturing sectors by developing a concept of sustainable harvesting of forest.
- Improve coverage and delivery of urban water supply.
- Encourage scientists, technicians and researchers to promote new technology and measures for the protection of the environment.
- Review current level of government resource allocation to ensure that adequate expenditure is directed to the protection of the environment.

Legal level

- Tighten loopholes in existing environmental legislations, keeping in mind that environmental rules and regulation are there for the industries to increase performance and product quality by minimizing the impact on the environment and not to kill them.
- Expand economic incentives to encourage more environmentally benign activities by initiating the concept of polluter pays principle through the implementation of tradable pollution permits
- Expand the existing legal measure to prevent and control air, sound and soil pollution.
- Expand the existing pollution standards to prevent all forms of pollution to cover all the industrial establishment
- Develop legal and regulatory framework exercise to make environment health programmeeffective and attractive for industries.
- Ensure all regulations are accompanied by appropriate mechanisms for enforcement
- Ensure sufficient consideration is given to integrating environmental considerations when developing new industries

Institution level

- Abolish the existing dual role of MOICS and develop MOICS as the promoter and MOPE as the monitor of environmental problems. Bring about better coordination between the line ministries
- Make it mandatory for all municipalities to develop a land-use, waste management plan, common effluent treatment and implement it.

9. Conclusions and Recommendations

9.1. Empowerment in Policy-Making and Implementation

Industrial development is a multidimensional process involving government, private sector and labour across a large number of issues in different sectors. From the point of view of government, it is of overriding importance to provide leadership and coordination for implementing the diverse policies that are required for long-term industrial development. Since different ministries are involved, each with their own goals and objectives and the Ministry of Industry, Commerce and Supplies is not in a position to coordinate the other ministries, it is recommended that a new Economic Development Commission (EDC) be formed that stands above sectoral interests and derives power directly from the prime minister to steer policy coordination and implementation.

The Economic Development Commission will be able to liase directly with the productive sector and labour representatives in an Economic Development Board. To this effect, the Investment Promotion Board should be reconstituted into a powerful Economic Development Board (EDB) focusing on domestic production and assigning commerce and trade a subsidiary role. It should encourage foreign investment, elimination of hassles and problems and creating investor friendly environment. Foreign and local investors must be made to feel truly welcomed and encouraged. The EDB should have a direct link with the Economic Development Commission to implement measures across ministerial boundaries. Membership of productive sector representatives should constitute 50 percent. The EDB must discuss basic policy issues in industrial development environment rather than approving investments (as the IDB).

The industrial sector, the agricultural sector, and the rest of the economy must be carefully monitored and studied to derive practical policy proposals to be submitted to ECD and EDB. Experience in successfully industrializing countries should be studied and taken into account. It is therefore recommended that the EDB and EDC be supported by a strong, no-nonsense applied policy and research institution (APRI), that can draw upon and direct research capability that at present is scattered across the public sector and research capability that exists outside the public sector in universities, FNCCI, special institutions and local consultants. Donors could be involved in funding for such an institution. It should however not fulfil the ever-present donor requirements for research and consultancy, although donor's suggestions and research contributions can be taken into account. Rather it should be able to direct donor-funded studies in line with its own priorities derived from the work of EDC and EDB.

These measures will place the initiative and decision-making for coordinated policy design and implementation strongly in the hands of Nepalese government.

Placing so much faith in the role of government makes improving government itself a *sine qua non* condition to start with the institutions suggested above. Therefore, although similar recommendations have been made on many different platforms, the relevant general recommendations for institutional improvements derived in the Chapter 4 will be placed below.

Government needs to be enabled, focused and dedicated. Thus,

- Bureaucracy must be strengthened. While policies and guideline must come from the political process, they should not be allowed to interfere bureaucratic processes except in case of breach of operations or violation of policies and guideline. Political interference must be eliminated. Human resource upgrading is required and there should be a system of retaining such manpower. The existing regulations do not easily allow for merit-based promotions. Adequate incentives should be given to motivate personnel along with clear definition of their roles and responsibilities. A merit-based, performance oriented reward/promotion system should be introduced at all levels. The right person must be placed at right jobs without nepotism.
- While government policies can be well designed, they are often changed, and implemented so inconsistently that they contribute to an unpredictable and risky business environment. In addition, manufacturing sector is suffering considerably from excessive government red tape and long delays in provision of government services. These problems are often compounded by lack of clarity in laws and regulations. The implementation of tax regime, imports and exports regime and labour laws are specific areas that affects the manufacturing sector most, and need to be addressed by the government. The proposed EDC, EDB and APRI would provide leadership in these areas.
- The prevalence of corruption has substantially deteriorated performance and outputs. A political consensus must be build among all parties to make anti-corruption measures effective. Strong political commitment from the top is essential and anti-corruption programmes should start at the top to be credible. All rules, laws and processes should be made clear, and simple and define elaborately as far as practicable. Discretionary powers in the use of incentives must be reduced. Transparency should be promoted at all steps.

9.2. General recommendations for industrial development

Major issues that need be addressed for promoting manufacturing sector growth are:
- Focusing macroeconomic management to improve competitiveness of productive sectors;
- Implications of MFA abolition, African Development Act, and China's accession to WTO for Nepal's readymade garment sector;
- Opportunities and challenges from Nepal's accession to WTO for its manufacturing sector;
- Implications from more restrictive Indo-Nepal Trade Treaty;
- Inadequate demand for products, poor access to finance, and inadequate infrastructure services;
- Low productivity of enterprise and worker in Nepal is another major constraint affecting manufacture sector that need to be properly addressed to enhance the sector's competitiveness.

In order to address above issues and constraints faced by the manufacturing sector, the following recommendations are put forward:

9.2.1. Competitiveness through Macroeconomic Management

The macroeconomic environment must be managed with the overriding goal of maintaining and improving competitiveness for the productive sector, in particular the manufacturing sector. The important macroeconomic parameters are the real exchange rate and the interest rate. If Nepal is going to regain its macroeconomic competitiveness while keeping a fixed exchange rate with the Indian rupee, monetary policy and fiscal policy must be coordinated to produce to ensure a depreciating real exchange rate with the Indian rupee. A lower rate of

inflation in Nepal than in India would be required. At the same time interest rates should be kept low. This will require low fiscal deficits. However to avoid negative consequences on development expenditure, Government savings need to rise. Other actions to avoid overvaluation of the currency would involve careful management (and spending) of aid inflows, and ensuring that workers remittances will be paid for in free foreign exchange rather than in Indian rupees.

9.2.2. Enhancement of Competitiveness and Productivity

For attaining the potential gains from globalisation, whether in terms of opportunities provide by accession to WTO or MFA abolition, Nepalese entrepreneurs must enhance their competitiveness in terms of reducing the cost of production, improved quality control, reliability of supply and quality, investment in better equipment etc. For improving the productivity of firms, the efficiency of technology transfer mechanism should also be upgraded. This would include programmes to increase FDI, raise the level of manager and worker training, improve firm's access to technical consultancy services, and assist managers to visit suppliers and buyers.

9.2.3. Improved Linkage with India by Creating Environment for Genuine Industrialization

Nepal should try to strengthen its existing economic relation with India further for promoting its industrial sector. For doing this, Nepal should create environment that would promote genuine and sustainable industrialization unlike the one at present, which have encouraged transitory type of industries that are based on the tariff difference between two countries on imports from third countries. Appropriate measures would include:

- provision of rules of origin in terms value added requirements;
- developing transparent and efficient system of providing certificate of origin (COO) to avoid their misuse;
- addressing issue of "surge" in an amicable manner
- setting up institutional mechanism for ensuring smooth implementation of the provisions of treaty by speedily addressing bilateral trade disputes; and
- formulating safeguard measures to protect its own industry.

9.2.4. Improved Business Environment

Efforts should be made to address the specific concerns raised by firms about government implementation of policy, bureaucratic burden and uncertainty. The possible measures include:

- improving the One-Window Service for investors;
- improved the tax administration;
- expediting duty drawback and VAT refunds;
- reducing transaction cost of doing business by simplifying customs and documentation procedures, abolishing the system of fixing floor prices for exports, and by eliminating export taxes and service charges.

9.2.5. Improved Physical Infrastructure

Another measure of reducing the cost of doing business in Nepal is to improve physical infrastructures be it in, power, road, water, telecommunication, and other facilities like warehouse and go-down. Privatisation of the utilities could be one way of for making them more efficient and more rationally priced.

9.2.6. Overcoming the Disadvantage of Being Landlocked

Nepal should find a way out to overcome the disadvantage of being landlocked. One way to do this would be the creation of a well-developed network of transport, port and administrative infrastructure in Nepal itself and in India and Bangladesh, a task that needs to be approached within the framework of South Asian Growth Quadrangle (SAGQ), a sub-regional cooperation among four countries in the region. South Asian Sub-regional Economic Cooperation (SASEC), Asian Development Bank's initiative in this regard should be fully explored. Such arrangement will reduce Nepal's transactions cost of doing trade in particular the high cost of transit to the ports from which it can access markets beyond those of its immediate neighbours.

9.2.7. Improved Access to Finance

In order to address the shortage of credit, particularly long-term credit, it is important to deepen financial sector reforms. Steps must also be taken to improve accounting standards so that lenders will be able to assess risks. The court and legal system must be strengthened so that contracts can be adequately enforced at a reasonable cost. Addressing these structural elements of the financial system will also enhance the environment for firms to extend trade credit.

9.2.8. Improved Legal Infrastructure

For promoting industry, legal infrastructure should be made investment friendly. The Labour Act is considered to be one of the major factors hindering industrial development in Nepal. Accordingly, the labour law should uphold labour standards, such as prohibition of exploitative use of child labour, prohibition of forced labour, elimination of discrimination in employment, freedom of association and provision of the right to organize and bargain collectively. However, it should be careful not to raise the costs and increase the inability to retrench workers, both of which not only increase the cost of doing business in Nepal but also may lead to the break down of possible linkage of employing abundant labour resources in manufacturing sector and poverty reduction. The manufacturing firms may move away from using more labour-intensive technology if stringent Labour Act of not allowing easy exit is not addressed in an amicable manner. Other legislations that need to be improved are Company Law and Contract Act. Company Law need to be addressed to make liquidation easy, and non-requirement of approval for loan transaction. Likewise, Contract Act needs to be amended to address issues relating to compensation against the breach of contract. There are also new legislations that need to be enacted for making the industrial investment climate friendlier. These include legislations on Bankruptcy, Anti-dumping, Intellectual Property Rights and Antitrust Laws.

9.3. Manufacturing Sub-Sector Recommendations

For detailed recommendations on the sub-sectors, the reader is advised to consult Chapter 3. Section 9.3.1 below presents only the major recommendations in a summary form.

9.3.1. Major Conclusions

Considerable capacity has been built up in manufacturing sub-sectors dominated by the manufacture of products, which are not in line with the country's current or near future comparative advantage.

Although HMG has taken measures, in particular in the late 1980s and early 1990s, to liberalize trade, phase out certain sub-sector specific incentives and privatise or liquidate state-owned enterprises, the overall industrial structure is still not sufficiently aligned with the country's comparative advantage. Furthermore, this structure is being preserved by high import duties (at the level of 40 percent for many products) and the continued presence of large state-owned enterprises.

The sub-sector analysis has revealed that sources of lack of comparative advantage consist of one or more of the following factors:

- Nepal being a landlocked country;
- a particular product requiring large scale production beyond the reach of Nepal:
- the production of a particular product requiring huge investments;
- the production of a particular product not requiring much labour in which Nepal has a comparative advantage;
- Nepal not having a critical mass of sufficiently educated staff or skilled workers for the manufacture of the particular product;
- inadequate infrastructure; and
- inadequate availability or access to raw materials at competitive prices.

The following sub-sectors or product categories are dominated by the manufacture of products in which Nepal doesn't have a comparative advantage at present, nor is likely to have in a foreseeable future (which doesn't exclude the possibility that Nepal may have a comparative advantage in certain niche products of the particular sub-sector): sugar, textiles (excluding Pashmina and carpets), cement, chemicals, plastic products, mechanical engineering and the electrical/electronics sub-sector. Aggravating the situation is also the fact that production of some goods in Nepal is based entirely on the tariff differential between Nepal and India.

The above mentioned sub-sectors or product categories in 1986/87 accounted for about 40 percent of total manufacturing sector value added and still accounted for about 35 percent in 1996/97. There are, however, indications that this share may have significantly decreased since then (maybe to about 20-25 percent) due to dismal performance in these sub-sectors or product categories, even with present high trade protection (rampant smuggling, however, has gradually eroded the efficiency of this protection). These are also the sub-sectors and product categories which are characterized by deteriorating technology, low capacity utilization, low productivity and low value added to output ratios. In terms of employment, these industries in 1996/97 employed some 30,000 persons, equivalent to about 15 percent of formal sector employment.

9.3.2. Approach to Industrial Restructuring

In a short-term perspective it could be tempting to try to rescue these ailing industries. Political considerations and the safeguarding of jobs are of course major considerations in this context. However, the negative consequences of such an attempt in the short, medium and long term are overwhelmingly larger than the short-term benefits. An inappropriate industrial structure would be maintained; the rescue operations would be a huge drain on the state budget (and a complete package would not be affordable anyway to HMG); consumers at large would be paying relatively higher prices for the concerned products; industries which could possibly be established utilizing the raw materials from the ailing industries would not be forthcoming; infrastructure projects would suffer from relatively higher prices; and, the ailing industries would get under increasing pressure as India is liberalizing its trade.

A more appropriate response by HMG would be, not to bail out these industries, but allow them to gradually be phased out (including the privatisation or liquidation of state-owned enterprises), to assist the industries in their efforts to restructure, and facilitate the reallocation of employees to more promising activities. Support for restructuring could consist of an appropriate amendment of the Labour Law, the provision of a credit guarantee scheme for mergers and industrial sub-sector restructuring, a subsidy to enterprises permanently employing retrenched employees from state-owned enterprises (funds that would come from retrenchment allowances that would otherwise have had to be paid) and an incentive for permanently employing retrenched employees from other enterprises.

9.3.3. Approach to Fostering Future Promising Industries

In addition to encourage and facilitate industrial restructuring and softening the negative impacts of such restructuring, HMG should also work in parallel to foster the development of healthy or potentially healthy industries. Most efficient to this end would be the economy-wide and manufacturing sector-wide measures (policies and other measures) outlined in Chapter 2 and summarized above.

In addition, as many enterprises are suffering unduly from rampant smuggling, HMG may also consider a draconian approach to this problem by hiring an honest international firm, which would be operating the customs under a management contract (when corruption was at its worst in Indonesia in the 1970s and early 1980s, a Swiss firm was hired for this purpose).

There may, however, be justification for some stronger HMG interventions in selected important and promising sub-sectors, viz. food, carpets and garments.

9.3.3.1. The Food Sub-Sector

In the food sub-sector, the implementation of the Agricultural Perspective Plan is a prerequisite for long-term development. The Agricultural Perspective Plan is, however, a costly scheme. Fortunately, HMG has at its hands also much less costly means to foster the food sub-sector. This sub-sector is the most over-regulated sub-sector of all with numerous distorting HMG policies in place. A systematic deregulation and abolishment of distorting HMG policies would be a most efficient means to foster private investment in this sub-sector. The intervention in this sub-sector would in fact be more ”non-intervention”.

9.3.3.2. The Carpet Sub-Sector

The carpet sub-sector is most likely the manufacturing sub-sector in which Nepal enjoys its strongest comparative advantage. The industry and its associations have, however, not been

able to adequately draw upon this comparative advantage and have only marginally exploited the global market for carpets. A strong support, with donor assistance, is therefore recommended to strengthen the sub-sector associations in assisting it members, particularly in product designs and export marketing.

9.3.3.3. The Garment Sub-Sector

The garment sub-sector, despite current problems, is also likely to represent a potential long-term growth industry. The industry would, however, need strong and urgent support from HMG in, *inter alia*, the fields of negotiation of international trade agreements, training incentives, improvements in the duty draw back system and an export credit guarantee scheme.

9.3.4. Highlights of Other Sub-Sectors

In the tobacco sub-sector, HMG may consider to divest its last state-owned enterprise enabling it to pursue, without being biased by commercial interests in the industry, whatever socio-economic policies it finds appropriate.

In the leather, leather products and footwear sub-sector, the implementation of the Agricultural Perspective Plan in respect of livestock development is a prerequisite for a healthy future development of the sub-sector.

In the wood and wood products sub-sector, enforcement of laws to halt further deforestation, private sector investment in organized forestry management integrated with wood processing, and development of village management systems of natural forests are prerequisites for increased production of wood and wood products. Until this is achieved, Nepal would reap the most advantageous benefits from its scarce timber resources by utilizing them in labour intensive activities such as carpentry, joinery, wooden furniture manufacture and handicrafts.

In the paper and paper products sub-sector, HMG could assist by encouraging mergers towards larger and more efficient production units able to reap benefits from economies of scale.

In the publishing and printing sub-sector, HMG could remove a negative trade protection by lowering the import duty rates for higher quality paper not being produced in Nepal, enabling the industry to compete in the field of higher quality printing works now being printed abroad.

In the electrical and electronic products sub-sector, HMG may assist in attracting foreign investment for local assembly of semi-conductors by significantly improving the business environment for foreign investors.

In addition, HMG also has the means to facilitate the development of manufacture of jewellery and other handicrafts with promising potential regarding both employment and exports.

9.4. Recommendations for Institutional Development

Institutional metamorphosis is a pre-requisite for sustained growth of industries. The government should take initiative to bring this change. Meritocracy is the only option. This will promote a culture of professionalism and institutionalisation among the private sector as well. Clear consultative processes with sufficient authority and implementation capacity should be instituted. In addition information dissemination and transparency will ensure whether these have been adopted or not. The public institutions must reduce their licensing and regulating roles and transform to facilitating roles. The institutions should work to welcome both foreign and domestic investors rather than harass them. In view of the balance of advantages and disadvantages with respect to competing countries, Nepal will have to out compete them in institutional support for the productive sector

9.4.1. Recommendations to the Ministry of Industry, Commerce and Supplies

- MOICS must be able to implement incentive and support schemes independently and incentives should be automatically available by clear and transparent rules.
- All agencies involved particularly MOICS, DOI and DCSI should be strengthened by incorporating necessary expertise and availing financial resources to review, implement and monitor industrial policies and industrial development.
- Institutions like DCSI and CSIDB should concentrate more on promotional activities. The present concentration on skill upgrading and training could be rationalized and made functional to skill development for industrial labour. A new labour training system should be developed in collaboration with the Ministry of Labour and the private sector through in the job training and involvement of private sector training institutions. See also Section 9.9.1.
- Clear definition of roles particularly in respect to designing environmental standards and enforcing them should be made between MOICS and MOPE with the role of control with MOPE and the role of facilitation with MOICS.
- One-window committee should be strengthened by incorporating infrastructure agencies and make their representation binding and effective.
- In industry and trade policy formulation and implementation, following approaches should be adopted:
  - EDC and EDB (and in their absence, NPC, IPB, and MOICS) must coordinate and conduct joint exercises to review and incorporate changes in industry and trade policy.
  - Through the proposed EDB, or any case, proper discussions with private sector must be ensured before making any such changes. There must be a mandatory mechanism of incorporating private sector inputs in such reviews and policy changes.
  - Through the proposed APRI, or in any case, periodic assessments and evaluations of policy impacts must be ensured making it a routine exercise.
  - Foreign investment needs to be facilitated in following ways:
    - One-window system must be strengthened as above.
    - EDB (or IPB) should meet frequently or substantial activities delegated to concerned agencies.
    - Industrial zoning system should be developed and the government should be able to assist in availing land to foreign investors.
    - Infrastructure and support services should be improved (see below in section 9.5).

- Small and cottage industry development require following institutional support:
  - DSCI and CSIDB should give primary focus to development and promotion of the CSI sector rather than providing skill development programmes.
  - To this end, DSCI's and CSIDB's capacity to monitor, supervise and regulate should be improved.
  - Mechanisms for de-registration of non-performing units should be established.

9.4.2. Recommendations to the Ministry of Finance

- The issue of misuse of authority should be addressed to build up efficient and effective institutions, in particular to the customs system under the Ministry of Finance. Involving an international agency could be considered (see Section 9.3.3).
- Tax Simplification:
  - Clear and detailed guidelines must be provided to ensure removal of discretion.
  - Tax regulations should be made clear and uncomplicated. Procedures and clarity should be further improved.

9.4.3. Recommendations to the National Planning Commission

- With the adoption of an EDC and an EDB, the role of NPC should be redefined.
- In the meantime, the following recommendations are suggested:
  - There should be a clear distinction of role between NPC and MOF and other ministries.
  - NPC should concentrate in providing advisory and expertise services.
  - It must enhance its capability to monitor and evaluate projects in physical terms and its ability to audit physical achievements and initiate corrective actions for deviations.

9.4.4. Recommendations on Private Sector Institutions

- The private sector organizations should work towards the enhancement of competitive advantage of the industrial sector. For this they should identify areas of competitive advantages for the Nepalese industrial sector in the domestic market as well as the international market; ways of improving inter-industry linkages; introducing and strengthening professionalism, human resource development and strategic capacity building in the private sector.
- FNCCI must find a way to separate commercial from manufacturing interests.
- FNCSI must be represented in necessary policy making and consultative bodies legally duly recognizing its importance.
- FNCCI and FNCSI should jointly develop an information system on available and appropriate production technologies with their investment, cost, input and output ramifications.
- A proper role and recognition must be given to representing important bodies like CCIA, GAN and HAN in consultative mechanisms.

9.4.5. Recommendations on Consultative Mechanisms

- IPB must be reconstituted into a powerful Economic Development Board (EDB) focusing on domestic production and assigning commerce and trade a subsidiary role. It should encourage foreign investment, elimination of hassles and problems and creating investor friendly environment. Foreign investors must be made to feel truly welcomed and encouraged. The EDB should have a direct link with a high-level government committee

that can implement measures across ministerial boundaries. Experience in successfully industrializing countries should be studied and taken into account.
- In the absence of an EDB, private sector representation in the IPB and TB should be increased possibly allocating half the share.
- The boards should be able to make some binding implementation mechanisms.

9.4.6. Recommendations on Public Sector Support Institutions

- For most of the business and industry support services the public sector institutions should make way either through larger participation of or privatisation to the private sector. This could be achieved by phasing out subsidies and improving their commercial operations.
- Involvement of Government and donors in the field of business development services should concentrate increasingly on developing and articulating the market for business development services by providing support to private service providers and facilitating and mobilizing demand for private services.
- Where the activities of some institutions are found redundant such as NPEDC, TPC and NTPB, the government should not continue such operations in the present form. Public-private partnership could be developed in these areas. Where this is infeasible, the institutions should be encouraged to earn their own income and/or downsize.

9.4.7. Recommendations on Education, Science and Technology and Information Technology

This section will address the collective challenges faced in the effort to utilize knowledge base for industrial development, and make recommendation on the application of knowledge base for industrial development.

9.4.7.1. Challenges

The challenges and problems faced in developing the knowledge base for the benefit of the manufacturing sector in terms of education, science and technology and IT has been discussed in each of the individual section. Based on the problems outlined for each of the sectors the collective challenge here will to make the government realize the benefits of knowledge base and its management so that the realization is:

- Translated into development of a education system that focuses more on quality education producing academicians and technicians who will be the backbone of the Nepalese knowledge base and decrease our dependency on foreign experts except for highly specialized areas; an education system that will meet all human resource requirement of manufacturing industry sector and actually initiates programmes tailored to address information and human resource needs of this sector.
- Translated into development of the S&T sector that will lead to increased spending on R&D, producing S&T technical manpower required by industries and stimulate growth of professional societies that produce scientific journals and not just play politics but solicit political commitment as well.
- Translated into utilizing IT as a tool for generation, storage and dissemination of knowledge base and making these knowledge and information available at a stroke of a computer button to the manufacturing industrial sector.

In the days to come, the challenge will be successfully overcome if these concerns will be addressed in the Government policies and programmes.

9.4.7.2. Recommendations

In order to address the problems and challenges faced the following is recommended:

- In terms of the education sector, efforts should be made to improve the quality of education at all levels with the idea that these are future manpower responsible for generating, assimilating and disseminating knowledge and information for the manufacturing industries. Scattered, small universities lack the critical mass to provide high quality training unless strict specialization is feasible. This should be translated into legal and policy measures that sets strict standards in terms of physical and academic facilities, teacher/student ratio and effective monitoring system and make sure the government enforces it.
- The poor development of and low student enrolment in the technical training system in Nepal is a serious handicap for manufacturing development. The government should take steps to redesign the system of technical training and skill development in collaboration with representatives of the productive sectors and undertake promotional efforts to stimulate new students to undertake technical topics required by the productive sectors.
- In terms of the S&T sector, efforts should be made where due political commitments are sought from communities outlined above, expenditures in S&T increased, traditional and new technologies be recognized and utilized for the benefit of our industrial sector, human resource development be addressed fully to meet the needs of the manufacturing industries and tailored programmes in R&D be developed in conjunction with need assessment of the manufacturing sector.
- In terms of the IT sector, a full policy and regulatory measures needs to be in place with emphasis on development of on-line services in the area of agriculture information system, distant education, telemedicine and e-commerce keeping in mind the need assessment of the manufacturing sector. Also, proper connectivity including rural connectivity, local language content development in the NET so that majority of the knowledge and information (except few specialized areas) are available for industrialists and entrepreneurs in Nepali language, and extensive advocacy and awareness campaign area initiated to realize the benefit of IT as a tool for knowledge generation, assimilation and dissemination for the benefits of the Industries.
- If Nepal is to take advantage of the knowledge and information, it must also offer educational opportunities to all citizens, including students, farmers, fisherman, men and women in uniform and prison inmates, to enhance their knowledge and information capabilities. Nepal needs to build the national information superhighway networks and provide high-speed Internet access to most elementary, middle and high schools for free. It needs to combine conventional industries such as metal, textiles and even agricultural industry, with information capabilities.

9.5. Infrastructure

9.5.1. Recommendations for energy development

The energy development policy of the industrial perspective plan should be to produce electricity at a low cost and minimum environmental impact to meet the demand of the industrial manufacturing sector with the objective of replacing traditional fuel consumption practice by utilizing the existing water resources, to expand reliable and quality electricity services nation wide at an appropriate price, to tie up electrification with economic activity, to expand rural electrification providing support to the rural areas (both in terms of domestic consumption as well as promotion of industrial growth), consumptive use of electricity and develop electricity into an export commodity to meet the energy demand of India.

The feasibility of replacing fuel wood and fossil fuel with hydroelectricity significantly is bleak at least for the next 10 years under the present conditions of development. Therefore, until the hydropower sector is able to substantially replace the traditional fuel, a general strategy of mixing large hydropower with mini/micro hydro, fossil fuel, solar and wind energy for the rural as well as urban areas should be adopted. Government needs to undertake market research for available technology and take stock of development approaches appropriate to users in Nepalese conditions to harvest this immense power. The mini/micro, solar and wind energy could help boost our cottage industries as well as agro-based industries.

Traditional fuel:
The strategy should be to promote the successful community forestry programmein place in many parts of Nepal. The consumptive use of forest should be promoted and not deforestation for energy, housing and resettlement as is the current trend. Implementation of a strong land-use policy taking into account that not all people in the country can own land and realization that fuel-wood is not the only benefit out of the forestry sector can help in further realizing the importance and help reduce the impact on the forestry sector.

Hydropower development:
At the present rate of development of the hydropower sector, it can be assumed as mentioned above, electricity will not be a catalyst for industrial or other sector growth at least for the next 10 years. Even the implementation of the APP will not catalyse our industrial sector in the rural areas. The large and medium manufacturing industries will require a lot of energy that could be supplied by the development of the hydropower sector. The following issues need to be addressed to foster a conducive environment for the development of the hydroelectricity both quantitatively and qualitatively so that by 2020 this will be the dominant energy in use and promoting large manufacturing industries:

- Improving power system planning: This improvement is needed to achieve balance between demand and supply as well as make system generation cost effective by reducing or making use of spill energy. The following is suggested to address the issue:
  - Long term option-Consideration of only hydropower plants in the generation expansion in the future to meet the demand of and catalyse the manufacturing sector.
  - Short term option-generation mix with hydropower plant and diesel or gas fired thermal plant or mix hydropower with imported thermal power from India.
  - The short-term option can be a cost effective one to meet the current demand of the manufacturing as well as other growth sectors but it requires dependency on Indian imports and thermal generation is not cost effective. As part of the energy sector planning captive utilization of energy for industrial development should be promoted.

- Encouraging private investment in hydropower: Currently, the Private sector in Nepal has a very high liquidity problem. Creating a secure environment for investments could attract the national as well as international private investors. Certain changes in institutional (like creating one window policy to assist the private sectors, developing a strong inventory of projects, transparent mechanism for techno-economic clearance) and legal (open access to grid, access to distribution) aspect need to be initiated and placed for the attraction of private investors. Also, a standard implementation (water rights issue in the river stretch, sovereign guarantee against nationalization, guarantee against the change of laws, and guarantee of all the facilities mandated under the policy) and power purchase

agreement (transparent price fixing mechanism, risk sharing mechanism, handling of resettlement/rehabilitation) needs to be developed.

A public private partnership also needs to be developed. Inadequacy of legal and regulatory provisions has limited the involvement of the private sector in developing hydropower. The involvement so far has been limited to acquiring a license with the intention to sell it to NEA. This is a very unsustainable and unhealthy practice as NEA is not in a position to sign PPA with any private parties as it already has more energy than it can evacuate. There for provisions should be made where the monopoly of NEA needs to removed where private parties can be involved in generation, transmission, distribution and export of power to neighbouring countries.

- Rural Electrification-increasing access to electrification in rural areas: As envisioned by APP and emphasized here as well, rural electrification not only can provide electricity access but also help promote industrial development to the rural sector. Given the scenario the following options can be considered:
  - Micro hydro and Mini hydro based local grid: A very short-term option that is feasible only in identified areas where government will never promote grid based rural electrification. : Feasible only in some selected areas and could catalyse the small and cottage industries. For example drying of cardamoms to produce high priced crop using electricity from these sources in contrast to the present practice of smoke drying it thus converting it to a high value crop.
  - Solar energy: A very expensive option but an option, if proper technology could be developed to harness it could solve the entire energy problem of the nation.
  - Grid based rural electrification: This could be targeted to areas with potentially high resources for industrial development. The extension of the Grid for electrification in areas has proved to be cost effective.

- Reducing cost of development: A two-pronged strategy should be developed, first to reduce cost of developing hydropower projects and second to deliver cheap or low cost electricity to consumers.
  In the long term, to develop cheap electricity hydropower plants with high head, high sustained base flow throughout the year, less seasonal hydrological fluctuation, less sediment load and dependable geology needs to be promoted even if it means building roads in that area as part of the development activities. All the plants in the Arun Valley, and the higher reaches of Trisuli and Dudh Kosi rivers fall in this category for development. These projects, although their delivery cost might be higher, in balance will be cost effective.
  In the short term, projects that produce appropriate generation mix like series of high head run-off plants, a medium size storage plant and limited thermal generation may produce an optimum generation mix allowing cheap energy delivery.
  However, the strategies need to be supported by:
  - Develop small/medium sized projects using local manpower, skills and resources as much as possible, to minimize the cost of financing of the project and foreign exchange variation;
  - Reduce the seasonal and daily imbalance between demand and supply of electricity through appropriate pricing;
  - Effective implementation of environmental rules/regulations;
  - Initiation of the public-private partnership to develop low cost plants.

The long-term option is a self-sufficient option and is based on indigenous renewable source. Also, if the present system planning is considered using only hydropower than simple improvements like developing storage as well as runoff the river plants, runoff the river with poundage basin, emphasize in cascade development of plants and demand side management to reduce spillage of energy could help Nepal reach self-sufficiency in power generation.

- Captive power development and power trading with India: Currently, the problem with hydropower development is directly related with the lack of potential industry that will utilize the huge hydropower that can be produced. The government needs to identify project and programme that will utilize (or promote industries for that matter) the generated energy and private sector developers need to feel confident as to the market of the power generated. The two potential areas where power developers and industrialists could focus on could be the promotion of captive power utilization and power trading prospect to India to meet its energy demand.
  One example of captive power generation could be development of a hydropower plant and promotion for the establishment of aluminium smelting plants or fertilizer plant or tourism related cable car industry. This kind of approach could be a win-win situation for both the power developers as well as industrialists.

9.5.2. Recommendations for Transport, Telecommunications, Water and Industrial Estates

Industries are seriously constrained by bottlenecks in the area of transport, water, telecommunications and industrial land. Government has given priority to involve private sector in the area of infrastructure development. However, an institutional and legal framework will be needed to combine public and private financial resources so as to reduce risks and maximize the available financing for infrastructure development.

The existing institutional structure will need to be strengthened to facilitate the implementation of private infrastructure projects by improving the coordination and cooperation within government and by making available technical, legal and financial skills needed to be improved. Infrastructural development policy should be formulated in accordance with national, regional, and international commitments.

Dispersion
Industries should be free to locate at the most advantageous place. Some types of industries might prefer to locate in rural areas: close to their market, close to their input supply, or close to their labour force. Many agro-based industries would fall in this category but basic infrastructure such as roads, electricity and telecom services are still lacking. Only when these are in place rural industrialization will be able to contribute to poverty alleviation and regional balance.

Industrial Estates-zoning/belting
Modern and urban-based industries need a certain degree of concentration to benefit from positive externalities. For efficient commercial and other business services to industry to develop a certain level of demand is required which can only be realized with sufficient concentration of industries. Activities such as labour training, exchange of information on market developments and technology changes, lobby services to government, will only flower with concentrated proximity to urban areas.

Thus the existing industrial estates in viable areas must be improved to deliver up to date services. Industrial estate legislation (by-laws) should be updated to allow for land ownership within existing estates and to allow for private estate developers.

Industrial zoning appears a more flexible instrument to cater for investors needs. The Ministry of Industry should coordinate with local governance bodies and relevant line Ministries to select industrial zones based on land use pattern, assessment of basic infrastructure and competitive market including other facilities such as postal, banking etc. Cost can be minimized by selecting areas where all relevant physical infrastructure is already available or when integrated into urban development plans.

Thus, "Infrastructure Planning" at the national and local level should be integrated with urban or rural planning to facilitate the manufacture sector in order to assure essential infrastructure requirements. Multi-sectoral collaboration, co-ordination with line agencies stakeholders, and infrastructure facility providers is essential from the very early stage of planning.

The Inland Container Depots (ICDs) or "Dry Port" currently being built in Birgunj in combination with the railway link between Raxaul and Birgunj will ease the movement of goods between Nepal's border and Calcutta seaport. Plans have been proposed to build container facilities (dry ports) at Bhairahawa and Biratnagar as well. This would bring about major improvements in industrial inputs supply and export transport facilities. Industrial policy would have to make use of such facilities by combining them with export processing zones. However, the movement of goods under present ICD framework has not materialized yet in the absence of the necessary agreement with India. (See also Section 9.8).

Transport

District headquarters, potential manufacturing growth centres including agro-based rural farms should be linked up by national road or agriculture roads or feeder roads etc as planning of District Transport Master Plan (DTMP). Priority should be given to areas with agricultural and industrial potential.

The private sector direct investment in the transport sector (construction and operation of roads, toll fee roads, tunnelling, airports, railways) should be facilitated by reforming the transport related acts including the Public Road Improvement Fee Fund Act 1996, Municipality Act of 1992, Municipality Regulation of 1993 and others. Government should formulate an integrated National Transport Act, incorporating all forms of transport infrastructure into one act including possibilities for private sector involvement.

The East West Highway should be improved and maintained to provide the services in line with Asian standards for the crucial linkage to markets of South Asian Countries and their ports.

Recently four South Asian countries—Bhutan, Bangladesh, India and Nepal—have formed the South Asia Growth Quadrangle (SAGQ), a sub-regional cooperation initiative. Modelled after the Greater Mekong Sub-regional Development Programme (GMSDP—another regional initiative of the ADB), the prime aim of SAGQ is to harness external finance for funding infrastructure projects of mutual benefit to two of more of these countries. As in the case of GMSDP, the Japanese Government has expressed willingness to provide infrastructure development projects under the interest in participation.

Based on this experience, the SAGQ has the potential to be of great value for the two landlocked countries (Nepal and Bhutan), in harnessing Japanese development aid to solve some of their perennial transportation problems. Nepal should strive to place the proposed access route to the Chittagong port in Bangladesh via India on the policy agenda of SAGQ.

Telecommunication

The legal framework of the telecommunication sector (1997) should be reviewed for quality and sustainable expansion of the system for the different part of the country by encouraging the role of private investors. This is needed after government's decision to introduce the possibility for private investment in local and long distance fixed wire operations as well as cellular and value added services such as fax, internet or pager in (1995).

Establishment of National Information Centre under the Ministry of Science and Technology for the development of policy, technology formulation and, establishment of industries related to communication, software, telecommunication as recommended in the draft document of the Tenth Plan.

Water Supply

There is a need of reviewing the existing regulatory provisions regarding the water sector and water supply system including the Water Resources Act of 1992 and the Water Resources Regulations of 1993 to define ownership rights at community users level, municipal and VDC level and to facilitate manufacturers needs for private access to water. Private sector's role in water supply development should be incorporated in the legal framework.

9.6. Promotion of Small and Medium Enterprises

The Small and Medium Enterprises (SMEs) could play an important role in promoting growth and reducing poverty in Nepal. As SMEs are considered relatively more labour-intensive, they could help to reduce poverty by employing the growing labour force. SMEs normally use more local resources and knowledge generating more activities within the country. The benefits derived from these industries are likely to be distributed with relatively greater justice than the large industries. They are more flexible in terms of acquiring and adopting the new technology. The overhead cost of running their business is relatively low thus enhancing their competitiveness. SMEs are relatively evenly scattered throughout the different geographical regions and thus helping in the process of balanced development.

However, there are many impediments to the growth of SMEs. They include: absence of clear definition, absence of appropriate institutional backup, poor access to credit, poor access to technology, lack of information, diseconomies of scale, unfair competition from imported inferior products, and vanishing skills.

Promotion of SMEs need, among others, state support in terms of specifying clear definition; provision of separate incentive package; provision of appropriate institutional arrangement to support and promote human resource development and to provide quality/standardization services; decentralization of loan disbursement authority and standardization of financing procedure; provision of priority loan; control of unauthorized trade; promotion and facilitation of appropriate technology etc.

9.7. Manufacturing productivity

9.7.1. Comparative Perspective

To double its contribution to GDP to 20 per cent (a share similar to India, Sri Lanka and Mexico today, and but lower than present day Philippines and Indonesia), the manufacturing sector will need to grow at 8-10 per cent per annum, a lot faster than the 6 per cent achieved in the past fifteen years, and at a rate comparable to China and Southeast Asian countries in the 1980s and 1990s. Given its relatively small manufacturing base and low labour costs, this should be achievable provided the country can attract increased domestic and foreign investment, and provide law and order, stable macroeconomic and political environment, good governance, and a conducive regulatory and business environment.

Nepal's most successful exports, carpets and garments, had RCA of well above one in 1997. In fact, all major exports had an RCA above one, indicating comparative advantage, and most were labour-intensive. Since Nepal's share of its major export products in the world market is still relatively small (less than 10 per cent for animal hair carpets and shawls, and less than 1 per cent for most garments categories), there is plenty of room for expansion in traditional exports, export-led growth and employment generation, notwithstanding their relatively low technology, and their relatively low demand elasticity in the world market. This conclusion confirms the findings of Chapter 3 and the recommendations made in Section 9.3.3.

Labour-intensive manufacturing industries, where Nepal already enjoys considerable comparative advantage, should be prioritised for employment generation and poverty reduction. In time, these industries may generate backward linkages in the production of raw materials and components. In order to facilitate market-driven manufacturing diversification and deepening, and eventually attract more technology-intensive industries over time, the government should allocate resources to producing an educated and skilled labour force.

The effective rate of protection is very high in almost all manufacturing sub-sectors reinforcing the findings of Chapter 3. A major reason for this is that value-added as percentage of output is low. As a result, inefficiencies are high. It is recommended to gradually reduce the tariff rate of 40 percent initially towards a general target level of around 20 percent and later towards 15 percent. The tariff rate of 25 percent could eventually be reduced to 10 percent. This would induce manufacturing firms to increase their productivity and value added.

Both the analysis of levels of and changes in productivity confirm the important role of skilled labour for increasing productivity. These findings strongly confirm the recommendation made earlier (based on Chapter 4) to overhaul the system of labour training and to develop a policy to encourage firms to engage in firm level training, for example by issuing training vouchers or giving tax concessions to firms conducting such training. Suppliers of training should get all the support needed and the market for business development services should be given high priority attention.

9.8. International Trade and Foreign Investment

An obvious, but important, inference coming from the in Chapter 7s is that trade liberalisation and generous investment *per se* in the absence of basic pre-conditions cannot achieve anticipated developmental objectives in this arena. The provision of required

supportive services, political stability and policy certainty and a flexible administrate mechanisms administrative have an equally, and perhaps even more, important role to play.

The realization rate of FDI projects (the percentage of projects actually implemented out of total project proposals initially approved) is very low (46 percent) by international standards. This may be because of various administrative bottlenecks that the prospective investors have to confront in Nepal. It is important to examine this issue closely and take appropriate remedial action.

Unlike other developing countries in the region, Nepal has not set up free trade zones as a means of promoting export-oriented FDI. There is convincing evidence from a number of countries which have impressive expansion of manufactured exports that EPZ schemes have a useful role to play as focal points of providing much needed infrastructure facilities and fashioning export-oriented firms against bureaucratic inefficiencies and delays. Moreover, there is ample evidence that the present duty rebate scheme in Nepal is far from perfect and exporters normally experience considerable delays (between 3 to 6 months, and at time even beyond that) in receiving duty refund. Thus as also argued in Chapter 5 and Section 9.5.2, there is a strong case for considering setting up of an EPZ in the vicinity of the dry port in Birgunj.

As emphasized above, success in attracting FDI depends on differences between countries in government attitudes toward regulation of business, foreign trade and investment regimes, provision of social overhead capital, and taxation and other related aspects of the investment climate. Moreover, the access to world-class imported input within a short lead-time is crucial for the successful operation of export-oriented clothing manufactures. Thus, concomitant trade and investment liberalisation is particularly important given that international market linkages are crucial for export success in a highly competitive global market.

Since around the mid 1980s, successful exporting firms in the East Asian NIEs have begun to play an important role as direct investors in the latecomers' labour-intensive export industries, especially in East and Southeast Asia. A major advantage which investors from these new countries possess is that, unlike TNCs from developed countries they are familiar with and/or easily adaptable to the more difficult business conditions (*e.g.* poor infrastructure, bureaucratic red tape, unpredictable policy settings) in latecomers. With their considerable specialised knowledge of small scale and labour-intensive production procedures in the manufacture of standardised products, they have a powerful competitive advantage over both local firms and TNCs from industrial countries in these latecomer environments. Nepal should focus its promotional efforts on this group of potential investors.

Judging from the performance record of SAFTA/SAPTA, it is unrealistic to anticipate tangible gains in the area of market enlargement and regional trade liberalisation. However, SAARC has the potential to play a useful role as a regional policy forum. Another potential role is to act as a unified force in international policy forums, particularly in WTO negotiations and in participation in the WTO dispute settlement mechanism.

As discussed in more detail in Chapter 3, the US Caribbean/Sub-Saharan Facility that entered into force as of 1 January 2001 provides very large quotas and duty free exports to USA for 42 Caribbean and Sub-Saharan countries, significantly changing the competitive situation of Nepal vis-à-vis Sub-Saharan African countries and Caribbean countries. HMG is advised to

initiate negotiations with USA in order to obtain the same preferential access to the US market for Nepal as has been provided to the Caribbean and selected Sub-Saharan African countries.

9.9. Labour, Poverty and Environment

9.9.1. Labour

The findings in Chapter 3 on sub-sectoral constraints, Chapter 4 on labour related institutions, in Chapter 6 on explanations for differences in productivity between firms and over time, and in Chapter 8 on labour, combine to give the following recommendations:

- The government must assume the responsibility to improve the industrial relations environment in the country. A mechanism should be developed to find compromise solutions between the labour and industry in the interest of both groups. Thus, the labour administration must focus on industrial relations, dispute minimization, addressing problems and gaps should be enhanced.
- The Ministry of Labour is strongly advised to develop a policy for developing industrial labour force rather than carry out skill training activities. Existing mismatch between demand and supply must be removed. All skill training programmes should follow the basic principle of relevance, efficiency and effectiveness. The whole skill training system is due for a fundamental overhaul. A policy should be developed to encourage firms to engage in firm level training, for example by issuing training vouchers or giving tax concessions to firms conducting such training. Suppliers of training should get all the support needed and the market for business development services should be given high priority attention.
- Labour law should be amended to make hiring and firing easier by defining clear terms and conditions.
- The Ministry of Labour must establish a separate section to look into labour market issues and operations including the domestic labour market.
- NGOs and Government should give continued support to women development. Particular efforts should be directed at improving the outreach of existing programmes.
- The revolving fund approach in Sri Lanka has shown to be an effective strategy for promoting women entrepreneurship and its effectiveness should be explored in the Nepalese context.

9.9.2. Poverty

Industrial development can play a crucial role in poverty reduction. A two-pronged approach of rural industrialization and concentrated urban-based industrial development will maximize the short-term and the long-term impact of the industrial sector on alleviating poverty. Industrial development will affect poverty through increasing employment, productivity, and incomes, directly as well as indirectly through remittances. Higher incomes will lead to higher demand for all productive sectors. Higher demand for labour will tend to increase wage rates, leading to efforts to increase labour productivity further by employing more capital. A strong economy will also contribute to women empowerment through increased economic independence, eventually also reducing the wage gap.

9.9.3. Environment

Based on the current assessment and future development growth of the manufacturing sectors it is recommended that following issues be considered seriously to accommodate for the environment:

- The stage of development of the country should be taken into consideration while permitting the type of industry for establishment.
- The authority, responsibility and roles of different agencies in the field of environment should be clearly defined and incorporated in laws and policies without duplication. Amongst other things, this means that:
  - The dual role of MOICS, that of promoter and regulator should be abolished. The environmental monitoring activities should be entirely the business of MOPE. The dual role can end up compromising the quality of environmental programmes undertaken by the MOICS and this can be counterproductive in the long run. The relevant departments under the MOICS need to be streamlined to avoid duplication efforts and unnecessary wastage of resources and manpower.
  - The role of MOPE itself needs to be more clearly defined including the task of the environmental inspectors
- The appropriate manpower and expertise should be developed at the MOPE and MOICS to meet the growing demand for environmental monitoring and implementation of CP options, respectively. MOPE or an agency like Pollution Control Board must do the monitoring and enforcement and MOICS can continue CP as good business tool for the promotion of industries.
- The existing planning process should fully integrate environmental factors leading to the development of an complete and integrated pollution control management strategy, and move away from the traditional methodology and approach of project evaluation based purely on economic consideration. Complete implementation of the concept of waste minimization or Cleaner Production (CP) put forward by UNIDO and UNEP respectively. A two-pronged approach that includes giving time for existing industries to implement CP before putting up treatment facility and requiring new industries to install suitable technology to comply with the mandatory environmental standards from the start of operation through the process of IEE/EIA.
- Promote the use of environmentally friendly industrial development, particularly when developing new industries, by minimizing the environmental impact of the manufacturing sector through regularizing of the EIA process, enforcement of the EPA/EPR, defining the role of MOPE, defining one window policy in terms of the government environmental requirements.
- The following preventative and restorative pollution control measures should be taken into consideration:
  - The policy on industrial locations needs to take into account environmental considerations such as zoning, provision of buffer zones, use of industrial districts with centralized waste treatment facilities as part of the infrastructure, compatibility of industries within an industrial district and dispersal of industries to reduce pollution stress.
  - Standards should be adopted that are not only environmentally effective but are within the financial possibilities of the industries, while gradually upgrading to meet environmental quality objectives. More specific standards to cover various types of chemicals need to be developed to replace the current broad range standards.
  - Adoption of appropriate policy for toxic/hazardous waste management.
  - Expand the existing pollution standards to cover all industrial establishments.
  - Ensure all regulations are accompanied by appropriate mechanisms for enforcement.

    - Fuel efficiency measures to maximize the use of fuel and adopt a practice of using cleaner and renewal type of fuel.
    - Maximize the use of scarce environmental services by using tradable pollution permits in combination with a definite ceiling on permissible pollution.
- Reduce the level of industrial pollution and vehicular pollution by initiating more R & D work to identify pollution and improve the data availability on all forms of pollution, introducing collective waste water treatment facilities, promoting fuel efficiency with the initiation of short term strategy (of using a mix of traditional, commercial and hydroelectric fuel)/long term strategy (of using all hydro electric fuel by the manufacturing sector) and appropriate/best available technology.
- Minimize adverse environmental impacts of forest related manufacturing sectors by developing a concept of sustainable harvesting of forest.
- Improve coverage and delivery of urban water supply.
- Encourage scientists, technicians and researchers to promote new technology and measures for the protection of the environment.
- The current pilot project on clean production needs to be followed up by more effective long-term projects.
- Make it mandatory for all municipalities to develop a land-use, waste management plan, common effluent treatment and implement it.

10. Annex: Survey Report

10.1. Introduction

Historically, the scope of industrial statistics in Nepal has been limited to the manufacturing sector. Size of mining activities is very small, while quarrying is mainly undertaken by small establishments and households. Electricity and water supply up to the recent past was under the sole control of two public companies and statistics for these activities were obtained through their annual reports. Manufacturing activities are covered by censuses and annual surveys conducted by the Central Bureau of Statistics. The Census of Manufacturing Establishments 1986/87 (CME-86/87) was the first conducted in full compliance with the international standard of industrial statistics recommended by United Nations.

10.1.1. Current status of industrial statistics

In comparison to many other sectors, industrial statistics are available in a comprehensive form in terms of the variables covered as well as in time series. However, some inconsistencies have been observed in recent years. After the CME-96/97 CBS dropped the annual surveys creating a data-gap between two censuses. Volume indices produced by CBS have not appropriately reflected the industrial growth for two reasons.

First, the volume index uses the Laspeyres method of fixed weight. Since 1986/87, manufacturing industry in Nepal went through big ups-and-downs at least three times caused by different products namely garment, carpet and Pashmina shawl. These changes were never sufficiently reflected in production index. Secondly, the weights used for production index that date back to 1986/87. By now these are redundant and outdated. As a result, data supplied by CBS seem contradictory within one and the same publication (Economic Surveys-2000/01).

10.1.2. Industrial growth in official statistics

Table 10.1: Industrial Growth Rate by MVA and Volume Index

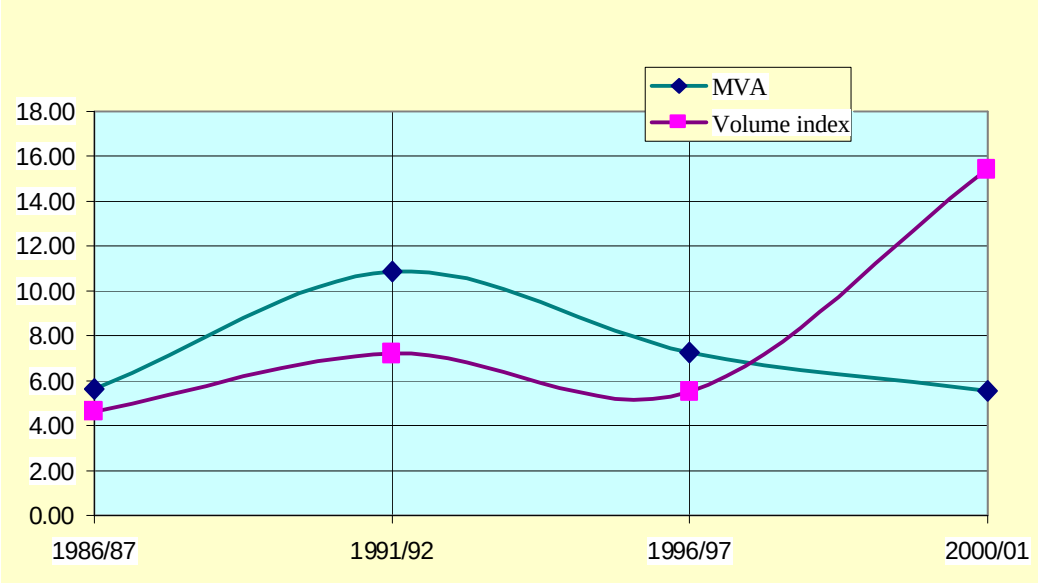
	1986/87	1991/92	1996/97	2000/01
MVA at constant prices (Rs. in million)	2959	4958	7040	9224
Chain index	100.00	167.56	141.99	131.02
Growth in compare to previous period (in %)		67.56	41.99	31.02
Average annual growth rate		10.87	7.26	5.55
Production index	100.00	141.70	185.36	329.26
Chain index	100.00	141.70	130.81	177.63
Growth in compare to previous period (in %)		41.70	30.81	77.63
Average annual growth rate		7.22	5.52	15.45

Source: Economic Survey 2000/01, Ministry of Finance. Data from Central Bureau of Statistics

The Economic Survey presents two sets of statistics that indicate the growth of manufacturing industry in Nepal. The first set of data is presented to measure contribution of manufacturing value added (MVA) to GDP and the second set is the production index based on the change of volume of production, which is free from the price changes.

Volume of production when measured in value terms is closer to output and its growth is not necessarily the same of value added. However, industrial growth curves constructed from CBS data are moving in opposite directions after 1996/97.

Figure 10.1: Annual Average Industrial Growth in Inter CME Period (in %)



Manufacturing value added grew by almost 11% per annum during the period of 1986/87-1991/92. After 1991/92, the growth rate declined to 7.3% and after 1996/97 to 5.6%. Lower rate of volume index for the same period might have been caused by the insufficient coverage of the production index, because the higher growth rate was achieved mainly thanks to export of carpet and garment, which were not reflected in production index.

However, average growth rate of 15% after 1996/97 in production index is more likely to be the result of data inconsistency rather than reflecting economic reality. Aggregation of re-based indices using the same weights of CBS produced different results ending at 36.65% growth in 2000/01 since 1996/96, which gives just 8.1% growth per annum after 1996/97. However this does not even take into account the decline of carpet and garment industry and more recently production of the Pashmina shawl.

Table 10.2: Production Index of Manufacturing Sectors for 2000/01 Compared to 1996/97

ISIC	Description	PI-Weight ('86-87)	Index
15	Food products and beverages	23.17	304.47
16	Tobacco products	20.11	75.10
17-18	Textiles and wearing apparel	18.14	67.54
19	Leather products and footwear	2.75	43.51
20	Wood and of products	2.02	123.18
21-22	Paper. Printing and publishing	0.85	304.61
23-24	Chemical and petro-chemical products	6.05	141.01
25	Rubber and plastics products	1.92	75.26
26	Non-metallic mineral products	16.85	93.42
27	Manufacture of basic metals	3.07	133.38
28	Fabricated metal products	3.17	24.08
29	Machinery and equipment n.e.c.	1.9	99.90
	Overall index	100	136.65

Note: Indices are converted to chain from fixed based series of CBS to compare two periods only

Most of the statistical observations target the larger establishments that can be surveyed with limited time and resources, because the frame for the survey is readily available. But small manufacturing establishments also make significant contribution to total manufacturing sector of Nepal.

10.1.2.1. Contribution of small establishments

Central Bureau of Statistics has designated a cut-off point following international practice at 10 persons engaged to divide the manufacturing industrial establishments. This division is clearly made for statistical purpose. Industrial policy and related legislation of the government use different criterion mainly based on the size of capital to define a business as a small, medium or large. The census covers all establishments with 10 and more persons engaged including a large number of those registered as "Small" with the Department of Cottage and Small industries. Distribution of small and larger establishments according to CBS distinction is presented below.

Table 10.3: Contribution of Small and Large Establishments to Manufacturing Industry

Variables	Small establishments (1999/2000)		Larger establishments (1996/97)	
	Absolute value	% of total	Absolute value	% of total
Number of units	43671	92.47	3557	7.53
Number of persons engaged	121270	38.14	196708	61.86
Census output*	25946	32.05	54999	67.95
Census value added	6675	23.38	21875	76.62

Note: Two data sets are not comparable due to the different reference period of statistical operation with the 3 years gap. The table is presented to grossly indicate distribution of small and large establishments;

* Census output is less than Gross output by margin of the receipt for non-industrial services rendered by manufacturing establishments. The concept was recommended for World Industrial statistics programme of 1982, which is still used in official statistics of Nepal. SNA-93 recommends gross output to measure the goods and services produced by an economic entity for market.

Small establishments (with less than 10 persons engaged) employ almost 40% of total number of persons engaged. However, due to the lower productivity their contribution to output is less than 1/3 and - value added less than ¼ of total. These ratios are used to estimate the contribution of small establishment when data are available only for larger establishments.

10.2. IDPP Survey of manufacturing establishments

As mentioned earlier, CBS dropped the annual surveys of manufacturing establishments after the last census conducted in 1997 (reference period: FY 1996/97). The next census will be conducted in 2002 for FY 2001/02 and results are expected in 2003. It has created a data gap of industrial statistics for relatively longer period. Report of the census of manufacturing establishments-1996/97 (CME-96/97) is the most recent and comprehensive set of industrial statistics available in the country at the national level.

Existing data sources cannot not provide relevant statistics on the recent position of industrial production of Nepal. Therefore, to assist in formulating the Industrial Development Perspective Plan a small survey was thought necessary to collect the fresh information from industrial establishments.

10.2.1. Objective

The main objective of the survey was to gather the information that could indicate the changes occurred in manufacturing sector since the last census. IDPP project had no sufficient time and resources for a large statistical operation, nor it intended to duplicate the work of CBS. The aim of the survey was not to yield any estimates for the national-level totals, but to produce some relative variables that could be used to update the results of CME-96/97.

In addition, the IDPP project required calculating the Effective Protection Rate (EPR) and Domestic Resource Component (DRC) as part of the economic analysis. Relevant information for this purpose was also collected from the survey.

10.2.2. Sample design

The directory produced from the last census of manufacturing establishments served as the frame for the survey. In a number of ISIC branches the list was updated with the recently established industries. However, in most of the cases no changes were permitted to facilitate the comparability of data over time. The survey was conducted only in 21 districts covering major industrial area of the country. The survey area covered Kathmandu Valley and Terai belt from Jhapa to Butwal stretching through Biratnagar, Janakpur, Birgunj, Hetauda, Chitwan and surrounding area. The difference between target and sampling population formed a sampling gap of 716 establishments located mostly in hilly and mountain region.

Excluding a large number of districts has not made the sample unrepresentative. Almost 80% of manufacturing establishments are located in survey area, which count about 90% of total number of persons engaged. In case of a number of ISIC branches, survey area ensures 100% representation, while even lowest coverage rate (non-metallic mineral products) is more than 75% in terms of employment. Figures for total and for survey area are compared in Table 10.4 below.

Table 10.4: Manufacturing Establishments in Survey Area and in Total

ISIC	Description	Number of establishments		Persons engaged		Coverage of survey area (in %)	
		Total	Survey Area	Total	Survey Area	In number	Persons engaged
15	Food products and beverages	661	500	24261	19359	75.64	79.79
16	Tobacco products	38	29	3213	3016	76.32	93.87
17	Manufacture of textiles	828	752	75303	72742	90.82	96.60
18	Wearing apparel	136	131	15126	15067	96.32	99.61
19	Leather products	77	72	2130	2068	93.51	97.09
20	Wood and of products	198	147	3731	2879	74.24	77.16
21	Paper and paper products	118	73	3546	2780	61.86	78.40
22	Publishing and printing	79	76	2621	2583	96.20	98.55
23	Refined petroleum products	3	3	158	158	100.00	100.00
24	Chemical products	92	82	5107	4215	89.13	82.53
25	Rubber and plastics products	146	143	3457	3311	97.95	95.78
26	Non-metallic mineral products	623	383	43988	33225	61.48	75.53
27	Manufacture of basic metals	22	20	1234	1113	90.91	90.19
28	Fabricated metal products	183	157	5290	4914	85.79	92.89
29	Machinery and equipment n.e.c.	19	19	298	298	100.00	100.00
31	Electrical machinery and appliances	29	29	1612	1612	100.00	100.00
32	Radio, TV and commun. Equip	5	5	275	275	100.00	100.00
34	Transport equipment	5	5	82	82	100.00	100.00
36	Furniture; manufacturing n.e.c.	295	215	5276	4169	72.88	79.02
Total		3557	2841	196708	173866	79.87	88.39

Further sampling of establishments was drawn from the selected area. In total, 170 establishments were selected representing 56 ISIC groups at 4-digit level. The sample establishments covered almost 50 industrial products. Selection of establishments was made using PPS-*work* method (employment as size measure) at 4-digit level of ISIC allowing wide representation of industrial branched to sample. Although selected establishments counted just 6% of the total, sample contributed more than 20% of the number of persons engaged.

10.2.3. Data collection

The survey questionnaire was very much identical to that used in the CME-96/97. As mentioned earlier the survey did not aim to produce independent estimates but only to update the census results to the extent possible. For this purpose it was absolutely necessary to make the questionnaire compatible to the census questionnaire. Additional variables in the survey questionnaire were allowed to facilitate the calculation of domestic resource components, which is supposed to be one of the main outcomes of the IDPP study. In addition to the census, the attempt was also made to include the desktop assembling and software production in the survey. However, this attempt did not bring desired results.

Data were collected through direct interview by a team of trained enumerators in the location of establishments. Data collection was carried out by enumerators divided into four groups. The project expert on survey acted also as a central field manager and coordinated the fieldwork. Distribution of sample by major industrial area was as follows.

Table 10.5: Number of Establishments in the Sample by Major Industrial Area

Major industrial area	Number of establishments in sample
Biratnagar area, Ilam and Jhapa	33
Lahan, Janakpur, Sarlahi+	7
Kathmandu Valley+	75
Birgunj, Hetauda, Chitwan+	39
Pokhara, Butwal, Nawalparasi	16
Total	170

Unfortunately, the survey period coincided with the unusual situation arisen from forceful collection of donations by hostile political group to the business communities. Respondents were not prepared to open their profit and loss account to outsiders that resulted in the higher rate of non-responses.

10.2.4. Estimation method

Estimation of total from sample data as such was not envisaged. Because, most of the information sought from the survey are estimates of average figures. Sample average itself is an unbiased estimator of the population. However, a number of major indicators were estimated for which estimation weight was calculated for each sample establishment based on the following formulae.

$$W_{ij} = \frac{1}{n_j} \times \frac{M_j}{m_{ij}}$$

Where,

W_{ij} is an estimation weight for *i*-th establishment of *j*-th 4-digit ISIC group
n number of sample establishments in *j*-th ISIC group
m_{ij} number of persons engaged in *i*-th establishment of *j*-th ISIC group
M_j number of persons engaged in all establishments of *j*-th ISIC group.

Using this weight total of Y characteristics can be estimated at desired level simply by multiplying sample value with corresponding weights of all establishments of an ISIC group.

$$\tilde{Y} = \sum W_i y_i$$

Estimation procedure also involved estimation for non-response and for the area not covered by the survey. The number of establishments in sample and number of returns from the survey is given below.

Table 10.6: Number of Samples and Returns by ISIC

ISIC		Total	In frame	Number of samples	Closed	Non-response	Number of returns
15	Food products and beverages	661	500	41	2	8	31
16	Tobacco products	38	29	3	0	1	2
17	Manufacture of textiles	828	752	15	4	4	7
18	Wearing apparel	136	131	5	0	1	4
19	Leather products	77	72	9	0	0	9
20	Wood and of products	198	147	7	3	0	6
21	Paper and paper products	118	73	9	0	3	8
22	Publishing and printing	79	76	8	0	3	3
24	Chemical products	92	82	13	1	2	7
25	Rubber and plastics products	146	143	7	0	2	4
26	Non-metallic mineral products	623	383	19	2	1	15
27	Manufacture of basic metals	22	20	5	0	1	3
28	Fabricated metal products	183	157	10	0	2	10
30	Office and computing machinery	0	0	2	0	2	0
31	Electrical machinery and appliances	29	29	8	0	2	3
32	Radio, TV and commun. Equip	5	5	3	0	1	4
36	Furniture; manufacturing n.e.c.	295	215	4	0	2	5
	Total	3557	2841	168	12	35	121
	Software production			2	0	2	0

Estimation for non-response cases was also based on the number of persons engaged. For instance the value of Y of characteristics raised by sampling weight was further corrected with a ratio that equals: $R = \frac{m}{m'}$ where ***m*** is the number of persons engaged in sample establishments and ***m'*** – only in responding establishments. Similar ratio was calculated to raise the data from the sample area to the whole country again based on the number of persons engaged.

10.2.5. Data processing and tabulation

IDPP study covered wide range of subjects, such as sector specific study, gender and labour issues, environment and infrastructure. So primary data at the firm level were available for such studies. A tabulation plan was prepared for major items required that gives general picture of the current status of industrial sectors. Important part of the results was a set of ratio variables that used to update CME-96/97 results.

10.3. Major findings of the survey

10.3.1. Industrial growth in compare to 1996/97

According to the production index constructed by CBS industrial production since CME-96/97 has grown by 36.6% or at the annual average growth rate of 8.1%. During the same period GDP of the country grew at the rate of 5% per annum. These figures indicate some increase of MVA share in GDP during this period. In order to assess the growth relatives of major indicators survey results were raised to national level following the procedure described earlier. The survey results indicated that the average growth rate of MVA produced

by larger establishments in the period of 1996/97-2000/01 was 6.16%, which is lower than in the period of 1991/92-1996/97. CBS estimates of MVA growth for the same period was 5.55%, which also includes small establishments. IDPP represents only larger establishments so the growth rate estimates not necessarily should match with CBS estimates.

During the same period employment rose by 12% and gross fixed capital investment by 22% in real terms. Estimated values of major indicators from the survey are compared to CME 96/97 results in following table. In average MVA grew slightly higher than both factors of production measured as number of persons engaged and gross fixed capital formation which indicate some increment in productivity.

Table 10.7: Estimated Value of Major Indicators of IDPP Survey in Comparison to CME-96/97

	1996/97	2000/01	Change in %
Number of persons engaged	196,708	220,752	12.22
Number of employees	187,316	211,922	13.14
Wages and salaries (million Rs.)	4,058	8,406	107.13
Average annual wages Rs.	21,664	39,664	
Nominal change			83.08
CPI adjusted			30.71
Value added at producer's prices (million Rs.)	20,131	33,810	
Nominal change			67.95
Real change			27.48
Average annual growth			6.16
Gross fixed capital formation* (million Rs.)	2,826	4,072	
Nominal change			44.07
Real change			22.03
Average annual growth			5.10

Note: The best way to get the capital formation at comparative prices would probably be adjustment with import price index for capital goods. As no such indices are readily available change in exchange rate of Nepali Rs. with US$ is used.

10.3.2. Industrial growth compared to 2000/01

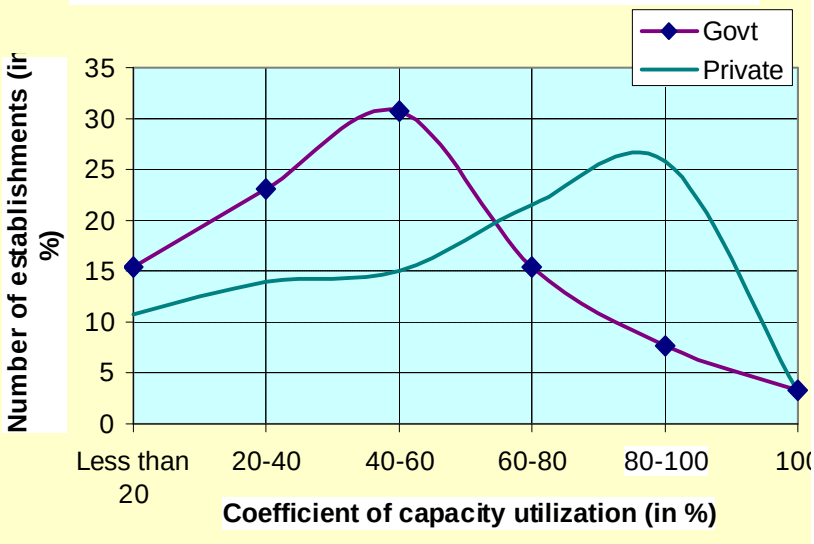
Despite an overall growth trend in the period 1996/97-2000/01, production condition in industrial sectors worsened last year, the reference period of IDPP survey. Overall index of manufacturing production compiled by CBS shows a 3.6% growth in 2000/01, however our aggregation of sector indices from the same data set showed a decline of industrial production in 2000/01 by 4.6% in compare to 1999/2000.

Overall decline of industrial production last year sectors was quite visible in IDPP survey results. Almost 10% of manufacturing establishments in sample were found closed, out of which few were large and quite important industries of the country. Major blow was suffered by textile industries where more than 25% of establishments were closed since 1996. Larger percentage of closer was also reported in wood industry.

Among surveyed units about 7% of manufacturing establishments had negative value added. Value added remains positive in most of the cases when receipts from the sale exceed the cost of material goods and services. The gross operating income that is value added less labour cost (measured as compensation of employees) was reported negative for 16% of manufacturing establishments. This figure was as high as 50% for public enterprises. Total of gross operating income of all surveyed manufacturing establishments of government

ownership was negative and average amount of loss was Rs.39 million per establishment. This has resulted in the decrease of value added output ratio from 36% in 1996/97 to just 30% in FY 2000/01.

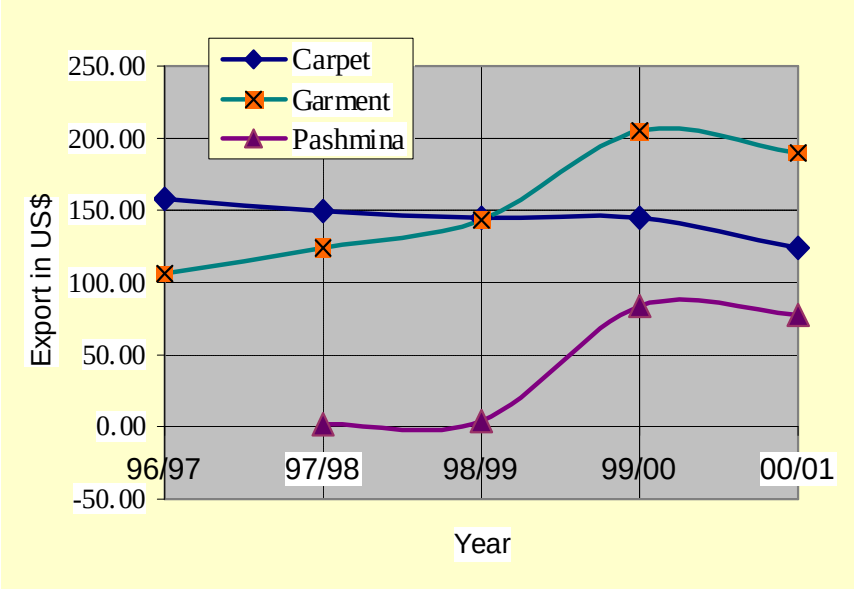
Figure 10.2: Distribution of Establishments by Capacity Utilization



Public enterprises of the manufacturing sector also had weaker performance in utilising production capacity. Nearly 70% of surveyed establishments owned by government utilised less than 60% of their production capacity. In contrast, over 70% of private establishments utilised more than 60% of their production capacity. The chart shows that the median of the capacity utilisation for private sector lies in the higher side than for government-run establishments.

Despite better performances in general, the private sector also encountered a setback in production of three major export oriented products namely carpet, garment and Pashmina shawl. The production index does not cover these products, thus provisional indices were derived from the export data. Export of carpet was consistently declining at the rate of 5 to 8% throughout the years since 1996/97, but it went significantly down in 2000/01 and declined by 15% in compare to the previous year.

Figure 10.3: Export of Selected Manufacturing Products



In quantitative terms, the exports of carpet decreased to 2,509 thousand sq.m. in 1999/00 from 2,891 sq.m. in 1996/97. Export of carpet further dropped to 2,242 sq.m. in 2000/01.

Export of garment however was growing every year but decreased last year. The new major export item Pashmina also went down last after a huge export of 5.6 billion Rupees in 1999/00. The chart shows that export of all these items decreased during 2000/01 that had negative impact on overall industrial growth. At the same time export of few new manufacturing products increased in 2000/01. For example, favourable trade relations with India boosted the production of vegetable ghee mainly for export to India. Among the major manufacturing products sold primarily in domestic market production of sugar dropped by 5.6%, cigarettes – by 10.9% and synthetic textiles – by 60%.

10.3.3. Input and output structure of manufacturing

IDPP surveys results were tabulated to analyse output and input structure of manufacturing sector by ISIC branches. Due to a small sample size, tabulation could not be done in more detail than 2-digit level of ISIC. Exception was manufacturing of beverages for which 3-digit ISIC was allowed due to its distinct nature in relation to indirect taxes.

The ratio of value-added to output was estimated at 29.4%. This ratio has come down from 36% in CME-96/97 results mainly due to the huge loss of some big public enterprises. Intermediate inputs subsequently occupied 70.64% of output out of which domestic sources comprised 26.19% and share of external resources (i.e. value of imported input) was 44.45%. Overall rate of indirect taxes was 10.61% of output, which is quite close to the CME-96/97 results that showed 10.58% of output. However, rate of depreciation in IDPP survey was found quite high and its share in output was higher than CME-96/97 results.

In the part of income generation compensation of employees occupied 8.9% of total output in compare to 7.4% in 1996/97. Since share of the material input, consumption of capital as well

as labour cost went high operating income decreased from 14.77% to 3.95%. Comparative figures for cost structure are given below.

Table 10.8: Cost Structure of Gross Output in CME-96/96 and IDPP Survey 2000/01 Results (in %)

	1996/97	2000/01
Total value of goods and services produced	100.00	100.00
Intermediate inputs:	63.40	70.64
Domestic*	31.83	26.19
External	68.17	44.45
Value added	36.60	29.36
Compensation of employees	7.39	8.90
Depreciation	3.86	5.90
Indirect taxes	10.58	10.61
Operating surplus (residual)	14.77	3.95

*Note: ** Share of domestic inputs are estimates as CME-96/97 report does not present such figures.

10.3.4. Technology level of the manufacturing sector

The broad classification of industries by level of technology used the following grouping of industrial sectors:

- Low technology industry: Food, beverages and tobacco; textile and wearing apparel, leather products, wood products, paper, publishing and printing, other manufacturing.
- Medium technology industry: Coke and refined petroleum products, rubber and plastic products, non-metallic mineral products, basic and fabricated metal products
- High technology industry: Chemical and chemical products, all types of machinery and equipment and scientific instruments.

Based on this grouping level of technology is measured for different years in terms of the share of industries falling under these categories in total value added. The classification shows there is no significant progress in introducing using high-tech industry in Nepal. The country lags far behind ASEAN countries in level of technology.

Table 10.9: Technology Levels Compared

Level of Technology	Nepal				Other countries		
	1986/87	1991/92	1996/97	2000/01	Singapore	Thailand	Vietnam
Low	71.0	75.9	74.4	75.1	10.5	42.7	58.7
Medium	18.2	17.1	14.7	15.2	16.5	26.5	20.7
High	10.8	7.0	10.9	9.7	73.0	30.8	20.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

10.4. Statistical Tables

Table 10.10: Summary of Major Indicators from IDPP Survey (2000/01)

ISIC		Number of units	Number of persons engaged	Number of employees	Wages and salaries	Compen-sation of employees	Change in stock	Gross fixed capital formation	Gross output	Intermediate consumption	Value-added
		Numbers			Value in '000' Rs						
15	Food products and beverages	31	6,834	6,715	288,547	350,079	161,216	202,830	6,235,024	3,816,565	2,418,459
16	Tobacco products	2	1,982	1,981	115,273	228,401	33,568	1,135	1,241,251	604,321	636,930
17	Manufacture of textiles	7	8,123	8,111	282,265	302,993	116,471	119,939	3,383,525	2,459,196	924,329
18	Wearing apparel	4	981	975	101,523	111,310	-1,407	537	659,955	538,735	121,220
19	Leather products	10	831	813	28,372	31,371	-17,573	2,948	547,495	466,452	81,044
20	Wood and of products	6	1,021	1,009	12,323	12,693	322	6,051	92,568	66,075	26,493
21	Paper and paper products	8	1,269	949	61,925	80,581	26,029	13,699	1,052,038	759,219	292,819
22	Publishing and printing	3	2,012	1,372	100,675	115,968	52,453	64,115	680,009	371,972	308,037
24	Chemical products	7	1,538	1,520	41,526	45,245	14,931	7,997	596,051	522,037	74,014
25	Rubber and plastics products	3	959	955	46,559	47,602	-30,621	12,572	505,112	370,596	134,516
26	Non-metallic mineral products	15	3,977	3,946	278,058	381,153	16,583	19,198	1,579,176	960,743	618,433
27	Manufacture of basic metals	3	441	300	15,820	17,636	18,627	54,143	647,180	570,684	76,496
28	Fabricated metal products	10	1,686	1,671	133,068	161,764	267,029	63,490	3,030,845	2,571,550	459,295
31	Electrical machinery and appliances	3	484	465	13,368	13,479	19,076	13,714	286,033	256,397	29,636
32	Radio, TV and commun. equipment	4	296	288	17,676	20,195	42,507	6,863	534,200	480,507	53,693
36	Furniture; manufacturing n.e.c.	5	512	500	19,382	20,210	151	4,195	726,366	581,703	144,664
	Total	121	32,946	31,570	1,556,360	1,940,679	719,363	593,426	21,796,829	15,396,751	6,400,078

Table 10.11: Gross Output and its Components, 2000/01 (Value in '000'Rs.)

	ISIC	Sale of goods	Receipt from services	Change in stock of output items	Gross output (producer's prices)	Indirect taxes less subsidies	Gross output (basic prices)
15	Food products	2,790,722	29,690	58,398	2,878,810	90,160	2,788,650
155	Beverages	3,268,095	95,129	-7,011	3,356,214	1,179,024	2,177,190
16	Tobacco products	1,211,136	6,177	23,938	1,241,251	524,485	716,766
17	Manufacture of textiles	3,240,656	3,466	139,404	3,383,525	3,805	3,379,721
18	Wearing apparel	658,411	1,738	-194	659,955	8,828	651,127
19	Leather products	553,343	20	-5,868	547,495	13,034	534,461
20	Wood and of products	93,109	741	-1,281	92,568	2,795	89,774
21	Paper and paper products	1,033,233	3,104	15,701	1,052,038	25,323	1,026,715
22	Publishing and printing	564,461	69,680	45,868	680,009	6,056	673,953
24	Chemical products	577,975	10,578	7,498	596,051	20,184	575,867
25	Rubber and plastics products	520,614	90	-15,592	505,112	49,645	455,467
26	Non-metallic mineral products	1,503,920	48,726	26,531	1,579,176	121,191	1,457,985
27	Manufacture of basic metals	639,728	-53	7,505	647,180	39,676	607,504
28	Fabricated metal products	2,964,727	7,983	58,135	3,030,845	128,173	2,902,672
31	Electrical machinery and appliances	267,781	10,895	7,357	286,033	10,193	275,840
32	Radio, TV and commun. equipment	520,147	-1,813	15,866	534,200	24,790	509,410
36	Furniture; manufacturing n.e.c.	722,950	0	3,416	726,366	65,772	660,594
	Total	21,131,007	286,151	379,671	21,796,828	2,313,133	19,483,696

Table 10.12: Intermediate Consumption and its Components, 2000/01 (Value in '000 Rs.)

	ISIC	Purchase of materials and supplies	Purchase of fuel and electricity	Cost of services	Change in stock (input)	Intermediate consumption	Custom and other duties on input	Intermediate consumption net of duties on input
15	Food products	2,196,679	131,009	108,358	-25,041	2,461,087	3,349	2,457,738
155	Beverages	975,347	56,643	456,735	133,247	1,355,478	1,435	1,354,043
16	Tobacco products	457,171	20,352	136,428	9,630	604,321	1,599	602,722
17	Manufacture of textiles	2,125,841	227,252	83,170	-22,932	2,459,196	81,421	2,377,775
18	Wearing apparel	425,525	74,082	37,915	-1,213	538,735	1,236	537,499
19	Leather products	402,167	10,943	41,318	-12,024	466,452	6,374	460,078
20	Wood and of products	59,886	3,692	4,101	1,603	66,075	287	65,788
21	Paper and paper products	588,554	115,924	95,226	40,484	759,219	1,381	757,838
22	Publishing and printing	287,472	7,186	86,015	8,701	371,972	1,714	370,258
24	Chemical products	384,902	18,612	125,956	7,433	522,037	4,015	518,022
25	Rubber and plastics products	280,600	55,717	19,569	-14,710	370,596	2,871	367,725
26	Non-metallic mineral products	382,386	412,688	155,722	-9,948	960,743	8,217	952,526
27	Manufacture of basic metals	546,187	24,722	10,897	11,122	570,684	31,041	539,643
28	Fabricated metal products	2,486,596	107,733	154,838	177,617	2,571,550	33,601	2,537,949
31	Electrical machinery and appliances	240,344	11,850	15,922	11,719	256,397	19,000	237,397
32	Radio, TV and commun. equipment	473,069	3,569	30,510	26,641	480,507	61,832	418,675
36	Furniture; manufacturing n.e.c.	516,112	32,306	30,019	-3,265	581,703	2,591	579,112
	Total	12,828,837	1,314,279	1,592,699	339,064	15,396,751	261,964	15,134,787

Table 10.13: Cost of Domestic Resources of Establishments by ISIC (Value in '000'Rs.)

	ISIC	Materials and supplies	Water and electricity	Cost of services	Domestic intermediate inputs	Interest	Depreciation	Compensation of employees	Total domestic cost
15	Food products	1,118,451	57,599	74,751	1,250,801	86,166	252,265	220,906	1,810,139
155	Beverages	205,281	24,365	489,013	718,659	100,918	41,156	124,330	985,063
16	Tobacco products	13,071	8,436	136,428	157,935	28,494	8,113	227,110	421,652
17	Manufacture of textiles	239,544	182,678	83,031	505,253	210,813	442,108	297,461	1,455,635
18	Wearing apparel	13,986	73,215	37,811	125,012	7,753	9,309	70,209	212,283
19	Leather products	326,164	10,856	39,591	376,611	37,144	4,753	30,542	449,049
20	Wood and of products	37,516	2,217	4,100	43,833	1,383	2,728	11,256	59,199
21	Paper and paper products	300,591	84,419	95,183	480,192	45,314	40,518	76,837	642,861
22	Publishing and printing	81,029	4,699	85,252	170,980	19,000	9,933	115,773	315,686
24	Chemical products	140,314	7,214	125,852	273,379	4,568	48,996	45,225	372,168
25	Rubber and plastics products	223,168	17,042	19,569	259,779	773	3,816	47,457	311,825
26	Non-metallic mineral products	123,898	244,120	155,373	523,390	113,398	60,441	380,936	1,078,165
27	Manufacture of basic metals	42,968	12,259	10,897	66,124	23,259	1,721	15,609	106,713
28	Fabricated metal products	167,477	47,327	154,541	369,344	126,422	346,774	160,149	1,002,689
31	Electrical machinery and appliances	35,509	5,568	15,921	56,998	8,113	4,027	12,901	82,039
32	Radio, TV and commun. equipment	100,269	2,179	30,504	132,952	2,640	8,543	19,893	164,028
36	Furniture; manufacturing n.e.c.	32,296	14,792	30,009	77,097	28,670	2,308	19,660	127,735
	Total	3,201,531	798,983	1,587,825	5,588,339	844,829	1,287,510	1,876,253	9,596,930

Table 10.14: Cost of External Resources of Establishments (Value in '000 Rs.)

	ISIC	Fuel	Materials and supplies	Intermediate inputs at purchaser's prices	Duties on input	Taxes on fuel	Intermediate inputs at border prices	Compen-sation of foreign employees	Total foreign cost
15	Food products and beverages	107,017	1,848,293	1,955,311	4,785	13,447	1,937,079	4,843	1,941,922
16	Tobacco products	11,916	444,100	456,016	1,599	1,497	452,920	1,291	454,211
17	Manufacture of textiles	44,713	1,886,297	1,931,010	81,421	5,618	1,843,971	5,532	1,849,503
18	Wearing apparel	971	411,539	412,510	1,236	122	411,152	41,101	452,253
19	Leather products	1,814	76,003	77,817	6,374	228	71,215	829	72,044
20	Wood and of products	1,475	22,370	23,845	287	185	23,373	1,437	24,810
21	Paper and paper products	31,548	287,964	319,511	1,381	3,964	314,166	3,744	317,910
22	Publishing and printing	3,250	206,443	209,693	1,714	408	207,571	195	207,766
24	Chemical products	11,503	244,588	256,091	4,015	1,445	250,631	20	250,651
25	Rubber and plastics products	38,675	57,432	96,107	2,871	4,860	88,376	145	88,521
26	Non-metallic mineral products	168,918	258,487	427,405	8,217	21,225	397,963	217	398,180
27	Manufacture of basic metals	12,463	503,219	515,682	31,041	1,566	483,075	2,027	485,102
28	Fabricated metal products	60,704	2,319,119	2,379,823	33,601	7,628	2,338,594	1,615	2,340,209
31	Electrical machinery and appliances	6,283	204,835	211,118	19,000	789	191,329	578	191,907
32	Radio, TV and commun. equipment	1,396	372,800	374,196	61,832	175	312,188	302	312,490
36	Furniture; manufacturing n.e.c.	17,525	483,816	501,341	2,591	2,202	496,548	550	497,098
	Total	520,169	9,627,306	10,147,476	261,965	65,360	9,820,150	64,426	9,884,576

Table 10.15: Value added at Domestic Market and Border Prices (Value in '000 Rs.)

	ISIC	Gross output (basic prices)	Domestic intermediate inputs	Foreign intermediate inputs at border prices	Change in stock (input)	Total intermediate input at border prices	Value added at border prices	Value added at producer's prices
15	Food products and beverages	4,965,840	1,969,460	1,937,079	108,206	3,798,334	1,167,506	2,418,459
16	Tobacco products	716,766	157,935	452,920	9,630	601,225	115,541	636,930
17	Manufacture of textiles	3,379,721	505,253	1,843,971	-22,932	2,372,157	1,007,564	924,329
18	Wearing apparel	651,127	125,012	411,152	-1,213	537,377	113,750	121,220
19	Leather products	534,461	376,611	71,215	-12,024	459,850	74,611	81,044
20	Wood and of products	89,774	43,833	23,373	1,603	65,602	24,171	26,493
21	Paper and paper products	1,026,715	480,192	314,166	40,484	753,874	272,841	292,819
22	Publishing and printing	673,953	170,980	207,571	8,701	369,850	304,103	320,164
24	Chemical products	575,867	273,379	250,631	7,433	516,577	59,290	74,014
25	Rubber and plastics products	455,467	259,779	88,376	-14,710	362,865	92,602	134,516
26	Non-metallic mineral products	1,457,985	523,390	397,963	-9,948	931,301	526,684	618,433
27	Manufacture of basic metals	607,504	66,124	483,075	11,122	538,077	69,427	76,496
28	Fabricated metal products	2,902,672	369,344	2,338,594	177,617	2,530,321	372,351	459,295
31	Electrical machinery and appliances	275,840	56,998	191,329	11,719	236,607	39,233	29,636
32	Radio, TV and commun. equipment	509,410	132,952	312,188	26,641	418,499	90,911	53,693
36	Furniture; manufacturing n.e.c.	660,594	77,097	496,548	-3,265	576,910	83,685	144,664
	Total	19,483,696	5,588,339	9,820,150	339,064	15,069,426	4,414,271	6,412,205

Table 10.16: Number of Persons Engaged by Sex and by ISIC

ISIC		Number of units	Working proprietors and unpaid family workers			Employees			Number of persons engaged		
			Male	Female	Total	Male	Female	Total	Male	Female	Total
15	Food products and beverages	31	111	8	119	5,804	911	6,715	5,915	919	6,834
16	Tobacco products	2	1	0	1	1,869	112	1,981	1,870	112	1,982
17	Manufacture of textiles	7	11	1	12	5,264	2,847	8,111	5,275	2,848	8,123
18	Wearing apparel	4	4	2	6	701	274	975	705	276	981
19	Leather products	10	13	5	18	798	15	813	811	20	831
20	Wood and of products	6	12	0	12	986	23	1,009	998	23	1,021
21	Paper and paper products	8	286	34	320	830	119	949	1,116	153	1,269
22	Publishing and printing	3	578	62	640	1,202	170	1,372	1,780	232	2,012
24	Chemical products	7	10	8	18	1,005	515	1,520	1,015	523	1,538
25	Rubber and plastics products	3	3	1	4	897	58	955	900	59	959
26	Non-metallic mineral products	15	25	6	31	3,744	202	3946	3,769	208	3,977
27	Manufacture of basic metals	3	135	6	141	293	7	300	428	13	441
28	Fabricated metal products	10	15	0	15	1,609	62	1,671	1,624	62	1,686
31	Electrical machinery and appliances	3	19	0	19	437	28	465	456	28	484
32	Radio, TV and commun. equipment	4	6	2	8	258	30	288	264	32	296
36	Furniture; manufacturing n.e.c.	5	10	2	12	461	39	500	471	41	512
	Total	121	1,239	137	1376	26,158	5,412	31,570	27,397	5549	32,946

Table 10.17: Number of Employees by Functional Categories and by ISIC

	ISIC	Production workers	Technical workers	Administrative	Seasonal employees	Non-nepali workers	Total number of employees
15	Food products and beverages	2,961	791	1,387	1,548	28	6,715
16	Tobacco products	944	68	816	139	14	1,981
17	Manufacture of textiles	4,930	1,210	368	1,450	153	8,111
18	Wearing apparel	386	12	43	271	348	1,060
19	Leather products	722	23	56	114	22	937
20	Wood and of products	328	22	41	67	30	488
21	Paper and paper products	597	214	234	72	90	1,207
22	Publishing and printing	589	128	1,006	10	3	1,736
24	Chemical products	455	99	144	500	2	1,200
25	Rubber and plastics products	368	128	131	48	3	678
26	Non-metallic mineral products	1,661	1,457	817	457	6	4,398
27	Manufacture of basic metals	182	14	57	36	25	314
28	Fabricated metal products	747	141	418	260	23	1,589
31	Electrical machinery and appliances	260	56	59	62	14	451
32	Radio, TV and commun. equipment	272	46	43	0	2	363
36	Furniture; manufacturing n.e.c.	205	26	61	15	35	342
	Total	15,607	4,435	5681	5,049	798	31,570

Table 10.18: Compensation of Employees by ISIC (Value in '000 Rs.)

	ISIC	Number of employees	Wages and salaries	Other benefits	Contribution to social security	Total compensation of employees
15	Food products and beverages	6,715	288,547	43,833	17,698	350,079
16	Tobacco products	1,981	115,273	81,161	31,967	228,401
17	Manufacture of textiles	8,111	282,265	16,165	4,562	302,993
18	Wearing apparel	975	101,523	9,421	366	111,310
19	Leather products	813	28,372	2,179	820	31,371
20	Wood and of products	1,009	12,323	355	15	12,693
21	Paper and paper products	949	61,925	16,627	2,029	80,581
22	Publishing and printing	1,372	100,675	15,293	-	115,968
24	Chemical products	1,520	41,526	3,014	705	45,245
25	Rubber and plastics products	955	46,559	1,043	-	47,602
26	Non-metallic mineral products	3,946	278,058	51,347	51,748	381,153
27	Manufacture of basic metals	300	15,820	883	933	17,636
28	Fabricated metal products	1,671	133,068	8,685	20,012	161,764
31	Electrical machinery and appliances	465	13,368	111	-	13,479
32	Radio, TV and commun. equipment	288	17,676	2,213	306	20,195
36	Furniture; manufacturing n.e.c.	500	19,382	511	317	20,210
	Total	31,570	1,556,360	252,840	131,478	1,940,679

Table 10.19: Balance of Fixed Assets and Capital Formation (Value in '000 Rs.)

	ISIC	At the beginning of the year	Acquisition during the year	Produced on own account	Sale or loss	Gross fixed capital formation	Depreciation	Gain or loss on revaluation	At the end of the year
15	Food products and beverages	2,371,849	221,550	732	19,453	202,830	293,421	21,386	2,302,643
16	Tobacco products	164,502	1,540	0	405	1,135	8,113	0	157,524
17	Manufacture of textiles	2,732,983	120,194	0	255	119,939	442,108	0	2,410,814
18	Wearing apparel	85,531	437	100	0	537	9,309	0	76,760
19	Leather products	148,623	2,948	0	0	2,948	4,753	0	146,818
20	Wood and of products	32,503	6,446	0	395	6,051	2,728	0	35,826
21	Paper and paper products	266,637	10,605	3,093	0	13,699	40,518	-225	239,593
22	Publishing and printing	170,219	36,342	33,680	5,907	64,115	9,933	634	225,035
24	Chemical products	608,755	7,997	0	0	7,997	48,996	0	567,756
25	Rubber and plastics products	21,581	12,189	383	0	12,572	3,816	0	30,336
26	Non-metallic mineral products	928,159	19,198	0	0	19,198	60,441	0	886,916
27	Manufacture of basic metals	40,157	54,143	0	0	54,143	1,721	0	92,579
28	Fabricated metal products	918,684	63,490	0	0	63,490	346,774	0	635,400
31	Electrical machinery and appliances	73,882	11,675	4,078	2,039	13,714	4,027	-198	83,371
32	Radio, TV and commun. equipment	99,074	6,863	0	0	6,863	8,543	0	97,394
36	Furniture; manufacturing n.e.c.	23,078	4,195	0	0	4,195	2,308	0	24,964
	Total	8,686,216	579,813	42,066	28,454	593,426	1,287,510	21,597	8,013,729

Table 10.20: Value of Materials and Supplies Purchased by ISIC and by Market Source (Value in '000 Rs.)

		Locally purchased	In %	Imported from India	In %	Imported from third country	In %	Total purchase	In %
15	Food products and beverages	1,323,732	41.73	668,419	21.07	1,179,875	37.20	3,172,025	100
16	Tobacco products	13,071	2.86	328,394	71.83	115,706	25.31	457,171	100
17	Manufacture of textiles	239,544	11.27	467,869	22.01	1,418,429	66.72	2,125,841	100
18	Wearing apparel	13,986	3.29	336,116	78.99	75,423	17.72	425,525	100
19	Leather products	326,164	81.10	34,750	8.64	41,253	10.26	402,167	100
20	Wood and of products	37,516	62.65	22,370	37.35	-	-	59,886	100
21	Paper and paper products	300,591	51.07	247,260	42.01	40,704	6.92	588,554	100
22	Publishing and printing	81,029	28.19	202,687	70.51	3,756	1.31	287,472	100
24	Chemical products	140,314	36.45	43,114	11.20	201,475	52.34	384,902	100
25	Rubber and plastics products	223,168	79.53	11,685	4.16	45,747	16.30	280,600	100
26	Non-metallic mineral products	123,898	32.40	257,828	67.43	659	0.17	382,386	100
27	Manufacture of basic metals	42,968	7.87	456,153	83.52	47,066	8.62	546,187	100
28	Fabricated metal products	167,477	6.74	1,868,484	75.14	450,635	18.12	2,486,596	100
31	Electrical machinery and appliances	35,509	14.77	126,940	52.82	77,895	32.41	240,344	100
32	Radio, TV and commun. equipment	100,269	21.20	14,676	3.10	358,124	75.70	473,069	100
36	Furniture; manufacturing n.e.c.	32,296	6.26	483,816	93.74	-	-	516,112	100
	Total	3,201,532	24.96	5,570,560	43.42	4,056,746	31.62	12,828,837	100

Table 10.21: Value of Sale by ISIC and by Market Destination (Value in '000 Rs.)

	ISIC	Sale to local market	In %	Exported to India	In %	Exported to third country	In %	Total sale	In %
15	Food products and beverages	5,124,580	84.58	773,921	12.77	160,317	2.65	6,058,818	100
16	Tobacco products	1,211,136	100.00	-	-	-	-	1,211,136	100
17	Manufacture of textiles	736,456	22.73	1,510,428	46.61	993,771	30.67	3,240,656	100
18	Wearing apparel	-	-	-	-	658,411	100.00	658,411	100
19	Leather products	102,288	18.49	33,120	5.99	417,935	75.53	553,343	100
20	Wood and of products	93,109	100.00	-	-	-	-	93,109	100
21	Paper and paper products	782,128	75.70	214,758	20.79	36,347	3.52	1,033,233	100
22	Publishing and printing	554,921	98.31	5,745	1.02	3,795	0.67	564,461	100
24	Chemical products	496,403	85.89	79,826	13.81	1,746	0.30	577,975	100
25	Rubber and plastics products	486,580	93.46	34,034	6.54	-	-	520,614	100
26	Non-metallic mineral products	1,472,789	97.93	31,131	2.07	-	-	1,503,920	100
27	Manufacture of basic metals	625,421	97.76	13,594	2.12	713	0.11	639,728	100
28	Fabricated metal products	2,755,612	92.95	207,628	7.00	1,487	0.05	2,964,727	100
31	Electrical machinery and appliances	243,382	90.89	24,399	9.11	-	-	267,781	100
32	Radio, TV and commun. equipment	520,147	100.00	-	-	-	-	520,147	100
36	Furniture; manufacturing n.e.c.	722,950	100.00	-	-	-	-	722,950	100
	Total	15,927,902	75.38	2,928,584	13.86	2,274,522	10.76	21,131,007	100

10.5. Questionnaire

10.5.1. Industrial Establishments Survey

Information collected hereby are strictly confidential and cannot be used other than for statistical purpose.

1. Identification

Name of establishment: Address: Name of contact person: Telephone: Main product:	 ISIC code:

2. Type of ownership: *(Optional)*

Government
National private
Joint venture
Others *(specify)* _____

3. Number of persons engaged (as of 15 January 2001):

	Description	Male (1)	Female (2)	Total (3)
301	Working Proprietors and active business partners			
302	Unpaid workers			
Employees (Nepali)				
303 304 305	Production workers total Technician Administrative			
306	Seasonal and temporary employees			
307	Non-Nepali workers			
3	Total			

Note: All data below this section should be reported for FY 2057/058

4. Remuneration to employees (in '000 Rs.)

	Indicators	Male (1)	Female (2)	Total (3)
401 402 403	Wages and salaries Other benefits paid to employees Contribution to social security, pension funds etc.			
404	Payment to non-Nepali workers			
4	Total remuneration			

5. Expenditure of establishment (in '000 Rs.)

	Description	Value
501	Purchase of fuel (excl. fuel for processing)	
502	Payment for electricity	
503	Payment for water	
504	Cost of materials and supplies purchased	
505	Cost of goods purchased for resale	
506	Payment for contract and commission work done by others	
507	Payment for repair and maintenance	
508	Payments for lease and hire of plant, machinery and equipment	
509	Rental payments for land and buildings	
510	Cost of transportation of finished goods	
511	Cost of business travel	
512	Insurance	
513	Postage, telephone, telex, fax, etc.	
514	Cost of advertisement and promotional activities	
515	Educational and training expenses	
516	Legal and auditing fee	
517	Payment for patent, trade mark, copy right and others	
518	Indirect taxes charged on final products (VAT, excise and others)	
519	Custom duties and other taxes paid for imported materials	
520	Loss of fixed assets	
521	Interest paid on short term loans and overdrafts	
522	Cash donations, grants and gifts	
523	Other payment	
5	Total expenditure	

6. Income of establishment (in '000' Rs.)

	Description	Value
601	Sale of goods produced by establishment	
602	Sale of electricity	
603	Receipts for goods sold as purchased	
604	Receipts for contract and commission work done for others	
605	Receipts for repair and maintenance	
606	Value of fixed assets produced on own account	
607	Rental receipts for land and building	
608	Receipts for lease of plant, machinery and warehouses	
609	Receipts for storage facilities provided to others	
610	Receipts for transport services rendered to others	
611	Subsidies and rebate (import discounts, Vat refund etc.)	
612	Sale of fixed assets	
613	Receipts from insurance claims	
610	Interest	
611	Dividends	
612	Other receipts (specify)	
6	Total income	

7. Details of purchase of materials and supplies (Value in '000 Rs.)

	Materials	CPC code	Unit	Locally produced		Imported from India		Imported from other countries		Total	
				Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
701											
702											
703											
704											
705											
707											
708											
709	Others										
7	Total purchase										

Note: Total purchase must tally with the figure reported in 504. Cost of material and supplies purchased

8. Details of sale of goods produced

	Products	CPC code	Unit	Local market		Export to India		Export to other countries		Total	
				Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
801											
802											
803											
804											
805											
807											
808											
809	Others										
8	Total purchase										

Note: Total sale must tally with the figure reported in 601. Sale of goods produced by establishment

9. Value of stock (in '000 Rs.)

	Particulars	Opening stock (1)	Closing stock (2)	Change in stock (3) = (2) – (1)
901	Materials and supplies			
902	Fuels			
903	Finished products			
904	Semi-finished goods			
905	Goods for resale			
9	Total			

10. Addition to fixed assets (Value in '000 Rs.)

		Land and building	Machinery and equipment	Transport equipment	Furniture and others	Total
1001	At the beginning of year					
1002	Acquisition					
1003	Produced on own account (should tally with ***606***)					
1004	Sale and loss					
1005	Depreciation					
1006	Gain (+) or loss (-) on revaluation					
1007	At the end of year					

11. Production and production capacity

Production capacity reported per: ***day/month/year***
Number of days worked_____Number of shifts per day_____

	Product	Product Code	Unit	Production capacity per annum (Qt.)	Actual production in 1999/2000 (Qt.)
1101					
1102					
1103					
1104					

12. Account summary

	Expenditure items	Cell reference	Value (Transcribe data from respective cells)
1201	Remuneration	4 (3) Total	
1202	Expenditure	5. Total expenditure	
1203	Total payment	(1201+1202)	
1204	Income	6. Total income	
1205	Change in stock	9(3). Total change	
1206	Total income	(1204+1205)	
1207	Profit before taxation	(1206-1203	

11. References

Adhikary, S.R., Ranjit, M. and J. Joshi, 1998, *A Study on Research and Development Investment in Nepal*, National Council for Science and Technology, His Majesty's Government of Nepal, Kathmandu

Adhikary, S.R., and M. Ranjit, 1987, *A Study on Research and Development Investment in Nepal*, National Council for Science and Technology, His Majesty's Government of Nepal, Kathmandu

Ahluwalia, I. J., 1991, *Productivity and Growth in Indian Manufacturing*, Delhi: Oxford University Press

APROSC-JMA, 1995, *Agriculture Perspective Plan*, John Mellor and Associates and Agriculture Project Service Centre, Kathmandu

Arnold E., Bessant, J. & Brimble, P., 2000, *Enhancing Policy and Institutional Support for Industrial Technology Development in Thailand: Overall Policy Framework and Development of Industrial Innovation System*. National Science and Technology Development Agency (NSTDA) and World Bank, Bangkok

Asian Development Bank, 1999**,** *Country Operational Strategy Study, Nepal*, Manila: ADB

Asian Development Bank, 1999, *Women in Nepal: Country Briefing Paper*, Programmes Department West and Office of Environment and Social Development, Manila: ADB

Asian Development Bank, 2001, *Asian Development Outlook - Nepal*, Website www.adb.org, downloaded December 2, 2001

Athukorala, P. and S. Rajapatirana, 2000, Liberalization and Industrial Transformation: Sri Lanka in International Perspective, Delhi: Oxford University Press

Athukorala, P., 1998, *Trade Policy Issues in Asian Development*, London: Routledge

Bagchi, S., 1998, 'The Textiles and Clothing Sector in Nepal', Division of International Trade and Commodities UNCTAD (*mimeo*)

Bajracharya D., 1998, A Study on Research Policy in Science and Technology, National Council for Science and Technology, His Majesty's Government of Nepal, Kathmandu

Bajracharya, P. and S. Sharma, 1996, *Impact of Economic Liberalization in Nepal*, Kathmandu: IIDS

Bajracharya, P. and S. Sharma, 1996, *Impact of Economic Liberalization in Nepal*, Institute for Integrated Development Studies (IIDS), Nepal

Bank of Indonesia, 1999, Bank of Indonesia Annual Report 1999, Jakarta

Bank of Thailand, 1999, Bank of Thailand Annual Report 1999, Bangkok

Basyal, T.R., 2001, 'Financial Development and Investment Promotion in Nepal', in IIDS, *New Policy Initiatives for Trade and Investment*, Kathmandu

Bhattacharya, A. and J.F. Linn, 1988, 'Trade and Industrial Policies in Developing Countries of East Asia', *World Bank Discussion Papers No. 27*, Washington D.C.: The World Bank

Bishta, N., 1999, 'Entrepreneurship Development for SMEs in Nepal', in Centre for Development and Governance, *Small and Medium Enterprise Development in Nepal*, Seminar Report, Kathmandu

Blejer, M. and G. Szapary, 1991, "The Gulliver Effect and the Optimal Divergence Approach to Trade Policies: The Case of Nepal", *World Development*, 19(2)

Blomstrom, M. and R.E. Lipsey, 1993, 'Foreign Firms and Structural Adjustment in Latin America: Lessons from the Debt Crisis', in Gote Hanson (ed.), *Trade, Growth and Development*, London: Routledge

Borensztein, E., J. De Gregorio, and J.W. Lee, 1998, 'How Does Foreign Direct Investment Affect Economic Growth?', *Journal of International Economics*, 45
BSP-Biogas Support Programme, 2001, *Biogas Bulletin*, Issue 2, 2001, SNV/HMG/N, Kathmandu
CBS, 1999, *Population Monograph of Nepal*, Kathmandu: Central Bureau of Statistics
Central Bureau of Statistics, 1987, *Census of Manufacturing Establishments 1986/87*, Kathmandu
Central Bureau of Statistics, 1992, *Census of Manufacturing Establishments 1991/92*, Kathmandu
Central Bureau of Statistics, 1997, *Census of Manufacturing Establishments 1996/97*, Kathmandu
CERID, 1997, *Impact Study of Adult Education in Nepal*, Kathmandu. Research Centre For Educational Innovation and Development, Tribhuvan University
Department of Statistics Malaysia, 1992, *Survey of Manufacturing Industry 1992*, Kuala Lumpur: Department of Statistics
Devkota, S. R., 1997, Industrial waste survey in Nepal
Dhakal, A. and P. Khanal, 2001, 'Foreign Investment and Export Problems and Prospects', in IIDS, *New Policy Initiatives for Trade and Investment*, Kathmandu
EDC, 1996, *Nepalese Legal Provisions on Hydropower Development*, Electricity Development Centre, Kathmandu: MOWR
EPC-Environment Protection Council, 1993, Nepal Environmental Policy and Action Plan (NEPAP)-Integrating environment and development, Kathmandu: EPC/HMG/N
ESPS, 2001, *Report on CP Policy Formulation for Adoption by HMG/N*, Environment Sector Programme Support (ESPS), DANIDA-HMG/N
ESPS, undated, *Cleaner Production (CP) brochure*, Component No. 2: Promotion of Cleaner Production in Industries-Nepal, Kathmandu
FNCCI, 1997, Wages and Working Conditions of Labourers Working in Nepal's Manufacturing Sector, Kathmandu: FNCCI
FNCCI, 2000, Nepal and the World, A Statistical Profile, 2000, Kathmandu: FNCCI
FNCCI, 2001, Nepal and the World: A Statistical Profile 2001, Kathmandu, FNCCI
FNCCI/WB, 2000, *The Business Environment and Manufacturing Performance in Nepal*, Kathmandu: Federation of Nepalese Chambers of Commerce and Industry
Gajurel, C. and Vaidya, K.K., 1983, *Traditional Arts and Crafts of Japan and Nepal*, New Delhi: S. Chand & Company
Gauchan, B. M., 'Labour-Management Cooperation and Workers' Participation', in Pant & Manandhar (1998), *Industrial Relations in Nepal*
Golder, B.N., 1986, 'Import Substitution, Industrial Concentration and Productivity Growth in Indian Manufacturing', *Oxford Bulletin of Economics and Statistics*, 48 (2)
Haq, Mahbub ul, 1997, *Human Development in South Asia 1997*, Oxford: The Human Development Centre
HMG, 1989, *National Policy on Science and Technology* (in Nepali), Nepal Rajpatra, Ministry of Law and Justice, HMG, Kathmandu
HMG, 1992, Foreign Investment and Technology Transfer Act, 1992
HMG, 1995, *Labour Act*, 1995, Kathmandu: Ministry of Law and Justice
HMG, 1996, Environmental Protection Act 1996 and Environmental Protection Regulation 1997
HMG, 1996, Industrial Enterprise Act, 1996
HMG, 1996, *Labour Regulations, 1996*, Kathmandu: Ministry of Law and Justice
IEDI, 1998, Report on Organizational Analysis on the DCSI and CSIDB**,** Kathmandu.
IEDI, NCC and ITC, 2000, *Trade Secrets*, Kathmandu

Institute for Development Studies, 2001, *New Policy Initiatives for Trade and Investment*, Kathmandu
International Labour Office, (Various Years), *Yearbook of Employment Statistics*, Geneva: ILO
International Labour Office, 1996, *Nepal: Programmeand Strategies for Employment Promotion*, New Delhi SAAT/ILO
International Labour Office, 1997, *Nepal: An Employment Strategy*, New Delhi: South Asia Multidisciplinary Advisory Team (SAAT) and ILO
International Labour Office, 1999, *Training Strategies for Nepal*, Kathmandu
International Labour Office, 2000, *Yearbook of Labour Statistics 2000,* Geneva: ILO
International Management Consultants, 1994, *Framework for the Development of Government Financial Management*, Financial Management Project, Kathmandu
International Monetary Fund, 1995, Nepal: Report on the Balance of Payment Statistics Mission, unpublished (mimeo)
International Monetary Fund, 2001, *Nepal: Recent Economic Developments*, Washington DC: IMF
International Monetary Fund, 2001, *Staff Report for the 2001 Article IV Consultation*, Washington D.C.: IMF
IRG, 1998, Energy Efficiency Policy Statement, Power Sector Efficiency Project (PEP), Industrial Energy Management (IEM) Component, Kathmandu
Islam, R., A.R. Khan and E. Lee, 1982, *Employment and Development in Nepal*, ILO:ARTEP, Bangkok
ITC and TPC, 1989, Export Import Strategy for Nepal, Kathmandu
IUCN, 2001, National Strategies for Sustainable Development and Regional Level Dialogues, Kathmandu
IUCN-The World Conservation Union, 1991, Background papers to the National Conservation Strategy for Nepal. Volume II, Kathmandu
IUCN-The World Conservation Union, 1991, *Sources of Industrial Pollution in Nepal-A National Survey Report*, NCSIP, Kathmandu: NPC/HMG
Jequir, N., 1988, *Endogenous Capacity Building in Science and Technology in Nepal-A Few Refections and Suggestions,* A Report Submitted to the Royal Nepal Academy of Science and Technology, Kathmandu
Jeria, Ana *et al*., 1994, 'Nepal: Critical issues in Secondary Education and Options for Reform', *Report No. 11243-NEP*, Washington: The World Bank
Johansson, H. and L. Nilson, 1997, 'Export Processing Zones as Catalysts', *World Development*, 25(12), 2115-2128
Jyoti, P., 1998, 'Industrial Relations: Employers Perspective', in Pant & Manandhar, *Industrial Relations in Nepal*
Jyoti, P., 1998, 'Labour Management: A critique' in Pant & Manandhar, *Industrial Relations in Nepal*
Karmacharya, B.K., 1996, *South Asian Regional Cooperation in Trade and Investment: A Nepalese Perspective*, Report submitted to International Development Centre of Japan, CEDA
Karmacharya, B.K., 1999, Informal Trade in Nepal and Their Implications for South Asian Free Trading Arrangements, Report submitted to International Development Centre of Japan
Karmacharya, B.K., 1999, *South Asian Regional Economic Cooperation: Operation and Challenges for Nepal* in H.Mund (ed.) *WTO, Regional Cooperation and Nepal*, Nepal Foundation for Advanced Studies (NEFAS), Coalition for Action on South Asian Cooperation (CASAC) in cooperation with Friedrich-Ebert Stiftung (FES), Germany

Karmacharya, B.K., 2000, *Export Potentials for Nepal: Comparative and Competitive Advantage Analysis*, Report prepared for National Planning Commission and the Asian Development Bank
Karmacharya, B.K., 2001, 'Economic Reforms in Nepal and their Implications for Trade, Economic Growth, Inequality and Poverty', *South Asia Economic Journal*, 2(1)
Karmacharya, B.K., 2001, *Indo-Nepal Trade Treaty: Issues and Options for Moving Ahead*, Paper presented at seminar on Indo-Nepal Economic Relation, Kathmandu
Kathmandu Post, 2001, GDP Growth Expected to Tumble to Lowest in 14 Years, December 13, 2001, Kathmandu
Kelegama, S. and F. Foley, 1999, 'Impediments to Promoting Backward Linkages from Garment Industry in Sri Lanka', *World Development*, 27(8)
Khadka, K., B. Acharya and B. Karmacharya, 1999, *A Study on Strengthening Industrial Sector in Nepal*, Kathmandu: NPC
Khatiwada, Y., 1998, *Options for Exchange Rate Policy in Least Developed Countries: A Case Study of Nepal*, Country paper submitted to Economic and Social Commission for Asia and Pacific (ESCAP), Bangkok
Krueger, A.O. and B. Tuncer, 1982, 'Growth of Factor Productivity in Turkey Manufacturing Industries', *Journal of Development Economics*, 11:307-325
Kwak, H., 1994, 'Changing Trade Policy and Its Impact on TFP in the Republic of Korea', *The Developing Economies*, 32 (4)
Lall S., 2000, 'Forward', in ECLAC/World Bank (2000), TradeCan: Database and Software for a Competitiveness Analysis of Nations - User Guide 1999 Edition, Washington: World Bank.
Lama, M.P., 2001, 'Foreign Investment in South Asia: Nepalese Perspectives' in IIDS, *New Policy Initiatives for Trade and Investment*, Kathmandu.
Lipsey, R. E., 2001, 'Foreign Investment in Tree Financial Crises', *NBER Working papers 8084*, Cambridge, MA.: National Bureau of Economic Research
Little, I.M.D., D. Mazumdar, and J. Page, 1988, *Small Manufacturing Enterprises*, New York, Oxford University Press
Management Association of Nepal, 1999, *Management Development Scenario 1998*, Kathmandu
Markusen, J.R. and A.J. Venables, 1997, Foreign Direct Investment as a Catalyst for Industrial Development', *NBER Working paper No. 6241*, Cambridge, Mass.: National Bureau of Economic Research
Maxwell Stamp, 1991, *Second Industrial Sector Study*, Nepal, ADB
Mills, C. Wright, 1959, *The Sociological Imagination*, New York: Oxford University Press
MOE, 1997, *Educational Statistics 1995*, Kathmandu: Ministry of Education
MOE, 1997, *The Basic and Primary Education Master Plan*, Kathmandu: Ministry of Education
MOE, 2000, *Education Information of Nepal 2000*, Kathmandu: Ministry of Education
MOF, 1999, Economic Survey Fiscal Year 1998-99, Ministry of Finance, Kathmandu
MOHPP-WB, 1994, Bagmati Basin Water Management Strategy and Investment Program
MOH-WHO, 1998, *Women Health and Development-Nepal Country Profile*, Department of Health Services/Ministry of Health, Kathmandu
MOICS, 1999, Nepal: Foreign Investment Opportunities
Monkay, B. and N. Manandhar (eds.), 2001, *Small and Medium Enterprise Development in Nepal*, Centre for Development and Governance and FNCCI
MOPE/HMG, 2001, State of the Environment Nepal (Agriculture and Forests), Singha Durbar, Kathmandu
NCS, 1998, National Conservation Strategy 1998, Kathmandu

NCST, 1977, *Directory: Scientists and Technologists of Nepal*, National Council for Science and Technology, HMG, Kathmandu
NCST, 1995, *Directory: Scientists and Technologists of Nepal*, National Council for Science and Technology, HMG, Kathmandu
Nepal Electricity Authority (NEA), 2001, *A Year in Review*, Durbar Marg, Kathmandu
Nepal Rastra Bank, *Quarterly Economic Bulletin* (various issues), Kathmandu,
Nepal South Asia Centre, 1998, *Nepal Human Development Report*, 1998, Kathmandu
New ERA, 2001, Poverty: Country Profile Formulation Study, Kathmandu.
NPC, 1992, *Eighth Plan*, Kathmandu: NPC
NPC, 1995, Perspective Energy Plan for Nepal (Volume I: Summary), Kathmandu
NPC, 1998, The Ninth Plan (1997 – 2002), Kathmandu: HMG
NPC, 2000a, Interim Poverty Reduction Strategy Paper, Kathmandu: NPC
NPC, 2000b, Poverty Alleviation Fund: ProgrammeApproach and Implementation Modality
NPC, 2001, Poverty Alleviation Strategy Paper, Kathmandu: NPC
NPC, 2001a, 'Concept Paper on the 10th Plan', *Internal government paper*, Kathmandu: HMG
NPC, 2001b, Mid-term Evaluation of the Ninth Plan, Kathmandu
NPC-IUCN, 1996, *Nepal Environmental Policy and Action Plan-Phase II* , Volume I: Sector Strategies for Forestry, Industry and Water Resources. NCSIP, Kathmandu
NPC-WHO, 1997, Nepal Environmental Health Initiative, Kathmandu
Okuda, S., 1994, 'Taiwan's Trade and FDI Policies and Their Effect on Productivity Growth', *The Developing Economies*, 32 (4)
Pandey (*et al.*), 1985, 'Domestic Smoke Pollution and Respiratory Function in Rural Nepal', Yokai Journal of Experimental and Clinical Medicine (10)
Pant, P.R. and N. Manandhar 1998, *Industrial Relations in Nepal*, FNF Germany & IRF
Perkins, F., Z. Yuxin, and C. Young, 1993, 'The Impact of Reform on Productivity Growth in Chinese Industry: A Case of Xiamen Special Economic Zone', *Asian Economic Journal*, 7 (2)
Pigato, M. (et al), 1997, *South Asia's Integration into the World Economy*, Washington D.C.: The World Bank
Rana, M.S. and Thapa, D., 1987, Role of Women in Nepal's Industrial Development: Status, Constraints, Opportunities and Prospects, HMG/N and UNIDO, Vienna
REDP/UNDP, 2000, *Rural Energy Annual Report 2000*, Rural Energy Development Programme, UNDP-HMG/N
Salam, A., 1988, Notes on Science, Technology and Science Education in the Development of the South. Report prepared for 4th meeting of the South Commission, Kuwait
Samuhic A., 1997, How Can We Establish More than 800 Enterprises within Five Years? A Case Study of PRDA, Kathmandu
SEAMCAP, 2000, State of the Environment Dataset Report: Strengthening Environmental Assessment and Monitoring Capabilities in Nepal, (Unpublished report), UNEP/EAP.AP/MOPE/ICIMOD, Kathmandu
Sharma, K., 1999, Trade Liberalisation and Manufacturing Performance in Developing Countries: New Evidence from Nepal, New York: NOVA Science Publishers
Sharma, K., 2001, 'Liberalisation, Growth and Structural Change: Evidence from Nepalese Manufacturing', *Applied Economics*, 33
Sharma, K., S. Jayasuriya, and E. Oczkowski, 2000, 'Liberalisation and Productivity Growth: The Case of Manufacturing Industry in Nepal', *Oxford Development Studies*, 28 (2)
Shrestha, G.R., 2000, 'Status of Science and Technology Related Professional Societies', *Paper presented to the Seminar Organized by the Chemical Society of Nepal*, May 26, Kathmandu

Smith, C., J. Comings and C.K. Shrestha, 1996, A Research Study on Effectiveness and Achievement in Nepal National Literacy Program, Kathmandu: World Education/Nepal
Subedi, S.P., 1998, 'Transit Arrangements between Nepal and India: A Study in International Law', in D. Hodder, S.J. Lloyd and K. McLachlan (eds), *Land Locked States of Africa and Asia*, London: Frank Cass
Trade Promotion Center, 1998, *Nepal Overseas Trade Statistics*, (various issues) Kathmandu
UN/Nepal, 1999, Nepal: Common Country Assessment, Kathmandu
UNCTAD, 2001, *World Investment Report*, Geneva: UN
UNDP, 2000, CHOICES: The Human Development Magazine, June 2000
UNDP, 2000, *Mid-Term Evaluation of MEDEP*, Kathmandu: UNDP
UNDP, 2001, Human Development Report 2001, New York: UNDP
UNDP, 2001, UNDP Poverty Report 1998, New York, UNDP
UNEP, 2001, *State of the Environment: Nepal 2001*, MOPE/ICIMOD/SACEP/NORAD/UNEP. Kathmandu
UNIDO, 1999, Measure for Measure: Building UNIDO's System for Industrial Development Indicators (SIDI), Vienna: UNIDO
UNIDO, 2001, *UNIDO International Yearbook of Industrial Statistics 2001*, CD ROM Data Base, Vienna: UNIDO
WEAN, 1997, Directory of Women Entrepreneurs in Nepal
WECS, 1998, WECS Bulletin 9(1), Water Energy Commission Secretariat, Kathmandu
World Bank, 1993, *The East Asian Miracle*, London: Oxford University Press
World Bank, 1999, Nepal: Poverty at the Turn of the Twenty-First Century, Washington D.C.: World Bank
World Bank, 1999, World Development Report-Knowledge for Development-1998/99, Washington D.C.: World Bank
World Bank, 2000a, *Nepal: 2000 Economic Update*, South Asia Region, Washington D.C.: World Bank
World Bank, 2000b, *Nepal: Public Expenditure Review*, South Asia Region, Washington D.C.: World Bank
World Science Report, 1998, UNESCO