NEPAL PROVINCIAL PLANNING

Baseline and Recommendations for Province Two

Final Report

January 2020

ACCELERATING INVESTMENT AND INFRASTRUCTURE
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Economic Policy Incubator

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Province Government

Province Policy and Planning Commission

Province No-2

Janakpurdham, Nepal

Foreword

The Policy and Planning Commission (PPC) in coordination with provincial stakeholders has set targets for improved socio-economic development in the Province. Accordingly, we have started working towards developing policies and plans, and allocating resources to them. Various donors and development partners are supporting this process.

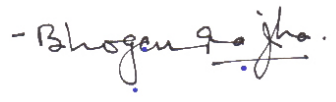
We are happy to bring out this publication entitled "Nepal Provincial Planning, Baseline and Recommendations of Province Two". This has been prepared in consultation with key stakeholders in the Province with the primary objective of identifying some sustainable development projects and their beneficiaries. This may be a good reference for development planners, government ministries, and other stakeholders.

The publication provides baseline and recommendations for three key sectors, namely industry, agriculture (including irrigation) and tourism for improved economic performance. The work covers socio-economic and geographical contexts of the province and identifies projects/ activities with estimated budgets for their implementation.

I am confident that this document will provide a roadmap for provincial development. This will also help the provincial government identify and design policy and programme interventions for poverty alleviation and economic empowerment.

I would like to take this opportunity to extend my sincere thanks to Hon. Chief Minister Lalbabu Raut, Hon. Ministers of the Government in Province 2, and the Chief Attorney. My sincere thanks are also due to the Principal Secretary, Secretaries of the ministries and their colleagues, and other stakeholders for all their inputs to various sectors covered by the publication. I would like to express my sincere thanks to the Economic Policy Incubator (EPI) for their technical support, including in mobilizing the services of national and international experts. The work was carried out under the guidance of ARUP, a reputed firm based in the UK. I would like to appreciate their contributions in data collection, compilation, and analysis, all very useful for preparing and finalizing this document.

I hope this publication will contribute to understanding the strengths of Province 2 even better, which is essential for our planning processes, both at provincial and local levels.



Dr. Bhogendra Jha
Vice Chairperson

July 2020

Acknowledgment

I would like to express my gratitude and appreciation to the Government of Province 2 especially Dr. Bhogendra Jha, Vice-Chair of the Policy and Planning Commission (PPC) and his team for thoroughly reviewing and providing comments in the earlier version of the report and encouraging to publish it. We are equally grateful to the earlier team of PPC, led by Dr. Hari Bansha Jha for supporting EPI in commissioning the work and facilitating and participating in several rounds of deliberations focused on the opportunities and challenges of the Provincial economy. These forums were convened in Janakpurdham and all eight districts of the province and participated in by government agencies, civil society representatives, and the private sector.

The report covers three key sectors of the Province's economy, namely agriculture (including irrigation), industry, and tourism. An in-depth analysis of each of these sectors is presented, which underpins priority projects identified for future planning.

The analysis presented here follows a robust methodology of multi-sector investment planning. The UK-based ARUP Consultancy led this process with Darren Gill coordinating all research activities. Four Nepali experts prepared sector papers to feed into the overall analysis: Kamal Poudyal, Mahendra Badu, Prachanda Man Shrestha, and Purushottam Ojha produced sector papers on agriculture, irrigation, tourism, and industry respectively. I would like to extend my sincere thanks to all of them.

I hope that this report would be useful for the Province 2 government in its planning exercise. It could be especially useful in evidence-based policymaking. The wider audience of the report includes Nepal's development partners, civil society organisations, the academic community, and potential investors.

My colleagues at EPI played a commendable role in completing the report. They were always available for support be it in providing technical inputs or arranging logistics. I would like to compliment them on their patience and perseverance.

Dr Shankar Sharma
Team Leader
Economic Policy Incubator
Kathmandu
July 2020

Acronyms

ADB	Asian Development Bank
AKC	Agriculture Knowledge Centre
ASYCUDA	Automated Systems of Customs Data
CBS	Central Bureau of Statistics
CDO	Chief District Officer
CFS	Container Freight Stations
CNI	Confederation of Nepalese Industries. DOC: Department of Customs.
CSIDB	Cottage and Small Industry Development Board
DAG	Disadvantaged Groups
DCC	District Coordination Council
DCSI	Department of Cottage and Small Industries
DOMG	Department of Mines and Geology
EIA	Environmental Impact Assessment
FDI	Foreign Direct Investment
FITTA	Foreign Investment and Technology Transfer Act.
FNCCI	Federation of Nepalese Chamber of Commerce and Industries
FY	Fiscal Year
ICD	Inland Clearance Depot
ICP	Integrated Custom Check-post
IPR	Intellectual Property Rights.
LG	Local Government
MAP	Medicinal and Aromatic Plants
MASL	Metres Above Sea Level
MCSI	Micro, Cottage and Small Industries
MEDEP	Micro Enterprise Development Project
MOE	Ministry of Energy
MOEAP	Ministry of Economic Affairs and Planning
MoF	Matrix of Functions
MOFSC	Ministry of Forest and Soil Conservation

MOLMAC	Ministry of Land Management, Agriculture and Cooperatives
MOICS	Ministry of Industry, Commerce and Supplies
MOPIT	Ministry of Physical Infrastructures and Transport
MOITFE	Ministry of Industry, Tourism, Forest and Environment
MOPID	Ministry of Physical Infrastructure Development
MOSD	Ministry of Social Development
MTEF	Mid-Term Expenditure Framework. NBSM: Nepal Bureau of Standards and Metrology.
MEDPA	Micro Enterprise Development for Poverty Alleviation
MW	Mega Watt
NAPA	National Adaptation Programme of Action
NCC	Nepal Chamber of Commerce
NEA	Nepal Electricity Authority
NPC	National Planning Commission
NTB	Nepal Tourism Board
NTIS	Nepal Trade Integration Strategy NPC: National Planning Commission. OSS: One Stop Services.
OCMCM	Office of Chief Minister and Council of Ministers
OPMCM	Office of the Prime Minister and Council of Ministers
PAN	Permanent Account Number
PC	Policy Commission
PPC	Provincial Planning Commission
RCP	Representative Concentration Pathways
SEZ	Special Economic Zones
SNG	Sub National Government
WTO	World Trae Organization

Contents

Executive Summary

1. Background

Nepal has entered a crucial historic phase in which the 2015 federal constitution establishes a three-tier devolution process that requires Provincial Government to formulate plans for territorial development. This is an opportunity to develop and promote higher efficiency and effectiveness in creating and promoting economic opportunities at a regional scale, which enhance sustainable and inclusive growth. The DfID- funded programme Economic Policy Incubator in Nepal (EPI) has supported the Provincial Governments of Provinces Two and Karnali to prepare provincial plans, with the technical support of Arup.

The purpose of this document is to provide Province Two with a list of prioritized actions selected based on robust evidence, to be implemented during one or multiple planning cycles, which are locally-driven and grounded in the economic, environmental, social and infrastructure reality. The methodology used was derived in consultation and includes: baseline analysis; development concept planning; objective setting and prioritisation of projects.

2. Baseline

Province Two was formed after the adoption of the Constitution of Nepal (2015) and is formed by eight districts: Saptari, Siraha, Dhanusha, Mathottari, Sarlahi, Rautahat, Bara and Parsa. With an estimated area of 9,661 km2 and a population in excess of 5.4 million in 2011, Province Two is the most densely populated in the country. Its provisional capital city is the sub-metropolitan city of Janakpur (159,468 inhabitants) while Birgunj is its largest city, with (240,922 inhabitants).

2.1 Environment, Disaster Risks & Climate Change

The geo-climatic, topographic, hydrological conditions and geographic location of Province Two are a strength and source of comparative advantages. Laying over unchallenging flat terrain drained by rivers from the Siwalik range, the province encompasses fertile plains that support agriculture and natural resources. However, the province is also exposed to a range of natural hazards that, given the current socio-economic, infrastructure and services, and environmental vulnerabilities, result in high risks of disasters. In addition, the combined effects of observed and projected climate change, and human-induced environmental degradation are likely to compound risks, and further vulnerability of people.

It is crucial that planning considers all these factors and invest in agriculture & irrigation, industry and tourism projects that, on the one hand, are resilient to disasters and climate change and, on the other, help mitigating vulnerabilities for people. Building resilience into project design will require acknowledging and addressing a) fragile and climate-vulnerable productive eco-system; b) water-resource scarcity scenarios; c) flood-risks; d) over-exploitation of forestry, water and other natural resources; e) root- causes of food insecurity presently and in the future.

2.2 Demographic and Social Context

Province Two exhibits the highest population density of Nepal, which represents a good potential for the province, in that it facilitates connectivity and certain aspects of service-delivery. Density may support sizable scale of agricultural, industrial and tourism outputs. However, the low-income per-capita, lower than its potential productivity, and lack of diversified income sources among the active population, means the Province Two economy is not resilient yet, and sub-optimal. Gender disparity, low level of education and literacy, and outward migration of young people also need to be addressed.

It will be crucial for planning to a) anchor economic development to social development; b) focus on promoting under serviced populations to increase critical indicators on sanitation, health, and poverty in particular by designing economic development projects in all sectors that proactively promote women and youth in value chains, supported by up-skilling to boost employability within the labour market.

2.3 Economic Context

Province Two can count on a robust economic base thanks to its fertile land and industrial base, and existence of tangible and intangible cultural heritage and natural resources for tourism with further potential for growth and a large labour force in the most densely populated region in the country, as well as fabric of SMEs.

Province Two is one of top three agriculture and industrial hubs in Nepal with the largest irrigated area (393,582 hectares) and highest proportion (74%) of irrigated land, and the largest number of industries (501). The province boasts the highest GDP output per province in manufacturing (34%) and fishing (55%) but income per capita (PPP $922) is disproportionately low and disparity between districts indicates the economic benefits of high output and GVA are concentrated and not equitably distributed. The strategic location along the Indian border combined with the Birgunj Dry port, proposed international airport at Nijgadh and the Kathmandu – Terrai fast track reinforces the comparative trade and tourism advantage of Province Two.

This may support sizable scale of agricultural and industry outputs, provided that jobs are diversified and better mechanisms for redistribution of wealth generated are established. Economic development in the three key sectors should focus on growth that is inclusive, through: a) expand innovative industrial production by identifying economic proximate sectors (through technological transfer) and b) improve productivity of agriculture through smart agriculture, i.e. upskilling and focusing on efficient irrigation and c) focus on alternative forms of tourism that engage communities and villages.

2.4 Infrastructure, Connectivity & Development Clusters

The connectivity and strategic position of Province Two are a major strength. The province is a 'natural region' with homogeneous economic potential concentrated in two main nodal centres located on strategic axes and supported by surrounding productive areas. There is high potential for inter-modal development and relatively good electrification, water access, and ICT. However, the insufficient maintenance may result into degrading infrastructure and diminishing performance while access to markets (farm roads) and urban planning and regulations could be improved. While the further enhancement of infrastructure will increase the potential and comparative advantages of the Province. Meanwhile, environment impact must be also acknowledged, prevented and mitigated and considering its importance for people, natural hazards regulation, and tourism attractiveness should also be promoted. Distribution of services and functions across settlements in the province is uneven, with 94 percent of urban and rural municipalities lacking concentration of critical services; and with uneven quality.

It is critical that planning a) improves spatial distribution of resources b), invests in inter-modal transport; c) makes environmental planning a priority; d) prioritises existing infrastructure to support the nodal centres' performance and emergence of new centres, starting from maintaining transport & energy infrastructure; d) refuses development that may adversely impact environment.

2.5 Comparative Advantage

Province Two has a range of comparative advantages with all sectors befitting from comparatively good multi modal transport infrastructure. Industry is competitive at the national and international level with Birgunj customs port accounting for 44% of total national trade in goods in 2017-18; the large Birgunj-Simara manufacturing base; extensive Pathalaiya-Birgunj industrial corridor; and highest industry GVA per capita in Bara. As the traditional 'rice bowl' of Nepal, agriculture benefits from: the largest area (393,582 hectares) and highest proportion (74%) of irrigated land of any province; favourable climatic zones which produce up to three harvests per year; high levels of absolute output (e.g. 57% of national fish production); and existing factories demand for industrial crops (e.g. sugar and tobacco). Tourism is less competitive as Province Two is not endowed with the natural conditions or attributes to compete with alternatives in surrounding provinces.

Targeting the correct market segment, in the sub-regions, will help to achieve the comparative advantage in: business recreation historical / religious / cultural sites and festivals; and ecological tourism in the west (Parsa National Park) and east (Koshi wetland). It is critical that planning a) enables the multi modal and multi sector transport potential of current and planned capital investments; b) fosters continued innovation in industry through technology transfer; c) addresses the environmental and infrastructural constraints to low agricultural productivity; d) protects the fragile ecological and historic/cultural assets which tourism needs to develop.

3. Recommendations for sectoral development plans

The overall goal of the development strategy is to drive inclusive economic development through industry lead innovation; consolidate and expand agricultural productivity; and establish viable tourism opportunities that support local economic development. The baseline highlights the existing economic growth of Province Two is inequitably distributed with disproportionate economic returns accruing to innovative and productive municipalities and sectors. The challenge for provincial government and a significant priority of the development strategy is to redistribute these economic returns more equitably through deeper local supply chains that increase local economic multipliers particularly in tradables (e.g. fruit) and value addition (e.g. manufacturing) or processing activities (e.g. cement), presenting heritage and packaging alternative tours.

The spatial development strategy focuses on: consolidating the three nodes within the province (Birgunj, Janakpur and potentially Rajbiraj) where comparative advantage can be exploited in each sector with connective elements (e.g. potential SEZ in Siraha) and infrastructure (physical and administrative); extending serviceability of people and increase economic linkages within the province; strengthen functional links on the East-West axis along the Mahendra Highway (H1) to maximise the connection across the two nodes (Birgunj and Janakpur) while enabling the development of a mixed-used third pole around Rajbiraj; reinforcing connectivity along the North-West axis of the H2 (Tribhuvan Highway) and H6 (Banepa Bardibas Highway) to strengthen the intra-nodal function of Birgunj and Janakpur respectively; but also consider infra-nodal connectivity (between the main nodes) along the feeders to/from India to the H1, i.e. F7 and F6 as well as F5 and F4 to the east, particularly to support the development of Rajbiraj as a third pole.

3.1 Industry

The objectives and development packages for industry in Province Two are framed by the vision of a prosperous province supported by high industrial growth which assists in reducing the level of poverty through the development of agro-based industry and manufacturing sector. The primary objective to increase income and employment opportunities at the Provincial level by enhancing efficiency and outputs of industries. The specific objectives are:

Develop necessary strategic and regulatory framework for industrial development of the Province;

Develop physical infrastructures for enabling investment climate in the province;

Promote micro, cottage and small industries (MCSIs) and help them to be the driver of growth and prosperity;

Prioritize key industrial sectors that are of importance from national perspectives;

Focus on creating enabling environment for investment (supported by skill development program and appropriate institutional infrastructures).

The development packages for industry focus on concentrating the innovation potential of industry around Birgunj. The localisation economies and specialisation achieved in Birgunj should be encouraged and promoted to drive innovation- based growth. However, as firms develop and industry matures, opportunities exist for stages of the value chain to move out to other locations, e.g. Rautahat. Development packages also include consolidation of existing routes into industrial corridors with connective multi modal transport infrastructure and a variety of measures to address the inequitable distribution of jobs and opportunities across Province Two. The development packages for industry highlight the need for several policy and regulatory interventions as well as connective and distributional infrastructure across Karnali to improve the enabling environment.

3.2 Agriculture & Irrigation

The objectives and development packages for agriculture and irrigation in Province Two are framed by the vision to attain sustainable prosperity through land reform, modernization and commercialization of agriculture. The overarching goal for irrigation is to achieve year- round irrigation in a sustainable manner through the combined use of surface and ground water that contributes to increased agricultural productivity. The specific objectives are:

To increase production and productivity through improved agricultural technologies;

To commercialize production and export of products through their scientific production and improved post- harvest management practices;

To improve resource productivity through cost minimization and efficient utilization of resources;

To increase production of agricultural and forest- based products while reducing impacts of climate change;

To provide assured irrigation in 20,800 ha of irrigated land through improvement and modernization of existing irrigation schemes of surface and groundwater system;

To provide assured irrigation in 91,000 ha of agricultural land through groundwater development in water scarce area of new and existing irrigated land.

The development packages for agriculture and irrigation focus on the nodes of highest current agricultural output – mostly in the central area of the province. Several non-location specific interventions are required to overcome the constraints to productivity enhancements such as crop and animal diversity. This area has the potential to also overcome the location specific constraints to productivity such as aggregated land holdings, mechanisation and enhanced irrigation. The central area is strategically located to benefit from the proposed Sunkoshi diversion projects. However, agriculture development must stretch beyond the central node in an effort to equitably distribute economic benefits and employment opportunities. Several secondary nodes are identified to the east and west where agriculture can support industry (west) and potentially contribute to enhancing the eastern edge of the province.

3.3 Tourism

The objectives and development packages for tourism in Province Two are framed by the vision and goals to: increase the contribution of tourism to the macro economic performance of the province; create employment opportunities; generate alternative income for targeted communities; and mobilise revenue for Provincial government by promoting religious / cultural / nature-based tourism activities. The main objective is to improve and expand the range of tourism activities and services which enhance the economic value of tourist product packages through increased awareness of such services and activities in the generating market. Future success can be measured by number of arrivals, per capita visitor spending and length of stay. The specific objectives are:

Develop tourism products that cater to diversified domestic and international demand in the generating market;

Establish the enabling governance and regulatory framework for investment in tourism projects and services;

Establish, enhance and consolidate the tourism hosting industry capacity by improving infrastructure, services and skill.

Development packages for tourism focus on three nodes in the east, centre and west of the province in response to existing historic, religious or cultural sites. Janakpur remains the major destination of the province with a proud history of religious significance. However, the volume of people transiting through Birgunj also offers potential to offer additional attractions for a market segment that has already travelled to or through the Nepal gateway. Similar to industry and agriculture but perhaps more visibly, the proposed development packages for tourism rely heavily on connective east-west transport infrastructure to facilitate sight-seeing tours and routes. The individual calibre of each tourist site may not rival those of international significance like Lumbini, but the proximity and ease of access may encourage existing travellers or those in close proximity (e.g. Kathmandu or Patna) to spend a few days visiting various sites around Province Two.

4. Recommendations to prepare implementation plans

A long list of potential projects was compiled throughout the research and consultation process. A short list of projects was prioritised using a modified version of the Delphi method against a series of criteria which included: strategic value; dependency; co-benefits (intra and inter- sectoral); quick wins; cost; feasibility; effectiveness; acceptance; risk; and sustainability. The priority projects for each sector include: province wide initiatives, policies and regulations (e.g. Tourism Awareness Marketing Campaign); location specific feasibility studies and capital projects (e.g. Aurahi industrial zone); sector specific training and capacity building measures (e.g. Agriculture College and Technical Training Center); technical assistance programmes (e.g. food testing and certification laboratory); and advocacy (e.g. Hulaki Highway).

Section 1

Baseline and Recommendations for Province Two

1. Introduction

1.1 Background

Nepal has entered into a crucial historic phase in which the settings and provisions of the 2015 federal constitution are rolled-out through a three-levels devolution process that includes Federal, Provincial and Local Governments. The Constitution entrusts specific statutory roles and responsibilities of the territory in almost all sectors of development, except the defined national sectors. Among others, the provinces have responsibility in developing "agriculture and livestock, factories, industries, businesses, transportation" (Annex 6) as well as aspects related to education and business that are vital to territorial competitiveness and development. Provincial authorities are required to formulate plans for territorial development. This is an opportunity to develop and promote higher efficiency and effectiveness in creating and promoting economic opportunities at a regional scale, which enhance sustainable and inclusive growth. Within this context, in 2019 the DfID- funded programme Economic Policy Incubator in Nepal (EPI) has supported the Provincial Authorities of Provinces Two and Karnali Province to prepare provincial plans, with the technical support of Arup. This document is the result of a thorough process of data collection and analysis, consultations and strategic participatory planning that has taken place in 2019.

1.2 Methodology & planning principles

The methodology consisted of three main 'building-blocks', which applied appropriate spatial and participatory analytical and planning methods:

i. **Baseline:** the primary and secondary-data, analysed spatially, were collected and analysed to understand a) the potential and constraints of the geo-administrative region (functional or natural region) and b) the comparative advantages and potential of the economic region (homogeneous, nodal or planning region). To this end, the following methods were used: 1) disaggregated Census 2011 data at ward level built into a semi-quantitative multi-criteria index to assess vulnerabilities and risks to natural hazards, and climate change impacts across socio- economic, infrastructure and services, and environmental indicators; 2) multi-stakeholder' consultation workshops with participatory spatial mapping; 3) review of official, institutional and academic literature, policies and plans; 4) questionnaires at district level to assess presence and absence of services and functions built into a Matrix of Functions (MoF) that established the spatial structure of the Province, following the methodology perfected by the United Nations Human Settlements Programme (UN-Habitat) in several countries.

ii. **Development concept planning:** concepts and development packages were discussed and agreed with the stakeholders for each of three sectors [industry, agriculture (along with irrigation] and tourism) pre-identified by EPI with the provincial authorities and contrasted with the emerging findings of the baseline. Concepts for development were mapped spatially with stakeholders and probed for sustainability; long-lists of potential projects were also established at this stage for each sector, as well as SWOT analysis, highlighting comparative advantages.

iii. **Objective setting and prioritization of projects:** strategic and specific objectives for planning were established based on the potentiality of the territory assessed through the baseline, and a short-list of projects to achieve the objectives prepared.

To this end, the following methods were used:

a. expert-driven consultations through multi-stakeholder consultations and workshops;

b. participatory objective-setting;

c. criteria-based selection of projects (as detailed in chapter 3 of this document).

In developing the plan, five overarching principles were used, as follows:

- Sustainability: keep the balance between projects/activities that will deliver economic benefits while enhancing social inclusiveness, and environmental health.

- Resilience: ensure that socio-economic and infrastructural development is able to

withstand, respond and adapt to exogenous and endogenous shocks and stressors

- Participation & inclusiveness: acknowledge that inclusive growth starts from involving actors in society from the private and public sector, the civil society and the university
- Evidence-based planning: aiming at establishing a robust, spatially- relevant basis of evidence for decision-makers to select and prioritize investments that can be sustained by the territory
- Result-based locally-driven approach: which favours buy-in and achievability over all other considerations.

The most recent available official data was consistently used as priority source. This includes namely all data sourced by the Central Bureau of Statistics, and particularly National Census 2011 data disaggregated at ward level and National Economic Census 2018, both available at https://cbs.gov.np/survey-census/. World Bank and United Nations reports were also used consistently.

Key limitations included:

a. timely access to updated data and information at provincial level was limited;

b. In traditional territorial planning, the prioritization of economic sectors follows the baseline phase: however, in this case key sectors [tourism, agriculture (and irrigation), industry] were pre-selected;

c. competitiveness could not be assessed with objectively verifiable quantitative data given the limited timeframe and data availability

1.3 Purpose

The purpose of this document is to provide the province with a list of prioritized actions selected on the basis of robust evidence, to be implemented during one or multiple planning cycles, which are locally- driven and grounded in the economic, environmental, social and infrastructure reality. Projects and investments devised as a result of this process are a) practical; b) realistic; c) owned by the provincial authorities and a range of community, local government and provincial stakeholders.

2. Baseline

Province Two was formed after the adoption of the Constitution of Nepal (2015) and is formed by eight districts: Saptari, Siraha, Dhanusha, Mathottari, Sarlahi, Rautahat, Bara and Parsa (Figure 1).

With an estimated area of 9,661 km² and a population in excess of 5.4 million in 2011, Province Two is the most densely populated in the country (Figure 2).

Its provisional capital city is the sub- metropolitan city of Janakpur (159,468 inhabitants) while Birgunj is its largest city, with (240,922 inhabitants) [1]

In this baseline information is provided to inform development planning in key sectors concerning 2.1 Environment, Disaster Risks & Climate Change; 2.2 Demographic and Social Context; 2.3 Economic Context; 2.4 Infrastructure, Connectivity and Development Clusters; 2.5 Comparative Advantages, including a SWOT analysis. On this basis recommendations for planning are provided in Province Two

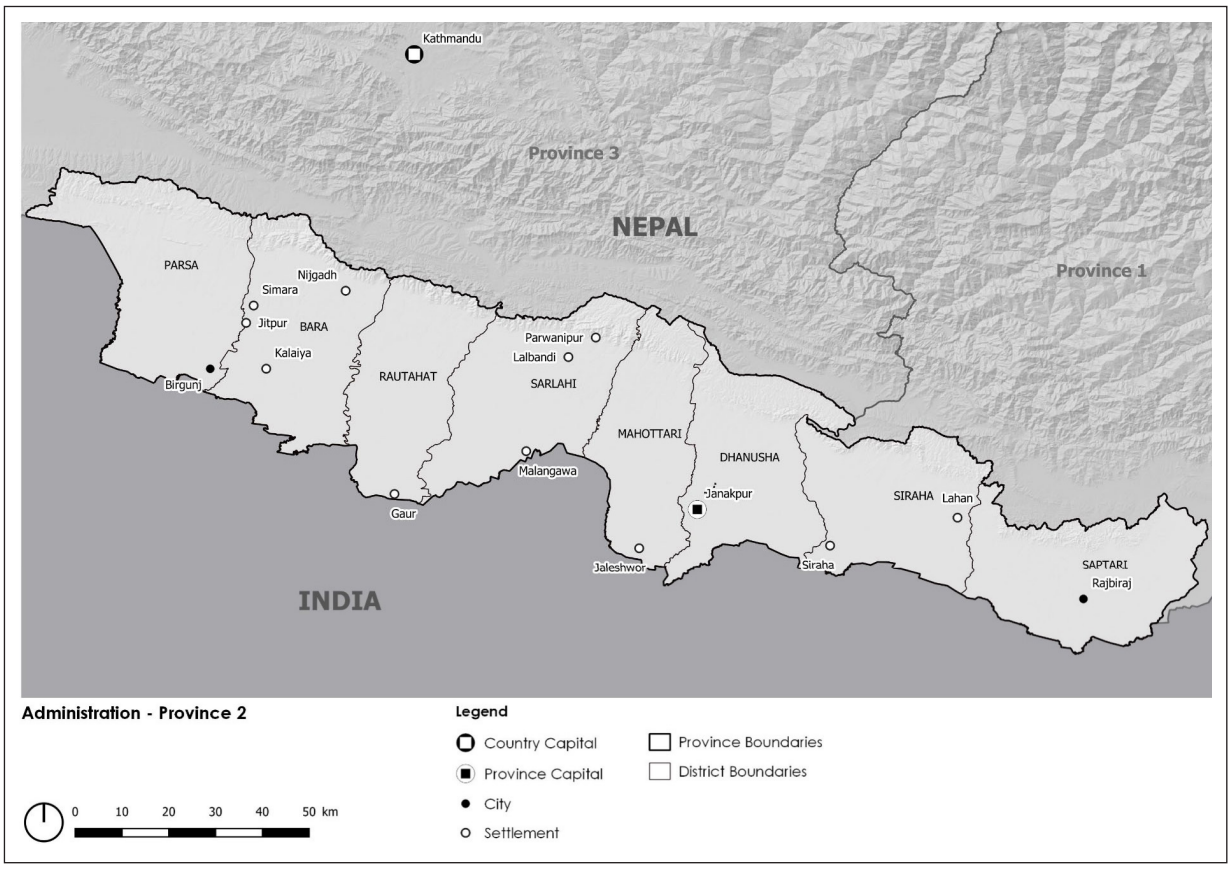


Figure 1. Province Two administrative map (Source: Authors, 2019)

[1] References: http://p2.gov.np/; http://dataforall.org/dashboard/nepalcensus/ and https://cbs.gov.np/

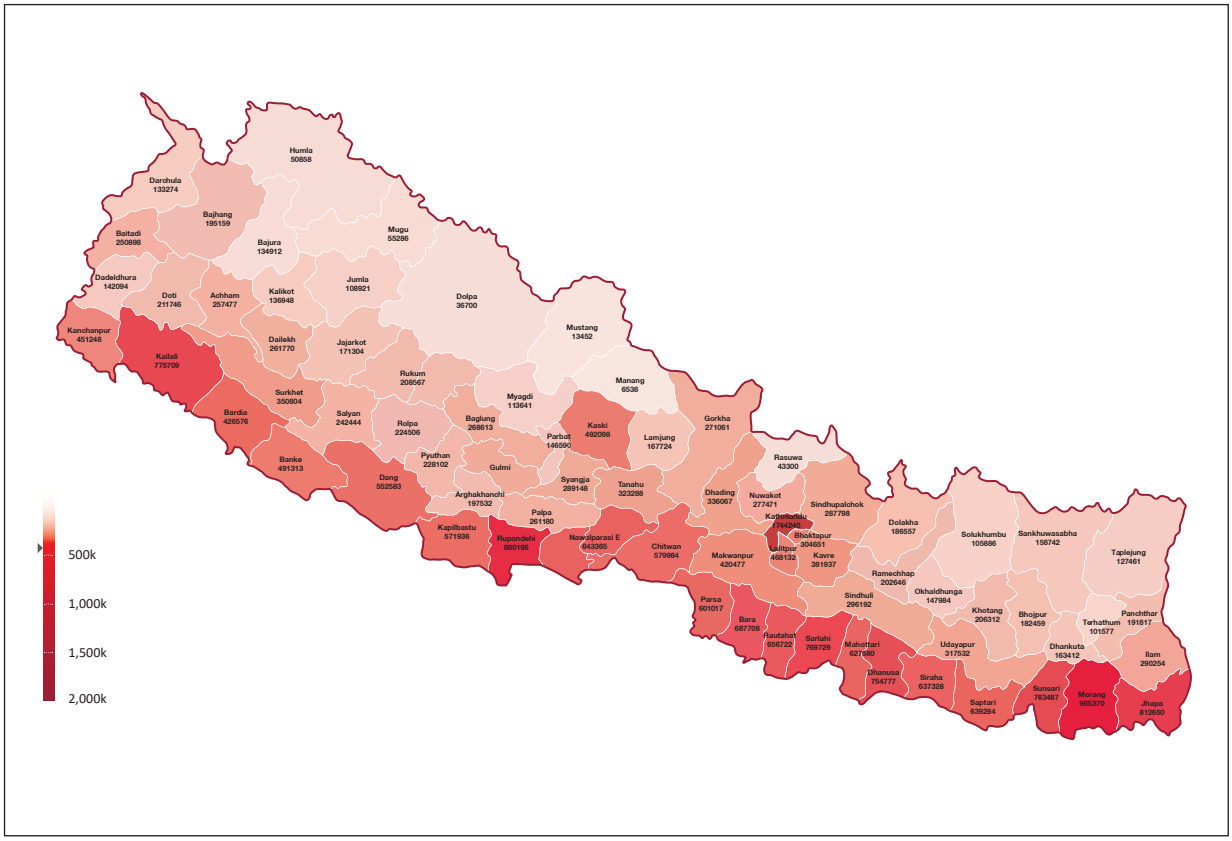


Figure 2. Population distribution in districts of Nepal (Source: UNFPA)

Note: Two districts namely Nawalparasi and Rukum were bifurcated in 2015: Nwalparasi was divided between Nawalpur and Parasi of which the former lies in Gandaki Province (No. 4) and the other (Parasi) lies in Province-5. Similarly, Rukum is divided into East Rukum and West Rukum. East Rukum lies in Gandaki Province while West Rukum lies in Karnali Province

2.1 Environmnet, disaster risk & climate change

The geo-climatic, topographic, hydrological conditions and geographic location of Province Two are a strength and source of comparative advantages. Laying over unchallenging flat terrain drained by rivers from the Siwalik range, the province encompasses fertile plains that support agriculture and natural resources. However, the province is also exposed to a range of natural hazards that, given the current socio-economic, infrastructure and services, and environmental vulnerabilities, result in high risks of disasters. In addition, the combined effects of observed and projected climate change, and human-induced environmental degradation are likely to compound risks, and further vulnerability of people. It is crucial that planning considers all these factors and invest in agriculture & irrigation, industry and tourism projects that, on the one hand, are resilient to disasters and climate change and, on the other, help mitigating vulnerabilities for people. Building resilience into project design will require acknowledging and addressing a) fragile and climate- vulnerable productive eco-system; b) water-resource scarcity scenarios; c) flood-risks; d) over-exploitation of forestry, water and other natural resources; e) root-causes of food insecurity presently and in the future.

Geographic & Climatic Context

Key Implications for Planning

Province Two is a 'natural region' with a flat unchallenging terrain defined by natural borders to the East, West, North, and international political boundary with India to the South. The favourable geography, topography, hydrology and land are a strength to be built upon and protected: however, observed changes in climate and particularly erratic rainfall patterns and temperature extremes require a long-term approach to planning, for investments in key sectors to be effective.

Province Two is located mostly in the flat plains of the eco-region1 of Terai, one of the 5 physiographic areas of Nepal (Figure 3) below 500m ASL. It is composed by eight districts, i.e. from the East: Saptari, Siraha, Dhanusa, Mahottari, Sarlahi, Rautahat, Bara, Parsa and cutting across the province from North to South. The province includes the Siwalik Range (or Churia Hills) the southernmost mountain chain of the Himalayas, between 500-1000m and the Bhawar undulating area. It develops longitudinally on the East-West axis between the 84E to 87E degree and from latitude 27N and 26N degrees at its northernmost and southernmost tips (Figure 5 and Figure 5) for a total estimated area of 9,661 km22. Its administrative boundaries to the North, East and West are natural with the Koshi River and Koshi Tappu Wildlife Reserve3 to the East dividing from Province 1 and the Parsa National Park to the West from Province 3. The East-West northern demarcation follows the Churia Hills, dividing the densely populated plains of the Terai from the hilly areas of the country. To the South of Province Two Nepal shares its international borders with the Bihar State of India. A complex system of streams and river basins drain the province i.e. Koshi or Saptakoshi River system (one of main tributaries to the Ganges), and namely the Sun Koshi; the Bagmati, Kamla, and Lakhandei Rivers, descending from the Siwaliks escarpments (Figure 4 and Figure 6).

The province is a 'natural region' as its administrative boundaries encompass a homogeneous eco-system laying almost entirely on the Indo- Gangetic Plains, with unchallenging topography. Land-use cover is predominantly agricultural with a stretch of forest along the Churia Hills and in 'buffer zones'4 to both the West, around the Parsa national park adjacent to the large Chitwan National Park; and to the East, surrounding the wildlife reserve of the Koshi Tappu, in the Saptari district. The region produces a variety of crops (i.e. rice, wheat, maize, sugarcane, vegetables) and fish as a major percentage of production in the country5. While homogeneous in general; western, central and eastern areas have different ecological comparative advantages that support low and high- value crops alike.

The normal climate in the Province is humid tropical (mostly Cwa - dry- winter humid subtropical climate6) and sub-tropical with hot and dry months between April and June; a rainy season from June/July to September; a cool dry season from October to January and a short spring from February to March. Saved district-specific differences, most of the province receives an annual average precipitation of between 1000 and 1500mm of rain, with average maximum temperatures of 31°C (should be more) and minimum of 20°C recorded in stations of Birgunj, Janakpur, Rajbiraj7 in 2017, with lower peaks of around 10-15°C. Winters experience a range of 20-30 mm of rain; the pre-monsoon 100 and 200 mm and the monsoon between 1000 and 1500 mm across districts. In the last decades, however, changes in climate have been observed specific to the province that include: a) the shift or variability of seasonal concentration of rain with a reduction of winter rainfall; a significant increase in the pre-monsoon rains; and mixed trends in the monsoon seasons across districts; and b) the general increase of maximum temperatures in pre-monsoon and monsoon seasons against the 1976-2014 baseline8. Studies are not conclusive on attributing extreme adverse natural events to climate change in the province9. However, torrential rains, erratic unseasonal rainfall patterns with impact on the harvesting seasons, crop disease, unprecedented flooding and heat waves have been experienced in the Province: these events are compatible with climate change effects.

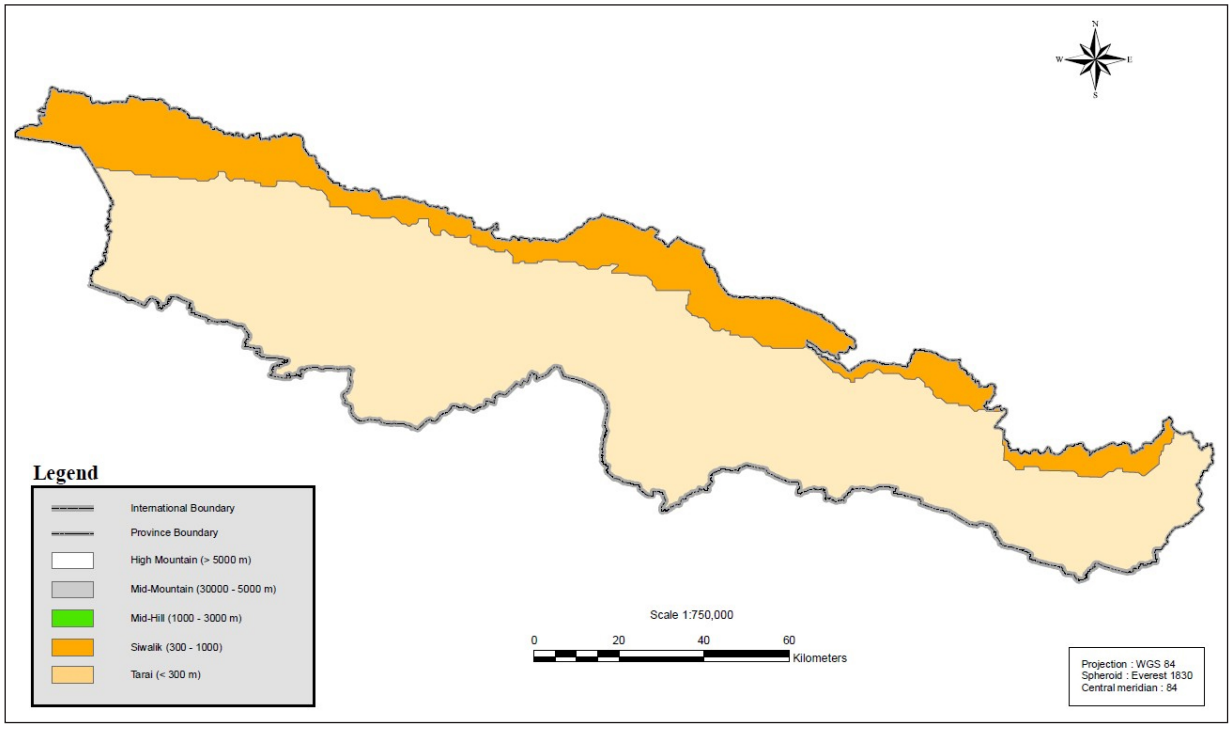


Figure 3: Physiography of Province Two (Source: Authors, 2019)

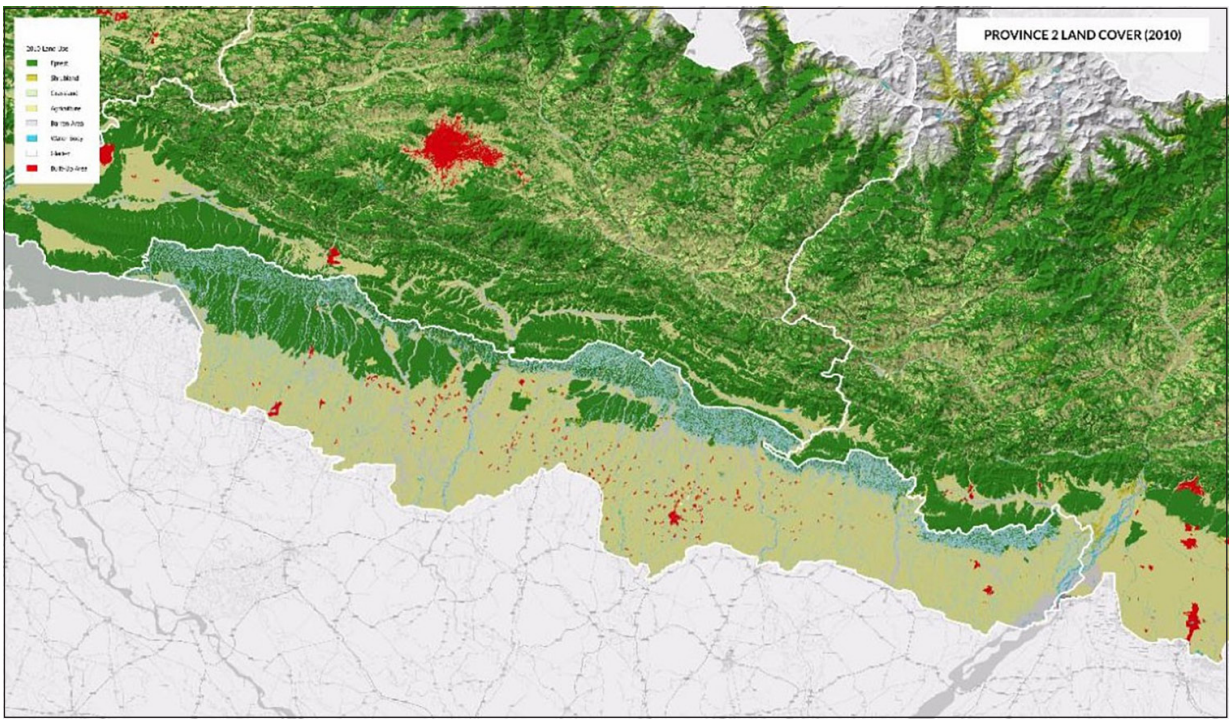
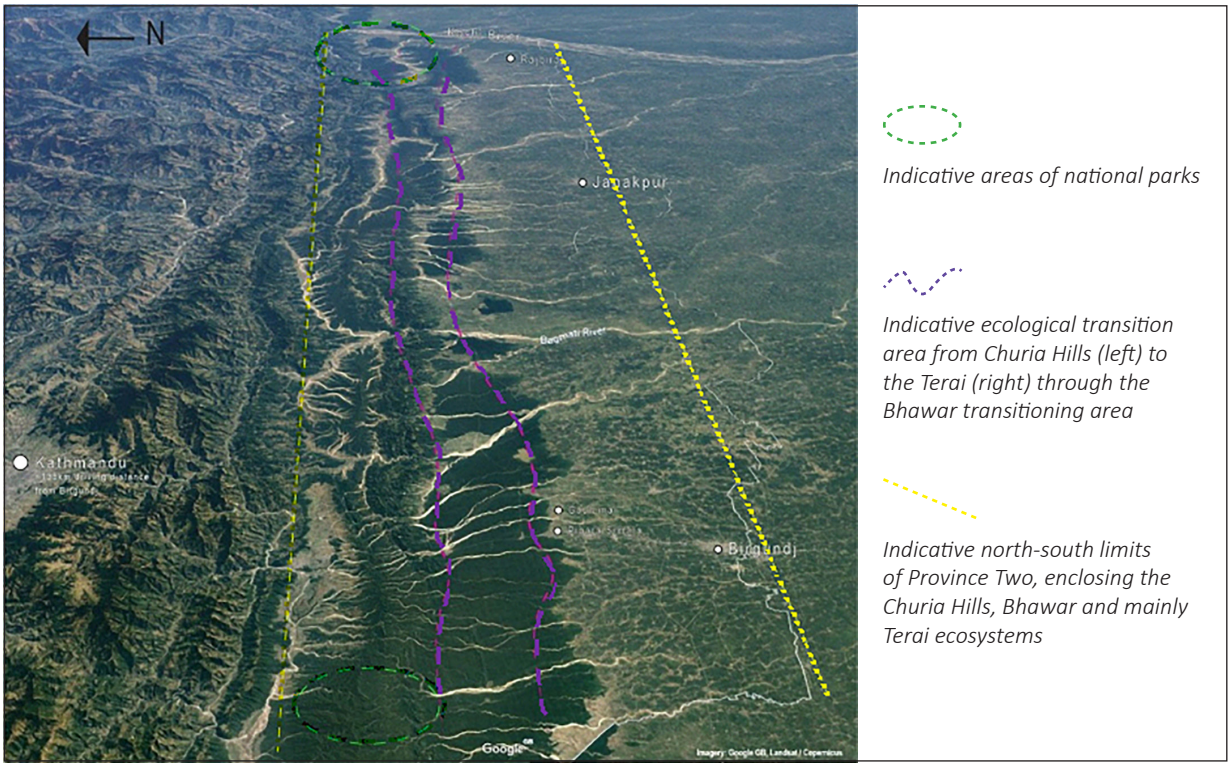


Figure 4: Province Two Land-use Cover 2010 (Source: Authors, 2019)



Indicative areas of national parks

Indicative ecological transition area from Churia Hills (left) to the Terai (right) through the Bhawar transitioning area

Indicative north-south limits of Province Two, enclosing the Churia Hills, Bhawar and mainly Terai ecosystems

Figure 5: Bird's Eye View of Province Two main physiography with elevations. (Source: Authors, 2019)

Figure 6: Bird's Eye view of the Indo-Gangetic Plains with settlements for reference. (Source: Google GB Landsat/Copernicus)

Natural Hazard Profile, Vulnerability and Disaster Risks

The naturally fertile plain area of Province Two is also exposed to a range of natural geo-climatic hazards including floods, droughts, earthquakes and landslides. Disaster risks are high and driven by the interaction of this hazard profile with socio-economic, infrastructure, environmental vulnerabilities, as well as human and climate-induced stressors, such as over-exploitation of natural resources.

Food insecurity is a chronic stress in the province, despite the province being known as the 'grain basket' of Nepal

Natural Hazards

From the high-level review of secondary-data available[10], the Province appears to be exposed to a range of natural hazards (Figure 7) including:

Riverine and urban floods, enabled by the hydrodynamics of the complex watershed, the topography, and rainfall patterns. This includes both high velocity water runoff from the steep hills of the Churia range into the alluvial plains of the Terai; the inundations of larger river basins through the complex network of riverbeds; and the streams channelled into built- up environment in settlements. In the province the flood hazard levels are compounded by the observed deforestation and land-use change upstream (Churia Hills), by the change in the permeability of the soils influenced by urbanization downstream, and erratic rainfall patterns;

Meteorological and agricultural droughts[11] hazard levels are medium to high: in effect, while the percentage of irrigated land in the province is above the national average[12], droughts hazards still affect the province as a result of the dry-spells, high temperatures and inefficiencies in irrigation. Moreover, observed changes in climate (and projections discussed in the next section) are likely to heighten the potentiality of this hazard and demand that it is considered carefully in planning;

Earthquake: according to World Bank ThinkHazard! Methods, there is a 10% chance of potentially damaging earthquake shaking in the province in the next 50 years[13] and should be therefore considered in all phases of the project, during design and construction of infrastructure. Project planning decisions, design, and construction methods should consider the level of earthquake hazard.

Landslides susceptibility in the belt along the Churia Hills should be considered as medium to high, depending on the locations. Prevalent rainfall patterns, terrain slope, geology, soil, land cover and possibly earthquakes compounded by environmental stressors (such as observed deforestation for land-use clearance; or logging) require that landslides are considered in planning decisions for projects in these areas.

In addition, wildfires and heat waves hazards levels are also high. Water scarcity, despite the resources of the province, may also affect different areas of the province. There is significant evidence of growing shortages of

water needed to meet the irrigation requirement of Terai areas due to several contributing factors, including: a) the higher demand and lower availability of water for local irrigation caused by the negative effects of land-clearance on the yield of local rivulets and streams and increase of cultivation area to be irrigated; b) the growth of population in the upper catchment areas using water resources locally; c) over the long-term, changing rainfall patterns and glacier melting, over-exploitation of ground- water resources, and deep aquifer alteration may all contribute to water shortage crises[15].

Vulnerabilities and Risks of Disasters

The interaction of current hazard profile with the vulnerability of people results in medium to high risks of both rapid and slow on-set disasters across the Province. A chronic threat of food insecurity is also acknowledged, in apparent contradiction with the agricultural potential of the region[16]. The analysis of multi-dimensional indicators in infrastructure, socio-economic and environmental aspects from primary and secondary data[17] shows that, despite improvements in the last decades, medium to high levels of vulnerabilities[18] remain across the province with deeper- pockets in some districts as visualised in Figure 7, including:

Infrastructure, services & connectivity: High density in Province Two and generalized insufficient risk-sensitive and sustainable planning in most urban and peri-urban centres increases the sensitivity to adverse effects of climatic hazards. Urbanization processes in cities of the Terai have proven to offer economic benefits[19] and concentration of services, reducing some aspects of the multi-dimensional vulnerability. However, higher density of people and assets also increases exposure in main settlements. Spatially, multi-dimensional vulnerability is distributed evenly across districts in the province with pockets in certain districts or towns where services, socio-economic and infrastructure indicators are lower. Relative to other towns in Nepal, Birgunj[20] presents medium to high vulnerability to the adverse effects of natural hazards, while within the Province it is relatively less vulnerable than other towns and areas. High connectivity in all directions of the Province, is a positive factor that counter vulnerabilities and is recognized to contribute in addressing poverty[21]. This means that in any given location people are potentially at risk of disasters, triggered from one or more natural hazards; In general, housing' conditions (materials and technology) and vernacular architecture are vulnerable to rapid on-set disasters (mainly floods) as well as the increasing incidence of heat-waves. Change in availability of wood, increased use of different materials, and non-risk-responsive designs is likely to increase susceptibility and increase risks, especially as concerns destructive forces associated with floods, and the effects on human health of heat waves. Importantly, while there is high access to improved water sources throughout the province, households have a very low access to improved sanitation in all districts compared to national percentages[22]. This has potential for outbreak of diseases in case of major natural disasters.

Socio-economic conditions: The comparatively low socio-educational indicators in all districts[23] except for higher levels concentrated around major centres, and dependency from undiversified sources of income, heighten risks of disasters from both rapid and slow on-set events. As described in the Section 1.2 of this document, indicators of socio- economic development in the province present an apparently contradictory context: while life-expectancy is amongst the highest in the country[24], and the productive potential of the province is high, the Human Development Index (HDI) is second-last[25]. The adult overall literacy is amongst the lowest in the country[26], with significant gender disparity in access to social and economic empowerment opportunities. While there is a high potential for agro-business and industry, the economic activity in the Province has declined since 1981 and remained lower than in other parts of the country, as far as Census 2011 data is concerned[27]. Rate of poverty, landlessness and dependency on labour from undiversified livelihood sources expose large parts of the population to the adverse effects of natural hazards affecting agricultural production suddenly (as a result of floods) or as a result of slow on-set disasters (e.g. droughts, heat waves) and natural process alteration from climate change (erratic rainfall patterns).

Eco-system services: The high dependency on eco-system services for livelihood, residential and production in the province and the concurring environmental degradation compound hazards and increase risks. This includes over-exploitation of natural resources, i.e. deforestation for land-use change and use as cooking fuel (especially in the western part of the province[28]); sand and boulder extraction in rivers for construction, which alter the hydrodynamics in the watersheds and exacerbate flood risks, as well as erosion, and depletion of sediments/nutrients washed away by faster runoff water. According to sources, construction industry has also driven up the demand for sand and gravel, usually mined from upstream river- beds in the dry season. During the monsoon, the loosened sediments are transported downstream, which elevate the beds of river, causing them to meander and flood. Land degradation trends are typical of lower elevations and gentle slopes, and include damage from flooding, waterlogging, and shifting of river courses, sheet, rill, inter- rill, and gully erosion[29]. Urbanization trends also reduce permeability of the

soil, increasing runoff water and flash-floods events in the area. In some districts, the coexistence of high people density and concentration of natural resources increase the sensitivity of both human and ecological dimensions, for instance in Parsa[30] where most of its forest area falls in national parks.

Potential disaster impacts and chronic stressors

Disasters resulting from floods and associated torrential rains, landslides, droughts and heat-waves have resulted in the province in a range of primary covariate and minor impacts overtime, such as a) loss of lives; b) loss of economic assets, including crops affected by torrential rains, floods, drought and livestock; c) loss of infrastructure assets, including housing; d) disruption of service' delivery and restricted seasonal access across waterways in the province. Secondary impacts include a) further stress on economic capabilities of households, with possible links to outward and rural-urban migration; b) acceleration of natural processes such as soil erosion and loss of soil nutrients. All districts in the Province are affected as they share a general geo-climatic profile. However, given the specificity of different watersheds and socio-economic or infrastructure sensitivities, some districts have been more affected historically by location specific hazards, such as Sarlhai that rank high at national level on disasters impacts, in particular triggered by floods and landslides[31]. Sources estimated that in Mahottari, as much as 8 percent of annual household income was lost to floods and 18 percent of the plains area in Mahottari was at high risk of flooding[32]. Sirhaha is also recurrently affected by destructive floods that disrupt agriculture, as well as landslides[33]. Rautat also laments high impact flood and landslides events, compounded by human-induced degradation processes in the hydrodynamics of rivers, soil quality and stability. As recently as August 2017, Nepal experienced intense rains resulting in large scale impact on life, livelihood and infrastructure across 35 districts, including all districts of Province Two, i.e. Saptari, Siraha, Dhanusa, Mahottari, Sarlahi, Rautahat, Bara, and Parsa. The Department of Hydrology and Meteorology (DHM) recorded the highest ever mean rainfall of 1,800 mm, substantially exceeding the average of 1,200 mm in the recent past. This triggered inundations and flash-floods across the Province[34]. In the event, an estimated 649,000 people were affected in Saptari, 266,000 in Rautahat and 200,000 in Mahottari[35].

In addition to the impact of rapid on-set disasters, chronic food insecurity characterises the province[36], which lacks behind the Country's average, in particular as concerns the availability and consumption of appropriate foods[37]. While this appears to be a contradiction given the prominent agricultural role of Province Two[38], the finding is coherent with data showing that households in rural areas engaged in agriculture are less food secure than those in urban areas in Nepal[39]. While poverty of the households is amongst the main obstacles to access food in the Province, there is little consensus on the complex interplay of root causes to be addressed to increase food security in the Province. While endowed with water resources that drain the plains, water scarcity in different areas have been reported, affecting both drinking water and irrigation.

Should the sources of vulnerabilities remain unaddressed and uneven socio-economic development trajectories for the province continue, risks of disasters are likely to be driven upwards in the next decades by the compound effect of climate change and human-induced stressors. Investing in Agriculture & irrigation, Tourism and Industry or any other productive sector will require planning authorities to identify and address root causes of food security and integrate risk reduction in all investment and projects.

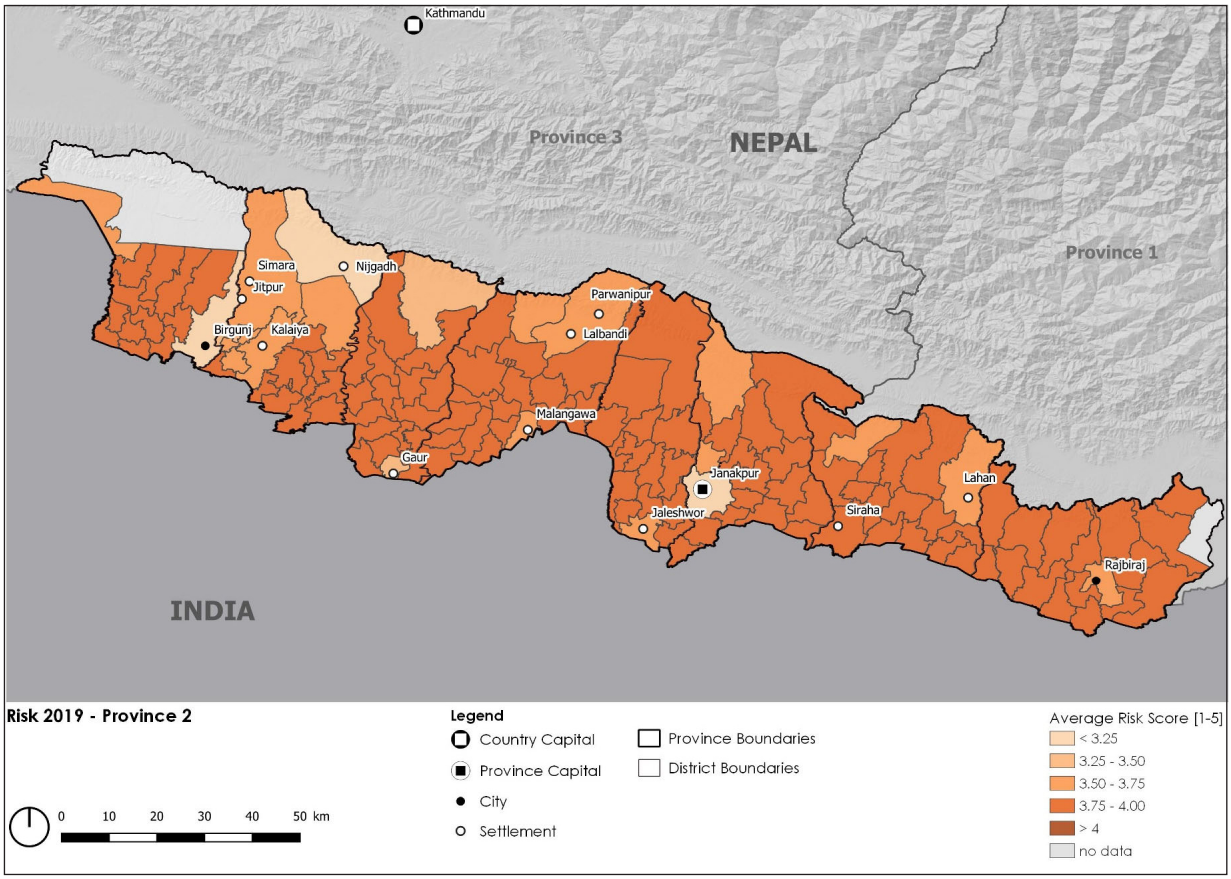


Figure7: Risks levels across the province (as a product of hazards, exposure and sensitivity of people and assets. (Source: Authors, 2019)

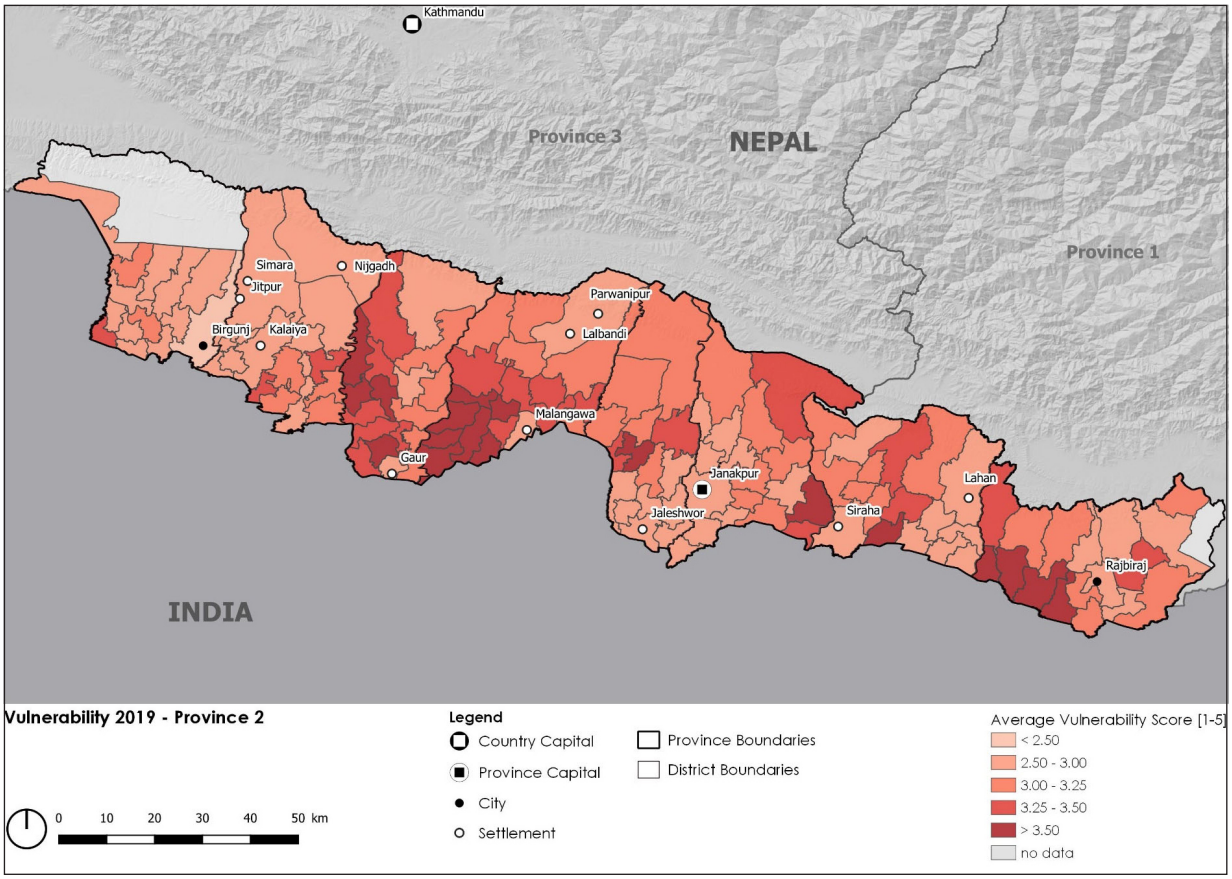


Figure 7. Multi-criteria vulnerability by district based on multi-criteria socio-economic, infrastructure and environmental vulnerabilities (Source: Authors, 2019)

Climate Change Scenarios and Implications for Planning

Key Implications for Planning

Changes in climate in the province will likely alter the hazard profile, driving risks upwards; as well as influence natural processes that govern eco-system services quality and availability.

Changes in climate will likely have tangible effects on the agricultural and infrastructure investments for Province Two plans for the short to mid-term period. Water stress, reduced agricultural yields (furthering food insecurity and poverty), further risks of disasters are among the effects to be anticipated and addressed in planning

Investments must include climate smart-agriculture approaches, disaster resilient infrastructure, and reliable critical services for Tourism and Industry to prevent sub-optimal outcomes and loss of investments

Changes in climate directly affects the type of tour packages and market segment as Nepal is still facing seasonality in utilizing tourism infrastructures

Climate Change Projections

Projections for climate change in Nepal, under various scenarios, include an increase mean annual temperatures of between 1.3-3.8°C by the 2060s and 1.8-5.8°C by the 2090s, while annual precipitation reduction is projected to be in a range of 10 to 20 % across the country[40]. More specifically, considering the two Representative Concentration Pathways (RCP) median (RCP4.5) and extreme (RCP8.5) and for the medium-term (2016–2045) and long-term period (2036-2065) in terms of temperature (Figure 8) and precipitation (Figure 9) and the following is projected[41]:

- Average annual precipitation is likely to increase in both RCPs by 2–6% in the medium-term period and by 8–12% in the long-term period that is beyond 2050.
- Average annual mean temperature could rise to up to 1.1°C in the medium-term period and 1.8°C in the long-term period (with a possible up to 5.8°C under extreme RCP scenarios)
- The mean temperature is projected to increase for all seasons, but particularly the post-monsoon (up to 1.4°C in the short period and 2.4° in the long period) and winter season (up to 1.2°C in the short period and up to 2°C in the long period)
- Precipitation may increase in all seasons, except the pre-monsoon season. However, projections about precipitation have a large degree of uncertainty, greater than temperature projections.

In terms of extremes, official reports project:

- Expected increase in precipitations may result in concentration over shorter periods: while the number of rainy days may decrease in the future, the increase in precipitation intensity is likely to create more water-related hazards, such as torrential rains.
- Under different RCP scenarios, consecutive dry days (CDD) may either increase or decrease, and there is therefore a high uncertainty.
- Warm days may increase in the future from 36 days to 60 days, as well as the duration of warm spells, heightening the risk of heat waves.

However, the spatial distribution of precipitation varies significantly across the Himalayan region[42] as does the hydrological regime from east to west of Nepal. The expected changes in Province Two also show positive trends for mean TMax and TMin, although comparatively less than western regions and high mountains, with an expected further increase in the number of very hot days. In RCP8.5[43], a significant increase in TMax and TMin should be experienced in the period 2016-2045 compared to the reference period 1981-2010. Changes will appear more extreme after 2045, in the long period. While temperatures increase may rise less than in other parts of the country, the effects of glacier melting in the high Himalayas will greatly affect the natural processes and eco-system viability in Province Two, especially as concerns water availability. Also, Province Two is likely to experience a higher magnitude of warm days, leading to protracted periods of extreme temperatures

Potential Impact

Changes in climate as projected will likely result in two main sets of consequences for the Province:

- A more frequent recurrence of intense events provoking rapid occurrence of floods, rain-triggered landslides; and slow on-set of droughts--disasters with severe disruption of services; increase in morbidity; destruction of economic and infrastructure assets;
- Progressive alteration of natural processes and impact on critical eco- system services (provisioning, regulatory, supporting) that may result in the

decrease in agricultural productivity and insurgence of new pests and diseases, which is critical in Province Two; and water scarcity. The potential for changes to the flow and quality of water derived from glaciers, snowmelt and rainfall, may well lead to excess water at certain times of the year and prolonged dry periods and extreme drought in others, which will further affect Province Two.

Implications for Planning in Province Two

All districts in Province Two fall under the high to very high ranking of the National Adaptation Programme of Action (NAPA) climate change vulnerability index[44]. Under the current socio-economic, infrastructure and services, and environmental conditions – and assuming steady unaltered trends – the impact of climate change in the province may be significant and provoke a series of primary and secondary set of consequences. Planning should consider at least the following key issues:

The increased prevalence of hydrological and agricultural droughts resulting from erratic rainfall patterns, melting of glaciers, increase in dry spells and extreme temperatures may result in water scarcity for irrigation, rain fed agriculture and drinking purposes. This can entail reduced agricultural yields, livestock death and crop failure; leading to further poverty for household relying on undiversified agriculture- based sources of income and eventually migration at different scales. Directly linked to these processes, increased prevalence of heat waves and high temperatures may also provoke insect infestations and plant disease compounding the negative effects on agriculture and livestock. Energy supply, critical to Industry will also likely be affected. All investments in agriculture should aim at reducing risks for people, to guarantee food security and productivity, through smart or adaptive agriculture techniques, efficient irrigation etc. Industry development will need to identify reliable year-round sources of energy. Additional human pressure and demand in the form of tourist arrivals may further stress on water management.

The increased prevalence of torrential rains, particularly in the monsoon season, will increase flooding and destruction of housing, agricultural assets, infrastructure and disruption to seasonal infrastructure functionality. In addition, still-water after flooding events conditions may increase vector-borne and water-borne diseases caused by biological and chemical contaminants in water. Torrential rains compounded by the observed human-induced environmental degradation trends may increase the risks of landslides. Given the hydrological context in the Province, and the exposure in all districts to flood potentiality, it is crucial that planning include risk reduction provisions in all investments.

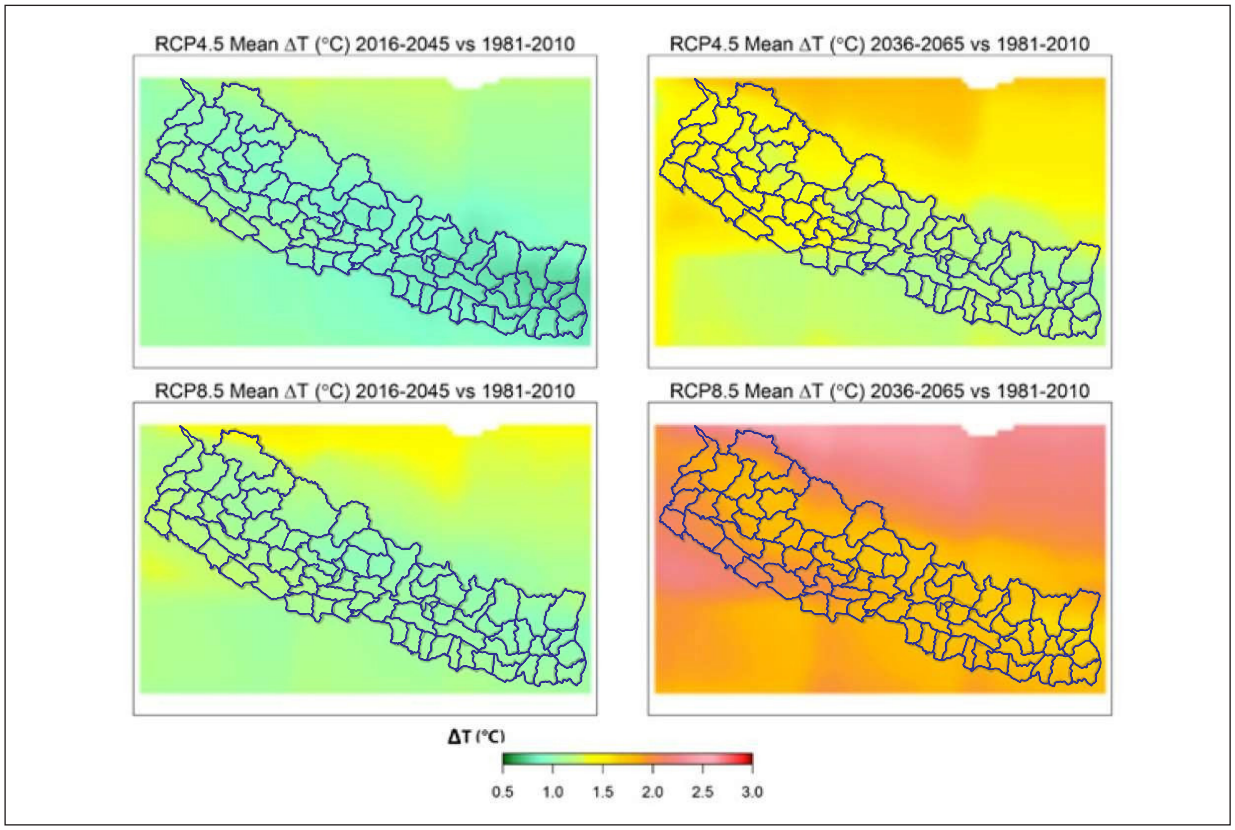


Figure 8: Projected changes in average annual mean temperature between the reference period (1981-2010) and the medium-term (2016-2045) and the long-term (2036-2065) periods for RCP4.5 and RCP8.5 model. (Source: MFE, 2019, Climate Change Scenarios for Nepal)

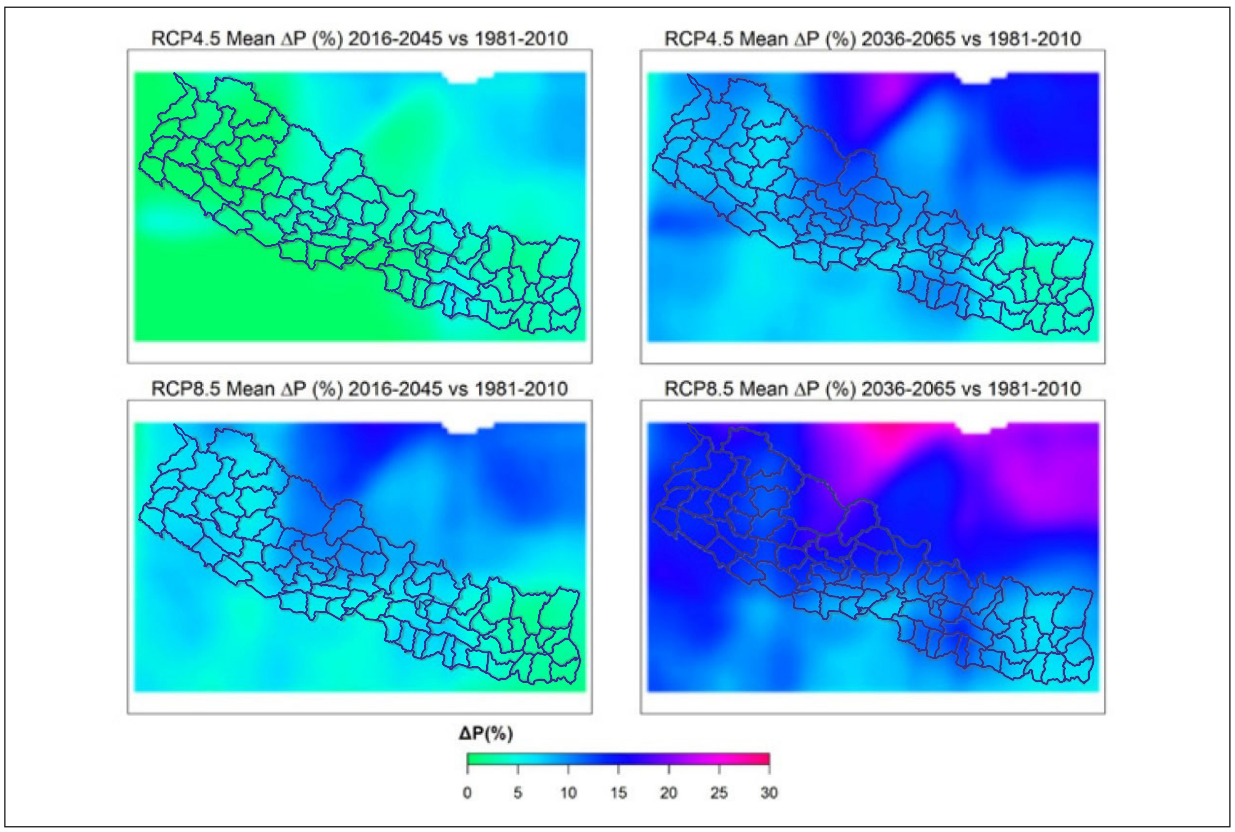


Figure 9: Projected changes in average annual precipitation from the reference period (1981-2010) to the medium term (2016-2045) and the long-term (2036-2065) periods for RCP4.5 and RCP8.5 model ensembles. (Source: MFE, 2019, Climate Change Scenarios for Nepal)

[1] "Eco region / eco-zone: homogeneous area of one or more ecosystems that interact with relatively self-contained human activities". Central Bureau of Statistics (2019), 'Environment Statistics of Nepal', Kathmandu, Nepal, National Planning Commission

[2] Central Bureau of Statistics (2011), National Population and Housing Census 2011, Nepal

[3] Created in 1976 and formed of wetlands, subject to seasonal flooding. It is a Ramsar designated area. It includes grasslands and forests

[4] Refer to Buffer Zone Management Rules, 1995; Conservation Area Management Rules, 1996; and Environment Protection Rules, 1997

[5] DVN (2018), 'Final Report: Inter-Provincial Dependency for Agricultural Development, submitted to Ministry of Agriculture, Land Management and Cooperative Department of Agriculture', Development Vision Nepal P. Ltd. (DVN), Dhumbarahi-4, Kathmandu, July 2018

[6] The Köppen-Geiger classification is a commonly used reference for classifying climate systems. However, within its broad classifications, geographic and topographic specific conditions apply. Also, the observed and projected climate change require that these classifications are reviewed and revised overtime. Province Two is mostly temperate (C) with a dry winter (w) and a hot summer (a)

[7] Central Bureau of Statistics (2019), 'Environment Statistics of Nepal', Kathmandu, Nepal, National Planning Commission, quoting the Nepal Department of Hydrology and Meteorology (DHM, 2018)

[8] DHM (2017) 'Observed Climate Trend Analysis in the Districts and Physiographic Regions of Nepal (1971-2014)', Government of Nepal, Ministry of Population and Environment, Department of Hydrology and Meteorology, 2017, Kathmandu

[11] Meteorological drought is defined usually based on the degree of dryness (in comparison to some "normal" or average amount) and the duration of the dry period. Agricultural drought links various characteristics of meteorological (or hydrological) drought to agricultural impacts, focusing on precipitation shortages, differences between actual and potential evapotranspiration, soil water deficits, reduced groundwater or reservoir levels, and so forth. For definitions World Meteorological Organization (UN-WMO) (2018) 'Commission on Agrometeorology, Expert Team 3.1, Report on Drought', January 31, 2018

[12] National Sample Census of Agriculture 2011/12, Central Bureau of Statistics and Survey Department, Government of Nepal

[13] http://thinkhazard.org/en/report/175-nepal/EQ, accessed May 2019

[14] ThinkHazard!, ibid. May 2019

[15] Thapa A.B., (2017) 'Extreme Droughts And Catastrophic Deluges Terai Provinces Boundary Restructuring', Magazine Issue: Vol.10, No.10, January 06,2017 Poush 22,2073;

[16] DVN (2018), Ibid.

[17] High-level multi-hazard analysis derived from a range of existing literature and scored for ease of reference on a 1-5 levels.

[18] Methodology for discussing vulnerability include the index of multi-dimensional composite indicator lists. The data is compared with the results of "Aksha et al. (2019) Analysis of Social Vulnerability to Natural Hazards in Nepal, Int J Disaster Risk Sci, Springer, 10:103–116" and cross-referencing with existing reputable reports , i.e. HDI etc.

[19] World Bank [Muzzini, E.; Aparicio, G.] (2013). 'Urban Growth and Spatial Transition in Nepal: An Initial Assessment. Directions in development: countries and regions'. Washington, DC: World Bank

[20] Aksha et al. (2019) Ibid.

[21] There is evidence in that increased connectivity is one of the main factors credited to reduce poverty in Nepal since the 1990s: "Between FY1995/96 and FY2003/04, Nepal's road network grew by 6.7% per year. The largest expansion occurred in roads classified as "district or rural roads", which grew 11% per year. This pro-poor expansion, along with improved modes of transportation, increased access to shops, markets, schools, and hospitals, improvements in rural connectivity helped raise non-agricultural employment and incomes", IDA (International

Development Association), (2007) 'Nepal: Interim Strategy Note'. World Bank Report 38119. Washington, DC: IDA, World Bank.

[22] Census 2011

[23] Dhungel, S., (2018) 'Provincial Comparison of Development Status in Nepal: An Analysis of Human Development Trend for 1996 to 2026', Journal of Management and Development Studies Vol. 28:pp. 53-68 Available online http://nasc.org.np

[24] Dhungel, S., (2018), Ibid

[25] For more detailed information and references, check section XX in this document.

[26] According to the Population and Housing Census 2011, overall literacy rate is s the "ratio of those who has the ability to read and write in any language with understanding and ability to do simple arithmetic calculations to total population of age 5 years and above and generally expressed as a percentage".

[27] Census 2011

[28] Census 2011

[29] Chalise D. et al (2019) 'Land Degradation by Soil Erosion in Nepal: A Review', Soil Systems

[30] CBS (2013), 'District Profile Parsa', accessed May 2019: https://cbs.gov.np/wp-content/upLoads/2019/03/Profile_Parsa_with_Cover_Final_Watermark%20(1).pdf (Nepal version only)

[31] UNFCO (2013), 'District Profile: Sarlhai and Landslide inventory characterization and engineering design of Chure area in 10 districts, central dept. of environment science)

[32] UNFCO (2013), 'District Profile: Mahottari'

[33] MoAC (2011), 'Disaster Risk Management Plan for Siraha District'

[34] Ministry of Home Affairs, (2018), 'Nepal Disaster Report, 2017: The Road to Sendai', Kathmandu: Government of Nepal.

[35] Government of Nepal, National Planning Commission, (2018), ' Nepal Flood 2017: Post Flood Recovery Needs Assessment'

[36] Multiple sources point to food insecurity in the Province, including: Bhandari, P. (2018), 'Regional Variation in Food Security in Nepal', Dhaulagiri Journal of Sociology and Anthropology Vol. 12, 2018, PP. 1-10; WFP, WB, UNICEF, AusAID, and CBS (2013). Nepal thematic report on food security and nutrition 2013. Kathmandu, Nepal: National Planning Commission ; DVN, (2018), Ibid ; Thapa A.B., (2017)

[37] Bhandari, P. (2018), 'Regional Variation in Food Security in Nepal', Dhaulagiri Journal of Sociology and

Anthropology Vol. 12, 2018, PP. 1-10

[38] DVN, (2018), Ibid.

[39] Bhandari, P. (2018), Ibid.

[40] Government of Nepal, Ministry of Population and Environment (2016), 'National Determined Contribution', October 2016 ; Government of Nepal, Ministry of Forests and Environment (2019), 'Climate Change Scenarios for Nepal, National Adaptation Plan', February 2019

[41] Different studies exist on climate change projections in Nepal. In this document, only projections published by the Government in February 2019 are used. Refer to Government of Nepal, Ministry of Forests and Environment (2019), 'Climate Change Scenarios for Nepal, National Adaptation Plan', February 2019

[42] RAJBHANDARI R. et al. (2017) , 'Extreme climate projections over the transboundary Koshi River Basin using a high resolution regional climate model' Advances in Climate Change Research 8 (2017) 199e211

[43] IPCC Fifth Assessment Report has endorsed representative concentration pathways (RCPs) to project global future climate scenarios. The four RCPs represent the possible trajectories of greenhouse gas concentration depending on the level of future emissions. The four RCPs together span the range of radiative forcing values for the year 2100 from 2.6 to 8.5 W/m2

[44] Ministry of Environment (2010), 'National Adaptation Programme of Action to Climate Change, NAPA', Kathmandu, Nepal

2.2 Demographic & social context

Province Two exhibits the highest population density of Nepal, which represents a good potential for the province, in that it facilitates connectivity and certain aspects of service-delivery.

Density may support sizable scale of agricultural, industrial and tourism outputs. However, the low-income per-capita, lower than its potential productivity, and lack of diversified income sources among the active population, means the Province Two economy is not resilient yet, and sub- optimal. Gender disparity, low level of education and literacy, and outward migration of young people also need to be addressed.

It will be crucial for planning to a) anchor economic development to social development; b) focus on promoting under serviced populations to increase critical indicators on sanitation, health, and poverty in particular by designing economic development projects in all sectors that proactively promote women and youth in value chains, supported by up-skilling to boost employability within the labour market

Key Implications for Planning

Highest population density of any province in Nepal should enable cost effective provision of infrastructure and services

Net out migration contradicts the national trend of in migration to the Terai may indicate that territory is at capacity and needs to increase utility, attractiveness and opportunity to account for future population growth and urbanisation

Large number of jobs but disparity of income per capita indicates the economic benefits in Parsa and Barra need redistribution to other districts to achieve inclusive economic development

Consistently low HDI values across Province Two and low health indicators (e.g. infant mortality and access to improved sanitation) indicate significant improvement in health facilities and services is required

Notable gender disparity in education and employment, and highest levels of violence against women highlight the need for interventions to safeguard and promote women's equality

Population

The population of Province Two was 5.4 million in 2011 with a median age of 20 and is predominantly rural. The province has the second largest percentage of national population (20.4%) concentrated in the smallest province by land area (6.5% of overall land area) making it the most densely populated province with 559 people per square kilometre compared to the national average of 180.[45] Population growth in Province Two has ranged from 22-33% between 1991-2001, but this has slowed to between 12-26% in the last census period (2001-2011). Population growth rates have been highest in the western districts of the province[46].

Nepal is the least urbanised, but the fastest-urbanising country in South Asia[47]. The average annual urban growth rate from 1981-2011 was 5.3% and is anticipated to remain high[48] with the Terai region exceeding the

national average rate of urbanisation[49]. The level and rate of urbanisation across Nepal have fluctuated considerably from 17% in 2011 to 40% in 2014 following the reclassification of 159 rural to urban municipalities in 2014. The Terai Region recorded an urbanisation level of 15.1% in 2011. The population of Province Two is fairly evenly distributed across the province and not concentrated in urban areas with the exceptions of Birgunj and Janakpur. However, within each district the population is concentrated in the Terai to the south along the Indian border (Figure 11).

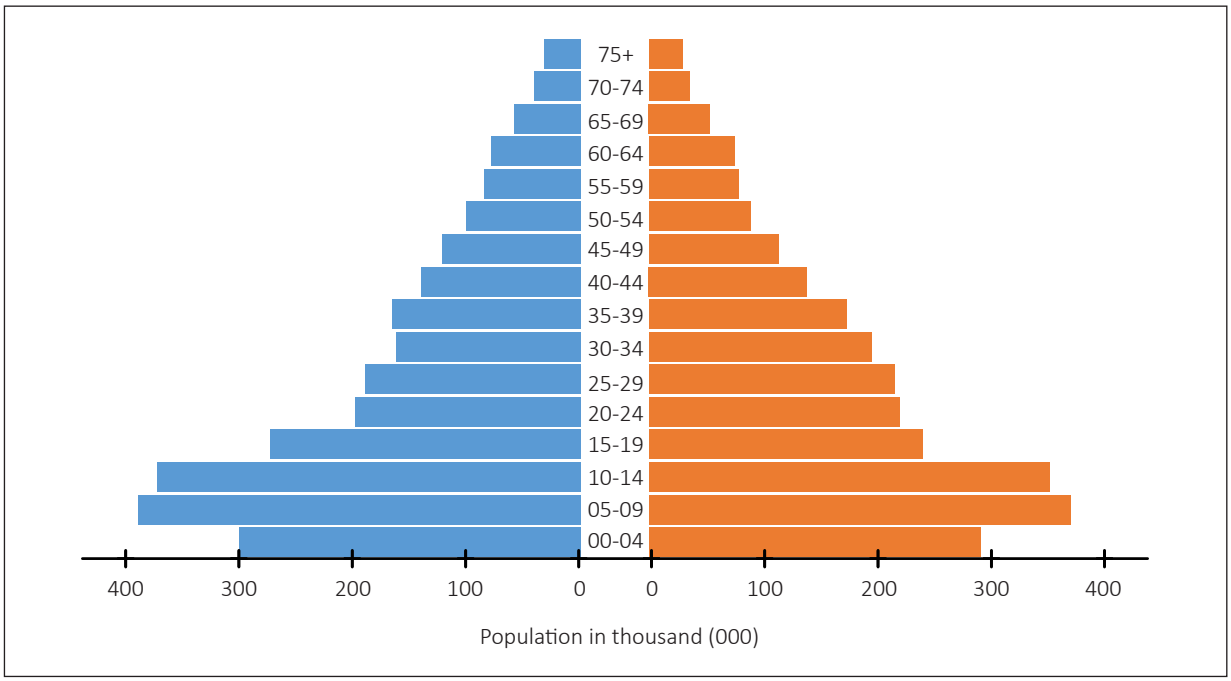


Figure 10: Population pyramid for Province Two by age group and gender in 2011 (Source: Authors, 2019 based on CBS, 2014)

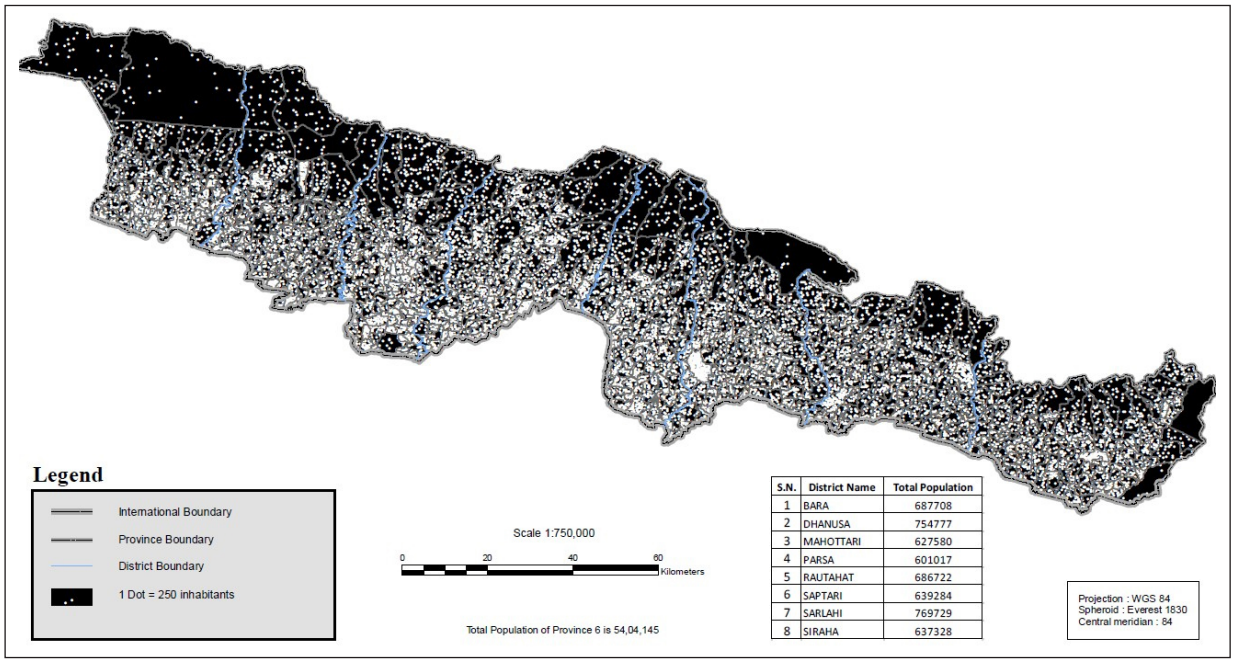


Figure 11: Population distribution in Province Two in 2011 (Source: Authors, 2019, based on CBS, 2014)

International Migration

During the period from 2008 to 2017, Province Two (2) sent the second highest number of migrant workers from the country for foreign employment (24% of total labour migrants) with five of the top ten sending districts of Nepal's 77 districts located in Province Two (Dhanusa, Mahottari, Siraha, Saptari, Sarlahi). A significant trend-increase of labour migration from Bara, Parsa and Rautahat is also evident in the data[50].

The Gulf Countries and Malaysia account for 85% of the 3.5 million labour permits issued from 2008-15. However, the data on international migration are incomplete with no reliable source of data on migration to India which, due to proximity, is possibly the most significant destination for the population of Province Two[51]. Similarly, seasonal migration from India (especially Bihar and Uttar Pradesh) to Province Two and Nepal more broadly of labour and semi-skilled workers in agriculture and industry are also a factor the magnitude of this migration is impossible to ascertain in the data. Various district profiles indicate that 100-150 people per VDC migrate seasonally to India which also creates labour shortages during the monsoon season.[52] 95% of labour migrants are male with 76% in the 18-34 age group[53] which can be observed in the population pyramid (Figure 10) and has a considerable impact on the economic and social fabric of communities and families through their absence and remittances. Labour demand is mostly for low skill workers with Nepal ranked 4th globally for remittances as a share of GDP[54]. However, future trends are difficult to ascertain given the numerous externalities and foreign market dynamics which may change significantly and rapidly.

Internal Migration

Internal migration has increased consistently in absolute numbers and as a percentage since 1961 at district, regional and zonal levels with a more rapid increase occurring since 1991. Compared to the 2001 census, the 2011 census reveals a noticeable decline in the proportion of migrants who move from rural to rural areas (68% in 2001 to 59% in 2011) in 2011, with a corresponding increase in the proportion who move from rural to urban areas (25.5% in 2001 to 33.5% in 2011). The majority of migrants come from the hills (63% in 2011) and move to the Terai (70% in 2011). Inter- zonal migration (vertical or north-south) is more significant than inter regional (horizontal or east-west)[55]. In contrast to international migration, the majority (57%) of internal migrants are women and 40% of female migrants cite marriage as the reason for migration versus only 18% for employment[56].

However, despite the national trend of migration to the Terai, all districts in Province Two reported net out migration in the 2011 census, as nearly 80% of the ethnic hill people with permanent residence in Janakpur left after 2007[57]. Province Two is the only province with a higher ratio of men to women which may also reflect the nature of migration to Province Two which favours young men looking for jobs.

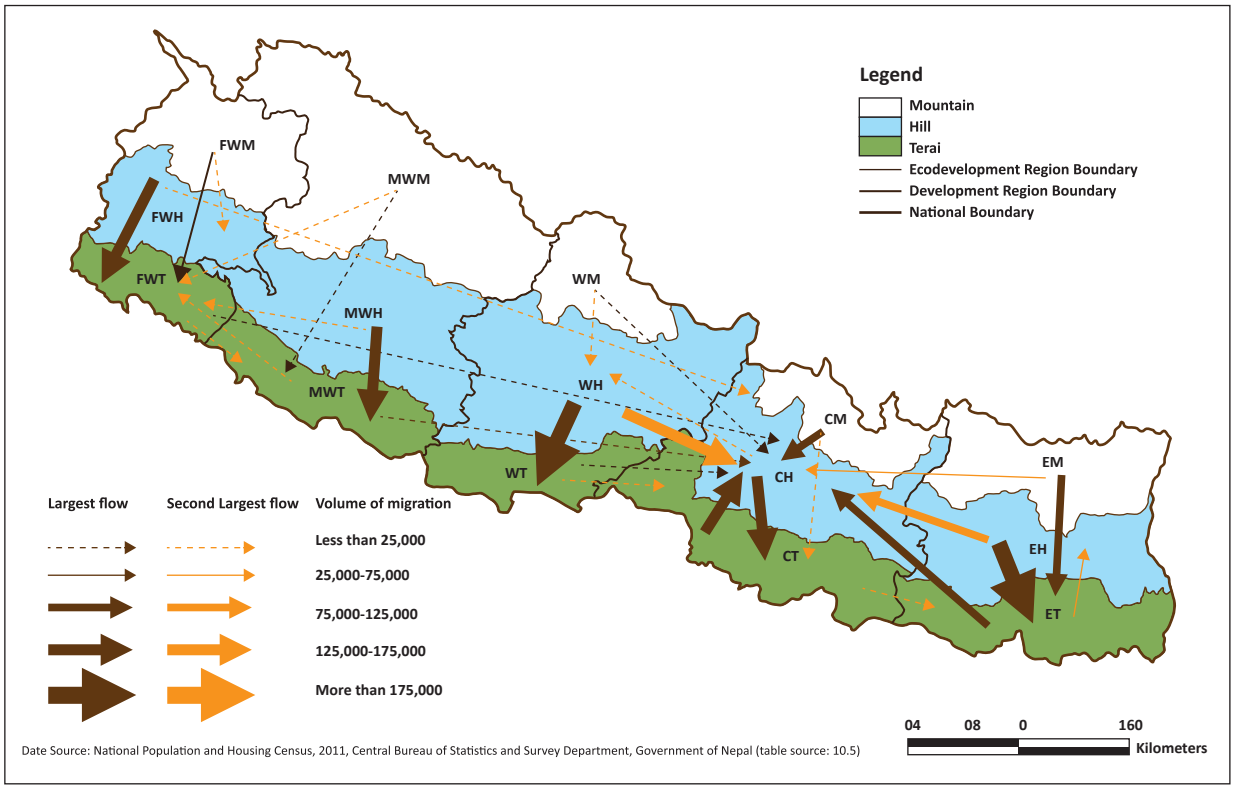


Figure 12: Inter regional life time migration flows (two major flows only), population census 2011 (Source: CBS, 2014)

Poverty, Education and Employment

Province Two is one of the three provinces with low HDI and all the districts have consistent HDI values lower than the national average of 0.490 (Figure 15). The United Nations Country Team in Nepal (UNCTN) has listed six of the eight districts in Province Two as among the least developed in the country based on a range of indicators including: rate of poverty; lack of alternative income and livelihood opportunities; landlessness, marginal landholding, and insecure property ownership; prevalence of caste and ethnic discrimination; socio-economic status; and rate of education and literacy.

Life expectancy is the highest in the country with all districts above the national average of 68.8 years. The literacy rate (50%) across Province Two is significantly lower than all other provinces. This Province also highlights significant gender disparity between men (60%) and women (39%). Similarly mean years of schooling (2.73) across Province Two is considerably lower than other provinces and gender disparity in level of education attained is significant (Figure 14). These factors contribute to relatively low income per capita of $922 across the province. However, Bara and Parsa with industrial corridors and connections to Nepal's main customs port, have noticeably higher per capita incomes of $1,480 and $1,223 which reveal considerable income disparity between the districts of Province Two. Employment is also subject to gender disparity. Men constitute the overwhelming majority of people in active employment whereas women constitute the overwhelming majority of people not economically active.

Health

Health indicators for Province Two are mixed. On the one hand, life expectancy and access to safe drinking water (94%) are the highest in the country. However, the infant mortality rate (56 deaths per 1,000 live births) is also the highest in the country and access to improved sanitation (26%) is considerably lower than all other provinces and well below the national average (62%). According to the 2016 Health and Demographic Survey, Province Two reports the highest rate of violence against women.[58]

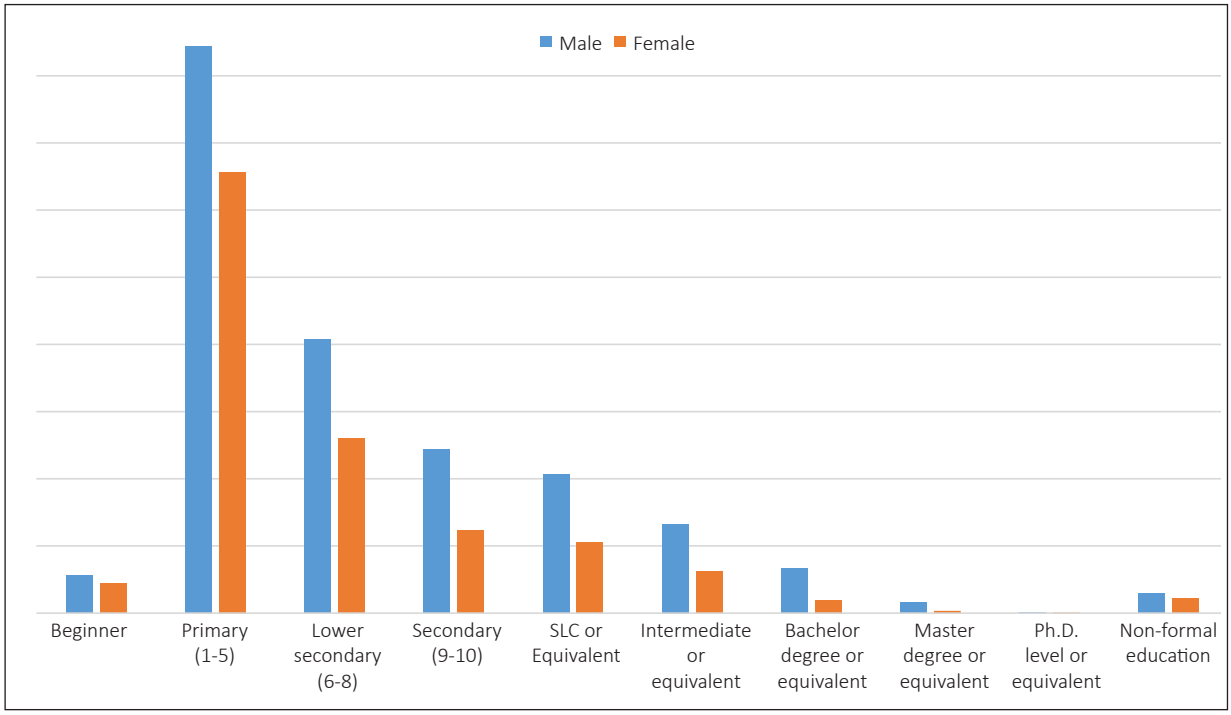


Figure 14: Education level attainment for Province Two by gender (Source: CBS, 2014)

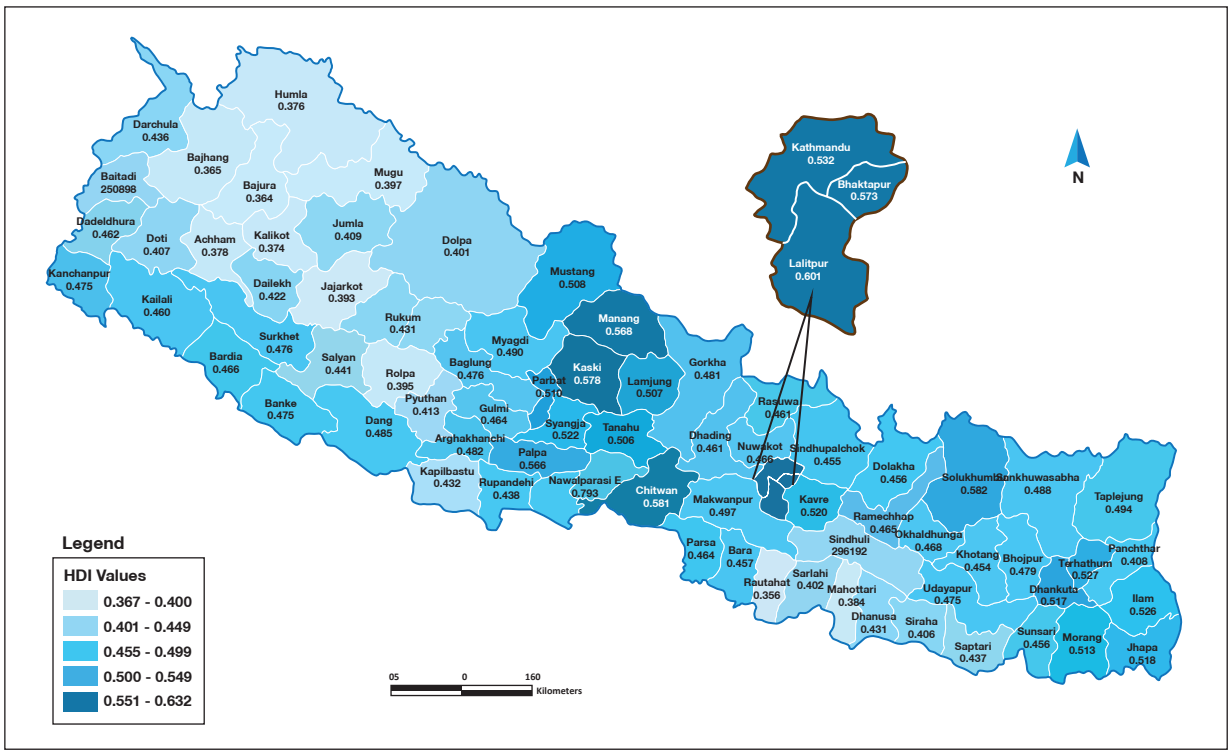


Figure 15: HDI values across districts, 2011 (Source: CBS, 2014)

Geographic Area	Population (#)[2]	Population Density (ppl/sqkm)[3]	Intercensal Growth Rate[2]	Net Migration Rate[4]	HDI[5]	Literacy Rate (%)[4]	Per Capita Income (PPP $)[6]	Improved Sanitation Access (%)[7]	Life Expectancy (years)[6]	Poverty Rate[8]
Province 1	4,534,943	175	0.76	-2.3	0.50	71.33	1,184	72.04	68.52	18.4
Province Two	**5,404,145**	**559**	**1.60**	**-2.2**	**0.42**	**50.20**	**922**	**26.07**	**70.43**	**28**
Saptari	637,844	522	1.14	-3.5	0.43	54.39	801	19.37	71.3	39.5
Parsa	597,769	762	1.89	-2.1	0.44	55.71	1,223	33.84	70.3	29.2
Sarlahi	769,330	609	1.91	-2.5	0.39	46.27	809	25.32	70.1	17.7
Bara	685,831	539	2.06	-2.4	0.44	51.81	1,480	26.55	70.5	29.9
Siraha	635,627	561	1.07	-2.1	0.40	50.06	689	20.44	71.3	34.6
Dhanusa	753,682	633	1.17	-1.8	0.41	50.37	938	33.41	69.5	23.1
Rautahat	686,059	661	2.30	-2.4	0.37	41.65	757	22.99	71.0	33.4
Mahottari	625,207	623	1.25	-0.9	0.37	46.22	681	26.93	69.5	16.2
Province 3	5,529,452	272	1.90	6.7	0.51	68.55	1,767	71.79	70.31	20.3
Gandaki	2,735,661	121	0.37	-3.8	0.51	73.17	1,206	78.94	68.80	21.1
Province 5	4,114,184	238	1.28	0.3	0.46	67.68	1,013	55.35	67.54	25.9
Karnali	1,623,602	51	1.82	-3.8	0.41	59.36	784	45.28	65.59	41.2
Province 7	2,552,517	131	1.52	-0.5	0.42	62.64	767	45.28	66.93	47.2
Nepal	**26,494,504**	**180**	**1.35**		**0.49**	**66.60**	**1,160**	**62**	**68.8**	**25.2**

Figure 16: Selected indicators (Source: various – see footnotes)

[2] CBS, 2014, National Census data reported in UNFPA Nepal, 2017, Population Situation Analysis of Nepal

[3] Calculated from CBS, 2014, National Census data reported in UNFPA Nepal, 2017, Population Situation Analysis of Nepal

[4] CBS and UNFPA , 2014, Population Monograph of Nepal: Volume 1 (Population Dynamics)

[5] CBS, 2011, National Population Census & CBS, 2014, Human Development Report

[6] UNDP, 2014, Human Development Report: district wise per capita income (PPP $). Accessed here: http://www.npc.gov.np/new/uploadedFiles/allFiles/NHDR_Report_2014.pdf

[7] Governance Facility, 2018, Socio-Cultural Profiles of the Seven Provinces

[8] CBS, 2013, Small Area Estimation of Poverty

[45] Governance Facility, 2018, Socio-Cultural Profiles of the Seven Provinces

[46] Central Bureau of Statistics and Survey Department, Government of Nepal, 2011, National Population and Housing Census

[47] Asian Development Bank Project Summary Sheet (No.000028, dated 10 November 2017

[48] "Business Plan 2014", Department of Urban Development and Building Construction, Ministry of Urban Development (2014)

[49] Ministry of Urban Development, 2017, National Urban Development Strategy

[50] GoN, 2018, Labour Migration for Employment

[51] Ministry of Labour and Employment, 2018, Labour Migration for Employment: A status report for Nepal 2015/16 –2016/17

[52] For example, see United Nations Field Coordination Office (UNFCO), 2013, District Profile: Dhanusha

[53] Central Bureau of Statistics, 2014, Population monograph of Nepal Volume 1 (Population Dynamics)

[54] World Bank (cited in GoN, 2018, Labour Migration for Employment)

[55] Central Bureau of Statistics, 2014, Population monograph of Nepal Volume 1 (Population Dynamics)

[56] Central Bureau of Statistics, 2014, Population monograph of Nepal Volume 1 (Population Dynamics)

[57] Suwal, B. (2014). Internal Migration in Nepal. In Population Monograph of Nepal: Volume I (Population Dynamics) (pp. 241–283). Kathmandu: Central Bureau of Statistics

[58] Ministry of Health, Nepal; New ERA; and ICF. 2017. 2016 Nepal Demographic and Health Survey Key Findings.

2.3 Economic context

Province Two can count on a robust economic base thanks to its fertile land and industrial base, and existence of tangible and intangible cultural heritage and natural resources for tourism with further potential for growth and a large labour force in the most densely populated region in the country, as well as fabric of SMEs.

Province Two is one of top three agriculture and industrial hubs in Nepal with the largest irrigated area (393,582 hectares) and highest proportion (74%) of irrigated land, and the largest number of industries (501). The province boasts the highest GDP output per province in manufacturing (34%) and fishing (55%) but income per capita (PPP $922) is disproportionately low and disparity between districts indicates the economic benefits of high output and GVA are concentrated and not equitably distributed. The strategic location along the Indian border combined with the Birgunj Dry port, proposed international airport at Nijgadh and the Kathmandu – Terrai fast track reinforces the comparative trade and tourism advantage of Province Two.

This may support sizable scale of agricultural and industry outputs, provided that jobs are diversified and better mechanisms for redistribution of wealth generated are established. Economic development in the three key sectors should focus on growth that is inclusive, through: a) expand innovative industrial production by identifying economic proximate sectors (through technological transfer) and b) improve productivity of agriculture through smart agriculture, i.e. upskilling and focusing on efficient irrigation and c) focus on alternative forms of tourism that engage communities and villages.

Economy in the Province

Key Points for Planning

Top three agriculture and industrial hubs in Nepal with largest irrigated area (393,582 hectares) and highest proportion (74%) of irrigated land, and the largest number of industries (501); Highest GDP output per province in manufacturing (34%) and fishing (55%); and second or third in numerous other sectors; Income per capita (PPP $922) is disproportionately low and disparity between districts indicates the economic benefits of high output and GVA are concentrated and not equitably distributed; Strategically located along the Indian border. The Birgunj Dry port, proposed international airport at Nijgadh and the Kathmandu – Terrai fast track reinforces the comparative trade and tourism advantage of Province Two.

In agriculture, absolute GVA is comparatively high with all eight districts in the top 22 nationally, but only one district (Bara) performs above the median in GVA per capita which indicates low productivity In industry, considerable variation in absolute GVA with Bara, Parsa and Dhanusa in the top ten nationally while all other districts are below the national median. Significant competitive advantage in GVA per capita with three districts in the top six, and all eight districts in the top 26, nationally In services, absolute GVA is surprisingly low with six of eight districts below the national median, though slightly better in per capita terms.

Sectors and Output

Province Two performs well across a broad range of economic sectors and is one of the top three industrial and agricultural hubs in Nepal. The province is endowed with the largest area (393,582 hectares) and highest proportion (74%) of irrigated land, as well as the most large industries (501) which support ~52,000 jobs concentrated around the industrial hub of Birgunj that includes timber yards, sugar mills, cement and steel factories, cosmetics production etc.

As a percentage of national GDP, Province Two achieves the highest output per province in manufacturing (34%) and fishing (55%); and comes second or third in numerous other sectors including agriculture (18%), mining & quarrying (13%); electricity, gas & water (18%); construction (17%); wholesale & retail trade (18%); and hotels & restaurants (17%). Data for Gross Value Add (GVA) show a similar trend. Province Three dominates GVA due to the concentration of activity in the Kathmandu Valley with Province Two clearly in the second tier of provinces along with provinces one and five.

However, levels of absolute output and value added are correlated to a comparatively large population and workforce. Income per capita at the provincial level (PPP $922) is disproportionately low which indicates a large number of comparatively low paying jobs and / or low productivity. The disparity of income per capita at the district level (ranging from $1,480 in Bara to $681 in Mahottari) indicates that the economic benefits of the high output and GVA are concentrated and not equitably distributed across the province. Similarly, the relative lack of micro, cottage, and small- scale industries (42,302 or 13% of national total) indicates that Province Two lags behind in economic depth and supply chain integration.

Strategic Location

Province Two is strategically located along the Indian border with common border with Bihar and proximity to UP and West Bengal Province of India. The Birgunj land-port is one of fifteen international entry points in the Country and accounts for 44% of international trade. However, surface entry of people is extremely low (0.6%) which indicates an opportunity for further exploitation. The proposed international airport at Nijgadh and the (currently under construction) Kathmandu – Terai fast-track expressway may reinforce the comparative trade and tourism advantage of Province Two, even though its economic advantages are to be proven while their environmental impact is likely to be high.

Fiscal Space and Revenue

In fiscal terms, Province Two claims the highest share of internal revenue generation (36.56%) of any province and collects 17% of national revenue with 80% from international trade[59]. Under the new federal grant and redistribution system, Province Two is uniquely positioned to take advantage of matching grants from federal government.

In contrast, Province Two receives the lowest share of Overseas Development Assistance (ODA) of any province despite its low HDI ranking. However, several development partners appear to be adjusting their geographic focus to account for this disparity which may bolster the province's revenues in the near future.[60]

Sector	Province 1	Province 2	Province 3	Province 4	Province 5	Province 6	Province 7
Agriculture & Forestry	107,034	83,507	76,327	49,850	86,804	27,528	42,218
Fishing	638	2,690	125	98	1,182	2	141
Mining & Quarrying	970	879	2,844	552	762	417	531
Manufacturing	14,299	27,281	19,744	6,000	9,974	1,339	1,894
Electricty, Gas & Water	2,880	2,844	5,386	1,501	2,715	75	596
Construction	14,190	15,240	31,857	8,277	11,048	4,222	4,525
Wholesale & Retail	28,778	31,919	59,208	13,615	27,327	5,887	12,574
Hotels & Restaurants	3,104	3,490	7,354	2,264	2,981	581	1,287
Transport, Storage Communications	14,711	12,500	53,471	10,096	10,983	1,752	2,323
Financial Intermediation	6,073	3,873	26,660	4,385	6,438	799	1,878
Real Estate, Renting & Business	16,785	13,200	42,310	9,386	15,236	3,628	5,693
Public Administration &	3,416	2,309	10,481	2,260	2,707	1,669	1,989
Education	6,569	5,672	34,392	7,676	8,021	1,771	3,638
Health & Social Work	2,818	2,502	5,063	1,844	2,603	857	1,388
Other	2,026	1,319	38,510	1,272	1,934	895	990

Figure 17: GDP per sector per province (numbers are GDP basic price in Rs. Millions).

Agriculture

The linear relationship between GVA and population size across all districts in Nepal indicates that agriculture is not subject to economies of scale in Nepal and mechanisation (or capital formation) does not play a significant role in agricultural production (Figure 18).

In Province Two, GVA is comparatively high with all eight districts in the top 22 nationally (Figure 20) which is attributed to the second largest labour force, the largest area (393,582 hectares) and highest proportion (74%) of irrigated land of any province. In addition, the existing agriculture and research centres contribute to overall agricultural output, these include: Regional Agricultural Research Station, Parwanipur; Agriculture Implementation Research Station, Parsa; Agricultural Research Station, Belchhapi, Dhanusha; Agriculture Machinery Testing and Research Centre, Nawalpur, Sarlahi.

However, only one district (Bara) performs above the median in GVA per capita (Figure 19) which indicates low productivity. Similarly, data from the Ministry of Agriculture and Livestock indicate that it has the highest area of paddy among the province.[61] Crop yields (especially for paddy and sugarcane) have declined in the last decade and are much lower than comparable provinces and districts in Bangladesh and India.[62] In theory, Province Two should be highly productive in agriculture given the comparatively flat and climatically favourable conditions. The cause of low productivity cannot be robustly explained in the literature or data. However, consultations in Janakpur and Birgunj revealed several possible causes including: lack of year round irrigation; small land holdings which inhibit economies of scale, low level of mechanisation and the use of modern farming methods; overexploitation of the land which has reduced soil fertility and crop yields; lack of genetic diversity in crop and animal inputs; and lack of fertiliser.

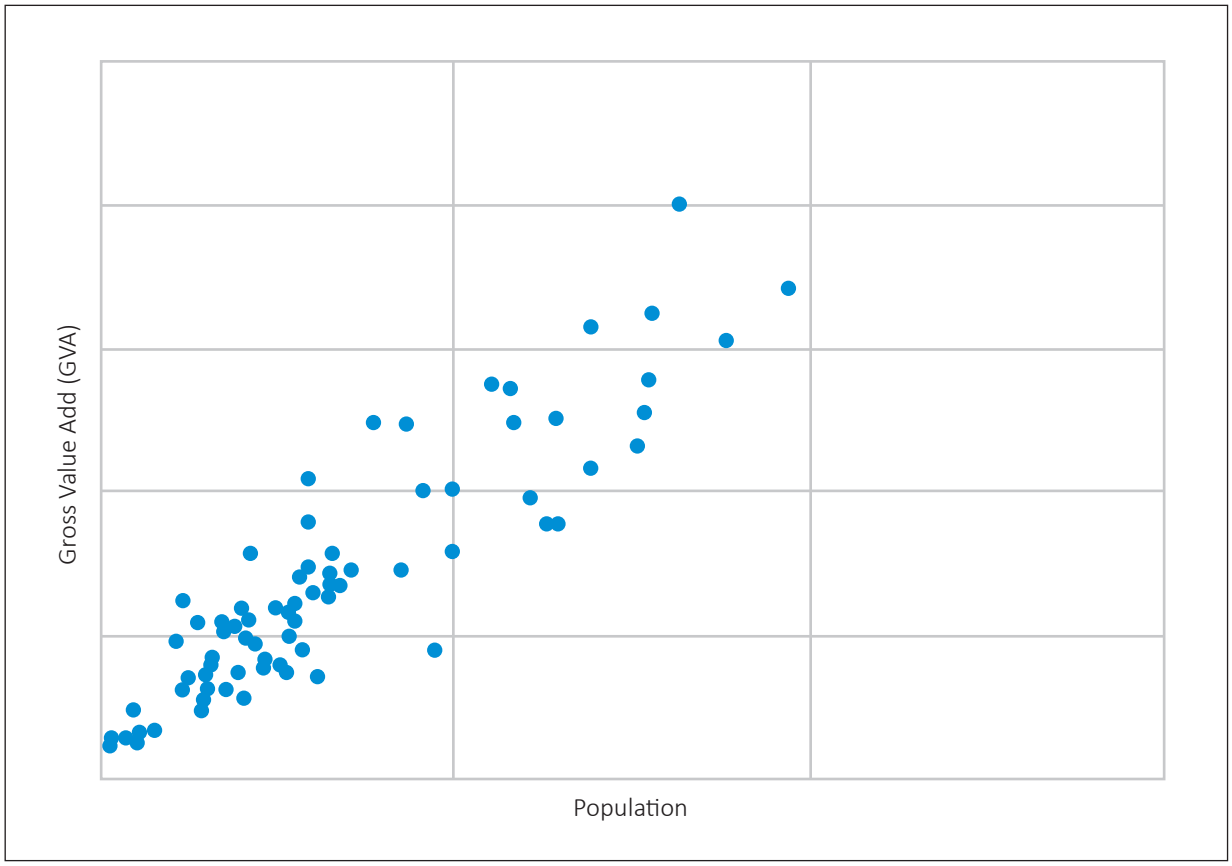


Figure 18: Agriculture GVA against population by district[63]

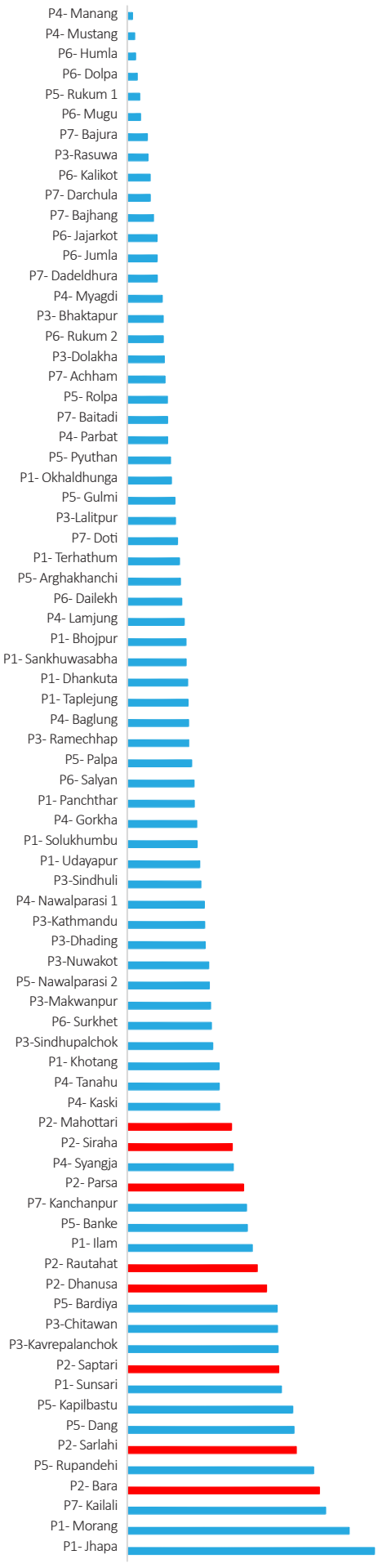


Figure 20: Agriculture GVA per district(P2 district in red)[65]

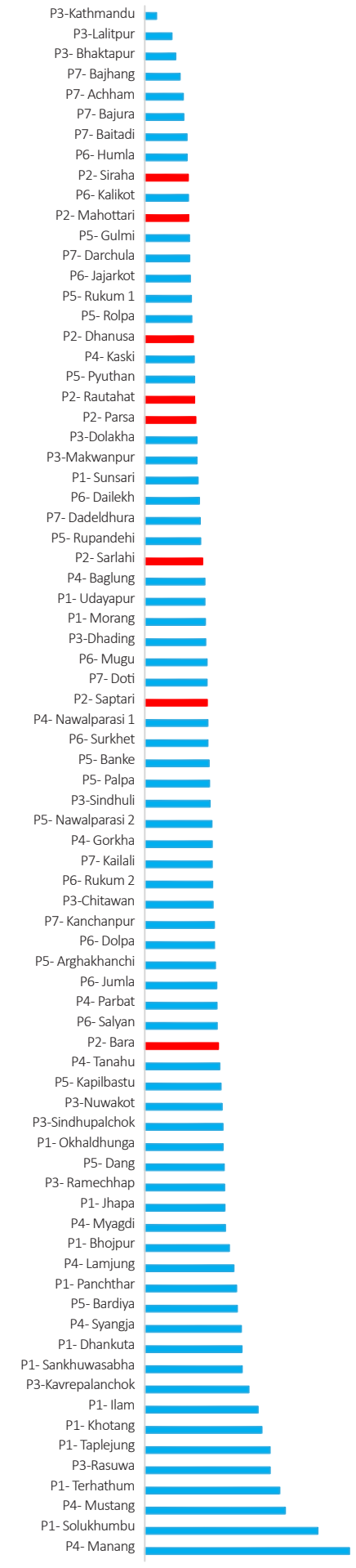


Figure 19: Agriculture GVA per district(P2 district in red)[64]

Industry

The scattered distribution in the upper tail between GVA and population indicates the relevance of capital formation and potential for small productive industries. Districts which achieve agglomeration effects demonstrate a positive non-linear relationship between GVA and population. The ability of low population districts like Dhanusa to achieve comparatively high GVA per capita indicates that small scale industries can be productive and benefit from localisation economies (Figure 21).

Province Two demonstrates considerable variation in absolute GVA with two distinct tiers of high and low districts within the province: Bara, Parsa and Dhanusa are in the top ten nationally while all other districts are below the national median Figure 25). This can be attributed to the industrial hubs of Birgunj and Janakpur, and the prominence in particular of manufacturing in these urban centres.

On a per capita basis, Province Two demonstrates significant competitive advantage with three districts in the top six, and all eight districts in the top 26, nationally (Figure 22). Bara, Dhanusa and Parsa still lag behind Kathmandu but can be considered part of the most productive and innovative industrial areas in the country. These districts, and Bara in particular, are best placed to drive economic growth by concentrating on industrial activity, assimilating technology transfer, increasing income per capita and harnessing innovation rents.

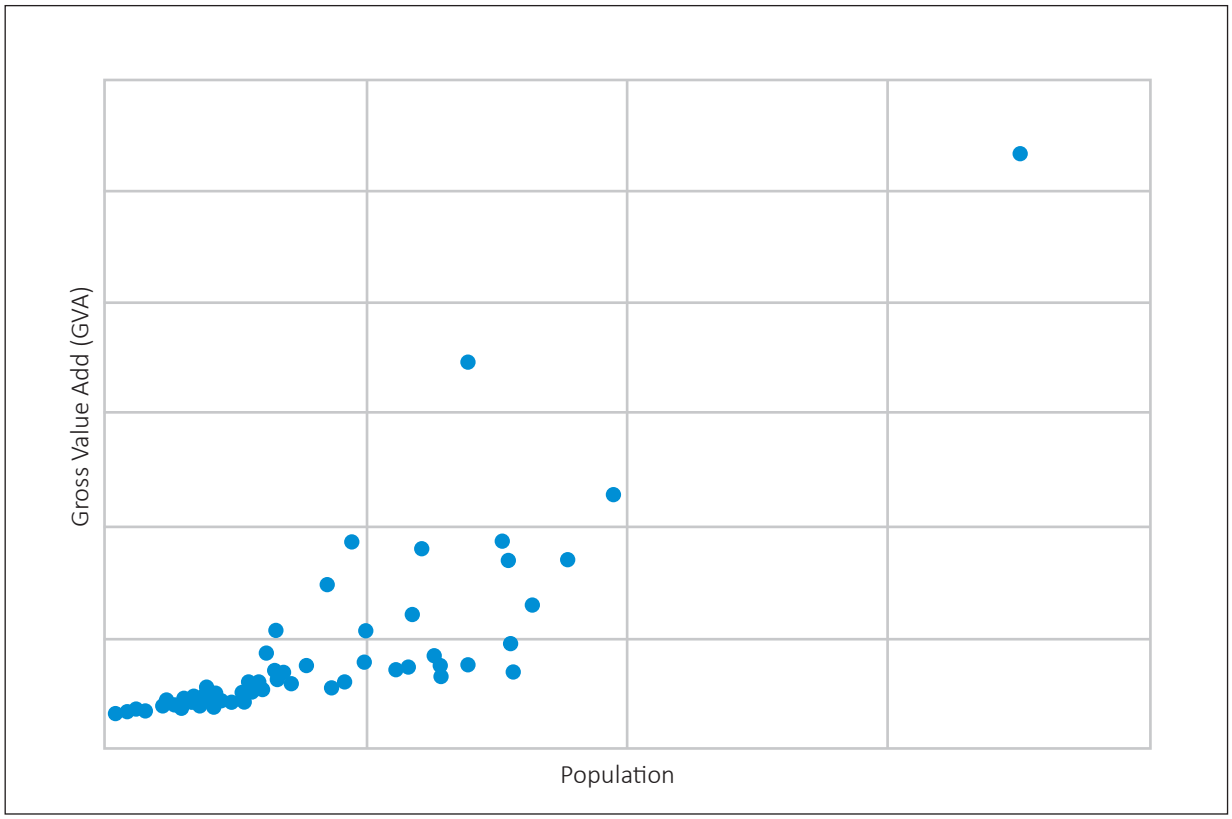


Figure 21: Industry GVA against population by district[66]

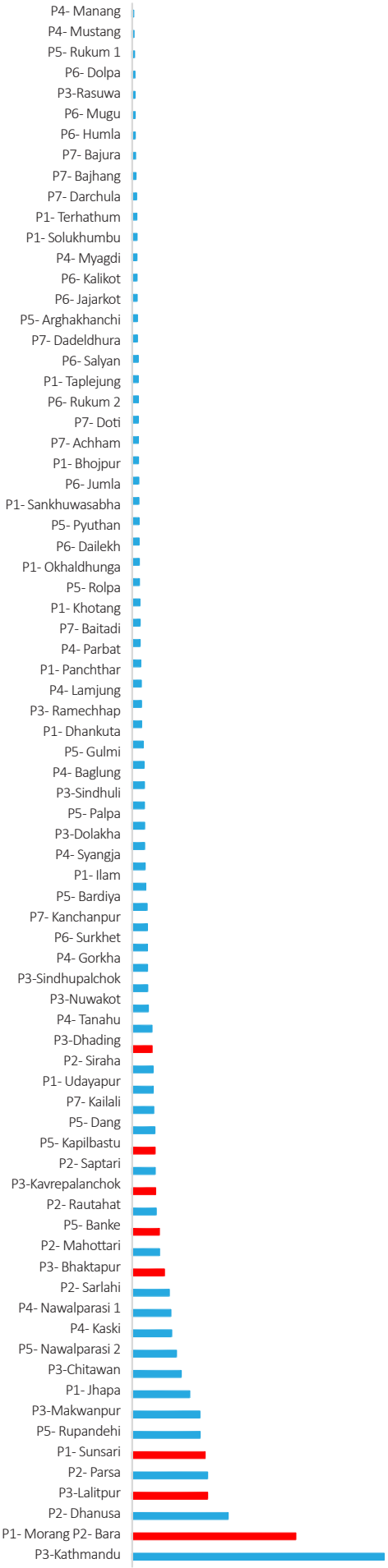


Figure 23: Industry GVA per district (Province two district in red)[68]

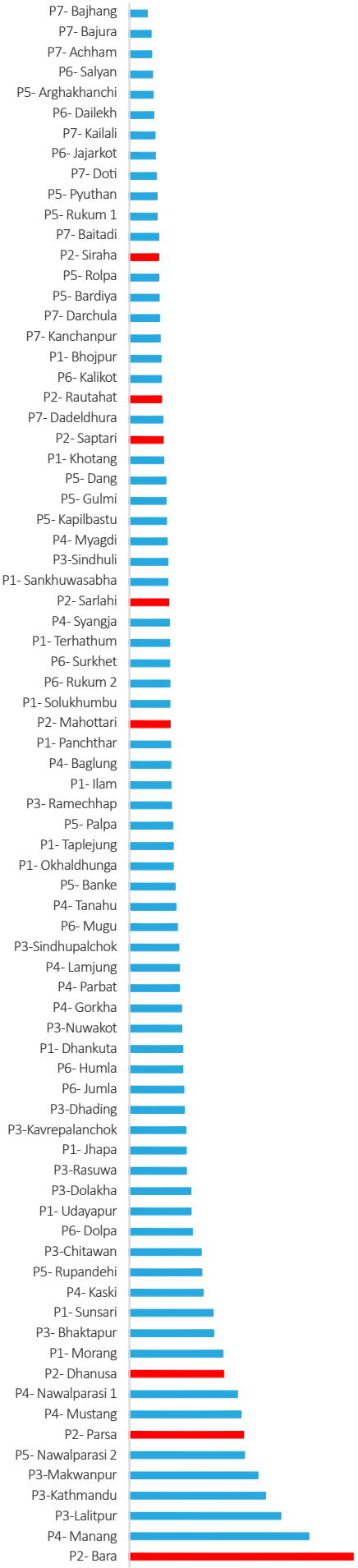


Figure 22: Industry GVA per district (Province two district in red)[67]

Services

The low level and linear distribution of GVA against population indicates the relatively minor role of services in the Nepali economy. Kathmandu is a significant outlier which has clearly achieved the density, heterogeneous supply chains and urbanised economies associated with the services sector (Figure 24).

Absolute GVA in Province Two is surprisingly low with six of eight districts below the national median (Figure 26). This may be explained by a comparative focus on agriculture and industry. However, Parsa is ranked 9th which indicates some volume of capacity, which is presumably linked to the border crossing at Birgunj and may also relate to the proximity to Chitwan National Park.

In per capita terms, Province Two performs relatively well with all eight districts in the top 23 nationally (Figure 25) which indicates relative competitiveness and potential for specific economically proximate service sectors through localisation economies. However, in addition to Kathmandu, there is a cohort of second tier districts with higher absolute and per capita GVA which indicates it may be difficult for Province Two to compete nationally for services. The service sector in Province Two may remain a local service industry and there appears to be greater economic potential in agriculture and industry.

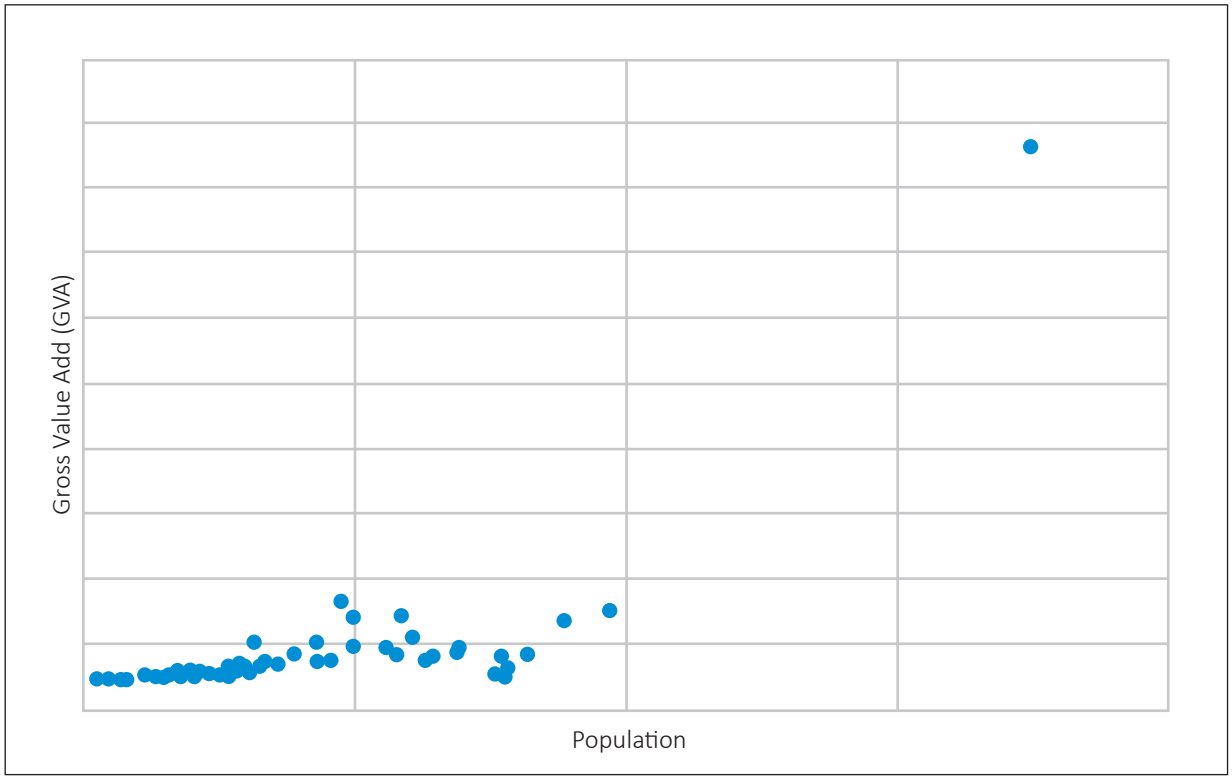


Figure 24: Services GVA against population by district[69]

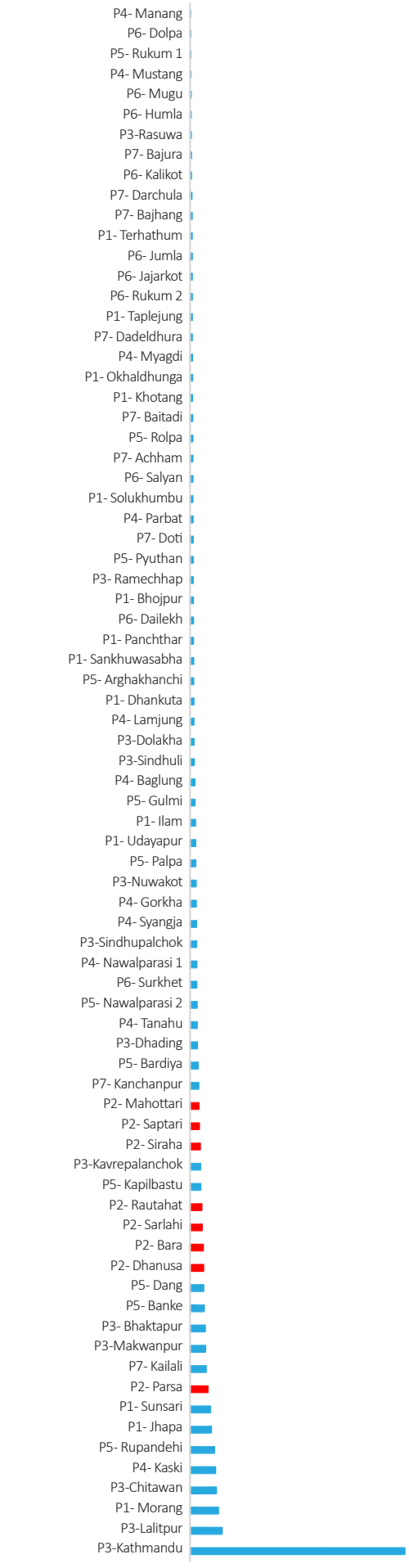


Figure 26: Industry GVA per district (Province two districts in red)[71]

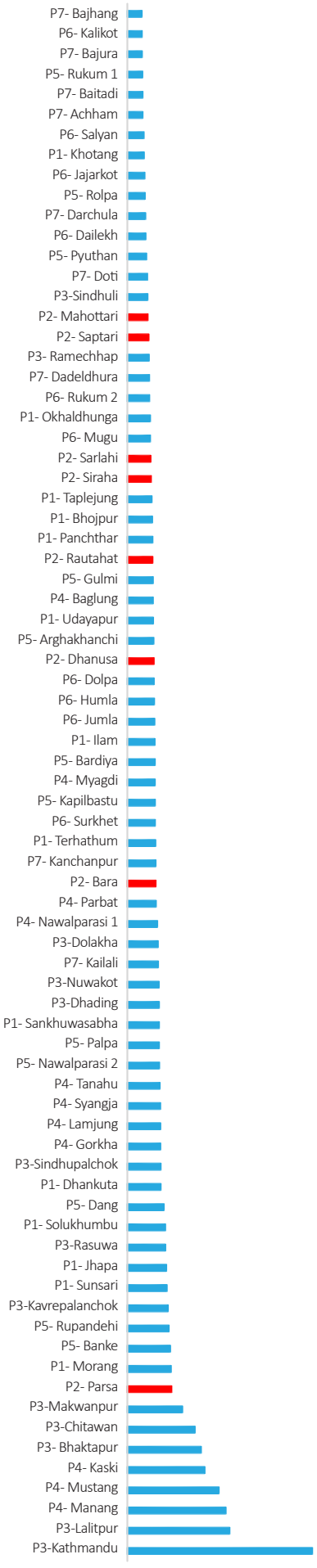


Figure 25: Industry GVA per district (Province two districts in red)[70]

[59] Governance Facility, 2018, Comparative analysis of economic and administrative data and challenges

[60] Governance Facility, 2018, Comparative analysis of economic and administrative data and challenges

[61] Data for 2016/17 from the Ministry of Agriculture and Livestock Development, cited in Table 7 (A) of Preparing Provincial Macroeconomic Dataset [DRAFT] by EPI, 2019

[62] EPI, forthcoming, Sector Development Strategy of Province Two (Industry)

[63] Data from National Accounts Statistics, Central Bureau of Statistics and Nepal Human Development Report 2014. Cited in Annex 1: Gross Value Added by Region/Province and Sectors 2011 of Preparing Provincial Macroeconomic Dataset [DRAFT] by EPI, 2019

[64] Data from National Accounts Statistics, Central Bureau of Statistics and Nepal Human Development Report 2014. Cited in Annex 1: Gross Value Added by Region/Province and Sectors 2011 of Preparing Provincial Macroeconomic Dataset [DRAFT] by EPI, 2019

[65] Data from National Accounts Statistics, Central Bureau of Statistics and Nepal Human Development Report 2014. Cited in Annex 1: Gross Value Added by Region/Province and Sectors 2011 of Preparing Provincial Macroeconomic Dataset [DRAFT] by EPI, 2019

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[67] Data from National Accounts Statistics, Central Bureau of Statistics and Nepal Human Development Report 2014. Cited in Annex 1: Gross Value Added by Region/Province and Sectors 2011 of Preparing Provincial Macroeconomic Dataset [DRAFT] by EPI, 2019

[68] Data from National Accounts Statistics, Central Bureau of Statistics and Nepal Human Development Report 2014. Cited in Annex 1: Gross Value Added by Region/Province and Sectors 2011 of Preparing Provincial Macroeconomic Dataset [DRAFT] by EPI, 2019

[69] Data from National Accounts Statistics, Central Bureau of Statistics and Nepal Human Development Report 2014. Cited in Annex 1: Gross Value Added by Region/Province and Sectors 2011 of Preparing Provincial Macroeconomic Dataset [DRAFT] by EPI, 2019

[70] Data from National Accounts Statistics, Central Bureau of Statistics and Nepal Human Development Report 2014. Cited in Annex 1: Gross Value Added by Region/Province and Sectors 2011 of Preparing Provincial Macroeconomic Dataset [DRAFT] by EPI, 2019

[71] Data from National Accounts Statistics, Central Bureau of Statistics and Nepal Human Development Report 2014. Cited in Annex 1: Gross Value Added by Region/Province and Sectors 2011 of Preparing Provincial Macroeconomic Dataset [DRAFT] by EPI, 2019

2.4 Infrastructure, connectivity & development clusters

The connectivity and strategic position of Province Two are a major strength. The province is a 'natural region' with homogeneous economic potential concentrated in two main nodal centres located on strategic axes and supported by surrounding productive areas. There is high potential for inter-modal development and relatively good electrification, water access, and ICT. However, the insufficient maintenance may result into degrading infrastructure and diminishing performance while access to markets (farm roads) and urban planning and regulations could be improved. While the further enhancement of infrastructure will increase the potential and comparative advantages of the Province. Meanwhile, environment impact must be also acknowledged, prevented and mitigated and considering its importance for people, natural hazards regulation, and tourism attractiveness should also be promoted. Distribution of services and functions across settlements in the province is uneven, with 94 percent of urban and rural municipalities lacking concentration of critical services; and with uneven quality.

It is critical that planning a) improves spatial distribution of resources b), invests in inter-modal transport; c) makes environmental planning a priority; d) prioritises existing infrastructure to support the nodal centres' performance and emergence of new centres, starting from maintaining transport & energy infrastructure; d) refuses development that may adversely impact environment

Infrastructure & Connectivity

Key Implications for Planning

Province Two is uniquely endowed with multi modal transport infrastructure. The smallest province by land area with the highest population and comparatively flat terrain all contribute to Province Two's unique and cost-effective infrastructure endowment. However, adjustments (e.g. broad-gauge railway tracks), repairs and maintenance (e.g. along the East-West Highway) could significantly increase performance of these infrastructure assets

Several new transport links of strategic and national significance (e.g. 2nd International Airport at Nijgadh, Kathmandu – Terai Fast track and inland waterway access to Kolkata) are planned or under construction which will radically improve the competitive advantage of the Province. However, environmental considerations of these new assets warrant close attention to prevent and mitigate negative impacts.

Transport Infrastructure

Nepal is a landlocked country in which road transport is overwhelmingly responsible for the transportation of cargo and passengers in the relative absence of rail or inland waterways. In 2013, the World Bank reported that the length of Nepal's road network had tripled in 10 years with most of the increase in the rural road network. In parallel, road sector funding had tripled in the five years to 2013[72]. However, allocation and utilisation of funding and project implementation can be considered ad hoc rather than planned with funding spread over a large number of small projects and expenditure concentrated at the end of the financial year, reducing efficiency and effectiveness. Approximately half the strategic network and less than 5% of the rural road network is paved, with most of the network consisting of fair weather roads that, combined with a lack of bridges, make many areas poorly accessible during the rainy season. Quality of construction and maintenance are also of concern with the focus in recent years on new roads rather than upgrading existing roads which results in approximately half the local road network being considered impassable.

However, Province Two is uniquely endowed with transport infrastructure by comparison to other provinces. Air, rail, road and planned water transport are all present and functional which facilitate considerable advantages for freight and passenger transport within the province, to neighbouring Provinces Three and Five (including Kathmandu), and strategically to India via the long southern border. The smallest province by land area with the highest population and comparatively flat terrain all contribute to Province Two's unique and cost-effective infrastructure endowment (Figure 27).

Province Two boasts three domestic airports and airstrips, including regular routes from Janakpur and Birgunj and the third one in Rajbiraj. The proposed 2nd international airport at Nijgadh (Bara District) will significantly expand the transport options for Province Two and establish a new draw for growth and development in the province. However, environmental considerations of the new airport warrant close attention to prevent and mitigate negative impacts.

The operational rail inks (including Jayanagar-Janakpur and Raxaul-Birgunj) facilitate passenger and freight transportation respectively between Province Two and India with onward passage to the extensive Indian rail network. While the ongoing east-west extension will enhance further opportunities for rail travel within Province Two itself. The ongoing gauge conversion and rehabilitation works of Jayanagar-Janakpur railway tracks will further expand the rail transport capacity to freight with obvious benefits for trade between Nepal and India which benefits Nepal in general and Province Two in particular.

In road infrastructure, Province Two is also uniquely endowed with the highest road density of any province at 75km per 100 sq. km. The East – West Highway provides the backbone of road transport within Province Two and connects to neighbouring Provinces Three and Five. However, the quality of the road surface has been deteriorating which impacts safety, reduces speeds and increases travel time to the extent that the existing road asset is underutilised and underperforming. The minimum four lane Kathmandu – Terai fast track (currently under construction) will significantly improve the linkage between Province Two and Kathmandu with reported travel time reduction of four hours as well as opportunities for tourists to access Lumbini within four hours from Nijgadh airport.[73] The new 72.5 km road is under the responsibility of the Nepal Army who have already completed approximately 1,200 km of new road construction in recent years.[74]

Furthermore, the ongoing bilateral negotiation with India may soon enable Nepal (and potentially Province Two via the Koshi River) to access Indian waterways at Sahibgunj (Jharkhanda) ultimately connecting Haldia seaport in Kolkata.[75] This could significantly decrease the cost of freight transport which will benefit the import and export of raw materials, intermediates, and finished products which are extensively consumed and produced in Province Two.

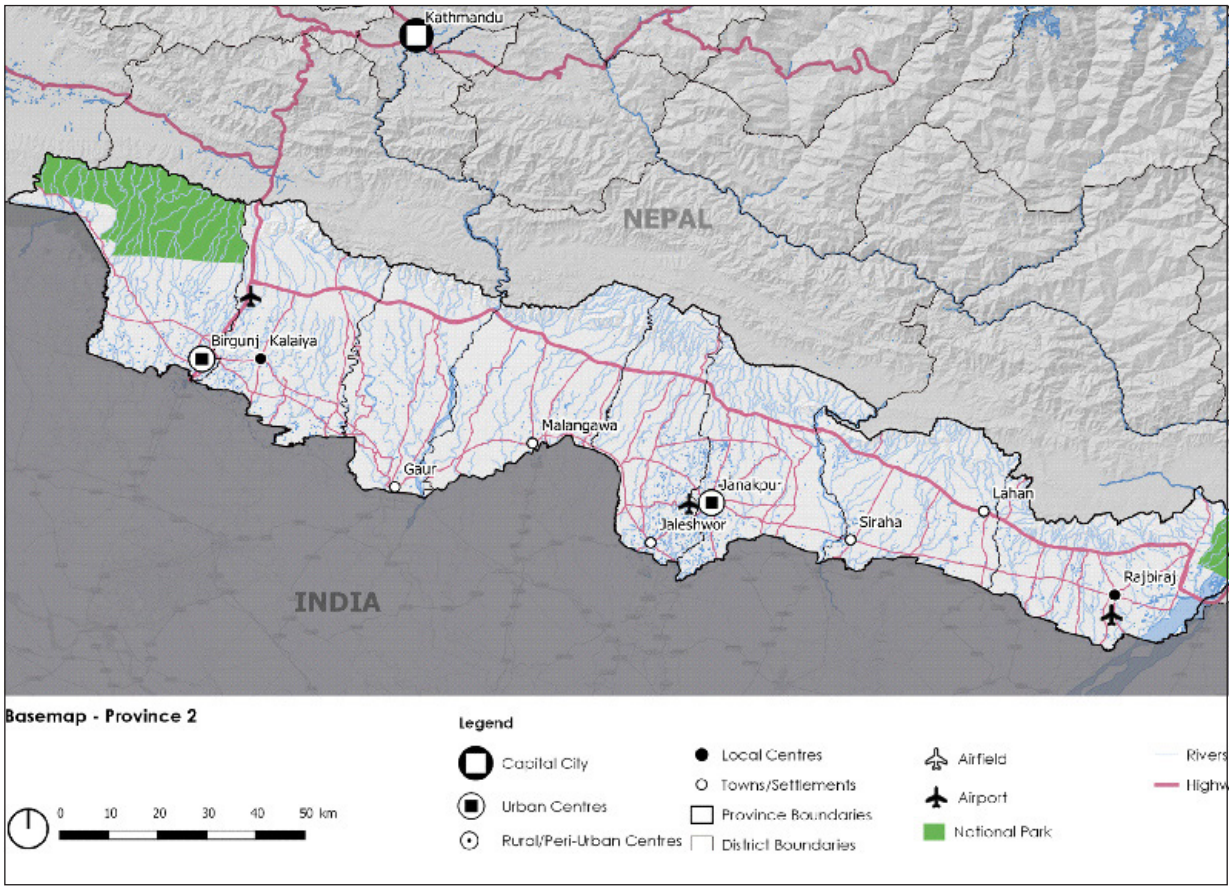

Figure 27: Transport infrastructure in Province Two (Source: Authors)

Development & Growth Clusters

Key Implications for Planning

Province Two is a natural region with homogeneous economic potential concentrated in nodal centres on South-North strategic axes, supported by productive areas and serviced by transport infrastructure, with additional nodal centres to the centre and potentially East of the Province. The East-West connection enables functional relations across the province, which can be still enhanced.

Distribution of services is uneven across the province: Birgunj and Janakpur are the main nodal centres (Metropolitan cities), which have most of critical services within the province, while 94 percent of urban and rural municipalities lack concentration of critical services.

Planning may focus on improving the functional potential of the province through a) better distribution of services; b) invest in inter- modal transport; c) make urban/environmental planning a priority.

Spatial structure and nodal centres

The analysis of the distribution of services and their value in the Province shows the highest concentration in and around two major nodes, Birgunj (240,922 inhabitants[76]; metropolitan city) and Janakpur (159,468 inhabitants; sub-metropolitan city). This effectively demonstrates the higher functional capacity of both cities, which are clusters of economic and administrative activities in the Province[77].

Together, they possess most of the services and functions identified in the province, barred eco-system services such as forests and, interestingly, universities. Rajbiraj could represent a third pole to the far-east of the Province, though it concentrates significantly less services as illustrated in Figure 29, and is functionally disconnected from the east of the Province.

Intense economic corridors appear along the North-South corridor road that acts as 'gateway' to Kathmandu to the North from India. The corridor is the entry-point for most imports into the country, from India and overseas from as far as the Kolkata ports in West Bengal. This vantage point enabled the corridor to become a robust transportation hub – supported by the airport and dry-port – that enable both import and export logistical basis. In addition to being located along the N-S axis, this area is also contiguous to the Parsa Wildlife Reserve (upgraded to national park) and adjacent to Chitwan National Park, which are tourist attractions.

Cluster-like activities are observed in and around Janakpur to the Centre- south of the Province, although these are more concentrated within the Janakpur municipality – which is the administrative capital of Province Two and location of very important religious sites, such as the Janaki temple and centre of Mithila culture.

It is significant that, beyond these two main clusters, other service areas exist but rank significantly lower in terms of diversity and overall value of the services they offer. They include Jitpur- Simara, Kalaiya (in Bara district) and Sirsiya (Parsa district) that form a functional triangle revolving around Birgunj, Kalaiya and Pathalaiya.

Out of 137 possible services and functions identified in the analysis (Table 1) 100-104 are represented in the first tier of settlements, i.e. Birgunj and Janakpur; while Jitpur- Samara offers 89 services across different categories. This can be explained by the relative ease of access to the main centres from surrounding areas, the porosity of the southern open border with India, the existing transport infrastructure, and the nature of the economic activities in the Province, mostly related to agriculture and fishery. However, this also shows an uneven or unbalanced distribution of quality and critical services for such a dense Province: 94 percent of both urban and rural municipalities in Province Two have no significant concentration of critical services and support, while density is amongst the highest in the country, as shown in Figure 11 and Figure 32.

It is also interesting to note that size of the population in given municipalities does not automatically coincide with quantity and value of services: Jitpur- Simara (117,496) and Kalaiya (123,659) are comparable in size to Janakpur: nevertheless they are far removed from the top-tier settlements when considering availability and value of services. A such, while Province Two has three sub-metropolitan cities (Janakpur, Kaliya and Jitpur- Simara) and one metropolitan city (Birgunj), only Janakpur and Birgunj have a significant concentration of services, of higher relative value whereas Lalbandi and Rajbiraj offer services to their respective surrounding areas.

Finally, while the topography and infrastructure conditions enable the E-W connections, there is no sign yet of intense functional connection between easternmost (Saptari, Siraha), centre (Dhanusa, Mahottari, Sarlhai) and westernmost part of the Province (Rautahat, Bara, Parsa) as shown in Figure 33. The central area appears to have functional relations (Pink arrow) with the western area, but eastern areas do not show specific functional relations towards the west.

Table 1. Services and functions by category. Source: Authors, 2019, adapted from UN-Habitat

Categories	Services and functions
A. Utilities, Services & Facilities	A.1 Mobile Phone local shops; A.2 Telecommunication Transmitter and Broadband Services; A.3 Local Radio Station (FM); A.4 Local TV Station (Broadcast); A.5 National TV Station (reception of); A.6 Satellite TV (reception of); A.7 Electricity from National or Provincial Grid Network; A.8 Electricity Off Grid- from micro hydropower sources as primary source for the Village / Ward; A.9 Electricity Off Grid- from pico hydropower sources as primary source for the Household; A.10 Electricity Off-Grid- from solar power panels for the Household; A.11 Water from National or Provincial Utility Network (On grid) for drinking; A.11 Water from Springs, boreholes, ponds or rainwater harvesting sources (Off Grid) for drinking; A.12 Water for irrigation (all sources, except rain); A.13 Sewerage and storm water drainage system; A.14 Internet connection for the household; A.15 Internet connection for the mobile phone.
B. Transport facilities & connections	B.1 National paved roads; B.2 Provincial paved roads; B.3 Bus/omnibus stop; B.4 River waterways (jetties); B.5 Airstrip; B.6 Heliport; B.7 Domestic Airport; B.7 International Airport; B.8 Railway Station; B.9 Surface Transport Services; B.10 Railway Transport Services; B.11 Airport Transport Services; B.12 Petrol / diesel supply station.
C. Industry, Commerce & Trade	C.1 Cottage Industry (e.g. Crafts; small household-based manufacturing; sewing; repair; electronics etc.); C.2 Primary sector industry: raw material extraction (e.g. minerals; timber) in factories; C.3 Primary sector industry: fishery; farming; animal husbandry [in mechanized factories]; C.4 Food processing industry in non- mechanized factories; C.5 Inland Clearance Depots/Integrated Check Post/Container Freight Station C.6SEZ/Industrial Clusters/Industrial Estate C.7 Manufacturing industry in factories (automobile; motorbikes; mechanical parts; light machinery) C.8 Manufacturing factories (Small scale) C.9 Cement factories or other construction material factories C.10 International tourist or travel agent office C.11 Local or domestic tourist or travel agent office C.12 Grocery shops C.13 Supermarket or drugstores C.14 Car and Motorbike Repair Workshop C.15 Banking offices (District or Municipal Level) C.16 Construction stores/shops C.17 Pharmacy C.18 ICT Business C.19 Dharmashala C.20 Homestay C.21 Lodges C.22 Guesthouses C.23 Community Lodges C.24 Non-Star Hotel C.25 Hotel (1-3 stars) C.26 Hotel (4-5 stars) C.27 Lawyers or solicitors/legal Service C.28 Insurance brokers Services C.29 Engineering Services C.30 Architectural Services C.31 Accounting/Auditing Services C.32 Tailoring Shop C.33 Barber Shop (Saloon) C.34 Shoe and Umbrella Repairing C.35 Building Contractor
D. Market & trade facilities or places	D.1 Retail market D.2 Wholesale trade market D.3 Agricultural products wholesale market D.4 Livestock Market/Slaughter House D.5 Visitor/Tourist Information Centre D.6 Flea Market and Trade Centre D.7 Convention Centre
E. Health facilities & services	E.1 Public national hospital E.2 Public provincial hospital E.3 Public district hospital E.4 Local level public clinic E.5 Village or ward-level health post E.6 Private clinic E.7 Household level traditional healers as primary source of medical care E.8 Heli-ported emergency evacuation facilities or services E.9 International clinic E.10 Teaching Hospital E.11 Military/Police Hospital E.12 Dentist E.13 Medical Doctor E.14 Veterinary Services E.15 Ayurvedic / Homeopathic / Naturopathy Treatment Services E.16 Waste Management & Disposal
F. Education, social services, religious and civil organizations	F.1 Kindergarten/Day Care F.2 Primary School F.3 Secondary School F.4 Technical institute (secondary school with certificate, e.g. Tourism Studies F.5 Vocational Training Centre F.7 Public University F.8 Private university F.9 International university F.10 Research centre (e.g. agricultural, medical, telecommunication, advanced technologies F.11 Public social protection systems (e.g. food-for-work schemes) F.12 Child referral systems; orphanage etc. F.13 Temple/Monastery, Churches. Mosques or other religious centres F.14 Cooperative offices except agriculture F.15 Civil society organizations' offices F.16 Sport facility (football stadium, basketball etc.) F.17 Traditional sport facilities or areas F.18 Theatre or cultural facilities (e.g. community-centres)

G. Safety, security & enforcement	G.1 Judicial Committee G.2 District Court G.3 Higher court G.4 Police Station G.5 Fire Station G.6 Prison (District Level) G.7 Customs office G.8 Immigration office G.9 Border police
H. Eco- system services (Supporting, Provisioning, Regulating, Cultural)	H.1 Crops in hilly eco-systems H.2 Plant unique to Nepal high- mountain eco-systems (Precious wild plant species) H.3 climate crop in high mountain H.4 Rare animals H.5 Hybrid gross bread animals H.7 Fruits (in temperate climate) H.8 Sub-tropical fruits (Mango, Litchi, Pineapple etc.) H.9 seed multiplication programme H.10Traditional medicinal plants H.11 Renewable biotic resources for building and fibre materials (e.g. timber, wool cotton) H.12 Wood, gas and other biological materials that can serve as sources of energy H.13 Ground water from mountain springs H.14 Primary and natural forest H.15 Community forest H.16 Fertile / productive soil H.17 Religious Forest H.18 Iconic and endangered biodiversity to be protected H.19 Pristine landscape H.20 Sacred landscapes of spiritual and religious importance H.21 Places of aesthetic, landscape or cultural recreational value H.22 National reserve or park H.23 Culturally intact / pristine activities, practices and traditions H.24 Endangered Species of Flora and Fauna H.25 Endangered Ethnic Community
I. Irrigation Facilities and Services	I.1 water reservoir pound I.2 rain water harvesting for irrigation I.3 ground water use in irrigation (Bore hole) I.4 Ground water use in irrigation (well) I.5 Lift/Pump Irrigation diesel engine/ electric engine I.6 Solar pumps in Irrigation I.7 Sprinkler/Drip Irrigation I.8 Solar pumps Supplier I.9 Sprinkler/Drip Supplier I.10 Motor /Pumps supplier I.11 Motor /Pumps Workshop I.12 all-weather agriculture road I.13 Fair weather agriculture road I.14 Water User's Group in Irrigation

Corridors & clusters

Concentration of services and functions acts as indirect indicator of economic activity intensity and functional relations amongst settlements.

The emerging spatial structure shows the following corridors and clusters within which activities are concentrated:

The South-North strategic axis that connects Kathmandu with India with the junction to the 'fast-track highway' project being constructed to connect Nijgadh with Kathmandu

The East-West corridor along the H1 across the Terai, Other minor corridors with concentration of different types of services and functions connect Janakpur to the E-W highway, and the railroad.

Two other minor clusters of activities beyond the main urban centres, supporting local service delivery around Rajbiraj and Lalbandi.

Province Two thus appears to be a 'natural region' with a homogeneous economic potential concentrated in two main nodal centres located strategically and supported by lower level services and functions across the province.

Implications for planning and future scenarios

The high connectivity potential of the Province (at least as far as major roads are concerned), its strategic geographic location and unchallenging topography are evident enabler of development; the observed spatial structure reflects concentration of services around key nodal areas. Further projects will likely further reinforce the westernmost part of the Province in its nodal role between Kathmandu and India.

Other aspects, however, should be considered for future planning

The uneven distribution of services delivers sub-optimal outcomes and increase vulnerability of people, contradicting one of the principles (inclusivity) and protract vulnerabilities highlighted in this report.

While potentially reinforcing the nodal role of Birgunj, the construction of the Nijgadh International Airport may also affect the viability of ecological corridors in the province. It is not possible to estimate at present for this baseline whether the establishment of the airport will enable the development of a further economic hub or node around this area. It is reasonable to assume, however, that the viability of the project for economic reasons will contingent to the parallel project, the establishment of the fast-track freeway connecting Nijgadh to Kathmandu78. The environmental impact in an ecological sensible area adjacent to Parsa National Park should be fully acknowledged, prevented and mitigated.

Climate change is likely to affect services in different categories (i.e. A, B, C, D and I) as a result of increased hazard levels; and indirectly reduce viability of services within categories H (eco-system services) as a result

of adverse impact on natural processes supporting and regulating agriculture (livestock health; crop viability, water availability etc.). Failing to acknowledge and mitigate the impact of climate change on these services through adaptation will result in the alteration of the spatial structure of the Province. Scenarios may include a) loss of importance of cities and municipalities currently supported by rain fed or water-intense agriculture; b) higher cost of management and maintenance of services and infrastructure because of the recurrent impact of adverse natural events; c) shifting of growth cluster potentiality within and across the Province; d) severe loss of capacity to provide for life in the territory as a result of the alteration of water yields resulting from glacier melting. This scenario considers a Business

As Usual scenario in which globally countries continue to emit carbon further forcing changes in climate, while no particular adaptive measure is taken in Province Two and upstream to mitigate the impact of climate change. Under this scenario, it is possible that the loss of capacities of the 94 percent of municipalities that depend on agriculture and forestry will have an impact on the centrality of larger centres, including the main cluster to the West (Birgunj) reducing its importance relative to the province, Kathmandu and towards south with India. While it is likely that given its initial tertiarization, broader economic basis, and strategic location that cluster will remain viable as a hub, its role will likely change. The 94 percent of the municipalities already with lesser access to services may be further deprived given the nature of the services they have access to coinciding also with roughly 81 percent of the total Province's population79, whom would slide into further vulnerability. Also, unsustainable development, which promotes environmentally costly projects such as large transport infrastructure, and lack of enforcement of zoning and natural resource management regulations will result in accelerated degradation of the environment and depletion of eco-system services.

Considering these factors, planning should:

Aim at redistributing critical services equitably in the territory and promote other clusters and service-delivery centres as this will result in a more equitable distribution of economic opportunities for people in the province;

Strengthen functional links on the East-West axis along the Mahendra Highway (H1) to maximise the connection across the two nodes (Birgunj and Janakpur) while enabling the development of a mixed- used third pole around Rajbiraj in the easternmost part of the province to extend serviceability in the area and establish a logistic 'gate' to and from Province 1 to the East

Reinforce connectivity along the North-West axis of the H2 (Tribhuvan Highway) and H6 (Banepa Bardibas Highway) to strengthen the nodal function of Birgunj and Janakpur respectively; but also consider infra-nodal connectivity (between the main nodes) along the feeders to/from India to the H1, i.e. F7 and F6 as well as F5 and F4 to the east, particularly to support the development of Rajbiraj as a third pole.

Integrate climate change considerations into decision-making on what and where should be developed in the territory at regional scale, starting from the projects selected through this process, especially as concerns agriculture;

Invest on environmental planning and ensure no project is prioritized that may adversely affect environmental sustainability or even hamper other sectors (for instance industrial projects affecting ecological tourist attractions, or large transport projects)

Table 2. Tiers of settlements and municipalities classified by functional ranking

Functional Tier	1-3	4-6	7-9	10-12	13-15
Functional ranking (by number and value of the services)	Most of the settlements and municipalities in this category have a limited number of services available (between 25 and 50) and typically of lower value given its recurrence (e.g. agriculture road, retail market)	In this tier settlements and municipalities in Province Two provide some types of services locally, typically through wholesale markets, which enhance their importance for surrounding villages and may constitute local clusters or by proximity to larger municipalities within the Province or across	In this tier settlements in Province Two provide some level of services. While comparatively low level of services and functions, in absolute terms for their areas play a significant role or are part of a broader functional cluster	Provision of services and functions with some intensity of socioeconomic activities and services	Comparatively higher concentration of services and functions – including those that are rarer and have higher relative value – with higher amount of socioeconomic opportunities, infrastructure and services
Names of Municipality (urban/rural) / City	127 out of 135 municipalities in the province fall under this category, or 94 percent of the total	Lalbandi, Rajbira Nijgadh, Kalaiya, Parwanipur	Jitpur-Simara	No settlement in this category in Province Two	Birgunj, Janakpur
Official administrative category	Third (Local level body)	Third (Local level body)	Third (Local level body)	Third (Local level body)	Third (Local level body)
Municipality population	Municipality (Urban and Rural) Rural) NB: Some of the municipalities in this tier may be comparatively large, such as Jaleswar City (~23,000) in the Mahottari district	Municipality (Urban andexcept Kalaiya (Sub- Metropolitan city) 20,000 to 125,000	Sub-Metropolitan city 117,000		Metropolitan (Birgunj) and Sub-Metropolitan (Janakpur) >150,000
Cluster	No significant clustering	Rajbiraj to the East; Kalaiya as part of the triangle with Jitpur and Birgunj	With Birgunj and Kalaiya along the N-S corridor to the west of the province. Potential clustering with Nijgadh, should the airport project move forward, and the fast- rack highway project completed		Main cluster with Birgunj, Kalaiya and Jitpur along the N-S corridor to the west of the province Secondary cluster with Janakpur connecting to the South (India) and along the E- W highway

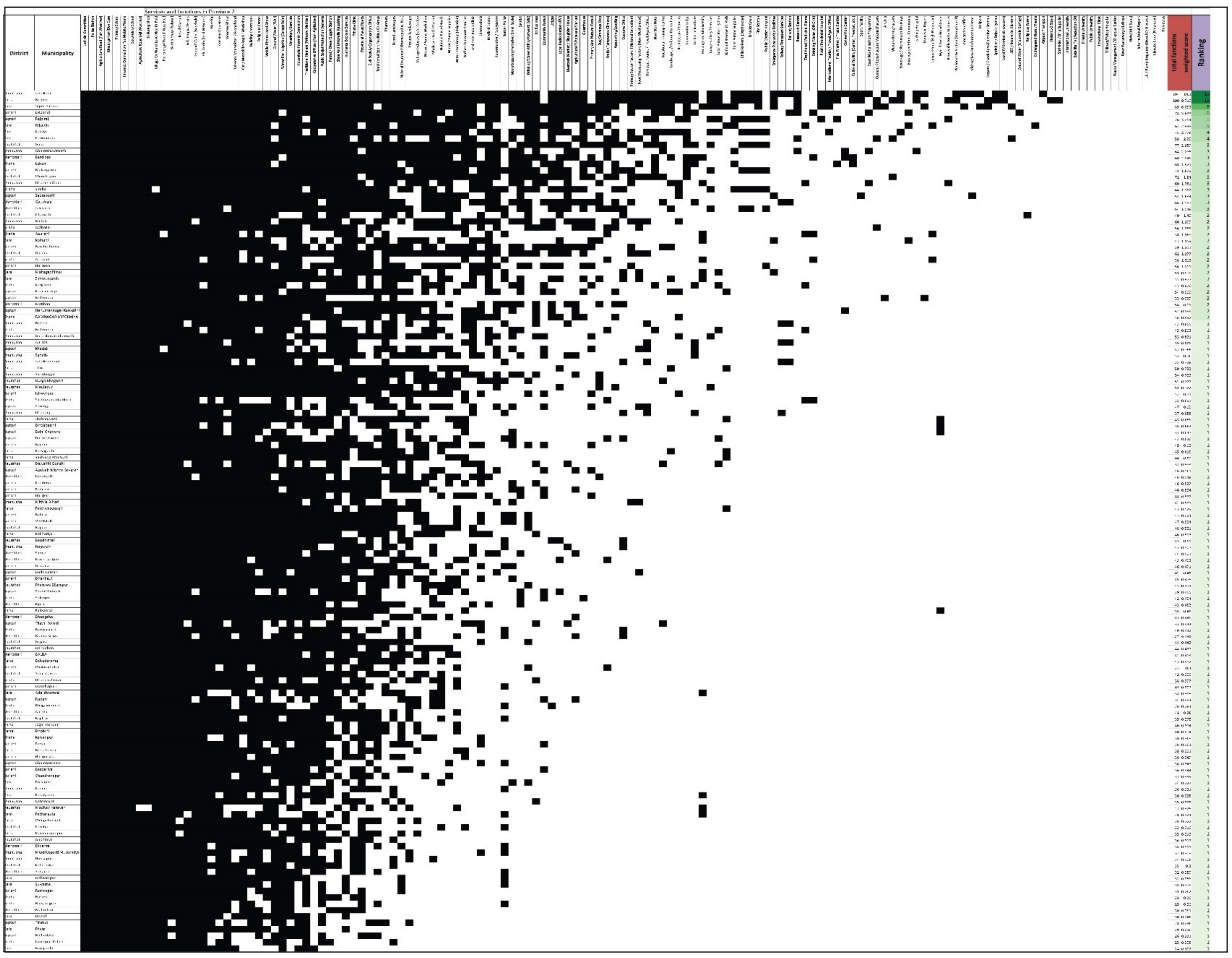

Figure 28. Index of municipalities ranked per number and value of services in Province Two (Source: Authors using UN-Habitat methodologies)

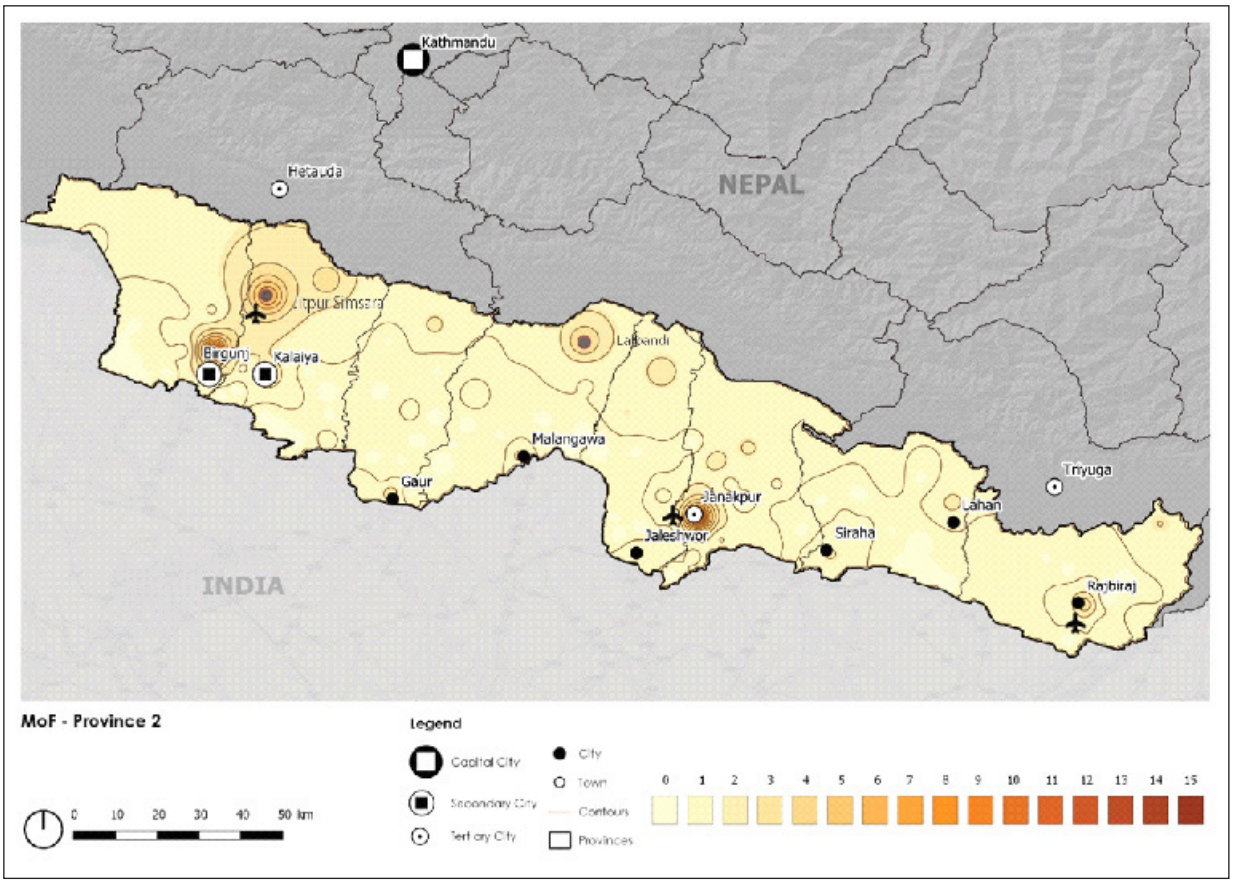

Figure 29. Functional hierarchy of settlements in Province Two (Source: Authors, 2019)

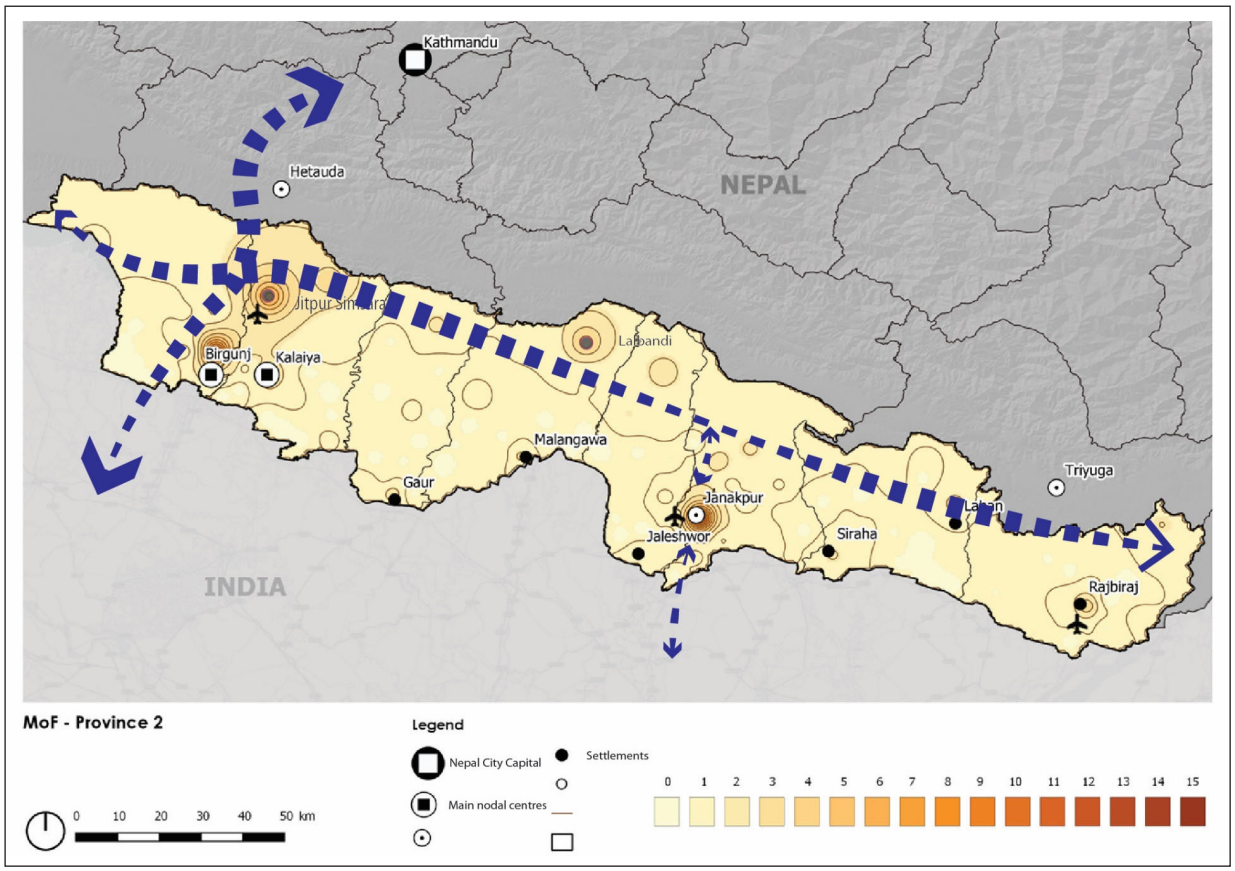

Figure 30. Emerging spatial structure and corridors (Source: Authors, 2019)

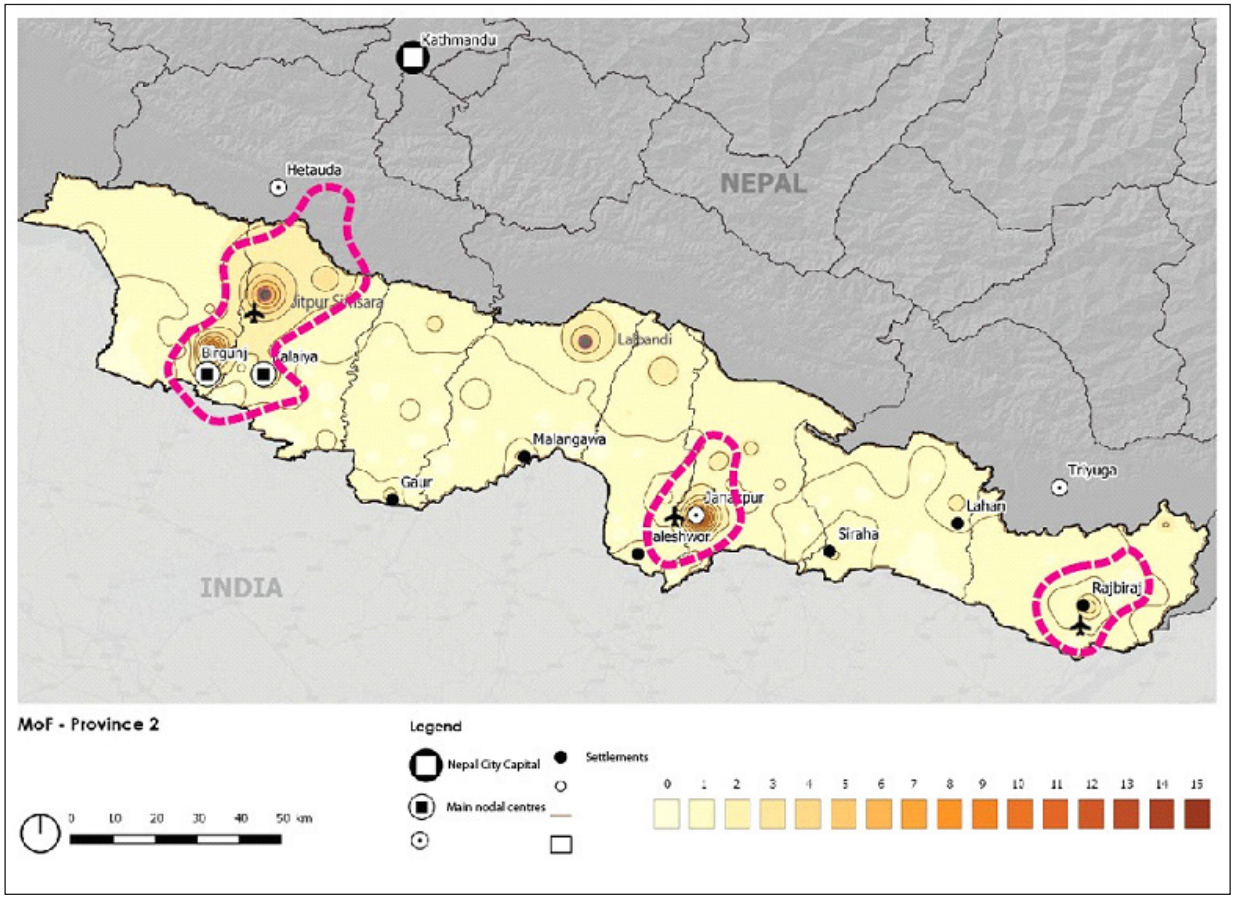

Figure 31. Main clusters (Source: Authors, 2019)

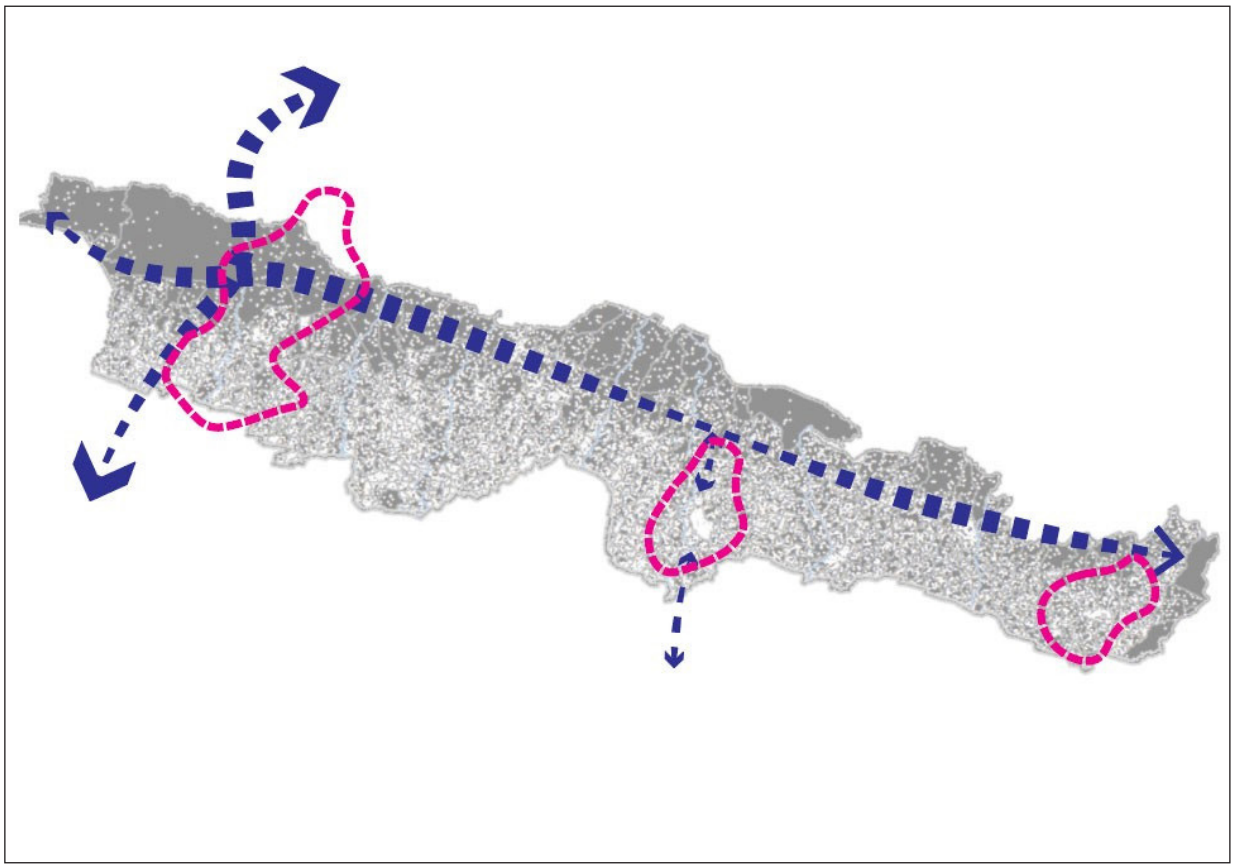

Figure 32. Nodal centres and corridors against population density (white dots). (Source: Authors, 2019)

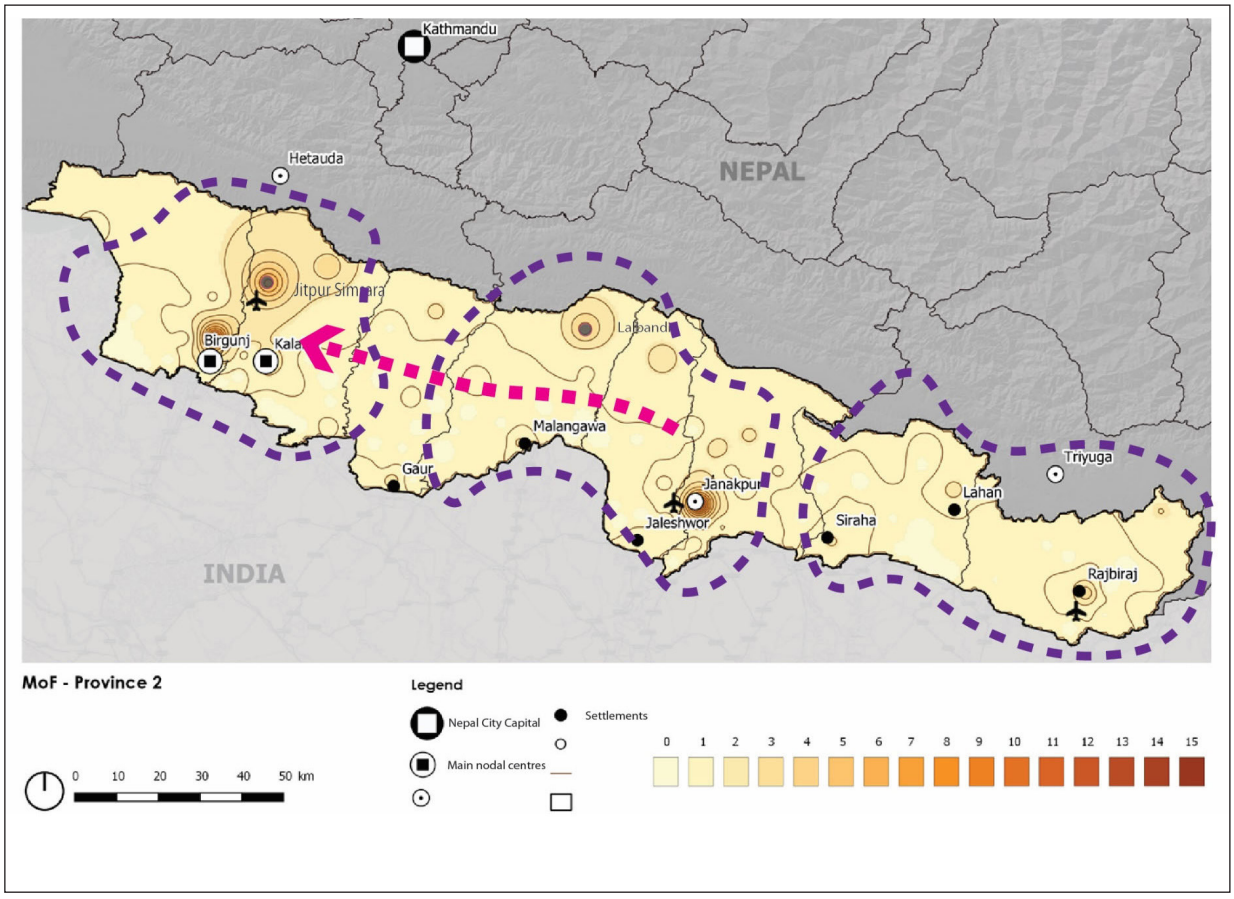

Figure 33. Functional ensembles in the Province. Centre appears to have functional relations (Pink arrow) with the western area. However, the eastern area does not show activity intensity towards west. (Source: Authors, 2019)

[72] World Bank, 2013, Nepal Road Sector Assessment Study

[73] The Himalayan Times, 22 August 2019, Kathmandu-Tarai Fast Track DPR okayed. Available here: https://thehimalayantimes.com/nepal/kathmandu-tarai-fast-track-dpr-okayed/. And Shrestha, C, 2014, Kathmandu – Terai Fast Track: From Non-Starter To National Project. Available here: https://www.spotlightnepal.com/2014/12/06/kathmandu-terai-fast-track-from-non-starter-to-national-project/

[74] My Republica, 18 November 2018, Dolpa connected to national road network. Available here: https://myrepublica.nagariknetwork.com/news/dolpa-connected-to-national-road-network/

[75] Kathmandu Post, 16 October 2019, India agrees to allow Nepal to use three inland waterways. Available here: https://kathmandupost.com/money/2019/10/03/india-agrees-to-allow-nepal-to-use-three-inland-waterways

[76] http://dataforall.org/dashboard/nepalcensus/

[77] The methodology used a questionnaire with a list of services and functions divided in ten (10) categories (Table 1). The questionnaire was given to local authorities (Urban and rural municipalities) within the eight (8) districts of the province asking whether services and functions exist or not in the Municipality. The questionnaire does not analyse the quality of the services, but only their presence or absence.

[78] https://www.nepalarmy.mil.np/fasttrack/home

[79] Together, Birgunj, Janakpur, Jitpur Simara, Kalaiya are home to approximately 640,000 people or approximately 11% of the total estimated population of Province Two, i.e. 5.4 million in 2011

2.5 Comparative advantage

Province Two has a range of comparative advantages with all sectors befitting from comparatively good multi modal transport infrastructure. Industry is competitive at the national and international level with Birgunj customs port accounting for 44% of total national trade in goods in 2017-18; the large Birgunj-Simara manufacturing base; extensive Pathalaiya-Birgunj industrial corridor; and highest industry GVA per capita in Bara.

As the traditional 'rice bowl' of Nepal, agriculture benefits from: the largest area (393,582 hectares) and highest proportion (74%) of irrigated land of any province; favourable climatic zones which produce up to three harvests per year; high levels of absolute output (e.g. 57% of national fish production); and existing factories demand for industrial crops (e.g. sugar and tobacco).

Tourism is less competitive as Province Two is not endowed with the natural conditions or attributes to compete with alternatives in surrounding provinces.

Targeting the correct market segment, in the sub-regions, will help to achieve the comparative advantage in: business recreation historical / religious / cultural sites and festivals; and ecological tourism in the west (Parsa National Park) and east (Koshi wetland). It is critical that planning a) enables the multi modal and multi sector transport potential of current and planned capital investments; b) fosters continued innovation in industry through technology transfer; c) addresses the environmental and infrastructural constraints to low agricultural productivity; d) protects the fragile ecological and historic/cultural assets which tourism needs to develop.

Industry

Province Two has a distinct comparative, and in some cases competitive, advantage in industry at the national scale and also internationally, including:

The international gateway and customs ports are of national importance to international trade that accounted for 44% of goods imported into the country in 2017-18.

The large manufacturing base in the Birgunj-Simara corridor and extensive industrial base along the Pathalaiya-Birgunj corridor are nationally competitive and boast the highest levels of productively in Nepal.

The largest areas of agricultural and irrigated land are also of national importance though are underperforming for a variety of reasons.

International and interprovincial transport infrastructure connections are some of the best in the country but lag behind neighbouring countries and intra-provincial transport infrastructure suffers from underinvestment and maintenance.

The strengths, weaknesses, opportunities and threats for industry in Province Two are summarised in. However, there are several constraints to these comparative advantages which must be considered:

The international gateway and customs ports are significant assets but are constrained by the terms of trade which limit intra-industry trade of intermediate goods which highlights the dependency of Province Two on international trade agreements far beyond provincial control. The current dependence on road haulage highlights the importance of multimodal.

transport by expanding the railway to carry freight and potential waterway development to lower the cost and provide redundancy.

The Special Economic Zones are a considerable opportunity but experience from Simara should be harnessed to ensure that adequate infrastructure (especially energy) and professional operators are identified to deliver the SEZs.

The manufacturing and industrial base is a significant endowment which could be enlarged in certain sectors (e.g. cement and sugar) and expanded into other sectors (e.g. intermediate manufactured goods). The latter will most likely require training, partnership and

technology transfer with foreign enterprises in order to capitalise on the highly productive industrial workforce in Province Two and drive innovation.

The existing infrastructure assets are comparatively good in the national context, but intra-provincial transport infrastructure is poorly maintained. Several capital projects (e.g. Kathmandu-Terai fast-track, Jayanagar-Janakpur railway) are underway. An integrated multi-modal approach to road, rail, air and water for both passengers and freight will be required to maximise the inclusive economic potential of these capital investments while protecting the sensitive environmental conditions.

Complementarity with the agriculture sector is significant but underutilised due to poor organisational linkages between the sectors and inadequate logistics / warehousing infrastructure. [80]

Strengths	Weaknesses
International gateway (ICD, ICP) and customs ports	Low agricultural productivity
International and inter-provincial transport links (road and rail)	Siltation of agricultural land
Large areas of fertile land suitable for cereals, vegetables and fruit	Irregular and unreliable electricity
Large manufacturing and industrial base in the Birgunj-Simara- Pathalaiya corridorgh industrial productivity	Weak / unreliable supply chain connections between agriculture and industry
High performance in numerous economic sectors (e.g. 57% of fish production)	Outdated freight, transport and logistics infrastructure
	Poorly maintained intra-provincial transport infrastructure
	Complex industry registration process
	Provincial capacity to implement
	Valuable yet fragile natural environment and eco-system services, easily upset by industrial development
Opportunities	**Threats**
Expand railway functionality to freight/trade as well as passengers through ongoing rehabilitation and conversion to Broad Gauge	Lower agricultural yield compared to Bangladesh and India
Kathmandu – Terai fast-track road currently under construction	No access to limestone deposits within the Province
Proposed inland waterway transport along Gandak and Koshi rivers	Further environmental degradation – silting along rivers due to floods, soil erosion along Churia Hills
Proposed 2nd International Airport at Nijgadh	Terms of trade – no tariffs against subsidized agricultural products imported from India; barriers to trade (sanitary/phytosanitary (SPS) and technical barriers to trade (TBT))
Ongoing development of Special Economic Zones in Simara, planned development of similar facilities in Umaprempur (Dhanusha), Jhunkunwa (Rautahat) and Gobindapur (Siraha)	Oscillating interest rates which increase investment risk
	Unstable and sometime contradictory policy environment (e.g. facilities and concessions provided by the Industrial Enterprises Act, SEZ Act and FITTA are nullified by the Financial Bill and Income Tax Act)
	High environmental impact of infrastructure projects planned or under construction

Table 3: SWOT analysis for industry in Province Two (Source: Authors, 2019)

Agriculture & Irrigation

As the traditional 'rice bowl' of Nepal, Province Two has comparative, and in some cases competitive, advantage in aspects of agriculture and irrigation at the national scale, including:

Second largest (and comparatively young) labour force, the largest area (393,582 hectares) and highest proportion (74%) of irrigated land of any province.

Three different agro-climatic belts including fertile land suitable for wide variety of tropical and sub-tropical crops; suitable environment for fish and livestock farming; and potential three harvests per year

High levels of output in numerous agricultural products (especially 57% of fish production)

Existing factories (e.g. eight sugar and one tobacco) generate demand for industrial crops.

International and interprovincial transport infrastructure connections are some of the best in the country but lag behind neighbouring countries and intra-provincial transport infrastructure suffers from underinvestment and maintenance.

The strengths, weaknesses, opportunities and threats for agriculture in Province Two are summarised in Table 4. However, there are several constraints to these comparative advantages which must be considered:

Low and declining agricultural productivity is a serious concern in the data and from consultations which is attributed to: relatively low levels (38%) of year- round irrigation; declining soil fertility; low productivity of crops and livestock. Many of these problems can be addressed through targeted and

systematic intervention. However, desertification, siltation and flooding are all likely to increase due to climate change impacts unless they are strategically addressed.

The existing and potential export capacity to other provinces and internationally is significant. However, the terms of trade with India do not reflect the considerable input subsidies which Province Two (and Nepal more broadly) must compete against in order achieve international competitive advantage.

The existing infrastructure assets are comparatively good in the national context with several capital projects (e.g. Kathmandu-Terai fastrack, Janakpur railway) underway. However, the lack of storage, processing, testing and certification infrastructure and facilities are a constraint to growth which could significantly improve the comparative and competitive advantage of agriculture in Province Two.

The existing in situ demand for industrial crops (e.g. sugar cane and tobacco factories) is a notable asset for agriculture which could be expanded significantly. However, inconsistent supply threatens the reliability of demand, and farmers are sceptical of market failures. Linkages between agriculture and industry, and storage /processing facilities must be improved to reassure both sectors of market reliability.[81]

Strengths	Weaknesses
Second largest (and comparatively young) labour force, the largest irrigated area (393,582 hectares) and highest proportion (74%) of irrigated land of any province. Three different agro-climatic zones including fertile suitable land for wide variety of tropical and sub-tropical crops; suitable environment for fish and livestock farming; and potential three harvests per year Irrigated by large perennial rivers and tube wells High volume (57%) and productivity of fish production Interprovincial vegetable exports (including high quality mango) International and inter-provincial transport links (road and rail) Existing factories (e.g. eight sugar and one tobacco) generate demand for industrial crops. Strong history of agriculture and farmers with indigenous knowledge of crop cultivation	Exposure of rain fed agriculture to the negative effects of climate change ck of modern variety of crops and livestock breeds contributes to low agricultural productivity (especially paddy, cattle, buffalo and old mango orchards) Slow adoption of available technology due to absence of necessary skills and low mechanisation due to small land holding sizes and capital investment required Lack of irrigation water during winter and spring season (only 38% of agricultural land has year- round irrigation) High post-harvest losses due to inadequate storage and processing Lack of laboratories for soil test and quality certification High incidence of diseases and parasite in livestock Forage/fodder not sufficient, especially during winter
Opportunities	**Threats**
Kathmandu-Terrai fastrack and east-west railway may facilitate double production of high value products (e.g. vegetables, fruits, fish and milk Establish processing industries for high value agricultural products including MAPs, fruits and vegetables Plain land feasible for mechanization Irrigate additional land with Sunkosi-Kamala and Sunkosi-Marine diversion, and extend ground water irrigation Increase cropping intensity to 300% with year-round irrigation facilities Large market nearby in India for agricultural products Establish and/or expand agro-based industries for value addition and replace imported ready to eat food products	Possibility of acute agriculture labour shortage as ~36% of economically active population are abroad. Lowering ground water table due to deforestation resulting in drying of some tubewells. Agricultural products compete with highly subsidized Indian products Climate change affecting crop viability Land productivity decline due to low organic matter in the soil (1 to 1.5 %), and desertification/siltation of land Flooding makes some areas inaccessible during monsoon. Farmers sceptical of cash crops due to risk of market failure. Absence of internationally accredited laboratories with sufficient test parameters limits export of agricultural products Fast urbanization without proper planning using fertile agricultural lands for non-agriculture purposes.

Table 4: SWOT analysis for agriculture and irrigation in Province Two (Authors, 2019)

Tourism

Province Two has limited comparative advantage in tourism at the national or international scale. Perhaps with the exception of Parsa National Park, the Province is not endowed with the natural conditions or attributes to compete with alternatives in surrounding provinces. Targeting the correct market segment, in the sub-regions, will help to achieve the comparative advantage, including:

Domestic and Indian tourists who are interested in historical / religious / cultural sites and festivals associated with: the heterogeneous ethnic community (e.g. Dhanuk, Yadav, Tharu, Musahar, Koiri, Kewat, Jhangads) with unique cultural identity; popular Mithila culture extending across the Indian border and recognized Mithila capital of Janakpur; and established festivities of Vivaha Panchami, Chath, Ram Navami

Ecological tourism in the west (Parsa National Park) particularly the proximity to integration with Chitwan National Park and east (Koshi wetland) of the province

Existing and under construction transport infrastructure (e.g. east- west highway, Kathmandu-Terai fast-track, postal highway, railway connections to India) which facilitate travel to the province

The strengths, weaknesses, opportunities and threats for tourism in Province Two are summarised in Table 5.However, there are several constraints to these comparative advantages which must be considered:

Basic transport infrastructure and accommodation facilities are inadequate for the standard required to attract recreation tourists. Similarly, the standard of hospitality service and skills needs to be improved to cater for standardized tourism.

The present flow and operation of tourism sector is unorganized and destination management is lacking. At the provincial level, there is no institutional mechanism to coordinate product development and encourage private investment in tourism facilities. At the operational level, there is little co-ordination between tour operators and accommodation providers etc. which creates a very ad hoc tourist profile.

However, the threat posed by ongoing environmental degradation and unplanned urbanisation may jeopardise the ecological and cultural attractions on which tourism depends. Ultimately, the scale of industrial and agricultural development may hinder the scale of comparative advantage in tourism.[82]

Strengths	Weaknesses
Air and ground transport connectivity, including domestic airports, east-west highway, postal highway, railway network link to India, and Kathmandu-Terai fast-track	Basic infrastructure of road network not up to standard for the purpose of holiday recreation
International border crossings at: Birgunj with frontier formality; and Janakpur and Jaleshwor with unrestricted entry exit for Indian and Nepali nationals	Absence of ground handling travel tour services including sight-seeing tour vehicles
Existence of heterogeneous ethnic community as Dhanuk, Yadav, Tharu, Musahar, Koiri, Kewat, Jhangads with unique cultural identity	Accommodation hotel facilities limited to few sites; absence and low interest of investors in tourism industry for standardized facilities
Popular Mithila culture extending cross border and recognized	Absence of recreational activities and facilities for longer stay
Janakpur as a city of Mithila	No destination management organization and lack of concerted destination marketing effort
Established historical/ religious based festivities as Vivaha Panchami, Chhath, Ram Navami drawing Hindu visitors	Absence of skilled human resources and training facility in hospitality
115+ ancient ponds with historical and mythological significance	No institutional mechanism to coordinate for product development and encourage private sectors for tourism facilities
Political will designating tourism as sector of priority	No effective land use plan, absence of reliable energy supply, low sanitation and garbage disposal management, and high out migration
Opportunities	**Threats**
Proposed Nijgadh International Airport	More attractive sites and competitive tourism sector in adjoining
Increasing number of middle income population along the secondary cities in neighbouring India	Provinces 1, 3, 4 and 5
Nadi tal Sarlahi, Dhanesore Mahadev of Dhanusha, Margahr Wetland and Pataura Mahadev of Rauthat, Simraungadh of Bara, Ghadiwarba Pokhari of Parsa, Chinnamasta of Saptari are listed as new destinations under Visit Nepal Year 2020 national campaign	Difficulty in retaining skilled human resources
Untapped resources of Mithila cultural heritage as Mithila Parikrama, Ramayan Circuit, reliving mythology-based events	Deterioration of environment in Churia range
People to people level socio-cultural relationship existing traditionally in the neighbouring potential source market of India	Deterioration of environmental quality and ambiance in the process of urbanisation
Operation of Integrated Check post in Birgunj, and railway track to Birgunj Sirsiya Dryport can be an international railway terminal	

Table 5: SWOT analysis for tourism in Province Two (Source: Authors, 2019)

[80] For more information on comparative advantage in industry please refer to EPI, forthcoming, Sector Development Strategy of Province Two (Industry)

[81] For more information on comparative advantage in agriculture and irrigation please refer to: EPI, forthcoming, Sector Development Strategy of Province Two (Irrigation); and EPI, forthcoming, Sector Development Strategy of Province Two (Agriculture)

[82] For more information on comparative advantage in agriculture and irrigation please refer to EPI, forthcoming, Sector Development Strategy of Province Two (Tourism)

3. Recommendations for sectoral development plans

3.1 Overall strategic components of plans

Strategy Overview
It is recommended that the development strategy, objectives and development packages for industry, agriculture, irrigation and tourism are informed by the baseline previously presented (including primary and secondary research), stakeholder consultations in the province and at federal level, expert technical advice in each sector, and the five overarching principles outlined in the introduction, and further described in this section. The strategy guides implementation plans that are a) practical; b) realistic; c) owned by the provincial authorities and a range of community, local, municipal, and provincial stakeholders; d) phased.

Overall Goal
It is proposed that an overall goal is developed, which could read as follows: "To drive inclusive economic development through industry led innovation; consolidate and expand agricultural productivity; and establish viable tourism opportunities that support local economic development".

Strategic priorities
The baseline highlights the existing economic growth of Province Two is inequitably distributed with disproportionate economic returns accruing to innovative and productive municipalities and sectors. The challenge for provincial government and a significant priority of the development strategy is to redistribute these economic returns more equitably through deeper local supply chains that increase local economic multipliers particularly in tradables (e.g. fruit) and value addition (e.g. manufacturing) or processing activities (e.g. cement), presenting heritage and packaging alternative tours. These inequalities can easily be seen in the socio- economic data and the spatial structure of the province. Therefore, the development strategy could drive inclusive economic development through:

1. Promotion of innovative industrial activity coupled with redistributive policy measures to more equitably spread the economic returns of industrial innovation and productivity
2. Enhanced agricultural productivity driven by research, development and training to improve yields and the quality of agricultural employment
3. Identification and development of heritage and culture-based tourism projects targeting the domestic and nearby Indian market

Geographic and spatial drivers
Geographically and spatially, the development strategy focuses on:

Consolidate the three nodes within the province (Birgunj, Janakpur and potentially Rajbiraj) where comparative advantage can be exploited in each sector with connective elements (e.g. potential SEZ in Siraha, Dhanusa and Rautahad) and infrastructure (physical and administrative)

Extend serviceability of people and increase economic linkages within the province.

Strengthen functional links on the East-West axis along the Mahendra Highway (H1) to maximise the connection across the two nodes (Birgunj and Janakpur) while enabling the development of a mixed-used third pole around Rajbiraj in the easternmost part of the province to extend serviceability in the area and establish a logistic 'gate' to and from Province 1 to the East.

Reinforce connectivity along the North-West axis of the H2 (Tribhuvan Highway) and H6 (Banepa Bardibas Highway) to strengthen the intra-nodal function of Birgunj and Janakpur respectively; but also consider infra-nodal connectivity (between the main nodes) along the feeders to/from India to the H1, i.e. F7 and F6 as well as F5 and F4 to the east, particularly to support the development of Rajbiraj as a third pole.

Achieving competitiveness
In order to achieve the full economic potential offered by the strong comparative advantages of Province Two in multiple sectors, enablers will need to be established and limiting factors addressed. These are: supporting infrastructure; skills and capacities; regulations & policies; climate & disaster resilience, environmental & social sustainability.

These **enablers and limiting factors** are intertwined: for instance, building supporting infrastructure will

require the policy and regulatory environment to enable investments. Policies for environmental sustainability and resilience will ensure, in turn, that these investments are sustainable and resilient.

Therefore, all sectors must make specific provisions to ensure these enablers are identified and strengthened; and limiting factors or challenges acknowledged and addressed as much as possible.

Supporting infrastructure

The existing economic growth of Province Two is facilitated by the existing infrastructure and unchallenging topography. However, there are risks associated with infrastructure extension and management. Overcoming these constraints will require:

Ensure maintenance and upgrade of existing transport and energy infrastructure, seen to be rapidly degrading, to prevent obsolescence and deterioration of the network and continue to support the economic activities;

Consider environmental impact of potential additional infrastructure, especially in and around Nijgadh and ensure this is prevented and mitigated;

Skills & capacities

Labour force and capacities exist in the province but require strengthening and upskilling to unlock the full potential in all three sectors. Key actions to strengthen skills and build capacities across all sectors will include:

Progressive upskilling of a critical mass of people in Province Two employed or active in skill-intensive sectors of industrial or service applications (e.g. agricultural projects and supply-chains);

Diversifying employment and occupational opportunities to involve the most vulnerable, considering the low socio-economic indicators

In each sector, this must include:

Formal training with academic or vocational accreditation within or outside the province, specific to each sector (e.g. agro- business);

On-the-job training at community-scale on specific applications (e.g. climate-smart agri-business);

Regulations, policies & incentives

Enabling economic development across the sectors will require reviewing existing regulations and policies to further identify incentives and potential obstacles for competitiveness and dedicated policies to orient investments. Key actions, across all sectors must include:

Reviewing existing rules & regulations at provincial level to identify potential challenges for implementation and investments and engage with the National Government and local authorities if a revision is necessary;

Developing dedicated policies, by-laws and guidelines to ensure investments comply with the overarching principles for development of this strategy: this includes e.g. specific zoning guidance on the type of tourist projects that can be developed in and around sacred sites; manuals for sustainable investments;

Identifying economic, financial, tax incentives – for instance through Special Economic Zones – to attract investments.

Climate & disaster resilience

The baseline shows that Province Two is highly exposed to a range of natural hazards, compounded by the effects of climate change. The potential effects of this hazard profile are both location specific (e.g. landslides on the shoulder of the hills, or land settlements on river embankments; or flood-prone areas in large rivers) and non-specific (e.g. droughts and heat waves). Each development sector must integrate resilience measures to reduce exposure (avoidance) and risk reduction (mitigation). Industry, agriculture, irrigation and tourism are all potentially exposed to the adverse effects of natural hazards currently and in the future.

Similarly, climate change will significantly alter the natural processes and eco-system services that are essential to the wellbeing of communities and critical for each sector. This includes, above all, the changes expected on water availability – which will put stress on services required for tourism, as well as industrial processes and – naturally – for rain fed and irrigated agriculture alike. The potential identified in each sector may be significantly affected by climate change as observed and projected. Planning must imperatively factor different scenarios before choosing investments and throughout design and implementation of projects in Province Two.

Each development sector in Province Two therefore must integrate resilience measures to:

reduce exposure (avoidance) through risk-assessments and risk sensitive planning of all projects, especially as concerns floods;

reduce risks (mitigation) of disasters through sector-specific actions e.g. disaster-resilient technical design of buildings or infrastructures;

adapt to the effects of climate change, through e.g. heat-resistant crop-species, efficient irrigation; rainwater harvesting interventions etc.

Environmental & Social Sustainability

While the agro-ecological area covered by Province Two is naturally fertile and endowed with rich natural resources, degradation trends are noted. Planning should focus on activities that are co-beneficial and avoid those that may hamper other sectors, e.g. increased transport or service infrastructure may well increase industrial viability, in several areas this will reduce the attractiveness for tourism (e.g. Parsa National Park or Koshi Reserve). The effects of over-exploitation or degradation in the province may be felt well beyond its boundaries and affect large biodiversity corridors, e.g. along the Churia Hills. Comparative advantages identified that support industry, agriculture, irrigation and tourism may become depleted. Durability and viability of investments in industry and agriculture are dependent on stewardship of resources from surface and underground water; and resources on or under the crust (deforestation and soil depletion in the hills). Planning should:

Ensure systematic consideration of social and environmental considerations when deciding what investors to attract and projects to prioritise, so that development does not affect eco- system services beyond replenishment, regeneration or carrying capacities, and work to the benefit of all people;

Ensure systematic use of Social Safeguards and Environmental Impact Assessments (EIA) in all projects according and beyond the requirements of the national regulations, and guarantee strict adherence to the relevant recommendations including, if necessary, finding alternative sites or technologies or renounce the project if projected impact on communities and the environment cannot be mitigated

Systematically implementing impact mitigation measures identified through Social and environmental impact assessments and project-specific assessments

Overarching principles for the Strategy

All development packages and specific projects in this strategy should adhere and uphold the following principles:

- **Participation & inclusiveness:** the ultimate goal of the strategy is to promote inclusive economic growth that involves all actors in the province (private and public sector, the civil society, the university, communities) to benefit everyone, especially the most vulnerable people;
- **Sustainability:** investments under this strategy aims at balancing economic and financial benefits with social inclusiveness, and environmental health, in a way that no unsustainable trade-off is made to promote growth at the expense of people or the environment
- **Resilience:** all projects and investments under this strategy will be conceived, designed and implemented ensuring that they can withstand, respond and adapt to exogenous and endogenous shocks and stressors;
- **Evidence-based design:** further to the baseline generated to prepare this strategy, all projects must include robust feasibility evidence to ensure they can generate benefits and can be sustained
- **Co-benefiting:** All projects prioritised and implemented must a) maximise their co-benefits across sectors (e.g. road infrastructure serving both tourism access and agri-business); b) avoid those that may hamper other sectors (e.g. industrial processing facilities which pollute productive agricultural land); c) genuinely attempt to mitigate residual risks or potential impact of projects (e.g. while the potential of the new airport is significant, the location, design and implementation will determine whether the province can benefit from enhanced connectivity or will rather be affected as a result of damage to the national park).

These general principles are further defined in the project implementation section of this strategy.

3.2 Industry objectives & develpmnet packages

Objectives

The objectives and development packages for industry in Province Two are framed by the vision of a prosperous province supported by high industrial growth which assists in reducing the level of poverty through the development of agro-based industry and manufacturing sector. The primary objective to increase income and employment opportunities at the Provincial level by enhancing efficiency and outputs of industries, frames the specific objectives and sub-objectives as follows:[83]

1. Develop necessary strategic and regulatory framework for industrial development of the Province.
    1.1. Carry out survey and resource mapping of the province and create inventories in order to support the formulation of policies and development plan of the province.
    1.2. Formulate and bring out industrial and trade policy of the province to complement and substantiate the national policies.

1.3. Enact legislations for establishment of industrial estate, parks and zones within the province.

1.4. Develop project banks based on feasibility studies for facilitation of foreign and domestic investment.

2. Develop physical infrastructures for enabling investment climate in the province.

2.1. Explore and identify key infrastructures for facilitation of industry and trade.

2.2. Implement program for developing such infrastructures in coordination with federal government.

2.3. Recommend the government of Nepal for development of border infrastructures in key locations.

2.4. Establish industrial village at each municipality.

3. Promote micro, cottage and small industries (MCSIs) and help them to be the driver of growth and prosperity.

3.1. Create venture capital fund for supporting the start-up enterprises and business incubation.

3.2. Set up technology development fund to support the technology improvement, reducing waste and improving energy efficiency.

3.3. Help in setting up gift/souvenir houses for display and sales of the MCSI products.

3.4. Carry out financial literacy programmes with potential entrepreneurs.

3.5. Support small enterprises to participate in national trade fairs.

4. Prioritize key industrial sectors that are of importance from national perspectives

4.1. Identify five key manufacturing sectors of the province and prepare plan for their development along the value chain.

4.2. Implement development plan for products and related services.

4.3. Enhance market access opportunities of priority products (in cooperation with government of Nepal).

5. Focus on creating enabling environment for investment (supported by skill development program and appropriate institutional infrastructures)

5.1. Prepare human resource (HR) development plan for meeting the skill requirement by the industries.

5.2. Carry-out training and skill development programmes in collaboration with government of Nepal.

5.3. Establish directorate of industry and trade.

5.4. Develop effective monitoring and evaluation mechanism.

Development Packages (DPs)

The development packages for industry focus on concentrating the innovation potential of industry around Birgunj. This node will remain the manufacturing and industrial hub of the province and potentially the country. The localisation economies and specialisation achieved in Birgunj should be encouraged and promoted to drive innovation- based growth. However, as firms develop and industry matures, opportunities exist for stages of the value chain to move out to other locations, e.g. Rautahat.

DP1. Proactive intervention to bolster existing industrial nodes and / or create new nodes in other parts of the Province. New nodes will require a significant level of capital investment, stewardship of the environment and industrial strategy to overcome existing productivity constraints, e.g. the proposed SEZ in Siraha, Dhanusa and Rautahad or provincial industrial zone in Aurahi could create their own economies of scale. Similarly, an industrial estate or similar could be used to bolster the growth potential of Rajbiraj and link to or benefit from the spill overs of Biratnagar. However, the proximity to the Koshi Tappu wild-life Park and bird sanctuary, and river is a concern for new large scale industrial development in this area. Training centres and skills development initiatives will also contribute to driving innovation-based growth by enhancing the skills base of the labour pool.

DP2. Development packages for Province Two could also include consolidation of existing routes into industrial corridors with connective multi modal transport infrastructure in order to both move inputs and outputs but also to allow for greater supply chain integration and intra- industry trade of intermediates. The east-west connection between Birgunj and Janakpur by both road and rail is particularly important in an effort to integrate the two main existing economic and industrial areas, and bolster linkages between industry and agriculture, e.g. feasibility studies for the Jatahi - Dhalkebar, Inarwa (Dhanusa) - Bardibas (along the railway line) and Lahan-Thadi corridors should be conducted.

DP3. The inequitable distribution of jobs and opportunities can be addressed through a variety of efforts including: industrial villages in each municipality to distribute egalitarian opportunities to each municipality; establish an entrepreneur fund targeted at women and disadvantaged groups to bolster the micro, small and cottage enterprise ecosystem; programmes targeting fish, vegetables and fruit processing industries; and the upgrade of farm to market access roads to enhance local economic opportunities outside the main commercial hubs.

Required enablers

For DPs to be fully implemented the following cross-cutting enabling actions must be undertaken:

Assess specific risks of disasters potentially affecting industrial assets (infrastructure; equipment) and business continuity (supply-chains) in each DP and identify specific required resilience measures;

Assess potential impact and cost-benefits balance of infrastructure projects that may serve industrial projects but may affect landscape, biodiversity, and eco-system services, in particular as concerns the construction of infrastructure in Bara district;

Conduct capacity/skill gap assessments to support DP1, DP3 and ensure Technical Assistance (TA) is obtained in the short to mid-term, while developing capacities and skills over the mid to long-term;

Assess business environment (policies, regulations, tax and economic incentives) to identify bottlenecks to Foreign Direct Investments (FDI) for DP1, DP2 and DP3; set-up incentives for DP1 and DP2.

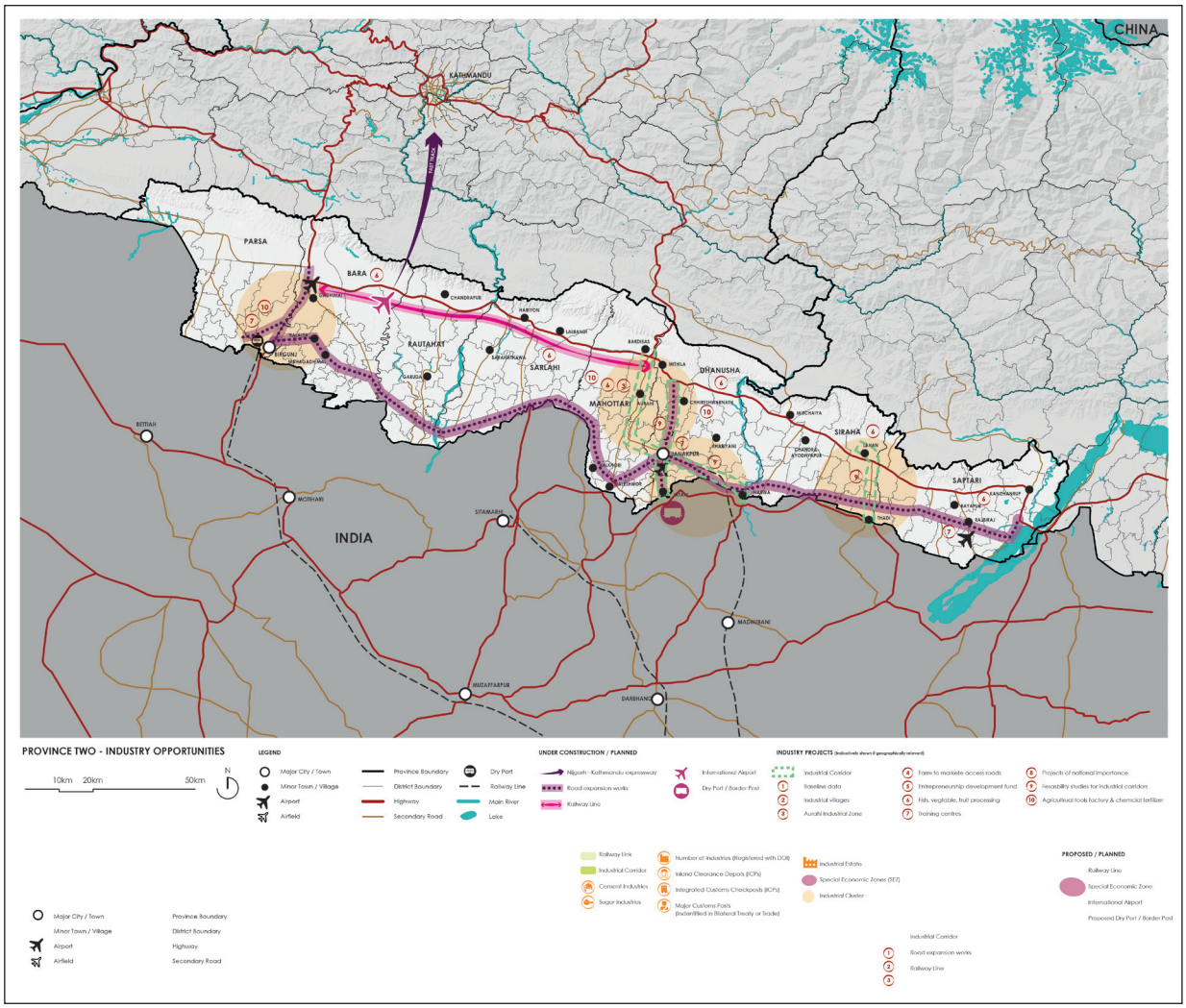

Figure 34: Opportunities and development packages for industry in Province Two (Source: Authors, 2019)

3.3 Agriculture & irrigation objectives and development packages

Objectives

The objectives and development packages for agriculture and irrigation in Province Two are framed by the vision to attain sustainable prosperity through land reform, modernization and commercialization of agriculture. The overarching goal for irrigation is to achieve year- round irrigation in a sustainable manner through the combined use of surface and ground water that contributes to increased agricultural productivity. The specific objectives and sub-objectives are: [84]

1. To increase production and productivity through improved agricultural technologies.
    - 1.1. Strengthen research bases for development and dissemination of ecology specific modern technologies including high yielding variety seed, livestock breed; and efficient water use techniques.
    - 1.2. Promote inter-agency coordination and collaboration among government, educational and agriculture research institutions to promote the result-oriented application of technologies.
    - 1.3. Develop rural infrastructure, and mechanization of agricultural processes.
    - 1.4. Increase cropping intensity through introduction of high-quality short duration varieties.
2. To commercialize production and export of products through their scientific production and improved post- harvest management practices.
    - 2.1. Encourage production of low-volume, high-value commodities in areas with potentialities.
    - 2.2. Promote the development of crop and livestock-based industries with priority on value-added processing.
    - 2.3. Promote market infrastructure and increase the access of producer to markets by developing efficient mechanisms for post- harvest handling of products.
    - 2.4. Set standards and strengthen quality control facility for crops and livestock products in order to make them competitive in domestic and international markets
    - 2.5. Promote activities to publicize exportable commodities identified by the Nepal Trade Integration Strategy, 2016
3. To improve resource productivity through cost minimization and efficient utilization of resources.
    - 3.1. Effective institutional efforts for scientific land management including land consolidation and mechanisation.
    - 3.2. Move toward semi-commercial and commercial farming from existing subsistence farming system
    - 3.3. Increase the competitiveness of agricultural and livestock products by reducing their costs of production through effective R&D
    - 3.4. Encourage youths to take up commercial farming by turning farming into an attractive and prestigious profession.
    - 3.5. Establish strong knowledge sharing / communication platforms (e.g. weather forecast, commodity prices and demand).
4. To increase production of agricultural and forest- based products while reducing impacts of climate change.
    - 4.1. Conserve, promote and utilize agro-biodiversity by protecting and promoting local and indigenous plants, animals and bird species.
    - 4.2. Develop and expand research-based environment-friendly agro-technologies to minimize the adverse impacts of climate change.
    - 4.3. Promote the use organic fertilizers to the extent possible.
5. a. To provide assured irrigation in 20,800 ha of irrigated land through improvement and modernization of existing irrigation schemes of surface and groundwater system.
    - b. To provide assured irrigation in 91,000 ha of agricultural land through groundwater development in water scarce area of new and existing irrigated land.
    - 5.1. Increasing the average cropping intensity of 200% or more in the irrigated area
    - 5.2. Ensuring that all the users from head to tail have the convenient access to the required quantity of water as and when required.
    - 5.3. Increasing agriculture production and enhancing food security through irrigation.
    - 5.4. Promoting the empowerment of irrigation water users.
    - 5.5. Ensuring ISF collection to contribute 40 % of O & M cost.

5.6. Ensuring agriculture-irrigation linkage/ coordination in the irrigation activities.

5.7. Promoting research and development activities in the modernization of irrigation.

Development Packages

Similar to industry above, the development packages for agriculture and irrigation focus on the nodes of highest current agricultural output – mostly in the central area of the province. Several non-location specific interventions are required to overcome the constraints to productivity enhancements such as crop and animal diversity. However, this area has the potential to also overcome the location specific constraints to productivity such as aggregated land holdings, mechanisation and enhanced irrigation. The central area is strategically located to benefit from the proposed Sunkoshi diversion projects.

However, agriculture development must stretch beyond the central node in an effort to equitably distribute economic benefits and employment opportunities. Several secondary nodes are identified to the east and west where agriculture can support industry (west) and potentially contribute to enhancing the eastern edge of the province.

DP1. Research, development and training can identify solutions to productivity constraints of agricultural output identified in the baseline (lack of year-round irrigation, declining soil fertility, low productivity of crops and livestock). Dedicated research facilities and in coordination with the National Agriculture Research Centre (NARC) and mobile soil testing facilities can help to identify appropriate crops, seeds, fertilizer, irrigation methods etc. to enhance agricultural productivity. An Agriculture and Training College can equip the labour force with knowledge of improved agricultural techniques in an effort to boost productivity and increase the quality of agricultural employment.

DP2. Improvement to enabling and market infrastructure can enhance the quality of agricultural harvests and processing. This includes basic market infrastructure like collection centres and storage areas to reduce post- harvest losses, as well as improvements to existing irrigation schemes. Food testing and certification laboratories can also contribute to reliability and quality assurance of outputs – especially fish and mangoes. While improved information technology and communications can inform agricultural practice and moderate the peaks and troughs of supply and demand through.

DP3. Intervention in specific sub-sectors (e.g. floriculture) and harvest processes (e.g. mechanisation) offer significant opportunities to enhance production. Province Two is uniquely positioned to adopt mechanisation which could transform the agriculture sector in Nepal. However, the potential productivity gains need to be balanced against potential shift to lower labour intensive forms of agriculture. The potential for flower production as a niche but highly valuable crop could be explored in an effort to achieve market performance similar to that of fish.

Required enablers

For DPs to be fully implemented the following cross-cutting enabling actions must be undertaken:

Assess specific risks of rapid and slow onset disasters (floods and droughts and heat waves mostly) potentially affecting agricultural productivity and continuity of business and identify adaptive measures required (e.g. heat-resistant varieties, water-harvesting catchment; dripping irrigation) already promoted by existing climate smart agriculture projects conducted in the province to reduce risks of disasters in agriculture

Develop climate change scenarios to verify suitability of investments in different value-chains that consider the expected changes in rainfall; increase in average and extreme temperatures; emergence of pests

Conduct capacity/skill gap assessments, and obtain Technical Assistance (TA) from Federal Government and international organisation on climate-smart agriculture, and on agri-business in the immediate to the mid-term, while developing capacities and skills over the mid to long-term: consider establishing or strengthening school- farm and other on-the-job training facilities

Assess business environment (policies, regulations, tax and economic incentives) to identify bottlenecks to Foreign Direct Investments (FDI) for DP1, DP2 and DP3; set-up incentives for DP1 and DP3 for both FDI and local investments

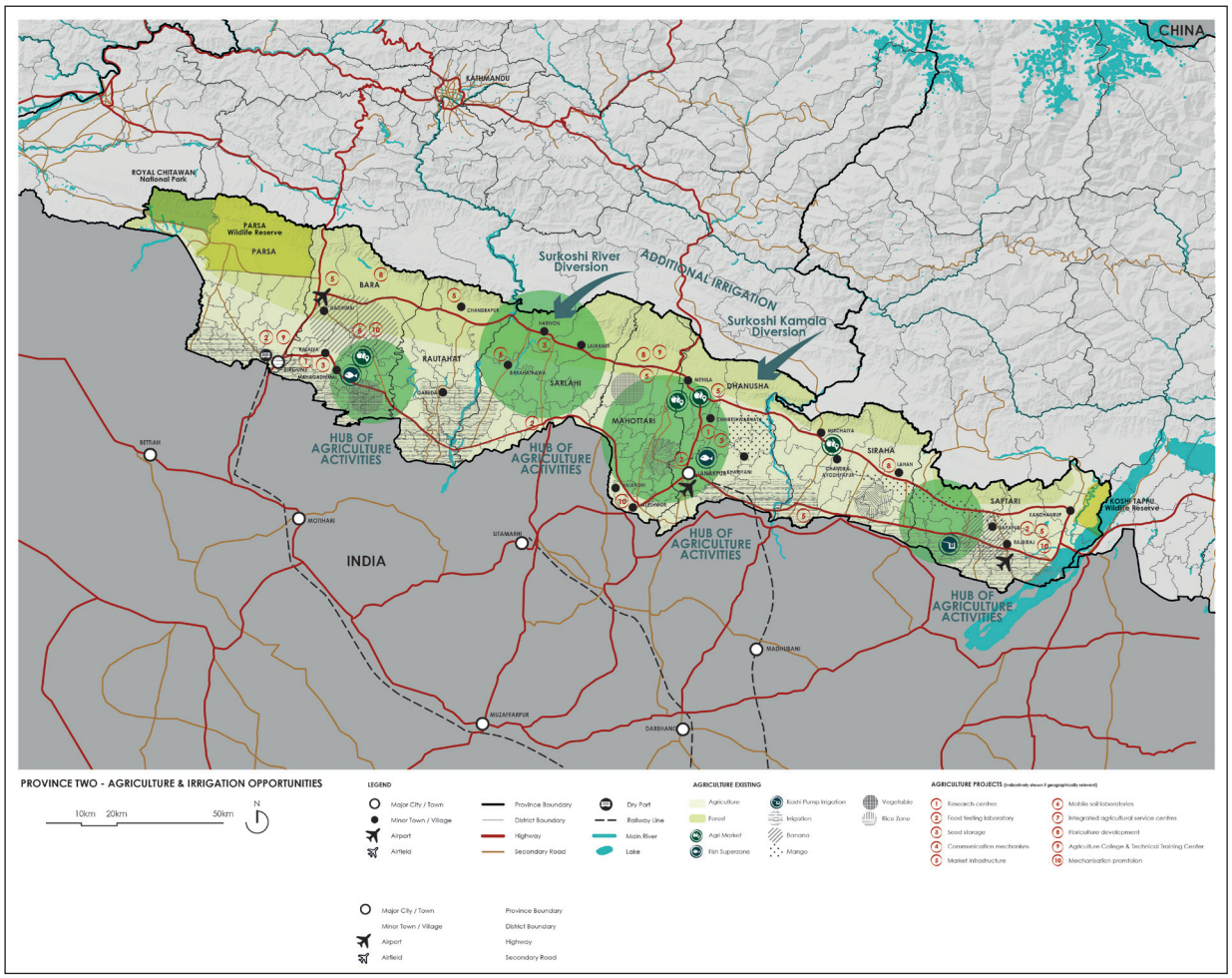

Figure 35: Opportunities and development packages for agriculture and irrigation in Province Two (Source: Authors, 2019)

3.4 Tourism objectives and development packages

Objectives

The objectives and development packages for tourism in Province Two are framed by the vision and goals to: increase the contribution of tourism to the macro economic performance of the province; create employment opportunities; generate alternative income for targeted communities; and mobilise revenue for Provincial government by promoting religious/cultural/nature-based tourism activities.

The main objective is to improve and expand the range of tourism activities and services which enhance the economic value of tourist product packages through increased awareness of such services and activities in the generating market. Future success can be measured by number of arrivals, per capita visitor spending and length of stay. The specific objectives and sub-objectives are:[85]

1. Develop tourism products that cater to diversified domestic and international demand in the generating market

1.1. Collect information from local government of potential tourism sites and resources

1.2. Determine the extent of intervention to develop them as tourism product from among the inventory

1.3. Ascertain the possible market segmentation for particular tourism product

1.4. Package the tour product based on Religious theme, Cultural theme, Historical/ archaeological theme, Lake/pond theme, Recreation/holiday theme, MICE theme, Festival/Event theme, sports theme, Village/Farm/Ethnic theme

1.5. Develop publicity materials and marketing tools to generate demand for the developed product packaging suitable to the identified segmentation

1.6. Create Brand wave for the product at Provincial, National, Regional and International level to increase production and productivity through improved agricultural technologies.

2. Establish the enabling governance and regulatory framework for investment in tourism projects and services.
    - 2.1. Develop Madhesh tourism policy, decide regulatory mechanism, prepare travel operation guidelines
    - 2.2. Develop incentive package to investors on tourism related business and industry
    - 2.3. Design and enforce heritage preservation, sustainable guidelines, aesthetic and beautification codes
    - 2.4. Develop distinct and visible destination image creation guidelines and enforce along all tiers of authorities and private sector
    - 2.5. Establish data collection and data management system disaggregated at provincial, district and local level
    - 2.6. Establish Provincial Tourism Board with representation from all districts and industry representatives for coordination, destination management, and marketing
    - 2.7. Set up institutional secretariat under the Board to implement tourism related programs and projects
    - 2.8. Develop sets of indicators for Monitoring and Evaluation
    - 2.9. Establish revenue generating and sharing policy, procedures to tax at appropriate point of the value chain within the scope designated by the constitution

3. Establish, enhance and consolidate the tourism hosting industry capacity by improving infrastructure, services and skill.
    - 3.1. Improve air transportation, rail transportation, and road transportation to facilitate cost effective and competitive accessibility to all tourism sites and circuits
    - 3.2. Improve tourism service facilitation as accommodation, recreation, information
    - 3.3. Increase tourism awareness among the authorities, general public, hosting community, travel service providers to establish tourism friendly atmosphere
    - 3.4. Enhance security services to assure the visiting tourists
    - 3.5. Improve skill and capability for enhanced quality service delivery of industry professionals to all targeted market and clients
    - 3.6. Ensure reliability and quality of basic services as hygiene, sanitation, garbage disposal, water supplies, utility, communication, gift, shopping, retailing

Development Packages

Development packages for tourism focus on three nodes in the east, centre and west of the province in response to existing historic, religious or cultural sites. Janakpur remains the major destination of the province with a proud history of religious significance. However, the volume of people transiting through Birgunj also offers potential to offer additional attractions for a market segment that has already travelled to or through the Nepal gateway.

Similar to industry and agriculture but perhaps more visibly, the proposed development packages for tourism rely heavily on connective east-west transport infrastructure to facilitate sight-seeing tours and routes. The individual calibre of each tourist site may not rival those of international significance like Lumbini, but the proximity and ease of access may encourage existing travellers or those in close proximity (e.g. Kathmandu or Patna) to spend a few days visiting various sites around Province Two.

DP1. Inventory, identification and design of new specific location-based tour circuits and day trip destinations based around themes such as religion, culture, heritage and ecology. These disbursed sites may not compete for international attention but can attract domestic tourists, those from nearby India, and offer excursions for the trade and business community active in and who pass through Province Two (especially Birgunj).

DP2. Develop and refurbish existing known attractions such as the heritage ponds of Janakpur and historical sites (e.g. Janaki Mandir) to bolster existing tourist numbers and experience.

DP3. Develop awareness, marketing and promotional material to advertise Province Two. Province Two may not be on the standard tourist itinerary and needs proactive marketing in order to generate demand among the domestic and nearby India market.

Required enablers

For DPs to be fully implemented the following cross-cutting enabling actions must be undertaken:

Include climate and disaster risk assessments in any major developments for tourism, especially if it includes heritage and historic preservation

Focus on improving capacities and skills in the tour operators and hosting business, tailored to the different DPs. Different tourists will require different

levels of service provision and capacities (cultural)[96] Nepal Provincial Planning: Baseline and Recommendations for Province Two tourists, business travellers etc.). The entire range of offering in capacity-building will be required, from professional training with formal accreditation, to community-based capacity-building for homestays.

Assess business environment (policies, regulations, tax and economic incentives) to identify bottlenecks to Foreign Direct Investments (FDI) for DP1 and DP2; set-up incentives for DP1 and DP2 for both FDI and local investments.

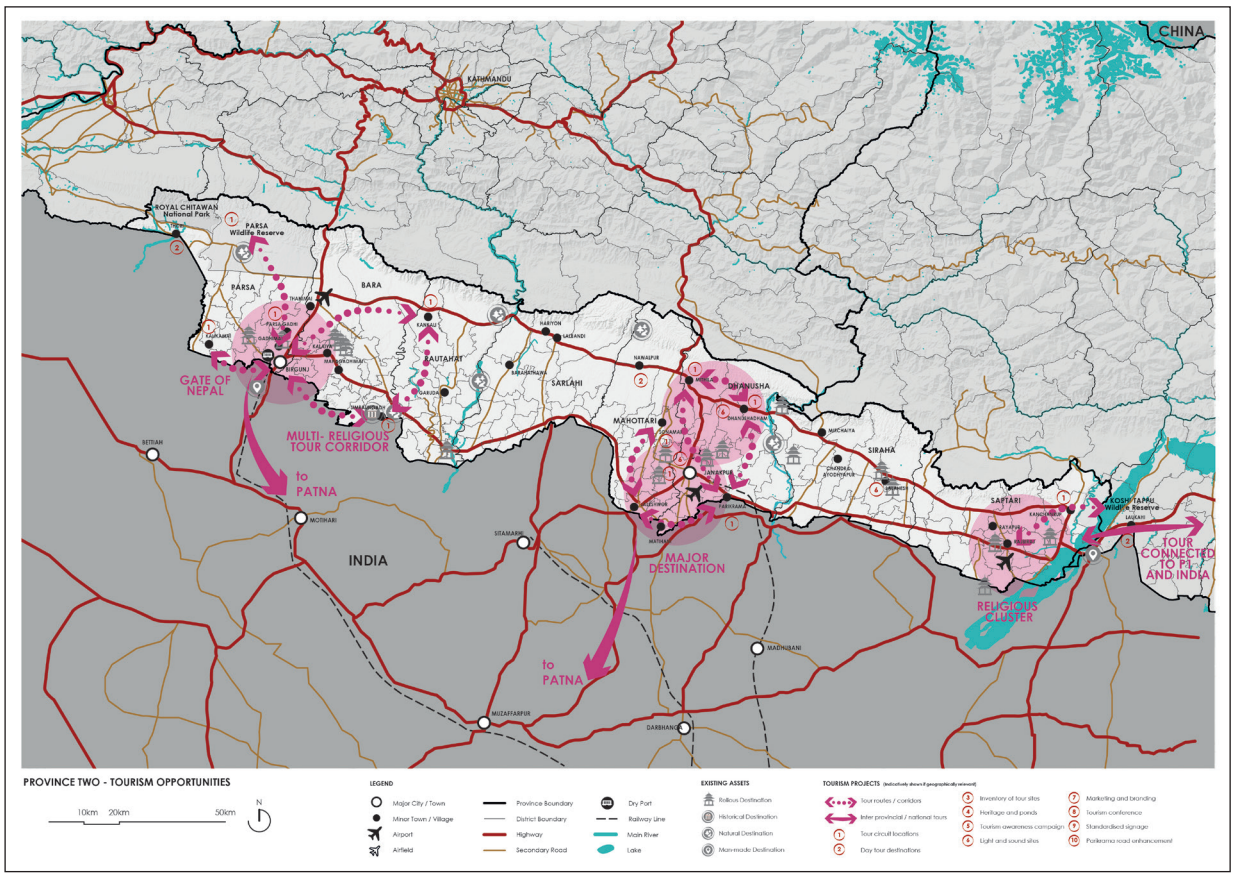

Figure 36: Opportunities and development packages for tourism in Province Two (Source: Authors, 2019)

[83] EPI, forthcoming, Sector Development Strategy of Province Two (Industry)

[84] EPI, forthcoming, Sector Development Strategy of Province Two (Irrigation); and EPI, forthcoming, Sector Development Strategy of Province Two (Agriculture)

[85] EPI, forthcoming, Sector Development Strategy of Province Two (Tourism)

4. Recomendations to prepare implementation plans

4.1 Overview

Implementation plans are required to operationalise and achieve the development strategy and sector objectives.

This section presents a series of recommended priority projects which can collectively contribute to the realisation of the sector objectives. For the purposes of this report, the term project is used in the broadest possible sense which can include: traditional projects (e.g. the design and construction of a piece of infrastructure (hard investment) or training / skills development (soft investment)); enabling projects (e.g. feasibility study to improve supply chains); operational projects (e.g. regulatory adjustment to overcome a policy constraint). These projects interact cumulatively to form implementation plans for each sector.

A long list of potential projects was compiled throughout the research and consultation process. Ideas, opportunities and suggestions were indiscriminately collected from the literature review, stakeholder workshops, focus group discussions, bilateral meetings with public authorities, informal discussions within the team etc. A diverse range of approximately 30-50 projects per sector were long listed which spanned time horizons, budget requirements and implementation capacities.

Project details were gathered and some assumptions included in order to promote discussion and agreement. These included:

1. Capital or current account: to ascertain the investment modality required;
2. Duration: short, medium or long term with four to five years considered long term for the time horizon of the provincial planning process. In several cases, longer term projects were broken down into phases in order to align with the provincial planning cycle;
3. Conditional: identify if the project is reliant on another project in order to be achieved and therefore identify any critical path projects;
4. Key actors: identify who is responsible for approving and delivering the project; and
5. Additional information: location, source of funding etc. as available or required.

A series of criteria were established in order to prioritise the long list of projects into a short list using a modified version of the Delphi method. The criteria were agreed as follows:

1. Strategic Value: how does the project align with strategic priorities for the country, province or sector?
2. Dependency: how dependent is this project on other projects?
3. Co-benefits (internal): how beneficial is this project to other projects in the sector?
4. Co-benefits (external): how beneficial is this project to other sectors?
5. Quick Wins: to what extent could this project be achieved quickly in order to build momentum?
6. Cost: what is the order of magnitude of the estimated cost?
7. Feasibility: how achievable is the project in terms of technical complexity, fundability, etc.?
8. Effectiveness: to what extent could the project achieve the sector objectives?
9. Acceptance: how much support or objections will the project attract from local communities and other stakeholders?
10. Risks: to what extent does the project pose a risk to sustainable development?
11. Sustainability: to what extent does the project contribute to sustainable development?

The long list of projects was evaluated under these criteria in sector working groups and in parallel by leading EPI sector experts.

The authors also reviewed both sets of results and queried any results where notable divergence of scores were identified, and scored projects according to two additional main criteria

1. Alignment with the baseline
2. Respect of overall principles

The proposed short list of priority projects represents the recommendations from the EPI sector experts, with a scoring assigned by the main

authors of this report. These projects are submitted to the public authorities and those responsible for producing the provincial plan for consideration.

The short list of projects is presented below, with scoring illustrating their relevance against the criteria. Further detail on each priority project is provided after each scoring table. Detailed descriptions and details, and a long-list of projects is included in respective Sector Development Strategy reports by EPI experts.[86]

[86] EPI, forthcoming, Sector Development Strategy of Province Two (Industry); EPI, forthcoming, Sector Development Strategy of Province Two (Irrigation); EPI, forthcoming, Sector Development Strategy of Province Two (Agriculture); and EPI, forthcoming, Sector Development Strategy of Province Two (Tourism)

4.2 PROPOSED PROJECTS: INDUSTRY

S.No	Project	Scoring From Consultation Process												Scoring Against Baseline Findings & Principles			
		Strategic Value	Dependency	Co-benefits (int)	Co-benefits (ext)	Quick Wins	Cost	Feasibility	Effectiveness	Acceptance	Risk	Sustainability	Final Score	Alignment to baseline	Alignment to principles	Specialist Scoring	Ave Score
1	Creation of baseline data, resources profiling, formulation of industry and trade related policies and regulations	5	3	4	4	4	3	4	5	5	5	5	45	5	5	5	5.0
2	Industrial villages in each municipality.	5	2	5	5	5	3	4	4	5	3	4	45	4	4	3	3.7
3	Feasibility study and land acquisition at Aurahi municipality in Mahottari for developing provincial industrial zones.	5	2	5	5	4	2	4	4	5	2	4	42	4	4	4	4.0
4	Construct/upgrade at least five farm to market access road at each district (15kmX5).	4	2	5	5	4	2	3	4	5	4	4	42	3	3	3	3.0
5	Create fund for supporting the women, disadvantaged groups and the poorest of the poor (targeted group for entrepreneurship development).	5	2	4	4	5	2	4	4	5	3	3	41	4	4	4	4.0
6	Special programs for development of fish, vegetables and fruit processing industries	4	2	4	4	5	3	3	4	4	2	4	39	3	3	3	3.0
7	Establish provincial level skill development and training center at Birgunj, Janakpurdham and Rajbiraj.	5	2	4	4	4	1	3	4	4	2	4	37	4	4	4	4.0
8	Persuade with the federal government on projects and program of national importance.	4	2	3	3	4	3	3	4	5	2	4	36	4	4	4	4.0
9	Detailed feasibility study to develop Jatahi-Dhalkebar and Inarwa (Dhanusa)- Bardibas (along the railway line) and Lahan-Thadi as the second and third industrial corridor of the province.	4	2	3	3	3	2	3	4	5	3	3	35	3	4	3	3.3
10	Promotion of agriculture tools factory and establishment of a chemical fertilizer industry (with identification of implementation modality)	5	2	4	4	3	1	4	3	5	2	1	34	2	2	3	2.3

Project Title: Creation of baseline data, resources profiling, formulation of industry and trade related policies and regulations.

Project Description:
The local level governance structure and the geographical jurisdiction introduced therein resulted into merging of various wards, village development committees and municipalities existed prior 2015. The Constitution of Nepal promulgated in 2015, has made a provision of restructuring the state under three tiers of governance whereas the provincial governments and the local level municipalities (both urban and rural) are given with the authority and responsibility of carrying out developmental activities in various sectors including industry and trade. For this, they are supposed to prepare their own periodic and annual plans.

Development of plan and programs needs adequate baseline information on availability of existing resources and future potentials. This requires collection of basic demographic data, availability of land, water, forest and mineral resources, human resources capacity, and the level of various infrastructures, including the transport, and border infrastructures, existing industry and IT related infrastructures. The provincial government and the local municipalities require to develop the resource profile, prepare land use map and make assessment of future potentials to support the formulation of pragmatic plan and program of the province as well as of the local level.

Project Components:
a. Carry out survey and resource mapping of the province to create database and inventories
b. Work out industrial clustering based on geographical areas/municipalities.
c. Develop Industrial policy including for FDI, formulate provincial enterprises Act and regulations
d. Improve coordination with Municipalities
e. Develop project banks for foreign and domestic investment.

Key Actors:
Policy Commission (PC), OCMCM, Ministry of Industry (MOITFE), MOEAP, Municipalities

Location:
Province wide

Timeframe:
1- 2 years

Cost (Nrs million):
150

Project Title: Industrial villages in each municipality.

Project Description:
The work required would be carrying out study and site selection for the industrial villages in the province in a phased manner. Out of 136 municipalities in the province, 68 will be covered under the first five year plan. Accordingly 10-15 industrial villages (sub-projects) may be undertaken during the first year of implementation. Such villages will be preferably located in the north- south highway and the two east west highways; one in the north and another along the Hulaki Highway on the south.

Project Components:
a. Carry out survey, feasibility study and site selection and proposed size (perimeter of the sub-project areas in hectares).
b. Design of the infrastructures and development modality.
c. Develop operation and maintenance modality in consultation with stakeholders, particularly with municipalities and local chambers.
d. Allocate budget for construction and development.

Key Actors:
MOF, MOICS, OCMCM, MOITFE and PC

Location:
Province wide

Timeframe:
~5 years

Cost (Nrs million):
680

Project Title: Feasibility study and land acquisition at Aurahi municipality in Mahottari for developing provincial industrial zones.

Project Description:
The previous study has indicated that Aurahi Municipality (around 5 km south west from Bardibas) has been found as one of the appropriate locations for establishing a provincial level industrial zones. The area is covered by bushy forest and grasses and is the reclaimed land of the flash floods. Provincial government may initiate the following process in order to develop the industrial zone in the designated location.

Project Components:
a. Detailed feasibility study and preparation of project report.
b. Obtain permission from the Government of Nepal/Ministry of Forest for possession of the land by the provincial government to develop industrial zones.
c. Construction of boundary wall, roads and river training and protection works.

Key Actors:
MOICS, OCMCM, PC, MOITFE

Location:
Mahottari district

Timeframe:
1 year

Cost (Nrs million):
1,000

Project Title: Detailed feasibility study to develop Jatahi-Dhalkebar and Inarwa (Dhanusa) - Bardibas (along the railway line) and Lahan-Thadi as the second and third industrial corridor of the province.

Project Description:
With the rehabilitation and extension of the railway line along Jayanagar-Inarwa-Janakpur-Bardibas corridor and the ongoing works upgrading the Jatahi-Dhalkebar road, there are potentialities of transforming these as the economic and transit corridors of Nepal. Similarly, the border crossing of Thadi-Laukaha at the Siraha border has been opened in 2009, as additional trading route for Nepal-India trade. The national highway of India is just few kilometres away from the border and there are potentialities of setting up industries along the road corridor passing from Lahan to Thaadi. Hence, the provincial government shall undertake study for development of industrial clusters and trade related infrastructures that could be developed along the corridor. Such a study would also indicate how the private sector service providers could make best use of the facilities being created in the corridor.

Project Components:
a. Detailed feasibility study and preparation of project report.
b. Land acquisition (possession) for the development of physical infrastructures

Key Actors:
OCMCM, PC, MOITFE

Location:
Dhanusha, Mahottari and Siraha.

Timeframe:
1 year

Cost (Nrs million):
15

Project Title: Establish provincial level skill development and training centre at Birgunj, Janakpurdham and Rajbiraj.

Project Description:
Lack of skills is a major impediment in the development of industry in the country in general and in Province Two in particular. The high rate of outmigration of labour force is also fuelled by the lack of skill that could otherwise create employability of the labour force within the country. Higher number of skilled persons is equally important for attracting investment in agriculture, industry and service sectors of the economy.

Given the size of population (5.4 million), it is felt that three vocational training centres need to be established in three different locations of the province, the first one targeting the districts of Bara, Parsa, and Rautahat, the second in Janakpurdham for the districts of Sarlahi, Mahottari and Dhanusha and the third in Rajbiraj for the districts of Siraha and Saptari.

Project Components:
a. Carry out feasibility and detailed study for setting up three training centres along with identification of sites.
b. Land acquisition.
c. Approval/permission from the respective regulatory agencies (e.g. CTEVT).
d. Initiate development of physical infrastructures including buildings, road, drainage etc.

Key Actors:
MOICS, NPC, OCMCM, MOITFE, PC

Location:
Parsa, Dhanusha and Saptari

Timeframe:
1 – 4 years

Cost (Nrs million):
25

Project Title: Create fund for supporting the women, disadvantaged groups and the poorest of the poor (targeted group for entrepreneurship development).

Project Description:
The number of registered micro, cottage and small enterprises is more than 39,000 in the province. Of these, numbers in service sector is highest (around 20,000) followed by manufacturing 12,000 and agriculture and forestry around 5,000. There is no organized and effective system to upkeep and support those vital industry that is linked with the income and employment opportunities with large swathes of rural population, particularly women and disadvantaged groups.

The provincial government shall consider developing a comprehensive support program for these industries along with the creation of support fund. At the same time the provincial government will also identify clusters of specific industries for maximizing the efficiency of support program.

Project Components:
a. Create a dedicated Directorate or Board to look into the issues of micro, cottage and small industries.
b. Formulate a comprehensive support package for development of MCS industries.
c. Establish a revolving fund to support the enterprises and develop strong regulatory framework and guidelines for effective operation and management of the fund.
d. Delineate the responsibilities of managing the fund to competent authority created by the government.
e. Develop regular monitoring and follow up mechanisms.

Key Actors:
MOICS, NPC, OCMCM, MOITFE, PC

Location:
Province wide

Timeframe:
~3 years

Cost (Nrs million):
100

Project Title: Special programs for development of fish, vegetables and fruit processing industries

Project Description:
The province is rich in the production of sub-tropical fruits, vegetables and fish and remains as source of supply of these products to major city centres in Nepal. However, there are occasions when the farmers and producers of these crops are affected due to unhealthy competition, oversupply and imports of cheaper similar goods from India. Hence it is imperative to protect the farmers from the vulnerability of market fluctuations; first by imposing tariff on import and secondly by creating processing facilities in the district. This will help farmers to get real price for their products by selling to the processing units. Such a facility could be either managed by the farmers groups themselves or their cooperatives in support of the local municipalities.

Project Components:
a. Techno-economic feasibility study; selection of sites (location) for processing units in the districts; mode of development and operation and maintenance modalities of the units.
b. Support for cold chain (chilling centres, refrigerated vehicles and the cold warehouse).
c. Delineation of the role and responsibilities for each stakeholder.
d. Development of sustainability plan.

Key Actors:
MOAD, PMAMP, MOLMAC, PC

Location:
Mahottari and Dhanusha for fish processing.
Sarlahi and Bara for vegetable processing and
Saptari and Siraha for fruit processing industries.

Timeframe:
1 – 2 years

Cost (Nrs million):
10

Project Title: Construct/upgrade at least five farm to market access road at each district (15kmX5).

Project Description:
The province is rich in the production of sub-tropical fruits, vegetables and fish and remains as source of supply of these products to major city centres in Nepal. Similarly, many small and medium enterprises and cottage industries are scattered over all municipalities within the province. One of the important aspects for facilitating the trade of these (agro as well as SME) products is the lack of proper transport network to link the production pockets with the market. Hence, the agriculture as well as industry support program need to be carried out in tandem with development of transport network. The current plan of the Province, thus, should focus on developing or upgrading at least five farm to market road at each district over a period of five years.

Project Components:
a. Feasibility study, design and preparation of cost estimates of the farm to market access roads identified by the DCC in consultation with the municipalities.
b. Detailed design of the road and bridges, if any.
c. Delineation of the responsibility of construction, operation and maintenance.

Key Actors:
PC, MOPI, MOEAP, Engineering Firms

Location:
Province wide

Timeframe:
4 – 5 years

Cost (Nrs million):
32

Project Title: Promotion of agriculture tools factory and establishment of a chemical fertilizer industry (with identification of implementation modality).

Project Description:
The provincial government may take the initiatives in association with the federal government for promotion of the Agricultural Tools Factory of Birgunj which was closed in early 2000. Running of the factory is important for the farmers as this could provide tools and machinery to the agricultural farms and farmers. The factory needs remodelling and technology upgrades in order to remain competitive in the market. Thus, appropriate modality for running the industry may also be explored and implemented with the support of government of Nepal.

Similarly, the Provincial government may also explore the feasibility of setting up a Chemical Fertilizer factory in the province with a view to substitute the large volume of import of fertilizers from outside the country every year. With the gradual increase in the supply of electricity in the country, the feasibility of setting up such industry needs to be re-explored and hence, the provincial government may include this as part of initiatives for the program in 2019-20.

Project Components:
a. Carryout detailed techno-economic feasibility for (i) promotion and modernization of agricultural tools factory of Birgunj and (ii) establishment of a chemical fertilizer factory either in Mahottari or Dhanusha.
b. Carry out consultations with various stakeholders of the province on the outcome of study.
c. Chart out future plan of action and implement it.

Key Actors:
OCMCM, MOEAP and PC

Location:
Parsa (Agricultural Tools Factory). Dhanusha or Mahottari for fertilizer factory.

Timeframe:
5+ years

Cost (Nrs million):
10

Project Title: Persuade with the federal government on projects and program of national importance.

Project Description:
Various trade, investment, and commerce related issues on the province are also of transnational types and some of these issues are very much important from the nations as well as from province's perspectives. Hence, the Provincial Government will take up the issues at the national level and will work closely with the Federal Government of Nepal in order to find out solutions and streamline those matters.

Project Components:
a. Expediting the construction works of Hulaki road, expansion of north-south road, national highway and railway network.
b. Construction of check-dams in Churia region for storage and recharge of water table in Terai.
c. Designating Jatahi as the border post for international trade.
d. Develop Lahan-thadi as another industrial corridor.

Key Actors:
MOFA, MOICS, MOF, OCMCM, PC, NPC

Location:
Province wide

Timeframe:
1+ years

Cost (Nrs million):
5

Project Title: Persuade with the federal government on projects and program of national importance.

Project Description:
Various trade, investment, and commerce related issues on the province are also of transnational types and some of these issues are very much important from the nations as well as from province's perspectives. Hence, the Provincial Government will take up the issues at the national level and will work closely with the Federal Government of Nepal in order to find out solutions and streamline those matters.

Project Components:
a. Expediting the construction works of Hulaki road, expansion of north-south road, national highway and railway network. b. Construction of check-dams in Churia region for storage and recharge of water table in Terai.

c. Designating Jatahi as the border post for international trade. d. Develop Lahan-thadi as another industrial corridor.

Key Actors:
MOFA, MOICS, MOF, OCMCM, PC, NPC

Location:
Province wide

Timeframe:
1+ years

Cost (Nrs million):
5

4.3 PROPOSED PROJECTS: AGRICULTURE

S.No	Project	Scoring From Consultation Process												Scoring Against Baseline Findings & Principles			
		Strategic Value	Dependency	Co-benefits (int)	Co-benefits (ext)	Quick Wins	Cost	Feasibility	Effectiveness	Acceptance	Risk	Sustainability	Final Score	Alignment to baseline	Alignment to principles	Specialist Scoring	Ave Score
1	Increase research and development facilities (coordinate with NARC and other research agencies)	4	4	4	3	4	4	5	4	5	4	4	45	4	4	5	4.3
2	Establish/enhance capacity of food testing and certification laboratory (At least four laboratories)	4	4	4	3	4	3	4	4	5	4	4	43	4	4	4	4.0
3	Promote production, certification and safe storage of good-quality seeds by strengthening the government and private farms/centers producing/handling the products.	4	3	4	3	4	4	4	4	5	4	4	43	4	4	4	4.0
4	Establish a network of modern information technology (weather, prices, demand etc.) in coordination with Agriculture Information Center	4	3	4	4	4	3	4	4	5	4	4	43	4	4	4	4.0
5	Establish/strengthen agricultural market infrastructures including collection center, market shade and storage facility	4	4	4	3	3	3	4	4	5	4	4	42	4	4	4	4.0
6	Procurement and operation of mobile soil laboratories for scientific soil management/improvement.	4	4	4	3	3	2	4	4	5	4	4	41	3	4	4	3.7
7	Establish and operate Integrated agriculture services centers in unified pocket areas which has been declared the site for the commercial production of a particular agricultural product	4	3	4	3	4	3	4	3	5	4	4	41	3	3	3	3.0
8	Promote Floriculture development for north of East-West Highway	3	4	3	3	4	4	4	4	4	4	4	41	3	3	3	3.0
9	Establish Agriculture College and Technical Training Center	3	4	4	3	3	3	4	4	5	3	3	39	4	4	4	4.0
10	Introduce/operate custom hiring system for promoting mechanization in agriculture	4	4	4	3	4	2	4	4	4	3	3	39	5	4	4	4.3

Project Title: Increase research and development facilities (coordinate with NARC and other research agencies).

Project Description:

Agricultural research has an important role to play as many of the new technologies, inputs, and techniques of production that increase agricultural productivity are developed through agricultural research. A transformed agricultural research system helps to achieve sustainable food and income security for all agricultural producers and consumers, particularly for resource-poor households, whether they are in rural or urban areas. Sustainable agricultural intensification itself means producing more food and agricultural products from the same overall resources (such as land, labour and water), while reducing the negative environmental impacts.

The Nepal Agricultural Research Council (NARC) is the country's main agricultural research and development (R&D) agency, accounting for almost three-quarters of total research capacity and more than 60 percent of agricultural R&D expenditures (Rahila et al, 2011). Another government agency "Nepal Academy of Science and Technology (NAST)" and some nongovernmental organization (NGO) such as Local Initiatives for Biodiversity, Research and Development (LI-BIRD), Forum for Rural Welfare and Agricultural Reform for Development (FORWARD), and the Centre for Environmental and Agricultural Policy Research and Development (CEAPRED) are also involved in R&D in agriculture.

NARC has seven research centres in the province including national program for rice, sugarcane and oilseeds; and agricultural implements research and testing centres. The centres have developed several improved variety of different crops and are also in the process of producing some more improved location specific varieties and breeds. However, adoption of the improved technologies has been slow. There is also tendency of using farm saved seeds rather than replacing the farm saved seed with certified seed in regular intervals. Lack of coordination among government research centres, NGOs and extension agencies including Agriculture Knowledge Centre (AKC) and Veterinary Hospital and Livestock Service Specialist Centre (VHLSSC) has been blamed as major problem in effectively taking the research products to farmers' field.

Project Components:

a. Create a high-level committee comprised of officials from NARC, other research centres, NGOs involved in R&D, AKC and VHLSSC to effectively coordinate technology generation and dissemination.

b. Strengthen the research centres through additional resources (financial and HRD).

c. Provide subsidy on foundation and certified seeds

Key Actors:
NARC and MOLMAC

Location:
Primarily near Hardinath,Dhanusha and Parwanipur in Parsa

Timeframe:
1-2 years

Cost (Nrs million):
120

Project Title: Establish/enhance capacity of food testing and certification laboratory.

Project Description:

Quality is an important factor when it comes to any product or service. With the high market competition, quality has become the market differentiator for almost all products and services. Quality control is essential for building a successful business that delivers products that meet or exceed customers' expectations. It also forms the basis of an efficient business that minimizes waste and operates at high levels of productivity. A quality control system based on a recognized standard, such as ISO 9001 published by the International Organization for Standardization, provides a strong foundation for achieving a wide range of marketing and operational benefits. Since the province -2 is moving forward with an objective of exporting agricultural products importance of quality certification is very important.

Department of Food Technology and Quality Control (DFTQC) and its offices located in different parts of the country are responsible for quality testing and certification of food products. There are five offices under DFTQC in province-2. They are Food Technology and Quality Control Office located in Janakpur, Food import export quality control office located at Jaleswor of Mahottari, and three Food Technology and Quality Control Division Offices located at Rajbiraj of Saptari, Jaleswor of Mahottari and Malangwa of Sarlahi. While those offices are running with limited capacity due to resource constraints producers are not interested to get their outputs tested fearing that the product may be sub-standard and rejected.

Project Components:

a. Strengthen the quality testing/certification laboratories through additional resources (financial and HRD).

b. Train the entrepreneurs on ways and means of quality improvement/ maintenance and minimum quality standards to be maintained for domestic and international markets and means of quality control.

c. Subsidize cost of quality testing for short time until entrepreneurs are convinced that quality certification is for their enterprise to compete in domestic and international markets

Key Actors:
MOLMAC

Location:
Rajbiraj, Janakpur, Malangawa and Birgunj

Timeframe:
3- 4 years

Cost (Nrs million):
500

Project Title: Production, certification and safe storage of good-quality seeds by strengthening the government and private farms/centres producing/ handling the products.

Project Description:
Availability of quality seed of improved variety is considered as crucial factor for realizing productivity. It is proved that use of quality seed alone can increase productivity by 15-20% (MADE Nepal, 2017). However, lack of quality seed continues to be one of the greatest challenges in bridging the vast yield gap. Due to its plain land with better irrigation facilities Province-2 is in better position to produce improved seeds, mainly of cereals. It can highly contribute in seed production as the government has targeted to increase seed replacement rate (SRR) of rice from 15.06% in 2015 to 24.25% in 2015, maize from 14.43% in 2015 to 31.57% in 2015, wheat from 13.09% in 2015 to 22.53% in 2025, potato from 9.0% in 2015 to 15.0% in 2025 and vegetables from 80% in 2105 to 90% in 2015 (NSB, 2013).

Project Component

a. Easy access of seed production groups/cooperatives to foundation seed with subsidy on seed prices.
b. Coordination among Agriculture unit of municipality, Agriculture Knowledge Centre and agriculture research centres.
c. Construction of appropriate seed stores at strategic locations.

Key Actors:
NARC and MOLMAC

Location:
NARC research centre at Parwanipur, Hardinath, and Nawalpur; and 2-3 selected seed companies/cooperatives

Timeframe:
1 – 2 years

Cost (Nrs million):
600

Project Title: Establish a network of modern information technology (weather, market prices, demand etc.) in coordination with Agriculture Information Centre

Project Description:
Information and communication has an important role to play in agricultural development. It helps in empowering the rural people by providing better access to natural resources, improved agricultural technologies, effective production strategies, markets, demand/supply situation, prices, banking and financial services and many other aspects such as weather. The existing agricultural information system is limited in broadcasting prices in major markets and weather information in macro level. Dissemination of price information is also less useful as there is time lag between collection and dissemination of those information.

Farmers in remote areas are not benefited from the present system of ICT as they do not have access to FM, television and internet. They normally walk long distance with their product only to know that prices are not as expected. This situation has been a major disincentive to farmers in producing for market.

Project Components:

a. Collection of vital information including size and use of agricultural land, supply/demand of agricultural inputs, irrigation status, quantity of different products, products utilization and marketing.
b. Regular collection and dissemination of information on demand/supply and prices of agricultural commodities.
c. Establish agricultural information centres with hi-tech mechanism to provide information to stakeholders as and when required.

Key Actors:
MOLMAC

Location:
District headquarters

Timeframe:
3- 4 years

Cost (Nrs million):
250

Project Title: Establish/strengthen agricultural market infrastructures including collection centre, market shade and storage facility

Project Description:

Production is the half the work done for any producer, either a farmer or an agribusiness firm. Agricultural marketing plays an important role not only in stimulating production and consumption, but in accelerating the pace of economic development. Its dynamic functions are of primary importance in promoting economic development. For this reason, it has been described as the most important multiplier of agricultural development. Proper agricultural marketing arrangements help in optimization of resource use and output management, increase in farm income, widening of markets, growth of agro-based industries, adoption and spread of new technology, employment, increased income and better living, among others.

In the absence of proper post-harvest facility including markets, most of the farmers sell their products at farm gate or local markets to middlemen without grading, packaging and labelling the products. The commodities are passed through middlemen to ultimate consumers adding cost to the commodity. Due to this producers' share in consumers' price is very low.

Project Components:

a. Construction/improvement of collection centres with grading, packaging and storage facility at strategic locations.

b. Training the stakeholders on appropriate post-harvest operations including harvesting, grading and safe storage to maintain quality of the products.

c. Construction/improvement of rural roads (Krishi Sadak) connecting major production pockets to collection centres.

Key Actors:
MOLMAC

Location:
Selected market centres in each district

Timeframe:
3- 4 years

Cost (Nrs million):
250

Project Title: **Scientific soil management/improvement with mobile soil lab**

Project Description:
Soil fertility and plant nutrition have very important role in sustaining increased agricultural productivity. Soil fertility decline continues at an alarming rate in Nepal. Trend has shown that one of the major factors responsible for slow growth or stagnation of agricultural productivity is the soil fertility decline. The depletion of macro and micro nutrients in soil are resulted due to intensive cultivation, soil erosion, inadequate supply of organic manure, crop residue, green manure, and injudicious use of chemical fertilizers (Rijal, 2001).

Focusing on the importance and need for soil-fertility management, a soil-testing mobile van program was introduced in Nepal by Soil Management Directorate, Hariharbhawan. With the introduction of the mobile lab, famers could get their soil tested for nutrient deficiencies and fertilizer requirements at their doorsteps. Using mobile lab, spatial distributions of chemical properties, including pH, organic matter (OM), total nitrogen (N), available phosphorus (as P2O5), and available potassium (as K2O) were examined in soil samples taken from the 0 to 15 cm depth from selected agricultural fields in eight different districts in the mid-hills and Terai regions of Nepal. For each crop to be grown, farmers were provided with individual soil health reports and fertilizer recommendations (rate, amount, and type). This program not only allowed scientists and farmers to work closely and share information but also served as a model for the nation to successfully transfer technology for improving soil health and sustainability (Pandey et.al. 2017). This model can be applied in province-2 for the benefit of the farmers.

Project Components:

a. Purchase and deploy mobile soil laboratories with well trained personnel to operate them.

b. Create a team of scientists, laboratory technicians and local government representative to coordinate and monitor the activities and results.

c. Provide training to farmers on the effective selection and use of fertilizers, plant protection materials and appropriate crops based on type and quality of soil.

Key Actors:
MOLMAC and Private

Location:
One market each in eight districts in pilot basis.

Timeframe:
5 years

Cost (Nrs million):
200

Project Title: Establish integrated agriculture services centres in unified pocket areas which has been declared the site for the commercial production of a particular agricultural product

Project Description:

Majority of the farmers in Province Two are operating less than one hectare of land. Agriculture census conducted in 2011 shows that the average holding was 0.84 ha per household (CBS, 2013). Most of those farmers grow food crops, oilseeds, pulses, vegetables, horticultural products (especially mangoes) etc. and also keep livestock and fisheries as part of subsistence farming. This means that they need several types of inputs including seed, fertilizer, other agrochemicals, agricultural implements, feed and veterinary services. They also need technical consultation as most of them are not aware of modern variety and methods of cultivation. It is very costly and time taking to visit different shops and offices every time they need one or another inputs, medicines, and technical services. Therefore, establishment of integrated service centres is proposed.

In particular, mango and fish production are key agricultural products to develop given their existing comparative advantage. Province Two produces 71% of Nepal's mangoes with Siraha and Saptari considered the mango capitals of the country as they produce 1.5 to 8 metric tons per hectare in recent years. Similarly, Province Two produces 57% of Nepal's fish with more than 2,000 hectares and 3,000 fish farmers in Bara alone.

There are two components to be considered while establishing such integrated service centres. First, the location of service centre should be such that a farmer easily can visit the centre in any season; need not to allocate more than one day for travel, consultation and other official formalities. Second, all sort of inputs, implements, technical services including veterinary services and medicines and credits are available under one roof. Farmers will be more benefited if the integrated service centre and agriculture market are in the same location.

Project Components:

a. Physical infrastructure to operate the ISC

b. Deployment of a team of technical persons to handle agronomy, horticulture, plant protection, fishery, veterinary and other related issues.

c. Soft loan to operate agricultural inputs, implements and veterinary medicines store.

Key Actors:
MOLMAC

Location:
At least one selected pocket in each district

Timeframe:
~3 years

Cost (Nrs million):
200

Project Title: **Establish Agriculture College and Technical Training Centres.**

Project Description:
One of the major reasons of slow adoption of improved technology is lack of education among the farmers. In the absence of proper knowledge about the technology farmers often do not adopt or partially adopt technology resulting in low or no impact on production and profitability. A study by Oduro et.al. (2014) also found that as educational level increases, output increases with secondary school education having the highest returns on agricultural productivity. The study concluded that education is important to the improvement of agricultural productivity such that formal education opens the mind of the farmer to knowledge, non- formal education gives the farmer hands- on training and better methods of farming and informal education keeps the farmer abreast with changing innovations and ideas and allows farmer to share experience gained.

Although there are some training centres and some of the schools have included basic agriculture education in their curriculum, the arrangement is not enough for educating/training entrepreneurs on modern farming practices from production to post harvest practices.

Project Components:

a. Operate at least two agriculture colleges in the province providing higher education in crop farming and livestock care.
b. Support schools and polytechnic institutions for inclusion of agriculture in their curriculum.
c. Arrange refresher trainings to technical persons at regular interval to keep them up-to-date on changing modern

technologies and techniques.

Key Actors:
Ministry of Social Development

Location:
Bardibas and Birgunj

Timeframe:
5 years

Cost (Nrs million):
1,000

Project Title: Promote Floriculture development for north of East-West Highway

Project Description:

The floriculture business in Nepal is booming and becoming more innovative with urbanization spreading rapidly over the last few years. Demand for flowers is traditionally high during festival season. Rose, gladiolus, tuberose, gerbera, carnation and orchid are the popular flowers in addition to traditional Nepali flowers such as Sayapatri, Makhamali and Godawari grown in Nepal. In the past, flowers were either used in the process of worshiping or used by hotels for decoration purposes. However, situation is changed and nowadays, middle-class people have started buying flowers to present as gifts during other special occasions. Compared to the limited variety of flowers available in the past, many hybridized variety of flowers are now grown and marketed in Nepal. It is reported that domestic production is not enough to cater the need. According to Floriculture Association Nepal (FAN) Nepal imported flowers and garlands worth around Rs 110 million for the Tihar festival alone in 2018. It was also reported that huge amount of flowers are being imported in Janakpur during Janaki Bibaha and other special occasions. This clearly indicates that there is huge scope of producing additional flowers not only for domestic but for international markets.

Commercial floriculture has been successfully introduced in area along and north of the east-west highway of province-2 for two reasons (i) ease of transporting the product and (ii) well-drained suitable soil for flower cultivation. However, farmers face a myriad of problems such as unavailability of hybrid planting materials, absence of land leasing policy for consolidated farming, high cost associated with cultivation, hassles in getting a bank loan and the lack of support from the government. This is holding back the industry from fully taking off.

Project Components:

a. Provision of easy access to improved / hybrid planting materials and equipment including import permits.

b. Provision of subsidy on planting materials and essential equipment.

c. Training the stakeholders on production, harvesting, handling and storage techniques.

Key Actors:
MOLMAC and Private

Location:
Along and north of East-West Highway

Timeframe:
1 – 2 years

Cost (Nrs million):
150

Project Title: Introduce/operate custom hiring system to promote mechanization of agriculture

Project Description:

In custom hiring system, high-cost agricultural machinery such as tractors, combine harvesters or threshers are purchased by a group of farmers or a body, for use by all in return for a fixed payment. This saves cost and optimizes usage, to make it financially viable. Over the years, agriculture mechanization has helped to increase production and profitability, improve the use of inputs, reduce the costs of production, and assist in income-building and employment opportunities. Custom hiring services (CHS) is an important mechanism through which most small holders can access services of agricultural machinery. CHS not only help to generate non-farm income but also enables farmers to produce a second or multiple crops in a year by reducing the turnaround time and increasing productivity. Custom hiring has been used in Nepal (especially in Terai where farm land is accessible by machinery and plot sizes are larger) individually, but no systematic CHS is initiated. Small farmers complain that the machineries are not available as per requirement and costly prohibiting their use. Establishment of formal custom hiring centre, preferably owned by cooperatives, will be beneficial to small farmers and women in terms of reduced drudgery, reduced cost and increased cropping intensity.

Project Components:

a. Soft loan (low or no interest) from commercial banks.

b. Exemption of tax on import of the machinery/ implements that are not produced in Nepal.

c. Land consolidation among the likeminded people having land together.

Key Actors:
MOLMAC and Private

Location:
Three most appropriate location of the province as model centres,

Timeframe:
3- 4 years

Cost (Nrs million):
400

4.4 PROPOSED PROJECTS: IRRIGATION

S.No	Project	Scoring From Consultation Process												Scoring Against Baseline Findings & Principles			
		Strategic Value	Dependency	Co-benefits (int)	Co-benefits (ext)	Quick Wins	Cost	Feasibility	Effectiveness	Acceptance	Risk	Sustainability	Final Score	Alignment to baseline	Alignment to principles	Specialist Scoring	Ave Score
11	Improvement of existing irrigation schemes (surface scheme) including modernization of system infrastructures to ensure assured irrigation in 16000 ha of existing irrigated land.	5	4	3	4	5	5	5	4	5	5	5	50	5	5	5	5.0
12	Operation and Maintenance of irrigation schemes to meet regular and emergency maintenance and thereby ensure assured irrigation in existing systems.	4	4	3	5	5	4	4	5	5	4	4	47	5	4	4	4.3
13	Institutional development and coordination activities, to empower WUA and ensure its participation in irrigation activities, including ISF collection (activities may include, workshop and interaction meeting with the agriculture group and capacity building training, model site visits etc. of the farmers)	4	4	5	4	4	4	5	4	5	4	4	47	4	4	5	4.3
14	Ground water development in the area of surface irrigation to supplement water in dry period (October to June) and / or new area of irrigable land to ensure assured irrigation in 91,000 ha of agricultural land.	5	4	3	4	5	4	5	5	4	4	4	46	4	3	3	3.3
15	Improvement of existing irrigation schemes (ground water) to ensure assured irrigation in 4,800 ha of existing irrigated land.	5	3	3	4	5	4	5	3	5	4	4	45	4	3	3	3.3
16	Agriculture Road development in the farm land.	4	4	4	5	4	3	4	4	4	4	4	44	3	3	3	3.0
17	Research and development initiatives (may include some model site for new technology like solar pumps, sprinklers, recharge ponds, study of surface and ground water reservoir, aquifer mapping etc.)	4	4	5	4	4	3	4	4	5	3	3	43	4	3	4	3.7
18	Rural Electrification in the farm land to support ground water development.	4	3	5	4	3	2	3	4	4	4	4	40	3	3	3	3.0

Project Title: Improvement of existing irrigation schemes (surface scheme) including modernization of system infrastructures to ensure assured irrigation in 16000 ha of existing irrigated land.

Project Description:

Improvement is a regular process that has to be done in a system to improve the performance of the system. Likewise there is potential to improve the performance of the existing irrigation systems, to increase the, conveyance efficiency, distribution equity, cropping intensities and the productivity. The improvement may include the repair and the maintenance works of the schemes in the Intake, alignments or at the farm level to ensure equitable and reliable distribution of the irrigation water. Construction or repair of intake and its protection works, lining works in the canal, construction of cross drainage works, village road bridges, improvement in the outlet and the distribution system at the farm level could be the major activities in such a project. The Water Resource and Irrigation Divisions have long list of such potential projects, some of them are even categorized as the running projects and some are in waiting list. Projects can be selected from this list applying the selection criteria to achieve the maximum benefit. General selection criteria include water availability, command area to be served, market opportunity, beneficiaries and their motivational level etc. Improvement of these projects requires investment of varying range depending on the extent of improvements needed.

Project Components:

a. Identification of the sub-project.

b. Preparation of detailed Feasibility report.

c. Appraisal of the sub-project.

d. Procurement of works.

e. Implementation.

f. Commissioning.

Key Actors:
Provincial and local Government through water resource & irrigation sector

Location:
Province wide

Timeframe:
5 years

Cost (Nrs million):
4,725

Project Title: Operation and Maintenance of irrigation schemes to meet regular and emergency maintenance and thereby ensure assured irrigation in existing systems.

Project Description:
Operation and maintenance of irrigation system is very important aspect to assure the irrigation water in the agriculture field. Operation and maintenance of irrigation schemes is to be done through the farmers themselves through Irrigation Service Fee (ISF) collection to meet their routine and regular maintenance. In the context of present scenario it has been realized that there is a need of emergency budget to meet some emergency maintenance and even the regular maintenance in some system. Hence a sum of about 1% of the total irrigation budget is proposed for the operation and maintenance purpose to meet such maintenance.

Project Components:
a. Identification of the sub-project.
b. Preparation of detailed Feasibility report.
c. Appraisal of the sub-project.
d. Procurement of services.
e. Implementation.
f. Commissioning.

Key Actors:
Provincial and local Government through water resource & irrigation sector

Location:
Province wide

Timeframe:
5 years

Cost (Nrs million):
148

Project Title: Institutional development and coordination activities, to empower WUA and ensure its participation in irrigation activities, including ISF collection. (Activities may include, workshop and interaction meeting with the agriculture group and capacity building training, model site visits etc. of the farmers)

Project Description:
Institutional development and coordination activities are essential for the sustainable and efficient development of the irrigation activities. Institutional development of the Water Users Association, (WUA) ensures the sustainability of the irrigation system while the coordination activities with the agriculture experts/groups ensure the efficient use of irrigation water in crop production. The activities may include workshops and interaction meeting with the agriculture experts, capacity building training to the farmers, and model site visit and excursion tour of the farmers to share and exchange the experiences. It is only a non-capital-intensive project that is necessary to realize the output of the other capital-intensive projects. A sum of 1% of the total irrigation budget is proposed for the project.

Project Components:
a. Need assessment.
b. Preparation of project proposals.
c. Appraisal of the project.
d. Procurement of services.
e. Implementation.

Key Actors:
Provincial and local Government through water resource & irrigation sector

Location:
Province wide

Timeframe:
5 years

Cost (Nrs million):
148

Project Title: Ground water development in the area of surface irrigation to supplement water in dry period (October to June) and / or new area of irrigable land to ensure assured irrigation in 91,000 ha of agricultural land.

Project Description:

As the province is rich in the ground water reservoir, ground water development is believed to be the most effective project for the irrigation development in the province. Power is the pre-requisite for the abstraction of ground water. Viability and the sustainability of the system depend on the source of power. Diesel is the most easily available power source and costs least at the installation but seems to be most expensive in operation while solar power source is most economical in operation but costlier in the installation. Among the all, electric power source seems to be the most suitable power source for the ground water development but is not easily/readily available in the farmland for this purpose a project "electrification of farmland" has also been proposed for the development of the ground water abstraction. Considering the above constraints, the weights of 60 % is given to the diesel power and the 38.33 to the electric and the rest of 1.67 is given to the solar power to realize the immediate result of ground water development. Details of total of 30,000 no of shallow and 400 nos of deep tube wells to make an investment of about Nrs 9000 million is given as follows (description; nos; cost (Nrs, million):

Shallow tube wells in southern part, electric; 8500 nos; 850

Shallow tube wells in southern part, diesel; 18000 nos; 2700

Shallow tube wells, solar power; 500 nos; 750

Shallow tube wells in northern part; 3000 nos; 1500

Deep tube wells; 400 nos; 3200

Project Components:

a. Identification of the sub-project.
b. Preparation of detailed Feasibility report.
c. Appraisal of the sub-project.
d. Procurement of works.
e. Implementation.
f. Commissioning.

Key Actors:
Provincial and local Government through water resource & irrigation sector

Location:
Province wide

Timeframe:
5 years

Cost (Nrs million):
9,000

Project Title: Improvement of existing irrigation schemes (ground water) to ensure assured irrigation in 4,800 ha of existing irrigated land.

Project Description:
It is found that many of the deep tube wells constructed in the past are not functioning well and need certain repair works. Some of them may need mechanical repairs or some may need the replacement of transformers or the pumps etc. after which the system expected to run efficiently. Approximate numbers of 120 deep tube wells, from all 8 districts are expected to be repaired to resume the irrigation facility in about 4800 ha of agriculture land. Considering a lump sum amount of investment needed to repair these deep tube wells a total sum of about Nrs 120 million has been allocated for the project

Project Components:
a. Identification of the sub-project.
b. Preparation of detailed Feasibility report.
c. Appraisal of the sub-project.
d. Procurement of works.
e. Implementation.
f. Commissioning.

Key Actors:
Provincial and local Government through water resource & irrigation sector

Location:
Province wide

Timeframe:
5 years

Cost (Nrs million):
120

Project Title: Agriculture Road development in the farm land.

Project Description:
Agriculture road is essential for the agriculture activities in the farm land especially for the mechanized irrigated agriculture. It is also a prime service to be provided in the farmland for commercial farming. A project for agriculture road development is hence proposed to construct or improve the agriculture roads as all-weather roads. Detailed feasibility of such road is crucial for smooth implementation that is why about 2000 km of agriculture road is proposed to be constructed at the initial phase giving a total project cost of about NRs 1000 million.

Project Components:
a. Identification of the sub-project.
b. Preparation of detailed Feasibility report.
c. Appraisal of the sub-project.
d. Procurement of works.
e. Implementation.
f. Commissioning.

Key Actors:
Provincial and local Government through water resource & irrigation sector

Location:
Province wide

Timeframe:
5 years

Cost (Nrs million):
1,000

Project Title: Research and development initiatives (may include some model site for new technology like solar pumps, sprinklers, recharge ponds, study of surface and ground water reservoir, aquifer mapping etc.)

Project Description:
Research and development is another important project for the overall refinement of the irrigation development. There are very few experiences of new technology in irrigation like, sprinklers, drips or rain water /snow water harvestings etc. Construction of model sites for such new technology will build up the confidence and reveal improvement in the new technology. The activities under the project may include detailed study and construction of model sites of solar pumps, sprinklers, drips, rain water/snow water harvesting as well as the study of ground water reservoir, aquifer mapping etc. A sum of about 1% of the total irrigation budget is proposed for the project.

Project Components:
a. Identification of model sites.
b. Preparation of detailed Feasibility report.
c. Appraisal of the sub-project.
d. Procurement of works.
e. Implementation.
f. Commissioning.

Key Actors:
Provincial and local Government through water resource & irrigation sector

Location:
Province wide

Timeframe:
5 years

Cost (Nrs million):
148

Project Title: Rural Electrification in the farm land to support ground water development.

Project Description:
Rural electrification in the farmland will support the shallow/deep tube wells making it economical and reliable. It's a vital component of the lift irrigation. Although the solar power could be an option to the electric power, it is most reliable and economical at the installation. Electric power is also regarded as the social and environment friendly. The project is hence proposed for the sustained development of lift irrigation. Since the project is proposed to be developed by provincial government through the energy sector, the cost of the project is hence needed to be assessed by the energy sector itself.

Project Components:
a. Identification of the sub-project.
b. Preparation of detailed Feasibility report.
c. Appraisal of the sub-project.
d. Procurement of works.
e. Implementation.
f. Commissioning.

Key Actors:
Provincial and local Government through water resource & irrigation sector

Location:
Province wide

Timeframe:
5 years

Cost (Nrs million):
To be assessed by energy sector

4.5 PROPOSED PROJECTS: TOURISM

S.No	Project	Scoring From Consultation Process												Scoring Against Baseline Findings & Principles			
		Strategic Value	Dependency	Co-benefits (int)	Co-benefits (ext)	Quick Wins	Cost	Feasibility	Effectiveness	Acceptance	Risk	Sustainability	Final Score	Alignment to baseline	Alignment to principles	Specialist Scoring	Ave Score
1	Development of specific tour circuits, e.g. religious tours, cultural tours, alternative tours as eco-tours, farm tours, village tours, Chhath/Holi Event tours etc.	4	4	4	4	4	4	5	5	5	5	5	49	5	4	4	4.3
2	Developing Day tour destinations, e.g. horticultural centre, village/farm visit, industrial centres, international border visit, art center etc.	4	3	3	3	4	5	5	5	5	5	5	47	4	3	4	3.7
3	Preparing detailed inventory of key tourism sites/activities/ events	5	4	4	3	2	3	5	5	5	5	5	46	4	4	4	4.0
4	Restoring, renovating, preserving heritage and ponds with beautification getting support of landscape architecture	5	3	4	2	4	2	5	5	5	5	5	45	4	4	5	4.3
5	Tourism Awareness Marketing Campaign (provincial and local)	4	4	3	2	4	3	5	5	5	5	5	45	4	4	4	4.0
6	Selecting at least three sites of historical significance for sound and light theme	4	3	3	2	4	2	5	5	3	5	5	41	3	3	3	3.0
7	Development marketing and branding material for destination promotion (e.g. audio-visuals, market studies)	4	4	4	1	4	2	4	5	5	4	4	41	3	3	4	3.3
8	Organise an annual tourism conference to explore investment opportunities and policy development	4	3	2	3	4	3	4	4	4	4	4	39	3	3	3	3.0
9	Develop / implement standardised signage for tourist sites in province including local language	4	3	2	2	2	3	5	4	4	4	4	37	3	3	3	3.0
10	Parikrama road enhancement with provision of Bishramsthal (rest houses)	3	2	2	2	3	2	4	4	5	4	4	35	3	3	3	3.0

Project Title: Development of specific tour circuits, e.g. religious tours, cultural tours, alternative tours as eco-tours, farm tours, village tours, Chhath/Holi Event tours etc.

Key Actors:
Tourism Board, Municipality, Private operators

Location:
Province wide

Timeframe:
1 – 2 years

Cost (Nrs million):
500

Project Description:

Product packaging is critically essential in order to facilitate national and international tourism operators to take up the tourism products of Province Two in the market for sale. Packaging product involves detail destination information, recreational activities, logistic facilities, and pricing on different theme based on motivational tourism resources available in the province as:

a. Mithila Parikrama; Ramayan Circuit.

b. Religious tours centering Janakpur – Tour on Steps of Ram; Panchakoshi Parikrama, Dhanushadham, Jalesore, Matihani temple linked with Sita Vivaha, Kanchan ban (10KM), Chiresorenath Shiva temple (16km)

c. Tours of Sacred Ponds – Ganga sagar, Agni Kunda, Bihar Kunda, Ratna sagar, Sita Kunda, Dhanush sagar,

d. Multi-religious tour of Buddhist, Jain, Muslim, and Hindu sites; Rajdevi temple; Gadhimai – Sahalesh – Kankali mai tour e. Mai temple tours as Gadhimai, Devi mai, Thanimai, Kalikamai, Durgamai, Sonamai.

f. Nature based tours along Parsa National Park and Koshi Tappu Wetland Reserve

g. Historical tours along Simraungadh, Parsa gadhi

h. Alternative tours as Eco-tours, community-based tours

i. Event based tours as Chath, Holi

Development of tours are mostly based on service centres for logistic and infrastructures. Along Bara Parsa cluster, tours for business tourism with recreational activities, while Janakpur and surroundings cluster can have tours motivated by religious and culture elements. Along the East West highway transit tourists can have extension of day tours.

Preliminary assessment and during the workshop in the Province, feedback from the participants demonstrated existence of attraction scattered in different districts. However, due to infrastructural limitation, and difficulty in coordinating multiple agencies relating to delivery of services, tour and travel operators at the centre and generating market are remaining shy in initiating to package the tours. Therefore, pro-active lead must come from Provincial tourism authority to pioneer and breakthrough in packaging such potential tours.

Project Components:

a. Collecting detail destination information on attractions, motivation, duration, distances, logistics, choices of facilities, prices, choices are compiled for tour itineraries.

b. Invite potential national market players as tour operators based in Kathmandu, Birgunj, and Pokhara to assess the possibility of sales of such itineraries.

c. Organize familiarization tours from neighbouring country and long-haul market-based operators to experience the itinerary.

d. Finalize and adjust tour itineraries on the feedback of operators

e. Initiate for inclusion of tour package in operator's sales manual by negotiating terms and incentive mechanism to test the tours in the market

f. Develop market collaterals as brochures, maps and incentives to be taken up on marketing programs.

Project Title: Develop day tour destinations, e.g. horticultural centre, village/ farm visit, industrial centres, international border visit, art centre etc.

Project Description:

Stay and activities are very important to get economic return from the tourists. Average days of stay in the Province at present is not recorded but feedback from the workshop and consultations with stakeholders indicate it is very short one or two days. Along the cluster of East West Highway, accommodation facilities and food outlets are seen growing but these facilities are used only as transit at present. Therefore, day tours are to be identified and developed to offer for the extension of stay and spending. Day tours are possible along the clusters of Birgunj Simra, Janakpur, Lahan, Rajbiraj, and from another urban centre. Arrivals may have been motivated by any reasons, but such tours will evolve further economic activities. Day tour can be designed as visit to Mango orchard in Nawalpur Horticulture Centre, International Border tour to Thari/Laukah, Farm tours to agricultural farmland, Village tours to indigenous ethnic villages, tour to industrial centres, art centres, and museums. Such tours facilitate integrating tourism with local community specially marginalized people.

Project Components:

a. Identify and classify possible day tours based on farming, ethnicity, village settings, industrial products, temples, river, wildlife, landscape, industrial zones, gardens, parks, museum etc.

b. Consult and discuss to establish the management mechanism and benefit sharing with related agency and group of people for preparing such visit as selecting village, farmland.

c. Develop tour guiding, audio visual interpretation, refreshment facilities, souvenir shops, parking facilities, beautification along the sites of day tour.

d. Complete MOU or agreement needed with sites owners for tour conduction.

e. Discuss and establish information dissemination, booking procedures with tourism travel operators and municipalities

Key Actors:
Tourism Board, Municipality, Private operators

Location:
Province wide

Timeframe:
1 – 2 years

Cost (Nrs million):
200

Project Title: Prepare detailed inventory of key tourism sites/activities/ events

Project Description:
As Province Two is not yet under the national tourism grid though certain spots and sites were identified and recognized by national periodical Plans. Potential tourism resources to attract tourist in the Province seems immense as cited by different publication and studies in the past. There may be many sites and spots with potentiality of developing tourism even in interiors of the Districts of the Province which needs to be catalogued and listed for the purpose of development and planning. During the process of tourism development, it is but natural to have a base of potential tourism assets as sites, vantage points, heritage, temples, shrines, ponds and lakes, legends and myth, festivities, folklore, which are to be catalogued and documented.

Project Components:
a. Design a template to catalogue and list resource inventory as tourism assets
b. Initiate Collecting District and Municipality-wide Potential tourism attraction spread in the Province.
c. Categorization of Resource Inventory to match prospective market segmentation as culture and history-based, nature and eco-tourism based, religious and spiritual based, Agro and farm-based, rural or village based alternative community tourism.

Key Actors:
Province, Tourism Board

Location:
Province wide

Timeframe:
1 – 2 years

Cost (Nrs million):
150

Project Title: Restore, renovate, and preserve heritage and ponds with beautification getting support of landscape architecture

Project Description:
Present state of cultural resources along different temples, Math, sacred ponds, and sacred sites are used only for religious rituals. This is the opportunity to turn these resources into economically viable tourism products. Such historical, religious, cultural, and archaeological sites and heritage resources are to be restored, preserved, and renovated to develop as destination spots to attract and make visitors stay for tourism activities. Beautification is to be based on its myth, legend and sentiments carried by these sites. Landscape architect has to build imagination on elements of historical evidence, belief of the people and recreation to tourists to design and renovate such resources as tourism products.

Project Components:
a. Select and prioritize from resources the heritage, and ponds to be restored, renovated, and beautify
b. Hire landscape architect for the design and monitoring development of such resources
c. Prepare layout design to restore, beautify, and renovate
d. Start restoring and renovating the sites and heritage as prioritized

Key Actors:
Province, Tourism Board

Location:
Province wide

Timeframe:
3- 4 years

Cost (Nrs million):
800

Project Title: Tourism Awareness Marketing Campaign (provincial and local)

Project Description:

In order to enhance tourism service capacity, tourism awareness among the officials of public agencies along different tiers, and skill among the workforce at different tiers of service industry is must for qualitative tourism development. Designing, developing, conducting massive tourism awareness programs and training at different tiers of work in the industry is essential to improve and establish tourism hosting capacity. Province Two lags behind other provinces in Human Resource capacity in the past, development of tourism greatly depends on its understanding, engagement, skill particularly reflecting in values, attitude, behaviour, and delivery of service relating to concept of hospitality. Implementation of Massive awareness programs as campaign for tourism is needed to this Province in establishing favourable destination. Host residents are less capable for operating high end tourism services and industry. Therefore, need to encourage to operate smaller accommodation services with standardized service delivery for satisfactory tourist spending and reliable service delivery with support of Clean Cooking devices for health and environment. Lodge owners do not have exposures on many simple but latest development of technology for safety and efficiency of operating accommodation facilities. Setting Standard Design and Developing guidelines on establishment and operation of small-scale lodging and homestay facilities will enhance hosting capacity of tourism in the Province, and benefit community directly by engaging in such profession.

Project Components:

a. Identify Category of Awareness program at different tiers: 1. Policy Makers, Executives, Front liners; 2. Accommodation operators, Business entrepreneurs, Retailers, Transport operators, Taxi drivers; 3. Farmers, Artists and Craftsmen

b. Collect information on establishment and operation modality adopted by small lodge and homestay in other provinces

c. Develop terms of reference and hire agency / individual to design, develop guidelines, conduct awareness and training

d. Design and develop Awareness curricula, and different skill training manuals and materials with experts and practitioners from other Provinces

e. Discuss the draft guidelines with operators, and municipalities for its implementation

f. Identify and list the participants of different awareness and training programs

g. Bring in place the regulation for its enforcement and adherence

h. Prepare the schedule of such programs at different level and areas

i. Conduct the awareness and training programs continuously for five years targeting at least 20,000 persons

j. Implement and enforce the guidelines with effective supervision for its adherence

Key Actors:
Tourism Board

Location:
Province wide

Timeframe:
1- 2 years

Cost (Nrs million):
400

Project Title: Select at least three sites of historical significance for sound and light theme

Project Description:
Stay and activity is important for higher spending in the economy. Sound and light based on historical or religious theme to be presented in the evening will attract domestic, and international tourists and encourage to stay at least a night. Sound and light show is not yet introduced in any sites of the country though its technology is not new, but it provides competitive edge with other Province of the country. Rangabhumi, Dhanushadham, and Salahesh garden can be selected to start with sound and light show as these sites are spacious and carries interesting theme of history and legend.

Project Components:
a. Acquire service of theme writer acquiring the available information and documents of cultural experts
b. Finalizing the themes, conduct discussion with municipalities for its operation, maintenance, management and revenue.
c. Assess environmental and emotional impact of such activity and show
d. Procure needed equipment and materials
e. Conduct test shows inviting stakeholders and operators of generating market
f. Publicize the show

Key Actors:
Tourism Board

Location:
Rangabhumi, Dhanushadham, and Salahesh

Timeframe:
1- 2 years

Cost (Nrs million):
1,500

Project Title: Development marketing and branding material for destination promotion (e.g. audio-visuals, market studies)

Project Description:
Growth in Tourism and creation of demand for the destination greatly depends on formulation and implementation of marketing plan. Marketing Plan set the mix of destination Products, with marketplace to establish image and brand, pricing for sales of tours, and promotional means along with distribution channels. Brand value is developed in the Plan with Brand creation and ownership of stakeholders backed by appropriate promotional programs and publicity collaterals. Province two is not yet known with its brand in generating market except with element of Janaki temple in Janakpur. Province has to face competition with other Province of the country apart from other emerging destinations at generating market

Project Components:
a. Rigorous discussion among diverse stakeholders to establish a provincial destination brand as "Destination of Legend and Myth" or else under national destination brand of "Naturally Nepal"
b. Prepare Terms of reference for the study and formulation of Province Tourism Marketing Plan and get experts selected
c. Formulate detail marketing Plan with strategic programs for five years to be implemented by Provincial Tourism Board
d. Develop different collateral for the publicity campaign along the segmented generating market guided by the marketing plan
e. Explore for Memorandum of Understanding with Group or Association of outbound Travel operators based in generating market for encouragement of organized travel to the Province and guaranteed service delivery

Key Actors:
Tourism Board

Location:
Province wide

Timeframe:
1- 2 years

Cost (Nrs million):
500

Project Title: Organise an annual tourism conference to explore investment opportunities and policy development.

Project Description:

Tourism as an industry requires investment. Recreational facilities are developed and offered by business entrepreneurs in the market. Therefore, close discussion, confidence to complement the policy environment and investment mobilization, common platform for policy makers and potential business entrepreneurs are essential. Annual Conference inviting to participate by all stakeholders will work as common platform to explore investment and achieve integrated policy coherence.

Project Components:

a. Collect potential list of domestic and international investors

b. Prepare baseline policy incentives offered to potential investors

c. Prepare shopping list of projects where investment is envisaged

d. Invitation to potential investors to participate at Tourism Investment focused Conference

e. Organize Tourism conference to be held annually for the mobilization of investment.

Key Actors:
Province, Tourism Board

Location:
Province wide

Timeframe:
1- 2 years

Cost (Nrs million):
100

Project Title: Develop / implement standardised signage for tourist sites in province including local language

Project Description:

Distinct and unique Visibility of tourism destination for its image is very important. Tourists coming from different source market imagine before its arrivals and try to match with reality on arrival. Province two has opportunity to create such visibility with some gimmicks to compete with other Provinces in the country. It can have uniform colours on the building at street and roadside if not all. It can designate a separate lane for decorated bullock cart which are with comfortable seat along the newly constructed six lane road of Janakpur Dhalkebar. Similarly, enforce cover of Rikshaw three wheelers on one standardized colour symbolizing Ram Sita wedding event. Signage along the public places facilitates information as well as guide the movement. The colour, languages, size, materials, location, uniformity are important features of signage. Developing a standardized Signage which is environmentally compatible design and material to be placed in whole Province along the highways, airports, touristic sites and public places will enhance visibility as distinct destination. Such Standardized and uniform in colour, language for the indication, basic info, and maps possibly with distances facilitate visiting tourists for their movement. Different languages including the local language are to be selected.

Project Components:

a. Conduct series of Discussion with Physical Planning Agency and bullock cart owners, owners of Riksha, artists, and environmentalist for designating a lane, adopting uniform building colour, and inputs on decoration of cart, cover of riksha, and design of signage.

b. Discussion with local Municipalities for the mechanism of enforcement, maintenance, and cost sharing.

c. Collect information and design on internationally accepted criteria for the signage

d. Enlist and determine on consultation the location for the placement of signage

e. Prepare the accepted and standardized decoration of bullock carts, riksha covers, and Signage sufficiently

f. Enforce to operate bullock carts and uniform coloured riksha, and place the signage along the selected highways and enlisted points of locations and sites

Key Actors:
Province, municipalities

Location:
Province wide

Timeframe:
1- 2 years

Cost (Nrs million):
300

Project Title: Parikrama road enhancement with provision of Bishramsthal (rest houses)

Project Description:

A very famous religious carnival like tour for almost 2 weeks observed during month of Falgun. This event is also popularly known as Mithila Bihari Parikrama. It starts from Mithila Biharisthan and idol of Ramjanaki is brought to Janakpurdham and after worship Parikrama starts from Hanumannagar then Kalyanesore Mahadev -then Girijasthan – then Matihani – Jalesorenath - then Madai- then Dhruba Kunda- then Kanchanban- then chhiresore mahadev Parbata-then Dhanushdham- then Saptapokhari- then Aurai Harsai- then Karuna- then Bishaul- then Janakpur. Road along this carnival which were fixed with rituals at different places are to be upgraded to facilitate increasing number of arrivals. At each ritual place facility for the participants are to be constructed and managed. At each site of night stay along this Parikrama, resting place Bishramsthal or Dharmasala are to be built (nearly 10 within Nepal and starting and ending 2 days each in India). This Carnival like event lies between territory of Nepal and territory of India and thus carries attraction to both the country. This event can be promoted as Hindu Carnival with more infrastructural facility and organized management, and interesting fun-ful gimmicks.

Project Components:

a. Assess the present level of participants and available infrastructure to identify gaps

b. Consultation with all stakeholders to add different recreational and fun filled activities.

c. Build appropriate facilities for resting place and dharmashala

d. Design and develop advance booking system for participation to this Parikrama

e. Promote by different means as Hindu signature events all over the world

Key Actors:
Province, municipality

Location:
Dhanusa

Timeframe:
5 years

Cost (Nrs million):
1,000

Annexes

Annex 1. Glossary of terms and concepts

This glossary is extracted and adapted from the Central Bureau of Statistics (2019), 'Environment Statistics of Nepal', Kathmandu, Nepal, National Planning Commission. It is completed with definitions that are used in this report, and the sources stated.

Annual Average: average of concentrations measured over one year.

Annual Rainfall (mm): total rainfall in a year

Assets: Assets are entities that must be owned by some unit, or units, and which economic benefits are derived by their owner(s) by holding or using them over the period of time.

Adaptation: Adjustment or preparation of natural or human systems to a new or changing environment which moderates harm or exploits beneficial opportunities.

Adaptive Capacity: Ability of a system to adjust to climate change (including climate variability and extremes) to moderate potential damages, to take advantage of opportunities, or to cope with the consequences.

Barren and uncultivable land: Land which cannot be brought under cultivation unless at high cost, irrespective of whether such land is in isolated blocks or within cultivated holdings.

Baseline: The baseline (or reference) is any datum against which change is measured. It might be a current baseline in which case it presents observable present-day condition. It might also be a future baseline, which is a projected future set of condition excluding the driving facer of interest. Alternative interpretation of the reference conditions can give rise to multiple baseline.

Biodiversity: the range of genetic differences, species difference and ecosystem difference in a given area.

Catchments Area: area from which rainwater drains into river system, lakes and seas.

Climate: Climate in a narrow sense is usually defined as the average weather or more rigorously as the statistical description in terms of the mean and variability of relevant quantities over a period of time ranging from months to thousands of millions of years. These quantities are most often surface variables such as temperature, precipitation and wind. Climate in a wider sense is the state including a statistical description of the climate system. The classical period of time is 30 years, as defined the World Meteorological Organization (WMO).

Climate Change: Climate change refers to any significant change in the measures of climate lasting for an extended period of time. In other words, climate change includes major changes in temperature, precipitation, or wind patterns, among others, that occur over several decades or longer.

Climate change adaptation: Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.

Consumption: consumption is an activity in which institutional units use up goods or service, consumption can be either intermediate or final

Deforestation: clearing of tree formations and their replacement by non-forest land uses.

Degraded Land (man-made): this refers to the land deteriorated through a reduction in soil depth or quality as a

result of deforestation, de-vegetation faulty irrigation system, excessive chemical fertilizers in localized area, unwise use of marginal land, road building in the hills etc. This also excluded land in the process of desertification.

Degraded Land (natural): land deteriorated through a reduction in soil depth or quality as a result of water or wind erosion, landslides or water logging etc. This excludes land in the process of desertification.

Depletion (in natural resource accounting): for renewable resources, the part of the harvest, logging, catch and so forth above the sustainable level of the resource stock; for non- renewable resources, the quantity of resources extracted. In the SNA it is defined as the reduction in value of deposits of subsoil assets, natural forests, fish stocks in the open seas and other non-cultivated biological resources as a result of the physical removal and using up of the assets.

Disasters: Unforeseen and often sudden events that cause great damage, destruction and human suffering. They often exceed local response capacities and require external assistance at the national or international level. Depending on their cause, disasters can be both natural and technological.

Ecological processes: which play an essential part in maintaining ecosystem integrity. Four fundamental ecological processes are the cycling of water, the cycling of nutrients, the flow of energy, and biodiversity (as an expression of the process of evolution).

Eco region / eco-zone: homogeneous area of one or more ecosystems that interact with relatively self-contained human activities.

Ecosystem: a dynamic complex of plant, animal, fungal and microorganism communities unit.

Environmental Impact: direct effect of socio-economic activities and natural events on the components of the environment.

Environmental Impact Assessment (EIA): analytical process that systematically examines the possible environmental consequences of the implementation of projects, programmes and policies.
Erosion: wearing away of the land by running water, rainfall, wind, ice or other geological agents, including such processes as detachment, entrainment, suspension, transportation and mass movement. Geologically, erosion is defined as the process that slowly shapes hillsides, allowing the formation of soil cover from the weathering of rocks and from alluvial and colluvial deposits. Erosion is often intensified by land-clearing human activities related to farming, resident and industrial development and it has as effect increasing run-offs

Extreme events: Events that are rare within their statistical reference distribution at a particular location. An extreme event is normally as rare as or rarer than the 10th or 90th percentile.

Fauna: all of the animals found in a given area.

Flora: all of the plants found in a given area.

Glacier: A multi-year surplus accumulation of snowfall in excess of snowmelt on land and resulting in a mass of ice at least 0.1 km2 in area that shows some evidence of movement in response to gravity. A glacier may terminate on land or in water. Glacier ice is the largest reservoir of fresh water on Earth and second only to the oceans as the largest reservoir of total water.

Global Warming: phenomenon believed to occur as a result of the build-up of carbon dioxide and other greenhouse gases. It has been identified by many scientists as a major global environmental threat. See also greenhouse effect.

Greenhouse Effect: warming of the earth's atmosphere caused by a build-up of carbon dioxide and other greenhouse or trace gases that act like a pane of glass in a greenhouse, allowing sunlight to pass through and heat the earth but preventing a counterbalancing loss of heat radiation.

Gross Domestic Product (GDP): gross domestic product is a measure of net aggregate of the total value of output produced within the boundary of a country or territory in a specified period of time.

Habitat: the place type of site where an organism naturally occurs.

Heat Waves: A prolonged period of excessive heat often combined with excessive humidity.

Herbs: plant with soft stem that dies down to the ground after each season's growth, as distinguished from shrubs and trees. Also any plant used as a medicine or seasoning, e.g. thyme, surpentine.

Human Settlements: Refer to the totality of the human community, whether people live in large cities, towns or villages. They encompass the human population that resides in a settlement, the physical elements (e.g., shelter and infrastructure), services (e.g., water, sanitation, waste removal, energy and transport) and the exposure of humans to potentially deleterious environmental conditions.

Industrial Clusters: Groups of similar and related firms in a defined geographic area that share common markets, technologies, worker skill needs, and which are often linked by buyer-seller relationships.

Industrial Corridors: A package of infrastructure spending allocated to a specific geographical area, with the intent to stimulate industrial development. An industrial corridor aims to create an area with a cluster of manufacturing or another industry.

Industrial Estate: An area zoned and planned for the purpose of industrial development. An industrial estate can be thought of as a more "heavyweight" version of a business park or office park, which has offices and light industry, rather than heavy industry.

Intergovernmental Panel on Climate Change (IPCC): The IPCC was established jointly by the United Nations Environment Programme and the World Meteorological Organization in 1988. The purpose of the IPCC is to assess information in the scientific and technical literature related to all significant components of the issue of climate change. The IPCC draws upon hundreds of the world's expert scientists as authors and thousands as expert reviewers.

Inundation: Submergence of land by water, particularly in a coastal setting.

Land Degradation: reduction or loss of the biological or economic productivity and complexity of rain-fed cropland, irrigated cropland, or range, pasture, forest or woodlands resulting from natural processes, land uses or other human activities and habitation patterns such as land contamination, soil erosion and the destruction of the vegetation cover.

Landslide: downward mass movement of earth or rock on unstable slopes.

Land Use / Classification: land categories, reflecting quality classes, capability classes or grade, depending upon the characteristics of the land and/or its potential for agricultural use

National Park: A legally established area for the conservation, management and utilization of flora and fauna, and landscape, together with natural environment.

Natural Resources: natural assets (raw materials) occurring in nature that can be used for economic production or consumption. See also renewable natural resources and non- renewable natural resources.

Nutrient: substance, element or compound necessary for the growth and development of plants and animals.
Population Density: total number of inhabitants per square unit of surface area. Population-land ratio: a measure to express population pressure on land i.e. population
divided by land area (sq. km.).

Protected Area: a legally established area for achieving specific conservation objectives.

Rare Species: species occurring in small populations throughout its range. They are sparsely distributed over a large area. They may be endangered or threatened with extinction if their regeneration or reproduction is slow.

Rapid and slow on-set disasters: Climate-related disasters can broadly be caused by rapid- onset events and slow-onset events. Climate-dependent hazards that arise suddenly, or whose occurrence cannot be predicted far in advance, trigger rapid-onset disasters. They include cyclones and other windstorms, landslides, avalanches and floods. The warning time before these hazards strike ranges from a few seconds or minutes (in the case of landslides), to a few days (in the case of storms and floods).

RCPs (Representative concentration pathways): The IPCC's (See entry above) Fifth Assessment Report has endorsed representative concentration pathways (RCPs) to project global future climate scenarios. There are four main RCPs that represent the possible trajectories of greenhouse gas concentration depending on the level of future emissions. The four RCPs together span the range of radiative forcing values for the year 2100 from 2.6 to 8.5 W/m2. In this report the Median and Extreme RCPs are used, called 4.5 and 8.5 respectively

Richter scale: scale with a range extending from 0 to 10 for measuring the strength of an earthquake.

Sanitation: improvement of environmental conditions in households that affect human health by means of drainage and disposal of sewage and refuse.

Shrub: low, perennial woody plants with several permanent stems branching from or near ground rather than single trunk, usually less than 6 m high at maturity.

Special Economic Zone (SEZ): An area in which the business and trade laws are different from the rest of the country. SEZs are located within a country's national borders, and their aims include increased trade balance, employment, increased investment, job creation and effective administration.

Species: a group of organisms capable of interbreeding freely with each other but not with members of other species.

Sustainable Development: development that meets the needs of the present without compromising the ability of future generations to meet their own needs (World Commission on Environment and Development, 1987). It assumes the conservation of natural assets for future growth and development

Vulnerability: Degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude and rate of climate variation to which a system is exposed; its sensitivity; and its adaptive capacity.

Water Quality: physical, chemical, biological and organoleptic (taste-related) properties of water.

Weather: day-to-day or sometimes even instantaneous changes of atmospheric conditions over a given place or area. In contrast, climate encompasses the statistical ensemble of all weather conditions during a long period of time over that place or area. Atmospheric conditions are measured by the meteorological parameters of air temperature, barometric pressure, wind velocity, humidity, clouds and precipitation.

Wetland: area of low-lying land where the water table is at or near the surface most of the time. Wetlands include swamps, bogs, fens, marshes and estuaries.

Section 2

Sector Development Strategy of Province Two (Industry)

Chapter 1: Background

Eight districts of "Province Two" largely comprises of plain fertile lands extended between Gandak and Koshi rivers. It is extended over an area of 9,661 square kilometer with a population of 5,404,145 which is more than 20 percent of the country's population[1]. The province is second in size of population after Province Three, having smallest geographical areas in comparison to other provinces. With dominance of agriculture in the economy, the province produces abundant cereal crops like paddy, wheat and maize. The production of paddy in the year 2015-16 was 886,350 MT, comprising 21 percent of the total domestic production.

The average per capita income of the people in the Province is USD 922 of which Bara and Parsa ranks highest (USD 1480 and 1223 respectively) and Mahottari and Siraha on the low ranking (USD 681 and 689 respectively). The other four districts are somewhere in between these figures[2].

Province Two is diverse by both caste and ethnicity. Madhesis constitute the largest ethnic group comprising 67.2% of the total population with the inclusion of Madhesi Dalits (15.4%). Muslims, constituting a major religious group in the province make up 11.6 percent of the total population and their identification with the Madhesi category is somewhat ambivalent. Other ethnic groups of the province include Khas Arya, Tharu and hill Janjati (indigenous people) who together make up less than one-fourth of the total population.

The province is also diverse in terms of language. Maithili is spoken as mother tongue by 45.3 percent of the total population, making it widely spoken language in the province. Second largely spoken language is Bhojpuri which is spoken by 19 percent of the population; followed by Bajjika (15percent), Urdu (6 percent), and Tharu (4 percent). Khas Nepali, which is the official language of the country is widely spoken and understood by the people but it is the mother tongue of only 6.7 percent population of this province. (Nepali, S, Ghale S and et al. 2018)

Traditionally, districts of Terai served as the bread basket of Nepal. Agricultural production in general and production of cereal crops like paddy and wheat in particular, has remained major farming business among the people in the province. There are four major irrigation project (Narayani, Bagmati, Kamala and Koshi) and other minor irrigation projects that provide irrigation to 3.9 million hectare out of 5.3 million hectare of agricultural land.

The province ranks sixth in national road length (1,356 km out of 12,899 km) and fifth in rural road length (5,969 km out of 54,822 km) with a road density of 14 km and 59 km per 100 square kilometer respectively. Some prominent infrastructure projects namely Nijgarh International airport, Kathmandu-Terai fast track Highway and Hulaki Road are the big projects in the province that could be a game changer in the development process of the province. The ongoing Rastrapati (President) Chure Protection Project is also equally important in order to protect from environmental damages and loss of farmland and water sources in Terai.

1.1 Industry

This Province houses 501 medium and large scale industries with a total capital investment of NRs. 93.4 billion[3], supposed to provide employment to almost 52 thousand people. These figures comes around 6.6 percent of the number of projects, 5.5 percent of capital investment and 9 percent of the employment in comparison to the national figures.[4]

The number of foreign investment projects are low in proportion to the national figure. The number of FDI projects in the province is minimal as it comprises of 3 percent of the total number of projects and 6 percent of the total foreign direct investment in the country, as presented in the following table.

[3] Investment committed by the investor and reflected in their business plan.
[4] Source: Industrial Statistics-2018; www.doind.gov.np

Table 1: FDI Projects approved in Province-2 (up to the end of 2017-18)

District	Number	FDI (amount in mill NRs.)
Bara	58	5,411
Dhanusha	5	368
Mahottari	1	9
Parsa	59	6,529
Rautahat	2	639
Saptari	3	190
Sarlahi	1	34
Siraha	5	928
Province-2 Total	134	14,108
Country Total	4,477	242,937
Percentage in relation to national figures	2.99	5.80

Source: DOI; www.doi.gov.np

Bara and Parsa district houses majority of large and medium sized industries and foreign direct investment projects. Dhanusha houses paper and cement industries which are registered with the Department of Industry, owned and operated by the private sector. Also there existed a cigarette factory, owned and operated in the public sector which is now virtually closed. Some other government owned industries like Birgunj Sugar Mill and Agricultural Tools Factory were closed in early 2000.

The Province ranks fourth in the number of micro, cottage and small industries with a number of 39,415 or the 13 percent of the country's total after Province Three which is 109,683 (36%), Province Five; 17%, and Province One; 14%. Among these, most of the manufacturing industries utilize the locally available raw materials in their production process.

1.2 Trade and related infrastructures

Province Two is well connected with Bihar, India as all eight districts share southern border with the Indian Provincial States. The province has the two major border posts; Birgunj land customs station (the major transaction of which is now shifted to the new location at the Integrated Customs Check-Post in Alau village) and the Inland Clearance Depot (ICD) in Sirsiya. These two order post transact almost 45 percent of overall international trade of Nepal and also largest sources for revenue collection for the government of Nepal. With the road and rail link facilities to the ports of Kolkata, Haldia and Vishakhapatnam and other cities in India, Birgunj has remained as the trade hub of Nepal.

The transportation links by road on all 8 districts and two railways links of Birgunj- Raxaul and Jayanagar-Janakpur, has not only facilitated cross-border trade and investment but also worked as a lever in deepening social and cultural linkages across the international borders. The major transport corridors linking north- south and east-west part of the provinces are as follows.

Table 2: Major transport corridors in Province Two.

Major road corridors		Rail corridors	
North-South	**East-West**	**North-South**	**East-West**
Nijgarh-Kathmandu-expressway (76 km)[5] Pathlaiya-Birgunj (25 Km) Chandranigahapur-Gaur (47 km) Nawalpur-Malangawa (24 km) Dhalkebar-Jatahi (40 km) Bardibas-Bhitamode (24 km) Lahan-Laukahi (18 km)	Mahendra Highway (240 km) Postal Highway[6](234 km)	Birgunj-Raxaul (5 km) Bardibas-Jayanagar (70 km)[7]	Bardibas-Simara electrical traction railway line[8] (107 km)

Source: Nepal Distance Calculator; https://distancecalculator.globefeed.com/Nepal_Distance

[5] Under construction
[6] Under construction with GOI Assistance
[7] Out of 70 km stretch, 52 km is completed till February 2019.
[8] Planned for construction.

Industry and trade related infrastructures in the province are as follows:

Inland Clearance Depot (ICD) in Birgunj: This facility developed back in 2001 is extended over an area of 38 hectare, 5 km west from Birgunj city. This is the only rail connected border infrastructure that is serving as inter-modal nodes for both containerized and non-containerized cargo moving to and from Nepal. The terminal handled 48,624 TEU of containers and 1,048,984 MT of bulk and break- bulk cargo in 2018[9].

Birgunj ICD is equipped with two large sized warehouses, container parking yard, vehicle parking facilities for 250 trucks and 30 trailers at a time, admin building, canteen, workshops, electric sub-stations, water supply, drainage and firefighting equipment. The facility is run by a private terminal on leasehold basis.

Integrated Customs Check-Post (ICP): This facility is extended over an area of 67 hectare as mirroring infrastructures of the other side of the border in India. The objectives of ICP is to facilitate the movement of people, goods and services through integrated development of the border facilities with systematically planned and effectively managed services that promotes hassle free movement of legal trade and effectively controls illegal trade and cross border activities.

The ICP Birgunj comprises of several facilities, which among others, include (a) buildings (administrative and cargo building, security and quarantine post, cafeteria, and electric sub-station), (b) warehouses (goods shed, inspection area, and animal shed, (c) web of internal road for flow of traffic and passenger vehicles and (d) other facilities such as weighing bridge, firefighting, water supply and drainage and sewerage forms the major infrastructures within the check posts. The check-post constructed with the technical and financial support of the government of India was bought to operation since 7th April 2018.

Special Economic Zone (SEZ): Government of Nepal has adopted the policy of creating special economic zones as one of the enabling infrastructures for enhancement of export trade. The primary objectives of the SEZ development is to provide appropriate land and other physical infrastructures within a single enclosure with single stop services for facilitation of industrial investment. Government of Nepal has identified 14 locations around the country for establishment of such facilities. Out of these, physical development works of Bhairahawa SEZ is completed and in the phase of operation while the SEZ in Simara (Province Two) is under progress. Located in Bara district of Nepal and two kilometers east from Simara airport, this SEZ is extended over an area of 556 hectare. The construction work is going on four phases and the work of the first phase (Block-A) is making a good progress and expected to be completed by the end of this year[10]. A part of this block (143 Bigha out of 343 Bigha) is being developed as the garment processing zone and supposed to house the ailing readymade garment industries of Nepal.

GN Singh Industrial Estate: Extended over an area of around 15 hectare, the industrial estate in Saptari district is named after a national leader from Terai Late Gajendra Narayan Singh. This industrial estate currently houses only four industries and only two of them are in operation. Rest of the sheds, buildings and large tract of industrial estate remains unutilized. The boundary wall has collapsed in several places due to lack of repair and maintenance and the area has turned to be a grazing land for cattle. This estate was developed in 1986 with the objectives of encouraging investment in agro-based industries and targeting the export market of India but this remains as an example of failed project to meet its intended objectives.

Birgunj is the largest city in Province Two with a total population of 140,000 in 2011. But the population has gone up high in 2017 with the re-demarcation and extension of the geographical area bringing them under the jurisdiction of newly formed metropolitan city. Currently, there are three major customs point in Parsa district. One, existing customs station adjacent to Raxaul Bazaar; second Sirsiya ICD and the third ICP customs at Alau village, west of ICD. These customs provide passage to around 45 percent of the total import and 23 percent of the total export of Nepal[11]. Relatively shorter distance to port of Kolkata and Haldiya, road and rail connectivity with Indian cities, presence of substantial number of industries in Birgunj-Pathlaiya corridor and shorter distance to capital city of Kathmandu are the main reasons for large volume of trade passing through the customs posts located in Parsa district.

Bilateral trade between Nepal and India takes place in smaller quantity through other customs offices located in various districts of Province Two. Those customs as identified by the bilateral treaty of trade are; Rajbiraj (Saptari)_-Kunauli, Thadi (Siraha)- Laukaha, Janakpur (Dhanusha)-Jayanagar, Bhittamode (Mahottari)-Sursand, Malangawa (Sarlahi)-Sonbarsa, Gaur (Rautahat) -Bairganiya, and Bhiswabazaar (Parsa)-Sikta. But, there are 55 sub-customs office under the administrative control of these customs offices that are mandated to facilitate and clear the goods of smaller value purchased by the local people for their consumption.

[9] Source: Himalayan Terminal Pvt. Ltd, Birgunj

[10] Source: Brochure of Special Economic Zone Authority (SEZA) of Nepal; www.sez.gov.np, 2018

[11] First six month trade data for the year 2018-19; published by Department of Customs, GON; www.customs.gov.np

Chapter 2: Objectives and Methodology of Study

The primary objective of this study is to support provincial planning bodies in formulating industrial development strategy which will ultimately feed into the first ever Provincial Five-Year Plan 2019/20-2023/24 of the province. The strategy is supposed to identify and prioritize key projects which will be useful for developing mid-term expenditure framework (MTEF) as part of periodic planning and annual budgeting process of the province.

In order to achieve the stated objectives, the following methods were followed:

a. Review of existing literatures, documents and regulations: This includes review of the existing laws, regulations, plan and policies of the government of Nepal, particularly industrial and trade policies, industrial enterprises act, foreign investment and technology transfer act, special economic zones act among others. Over and above, Constitution of Nepal-2015 has defined the national policy on industry and trade and also delineated the responsibilities of Federal, and Provincial government and Local level under the state restructuring arrangements of the constitution. These has been duly reflected in Chapter III of this report.

b. Stakeholder consultation-I (with office bearers of provincial government and Policy Commission): The next steps followed in this study was wider consultation with the government stakeholders in the capital city of Janakpur which was co-hosted by the Policy Commission and EPI office jointly in 13th January 2019. This consultation workshop was inaugurated by the Chief Minister Hon'ble Lal Babu Raut and attended by other three ministers of the province. Vice-chairman and members of policy commission and secretaries in the ministry of finance, industry, tourism and forest also attended the program and participated in the discussions and deliberations. The consultation workshop identified overall goal, objectives and sub-objectives of the industry and trade sector.

c. Stakeholder consultation-II: The second mini workshop was held during the third and fourth week of February in Janakpur, Bardibas and Birgunj with participation of the public and private sector representatives. Experts from ARUP also participated in these discussions where Vice chairman of the Policy Commission inaugurated the workshop in Janakpur and Hon'ble Chief Minister inaugurated the program in Birgunj. This time around, private sector business persons, representative of civil society and academia of the province also participated in the event.

   During the study visit and second workshops organized in the province, focus was given on four parameters namely; assessment of strength and assets of the province; perceived vision; challenges faced and identification of opportunities/ the way forward. Information on basic parameters for developing the strategic plan was provided by experts from ARUP.

Notes on stakeholders consultation is given in Annex-1.

d. Collection and compilation of data: The study mainly relied on data collected from the secondary sources. The industrial data were obtained from the publications of Department of Industry and district level industrial offices/district profile, trade data from the Department of Customs and Trade and Export Promotion Center. Economic survey of the government of Nepal-2018, and Central Bureau of Statistics (CBS) publications also provided data and information on infrastructure, transportation and other resources available in the province.

e. Focus Group Discussions (FGD): Discussion forum was organized at the municipality office Bardibas. The forum was chaired by Mayor and office bearers of the municipality and representative of civil societies. Besides, the team of consultant also carried out consultation with the President and office bearers of Lahan Chamber of Commerce on 24th February 2019. These discussions focused on the issues of industrialization of the province in general and the municipal areas in particular. Some of the proposed potential projects were also identified during the discussions.

Limitation of study: This study basically draws upon the data and information extracted from the secondary sources, and opinion expressed by various stakeholders that are directly or indirectly associated or engaged for development of trade and industry. In view of paucity of time and resources, survey and census could not be done to obtain primary data. Secondly, the cost estimation made for the identified projects are very much tentative and needs further verification through feasibility study.

Organization of the report: The rest of the report is organized as follows; the first chapter deals with background; third chapter presents findings of literature review; fourth chapter is about issues and challenges; fifth chapter deals about planning approach including comparative advantages of the province and the final or sixth chapter presents implementation and investment plan.

Chapter 3: Literature Review

The constitution of Nepal-2015 is the primary source of all national laws and policies. Article-17(1) under the heading of right to freedom, the constitution guarantees the right to practice any profession, carry on occupation, and establish and operate any industry, trade and business in any part of Nepal (sub-article-f). Similarly, Article 25 mentions the right relating to property whereas every citizen shall, subject to law, have the right to acquire, own, sell, dispose, acquire business profits from, and otherwise deal with, property, provided that the State may levy tax on property of a person, and tax on income of a person in accordance with the concept of progressive taxation.

Article-51 (d) of the constitution has mentioned the policy of the state regarding the economy, industry and commerce which basically focuses on enhancing national economy through participation and prudential development of the public, private and cooperative sectors; achieving economic prosperity by way of optimum mobilization of the available means and resources, while focusing on the role of private sector in economy; making equitable distribution of the available means and resources and benefits of economic development; diversification and expansion of markets for goods and services, while promoting exports through development and expansion of industries of comparative advantage; protecting and promoting domestic industries and resources and giving priority to domestic investment; encouraging foreign capital and technological investment in areas of import substitution and export promotion, maintaining harmony with national interest, among others[12].

Part-5 (Article 56 to 60) of the Constitution of Nepal contains provision of state restructuring and power sharing among three level of government; federal and provincial government and local level. Accordingly, the task of generating provincial statistics, exploration and management of mines, industrialization of the province, trade and business, and development of provincial level infrastructures are under the sole jurisdiction of the provincial government. Similarly, poverty alleviation and industrialization, development of industry, mines and physical infrastructures are included in the concurrent list of allocation of authority between federal and provincial government[13] Thus, constitution has given leeway to the provincial government for developing infrastructure, industries and promotion of intra-province trade.

Industrial Policy 2010 provides overall guidelines and strategic directions for advancement of the industrial sectors in the country. The policy has set long term goal of supporting poverty reduction through industrial development that is based on effective, coordinated and harmonized effort of public, private and cooperative sectors. The five pillar objectives to achieve this goal are as follows;

Increasing export of industrial goods through enhancement of quality, competitive production and higher productivity.

Linking industrial sector in the balanced development of the country and region by mobilizing local resources, raw materials, skills and means.

Development of industrial entrepreneurship based on latest technology and environment friendly production techniques;

Creating favorable investment climate and making Nepal as the best investment destination supported by productive human resources and managerial capacity and

Protecting industrial intellectual property rights.

The industrial policy has classified categories of industries based on the size of investment and nature of production and elaborated the facilities and concessions to be provided to the industries in terms of rebate on customs duties, income tax, and value added tax. There are specific rebate and concessions for the micro, cottage and small industries, for women entrepreneurs and special dispensation to the industries established in the remote and inaccessible areas. The policy has made a provision of constituting an Industrial Promotion Board under the Chair of Minister of Industry in order to provide high level policy guidance, and provide policy recommendations to the government of Nepal. Establishment of one stop service center for providing all facilities and services to the industries and creation of an independent body for IPR are other features of the policy.

Trade Policy-2015 was bought out with the twin objectives of; (a) reducing trade deficit by strengthening supply-side capacity and enhancing export of value added goods and services and (b) enhancing access of Nepalese goods, services and IPR in the international markets. The objective is supposed to be achieved through the major strategic interventions in the form of; increasing participation of the private sector entities and businesses in production and trade; increasing competitiveness of the products, increasing supply-side

[12] Constitution of Nepal; Nepal Law Commission; www.nepallawcommission.gov.np
[13] Refer Annex 6 and 7 of Constitution of Nepal-2015.

capacity, implementing measures of trade facilitation, enhancing reach out to the international markets through the route of bilateral regional and multilateral agreements, among others.

The enhancement of supply-side of trade hinges upon a number of work programs/policies identified by the trade policy. Those program that GON is supposed to pursue includes; development of trade related infrastructures; construction of an international standards exhibition ground in Kathmandu; construction of cold warehouses for facilitating trade of perishables; implementation of product development program; establishment of special economic zones and export processing zones for enabling domestic and foreign investment, establishment of export trading houses through joint collaboration of local government, private sector and cooperatives; promotion of organic farming/ production and support in packaging, labeling and storage along with support for quality certification.

Mainstreaming trade is one of the strategies of the policy. This means linking other sectors of economy with export trade and creating a value chain link of the MCSI products with export market.

Foreign Investment and Technology Transfer Act-2075 (2019): Revision in the Foreign Investment and Technology Transfer Act of 1992 has been introduced with the objectives of making the national economy competitive, strong and employment oriented by increasing productivity and output of the industries for supporting import substitution and promoting export and creating an investment friendly environment for attracting foreign capital, and technology.

The Act allows various type of foreign investment which includes; single company investment or joint venture investment, equity investment, leased investment, technology transfer and creation of capital investment fund. Besides, the investor can open up branch industry in Nepal. The investors in capital investment fund is also allowed to transact in stock market by registering in the stock exchange office of Nepal. Those investors may be allowed to borrow money from international capital markets by issuing bonds or debenture and other financial instruments.

The Act allows repatriation of the principle amount, profit or dividend, proceeds of the sale of share, lease rent, and royalty earned under technology transfer. Similarly, the provision of One Stop Service (OSS) has been made in order to facilitate the investors for industry registration, approval of investment, work permit, visa facilitation, and EIA approval and foreign exchange facilities, among others. The Act has proved other facilities and concessions to the investors in terms of hiring of foreign management and technical expert, additional land holdings beyond the normal holding, national treatment and immunity from nationalization. Besides, the Act also made provision of introducing automatic approval process for company and industry registration and approval of foreign investment.

The Fourteenth Plan (2016-19): Development of industry sector in fourteenth plan of the government of Nepal rest upon three pillars; increasing employment opportunities, export promotion and import substitution. The strategies for achieving these objectives focuses on; development of industrial infrastructures, improvement on policy, institutional, legal and procedural matters for enhancement of investment climate, encouraging use of domestic resources and skills in industries, maintaining provincial balance and promotion of products of comparative and competitive advantages. The plan focused implementation of the program on development of industrial infrastructures in the form of SEZ, access road and energy grid connecting the mining sites for cement industries, establishment of at least one industrial estate in each province, promotion of micro, cottage and small industries and implementation of the micro-enterprises development for poverty alleviation (MEDPA) and encouragement of the industries identified in Nepal Trade Integration Strategy (NTIS). (NPC-2016)

Labor Act-2017 has been introduced as replacement to the Labor Act of 1992. The Act has made several changes in respect of the protecting rights, and interests of the employee and workers and their emoluments and safety at work. The new labor act is applicable to all enterprises regardless of the number of workers/employees. The previous act was applicable to the company employing at least 10 or more workers/employees. The other features of the new legislation are; flexibility in the mode of hiring as the workers/employees could be hired as regular, job/task based worker, time bound worker, on part time (employing 35 hours or less in a week), and casual employment (employing seven days or less in a month). Intern hiring as part of university or college syllabus is also allowed in the Act. The other provisions are related with compulsorily meeting the safety and occupational health standards by the employer.

The new labor act has increased the working hours from 40 to 48 hours in a week. There are lists of benefits to be provided to the workers/employees in the form of provident fund, insurance, gratuity, severance pay, and disability compensation among others. The penal provisions have also been amended to make the workers more responsible and accountable to their jobs (NBSM-2019).

Trade Union Act-1993 intends ensuring the right to form and be associated with a trade union and to engage in collective bargaining (Article 30/2). Similarly under section 3 of the Act, the workers of industrial establishments can form their enterprise level trade unions for the protection of workers right and promotion of their common welfare. This Act has prescribed the

requirement of at least ten workers/employees for the registration of a trade union at the level of an enterprise. Workers from MSE with less than ten employees may join union formed in other enterprises. The violation of this law may lead to a penalty of up to 10,000 Nepalese Rupees (NPR). Enterprises are also required to provide office spaces for the trade unions to run their activities. The number of trade unions is increasing at a faster pace. There were 172 trade unions in 2001, which increased to 1125 in 2006 and then came down to 566 in 2008, with an increase in the number of inspection (ILO-2014).

The Industrial Enterprise Act-2073 now is undergoing into comprehensive revision process through the Parliament. The revision is supposed to bring micro-enterprises under the classifications of industries which were not there in the earlier version. Identification of the national priority industries and sub-sectors of various categories of industries including the cottage and services industries are included in the proposed revisions. Facilities and tax benefits available to various categories of industries are assured through this legislation. Besides, there will be an Industrial Promotion Board with wider participation of high ranking officials from the public and private sector for facilitation of industrial establishments, promotion, protection and development of industries and helping in industrialization of the country.

Firm registration acts and regulations, particularly Private Firm Registration Act-1958 and Partnership Act-1964 lay down the procedures for registration and de- registration of the private and partnership firms. The Act in Article-7 mentions that no transaction shall be valid which is carried out in the name of a Firm which is not registered under this Act. While the Company Act-2006 provides ground to make the incorporation, operation and administration of companies easier, simpler and more transparent.

Some other regulatory provision in respects of the industries in Nepal are; Patent, Design and Trade Mark Act-1965 that provides special rights to the patentee, design holder or trade mark holder and assigned the Department of Industry as the sole authority to register, monitor and regulate the patent and industrial design, intellectual property, trade mark and copy rights. This act is now under the process of review and revision by the national parliament in order to accommodate the other dimensions of IPR like geographical indication, copyright and trade secret within a single legislation. Child Labour (Prohibition and Regulation) Act-2000 prohibits in employing a child below the age of 14, children of ages between 14-16 cannot be employed in the dangerous and hazardous work and against their will, children's work hour will be on day time only and employer is made liable to pay equal remuneration for equal works;

Prohibition of Bonded and Forced Labor Act-2002 prohibits from employing a person as the bonded labor and the government exercises the right to fix the minimum wages for agriculture wages where there is use of high number of laborers.

Nepal as the member of World Trade Organization (WTO) and South Asian Free Trade Area (SAFTA) is carrying its international trade on the rules set under these multi-lateral trading systems. Besides, the bilateral trade agreements with neighboring countries; India and China allows substantial number of goods to enter these markets on duty free basis. Nepal, as one of the LDCs, is getting preferential access to developed country markets like, EU, US, Canada, Japan, and Australia. Such an opportunities could be leveraged in order to enhance production and export of products of comparative and comparative advantages to the country in general and the province in particular.

Chapter 4: Issues, Challenges and Opportunities

Province Two is well connected with other provinces of the country as well as with the Bihar State of India by the road and railway link. This province is bequeathed with immense opportunities for developing industry and international trade that not only contribute to the national economy but can trigger increased income and employment opportunities to the local people. Stretched over a vast plain fertile area, there are opportunities for growth, not only for the agricultural crops but also industry and trade in goods and services. The industrial corridor of Birgunj-Amlekhgunj generates substantial volume of export products of Nepal. Challenges faced in developing the industry and trade sector and prospects for development is mentioned in the following paragraphs.

4.1 Issues and challenges

Revival of government owned industries: Some key industries from the perspectives of national importance were established in the province during 1960s and 1970s. These mainly were Birgunj Sugar Factory, Agricultural Tools Factory, and Janakpur Cigarette factory which were closed in early 2000. There is general debate at the level of provincial government on possibilities of revival of these industries in view of the employment generated vis-à-vis benefits accruing to the local farmers. There are discussions in favor and against the revival of the publicly owned and operated industries. Ambivalence is created as politicians are in favor of revival while the business sector representatives oppose such motions.

Decreasing production level of paddy and sugarcane over the last decade hampered the growth of rice and sugar mills in the province. Enhancing production of major crops would help in smooth running of industries and creation of employment through their backward integration. Reversing the trend of declining production is a big challenge.

Lack of reliable irrigation facilities for increasing agricultural production: In general, the province possess good irrigation coverage as, 393,582 hectare (74 percent) out of the total agricultural land of 529,752 hectare is irrigated.

However, the area of round the year irrigation is far less. The lack of round the year irrigation facility is taking a toll on crop yield and production. Yield of crop is much lower in comparison to nearby provinces/districts of Bangladesh and India. Expansion of irrigation facilities remains crucial in improving the productivity and production of farm crops.

Lack of cold ware houses and storage facilities: The province produces varieties of fruits, vegetables and fish products and remains one of the sources of supply to the domestic markets. But, these perishable products are not supported by the provision of cold supply chain and cold warehouses. Consequently, there has been cases of wastage of fruits and vegetables such as mango, banana, tomato etc. due to lack of preservation infrastructures and the farmers are compelled to sale in a very cheap price.

Lack of resources and poor implementation capacity: The provincial government cannot ensure the availability of resources for implementation of plan and projects of national importance as the source of revenue generated at the provincial level is inadequate and depend on the resource and budget supplied from the federal government. On the other hand, implementation capacity of the provinces is poor due to lack of adequate number of staffs' inadequacy of institutions and enabling regulations. Lack of trained human resources is a big challenge for implementation of the plan and program particularly required by the agriculture and manufacturing sector.

Siltation of the agricultural land: Silt deposited by the flash flood is a big problem for agriculture. The fertile lands at the vicinity of stream and rivulets are covered by the silt and boulders carried over by flash flood and rivulets flowing down from Churia region.

Farmers are not directly linked with the market: Middle-men are sapping the benefits of agricultural production. Vegetables and fruits are purchased at a very low price from the farmers and ultimate consumers are compelled to pay a high price, there by bringing hefty profit to the middlemen.

Other challenges: High poverty level than national average (26.7%); the province occupies second place (47.9%) after Karnali (51.2%) in multidimensional

poverty index and lowest in HDI with an score of 0.421;(NPC-2019) absence of hydropower projects; higher number of labor migration to Malaysia and Gulf countries; fragmented production and lack of economies of scale; low literacy rate (50.2%); consequently low number of skilled and trained human resources; high infant mortality (56.6%); low level of access to sanitation (26.4%) and lack of institutions for vocational trainings. These indicates low level of human development index in the province in comparison to rest of the country.

4.2 Opportunities and strength

Province Two provides major gateway for international trade of the country: Two major customs offices of Nepal; Birgunj customs office and dry-port customs offices remain as the major border posts of Nepal. These two border posts transacted import volume of NRs. 552 billion and export volume of NRs. 19 billion in the fiscal year 2017-18. This makes 44 percent and 23 percent of the total goods import and export of the country respectively. The other customs offices in Jaleshwor, Janakpur, Sarlahi, Gaur and Siraha in the province handled around 1 percent of total import and insignificant amount of bilateral export. Revenue contribution from the two customs offices is also significant as the major contributors of the revenue (vehicle and petroleum products with a combined effect of 43%) passes through Birgunj (DOC: 2018). The increased connectivity and access to international and domestic markets can be further leveraged in development of industrial sector in the province.

Fertile land made up of alluvial soil is an opportunity for growth of agricultural products and agro-based industries: Province two possess large fertile land that have immense potentiality of growing various agricultural crops; paddy, wheat, maize, and millet; horticultural crops like sub-tropical fruits, and vegetables; presence of various ponds and fish farming are also important assets of the province. Mango, litchi, jackfruit, pineapple are the major fruits grown here while tomato, cabbage, cauliflower, leafy vegetables etc. are the major vegetable crops.

Home to large manufacturing industries: Large manufacturing industries are located in Birgunj-Simara corridor. The number of large and medium industries registered with the Department of Industry remains 230 and 172 for Bara and and Parsa district respectively. These industries mostly are; cement industries, iron and steel, cigarettes, sugar mills, leather and shoes, fruit juice, vegetable fats, yarn, food and beverage and production of packaging materials among others. Altogether, there are 8 sugar mills in Bara, Sarlahi, Rautahat, Dhanusha and Siraha districts (Annex-2). Of these, some are the leading exporter of Nepal. The number of industries registered with the Department of Industry for the province are as follow;

Table 3: Industries registered with the Department of Industry

District	Numbers	Total investment (NRs. Billion)	Employment (Number)	Remarks
Saptari	12	0.78	1,139	
Siraha	11	17.0	1,789	
Dhanusha	40	8.2	3,912	
Mahottary	8	2.3	1,141	
Sarlahi	18	4.9	3,096	
Rautahat	10	1.6	1,423	
Bara	230	36.3	23,598	
Parsa	172	22.2	15,651	
Total	501	93.28	51,749	
Country's total	7,529	1,681	575,496	
Share of province Two (%)	6.6	5.5	9.0	

Source: Industrial Statistics. Department of Industry-2018.

Increasing number of micro and small industries: Micro, cottage and small industries (MCSI) are scattered over all districts that includes construction industries, furniture and fixtures, agro-processing, hotel and restaurant, among others. Women's in Dhanusha and Mahottari districts are engaged in Mithila Art and Painting which is unique for this province.

Table 4: Industries registered with the district offices of cottage and small industries (till the end of FY 2017-18).

District	Numbers			Total	Remarks
	Micro	Cottage	Small industries		
Saptari	0	27	3463	3490	(4)
Siraha	193	155	5250	5598	(64)
Dhanusha	282	134	5422	5838	(48)
Mahottary	79	217	3625	3921	(38)
Sarlahi	0	0	4222	4222	(58)
Rautahat	28	0	3902	3930	0
Bara	76	87	4274	4437	(45)
Parsa	236	206	7537	7979	(158)
Total	**894**	**826**	**37,695**	**39,415**	

Source: Industrial Statistics. Department of Industry-2018.
Note: Number in parentheses ( ) indicates the number of deregistered industries.

Type of those registered micro, cottage and small industries are as follows;

Table 5: Type of MCSI registered in the District Offices of DCSI

District	Numbers								
	Mfg.	Energy	Ag+F	Tourism	Mnr.	Services	Const.	IT	Total
Saptari	793	2	489	33	20	1978	175	0	3490
Siraha	1649	0	648	76	0	3216	9	0	5598
Dhanusha	1469	3	506	151	0	3701	7	1	5838
Mahottari	970	0	341	87	0	2188	335	0	3921
Sarlahi	1345	0	420	136	0	2048	273	0	4222
Rautahat	966	0	801	378	0	1389	396	0	3930
Bara	1539	3	965	26	2	1877	25	0	4437
Parsa	3170	0	755	12	0	3550	492	0	7979
Total	11,901	8	4,925	899	22	19,947	1712	1	39,415
N'tl Total	83,803	557	50,540	35,281	476	124,666	7262	189	302,774
Share of P2 (%)	14	1.4	9.7	2.5	4.6	16	23.5	0.5	13

Note: Mfg= Manufacturing, Ag+F= Agriculture and forestry, Mnr. = Mineral based, Const. = Construction related, and IT= Information technology related.
Source: MCSI Statistics of Department of Industry-2018.

Multi-modal transport facilities: Connectivity of this province is unmatched with other provinces. The north-south road and the two railway link has put the province in a more advantageous position in comparison to other provinces of Nepal. The social and cultural ties between the people across the border could be helpful in sharing and bringing prosperity to the people. The proposed inland waterways transport along the Gandak and Koshi River would also be helpful in bringing prosperity to the province.

Access to large irrigation projects: Narayani, Bagmati, Kamala and west canal of Koshi barrage are the large irrigation projects that can provide irrigation facilities to the farm lands of the province. However, benefits of these projects are yet to be fully realized. These projects could be further leveraged to expand irrigation facilities in the province. The much touted Sunkoshi-Kamala Diversion Project could be a game-changer in provision of irrigation and power generation facilities for the province.

Supportive mining facilities for cement industries in the neighboring districts: Udaypur district in Province One is the neighboring district sharing common bordeers with Dhanusha, Siraha and Saptari districts. Udaypur district houses large deposits of good quality limestone for cement production and a government owned cement factory is in operation in the district. More cement industries could be established in adjoining districts of Province Two by utilizing the raw materials available in Udaypur district.

Demographic dividend: The province has almost 5.4 million people which is 20 percent of the national average. The number of economically active

population (15-59 age group) is 45 percent[14], which may be considered as the valuable asset of the province. Besides, cheap labor can be available in the adjoining states of Bihar in India.

Prospects of tourism promotion is high: Abundance of the cultural heritage and religious sites is another strength of the province. Viswa (Parsa), Gadhimai (Bara), Jaleshwor (Mahottari), Ram-Janaki Temple (Dhanusha), Salehas (Siraha), Kankalini and Sakhada (Saptari) are prominent religious and cultural heritage sites that provides immense opportunities for tourism circuit. Besides, there is an Islamic cultural center in Mahottari district which can be developed as the pilgrimage sites for the Muslims from India and Nepal.

Good opportunities and prospects are available for agriculture and manufacturing: Based on the production pattern and cultivation practices, the province can provide a better ground for animal husbandry, fisheries, and cultivation of sub- tropical fruits, vegetables and medicinal plants.

Similarly in the manufacturing sector, the ongoing development of Special Economic Zones in Simara, planned development of similar facilities in Umaprempur (Dhanusha), Jhunkunwa (Rautahat) and Gobindapur (Siraha) would help in industrialization of the province. Enhanced physical connectivity with the major cities and ports of India through the road and two railway networks in Birgunj and Janakpur; increased air connectivity with the construction of Nijgarh Intl. Airport and Fast-track, the province can emerge as the hub for agro-processing and manufacturing industries.

The flat land of terai makes it easier for construction of infrastructures including road and railways.

4.3 Points of caution:

Protection of Churia forest and controlling soil erosion from the hills has become a matter of serious concern as it would cause depletion of water table and raise siltation problems due to excessive floods in the farmland. If the loss of vegetation and extraction of gravel and sand from the hills goes unabated, this will leave devastating effect of desertification of terai plains.

Inter-province competition and conflict on resources like water resources, and mineral may be considered as another potential threat for economic growth. Province Two need to depend upon the hydro and mineral resources (particularly the cement grade limestone) to other provinces. Therefore, there should be a harmonious relationship and feeling of solidarity among all provinces for overall socio-economic development of the country.

Control of corruption and mismanagement is another perilous issue for maintaining peace, harmony and development in the society. The provincial and local government need to be fully aware of the benefits of good governance and should focus on maintaining transparency, accountability and adherence to the rules of law for effective delivery of the development program and services.

Vertical and horizontal coordination should be maintained with the federal government and other provincial governments respectively. Misunderstanding and lack of proper coordination may seriously deter the implementation process of development plans and programs.

Unexpected barriers on market access to India and China may sometime create problem in healthy growth of trade and industry. These are the two large markets to the reach of Nepalese industry and trade as these countries provide duty free access to Nepalese products under the preferential trade agreements. But, the Nepalese export has not grown over the last decade or so due to several non-tariff barriers. As a result the trade deficit is looming at an alarming rate. The situation need to be reversed in order to develop industries and build complementarity on trade. In absence of this, the industrial development of the country in general and that of Province Two in particular could remain as day dream.

[14] According to CBS Statistics-2011.

Chapter 5: Planning Approach

The Fifteenth Periodic Plan of the government of Nepal is in the stage of formation. National Planning Commission (NPC) has bought out the Approach Paper of the plan and has set the vision of Prosperous Nepal, Happy Nepali. The National Planning Commission has also elaborated the vision as a condition where Nepal would be a prosperous, free and socialism oriented country inhabited by highly productive, interconnected, and equitably benefitted, healthy, and educated people with high living standards. The plan aims attaining prosperity and happiness over a period of 25 years coinciding Nepali calendar year of 2100 B.S. This will be a period of implementation of five periodic plans of each five years. The first five year term (2019-24) will be dedicated for generating prosperity and happiness while the second stage 10 year term would be dedicated to the slogan of accelerating prosperity and happiness while the third stage ten year period will focus on sustaining prosperity and happiness.

The industry sector development strategies of Fifteenth Plan has focused on number of issues that are related with; reform on policy, legal and institutional regimes, development and promotion of products that are of comparative and competitive advantages, support for upgradation of technology, one stop services, development of industrial infrastructures, enhancing access to finance and establishing linkage of manufacturing with other sectors of economy. The provincial plan is supposed to complement the objectives and strategies of the national plan.

5.1 Areas of comparative advantages to the province:

Given the vast plain area and fertile land, Province Two possess huge potentialities growing cereal, vegetables and fruits. The Prime Minister Agricultural Modernization Project (PMAMP) has identified various pockets, blocks, Zones and Super-zones for growing various crops including fruits, vegetables, paddy and fisheries in the province. Of the eight districts Saptari has been designated as blocks for paddy and vegetables, zone for mango, Siraha houses several blocks and zones for paddy and fish; Dhanusha district has been divided into several blocks and zone for paddy and super zone for fish, Mahottary has blocks for paddy and fish, Sarlahi with blocks and zone for paddy and fish, Rautahat with blocks for paddy and fish and zone for vegetables, Bara with multiple blocks for vegetable and paddy and super-zone for fish and Parsa with blocks for paddy, fish and zones for vegetables[15] (MOA-2019).

Given the resource base and industry enabling environment, particularly in context of good transport connectivity with other parts of country and neighboring country, the comparative advantages of the province can be explained in three categories.

5.1.1 Industries based on local agricultural products:

All eight districts of the province are rich in agricultural production. Farmers in those districts are engaged in production of major cereal crops like paddy, wheat and maize and also classified under cereal (paddy) zone by the PMAMP. Share of the province in paddy and maize production are 21 and 7 percent respectively (Governance Facility-2018). Vegetable and fish production are other agri-business of the farmers. Potential industries based on the local production are identified as follows;

[15] The PMAMP has classified the production area into four categories for sake of specialization and commercialization of production; Pocket Areas with coverage of 10 ha; Block with coverage of 100 ha; Zone with a coverage of 500 ha and Super-zone with a coverage of 1000 hectare.

Table 3: Industries registered with the Department of Industry

Districts	Major agro-products	Proposed industries	Remarks
Saptari Siraha Dhanusha	Paddy, Fruits, Fish, Sugarcanes, Medicinal plants and Animal husbandry	Food processing, Essential oils, Sugar mills, Meat processing, Dairying and confectionery	Cultivation of medicinal plants is becoming popular in recent years. Goat farming and animal husbandry is widely adopted in northern part of those districts.
Mahottari Sarlahi Rautahat	Paddy, Fish, Vegetables, Fruits, Sugarcanes,	Food processing Sugar mills Distilleries Canning of fish.	
Bara Parsa	Paddy, Vegetables, Fruits and Fish.	Food processing (Rice milling, vegetable and fruits processing) Fish canning.	

5.1.2 Mineral based and value added manufacturing: There is little progress in exploration of mines and minerals in Nepal and the available information shows that Province Two does not possess any substantial mines and minerals except the sand, gravel and boulders that are found in the river bed and floodplains. Project for exploration of petroleum products were taken up during 2003-04 in consideration of the preliminary assessment that the whole terai region extending west from Jhapa district could have deposits of fossil fuel. But, this exploration was abandoned by the contractor in pretext of security of its personnel after some years.

Nepal has abundance of minerals used in industries and construction. Of these, limestone is the most prominent non-metallic mineral. The Department of Geology and Mines has discovered 1.07 billion tons of limestone deposits, of which 540 million tons are proven, 110 million tons are semi-proven, and 420 million tons are feasible deposits. These have been discovered in different districts including Udayapur, Dhankuta, Sindhuli, Makwanpur, Lalitpur, Dhading, Syangja, Arghakhachi, Sukhet, Dang, Salyan, Baitadi and Palpa (FNCCI-2019)[16].

Despite that Province Two does not have its own limestone deposits, 14 industries currently in operation in Dhanusha, Siraha, Bara and Parsa districts are using the limestones from the neighboring districts in Province One and Province Three. Demand of cement as the construction material is increasing at a faster pace due to reconstruction activities in the aftermath of earthquake-2015 and the increasing demand of the physical infrastructures in the country. Hence, almost 4 dozens of cement industries have come into existence in the country over the past years and more are yet to come. Province Two has 14 of them and 13 only in Bara and Parsa districts (See Annex-2).

Recent studies have shown that Nepal is having 2.5 billion metric tons of cement grade limestone. Much more such industries could be established in the province that could utilize the huge deposits of limestones available in neighboring districts of Udaypur, Sindhuli, Makawanpur and Dhading.

Sugar industries are other important manufacturing units established in the province. There are eight sugar mills of which two are in Bara, two in Rautahat, two in Sarlahi, one in Mahottari and the next one in Siraha. There are possibilities of increasing production capacity of these industries by increasing the supply of sugarcane from the local farmers.

Pathalaiya-Birgunj section of Tribhuvan Highway (linking Birgunj with Kathmandu) houses large number of industrial establishment and possess possibilities of bringing into more investment in the foreseeable future. Major industries in this corridor are; steel and aluminum, tobacco, pipes and tubes, vegetable fats, CGI sheets, food processing, leather and footwear, fruit juices, pharmaceuticals and packaging materials. The number of industries registered with the Department of Industry are 230 and 172 for Bara and Parsa district respectively[17]. Easy connectivity with the major cities and ports in India, central location between east and western borders of the country, a well-developed market and presence of entrepreneurial community are the reasons behind industrial growth in this corridor. The corridor can provide opportunities of enhancing cross-border value chain and linking the industries in India and Nepal together under the single production network. Such industries may

[16] See http://fncci.org/mining--minerals-152.html, accessed on March 13, 2019.
[17] Only the large and medium sized industries as classified by the Industrial policy are registered with the Department of Industry. Rest of the micro, cottage and small industries are registered with the District

expand in future in order to take advantages of tariff preferences available in the Indian markets as well as for enhancing competitiveness of Nepalese products.

5.1.3 Logistics and transport related industry (services): Province two is well connected with the rail network of India through two railway lines; one passing through Jayangar-Jankpur with the provision of extension of the railway-line to Bardibas in Mahottari district. This railway is intended to serve passenger traffic but with the ongoing conversion to Broad Gauge line, there are possibilities of running the cargo train between India and Nepal through this line. The second line passes through Raxaul and terminates in Birgunj ICD and carries the trade traffic. However, the passenger train is available in bordering city of Raxaul, just 3 kilometer away from the city of Birgunj.

Rail connected ICD and road connected ICP is operational in Sirsiya, Birgunj that carries almost 50 percent of the trade traffic of Nepal. In view of the steady growth of trade in recent years, the following logistical services could be bought into operation as the value added activities of these trade infrastructures.

Improved transportation (articulated) vehicle to carry 20' and 40 ' containers: The current practice of using outdated vehicle could be replaced by the use of modern fleet and multi-axle vehicles that can carry large volume of cargo at a time thereby reducing the cost accruing on account of economies of scale.

Privately owned and operated container freight stations and warehouses: The need for developing additional facilities is increasingly felt in view of congestions developed due to increased volume of import traffic in the ICD and ICPs in Birgunj. The investment in development of such facilities could be supplemented by engaging and attracting private investment. Necessary regulatory framework should be developed in order to enable the private sector to make investment in development of warehouses and container freight stations.

Refrigerated vehicle for transportation of perishable items: The service providers may be encouraged to use the refrigerated vehicles for transportation of fruits, vegetables, dairy, fish and meat products. Such facilities is needed in order to maintain the freshness and vigor of the perishable items while transporting the goods from harvesting/production unit to the ultimate users.

Customs clearances and forwarding services: This type of service industry could be promoted in view of the large volume of transaction taking place on the major border customs located in the province.

Other services related with border facilities: Some other value added services could emerge within the dry port or the integrated check posts which may be in the form of container cleaning and fumigation, packaging and labeling of goods and consolidation of cargo. Necessary policy and regulatory framework could be developed by the federal government which may be implemented in cooperation with the provincial government.

5.2 Strategies for enhancing industry and trade:

The strategies to be pursued for enabling industrial environment in the province largely hinges with the national, provincial and local level policy harmonization, unified and complementing efforts among three level of government. Such an effort should be based on the following strategies;

Enhancing quality of factors of production: Management of labor, capital, and land is a big challenge and demands support of government in facilitating the availability of these factors of production at a competitive price. Training and skill development of local human resources is important for enhancing productivity of the labor. Political parties should not use and meddle over the trade unions in order to pursue their political goals which has remained as a curse for the industrial development of this country. Secondly, there should be predictability in the cost of financing which need assurance from the government for a stable interest rate spread over the maturity period of the project. The current trend of unstable and swinging interest rates charged by the commercial banks is taking a toll on investment in the real sector including the one in manufacturing industries.

The process of availing land for industries should be facilitated by the government. First, the ceiling of the holding should be made flexible in accordance with the requirement of a particular industry; second, government need to embark upon the process of land acquisition and development in accordance with the announcements made in the Budget Speeches and Industrial Policy. Lands should be acquired in the designated places for development of industrial estate and Special Economic Zones so that industries could fully devote their efforts in development of infrastructures, installation of plants, equipment and machinery relieving them from the burden of going into complex processes of land purchase.

Focus on increasing agricultural production as sources of raw materials for the industries. This

may require bringing changes in method and processes of production and reduction in production cost. Cost of labor, and transportation, are essentially important elements in bringing down the overall cost of production and delivery to the market.

Enhancing agricultural production and productivity may require; lifting ban on land holding ceiling, support for adoption of modern technologies; promotion of organic farming; availability of fertilizers to the farmer on time and moreover enforcement of price support mechanism for ensuring market to the products.

Sunkoshi-Marine and Sunkoshi-Kamala diversion project must be implemented as early as possible. These projects have the potentiality of bringing large area of non-irrigated land under round the year irrigation and could be a game changer in increasing agricultural production in the province.

Ensure regular and dependable supply of electricity: Industries are heaving a sigh of relief with the end of power outage (load shedding) over the last three years but the quality of supply is still questionable. Infrequent and unannounced outage, low voltage and inadequate supply is still grappling the manufacturing industries which need reliable, adequate and continued supply.

Simplification of industry registration process: The licensing system in industry was abolished more than 25 years ago, but the burden of complexity has now shifted to registration. Industry registration and exit procedures are complex and complicated. Government should consider introducing automated process in registration and exit to the possible extent.

Stable and predictable policy for healthy growth of industry: One of the problems faced by the investors in Nepal is the frequent changes and sometime turn around on the policy and regulatory regime that often leaves industries in adverse situation and dilemma. Experience has shown that facilities and concessions provided by the Industrial Enterprises Act and FITTA are nullified by the Financial Bill and Income Tax Act. Such a situation will merely send negative signal to the potential investors. Hence, government should strive for creating a stable and facilitative policy environment for industries and investment.

Support in increasing production and productivity of agriculture: The agro-based industries like sugar and tobacco manufacturing often time face the shortages of domestic raw materials thereby affecting the production process. There is no proper linkages between production of local raw materials and agro-based manufacturing. Unpredictability of supply and low quality of available raw materials are the reasons behind poor linkages between the agriculture and industry sector[18]. Hence, there should be a proper coordination and complementarity between these two sectors of economy. Support measures for enhancement of quality and quantity of agricultural production should be implemented for maintaining backward linkages and sustaining the industries of the province.

Re-negotiate the bilateral treaty of trade with India: Three factors are quite important for making the bilateral treaty of trade conducive to healthy growth of industry in the country. First, offsetting the imports of highly subsidized agricultural product by imposing tariff which is not allowed by the current treaty; second, devising an effective mechanisms to deal with the SPS and TBT barriers and third allowing free movement of intermediate goods that encourages intra-industry trade between the countries. Such a provision would be helpful in bringing more investment into Nepal and also in achieving complementarity on bilateral trade.

5.3 Planning framework for Province Two: In the context of strategies discussed above and the series of consultations carried with various stakeholders in the province, the following framework of planning has been proposed.

5.3.1 Vision: A prosperous province supported by high industrial growth.

5.3.2 Overall goal: Assist in reducing the level of poverty through the development of agro-based industry and manufacturing sector.

5.3.3 Main Objective: Increase the income and employment opportunities at the local level by enhancing efficiency and outputs of industries.

5.3.4 Specific Objectives/Sub-objectives:

a. Develop strategic and regulatory framework for industrial development of the Province.

   Carry out survey and resource mapping of the province and create inventories in order to support the formulation of policies and development plan of the province.

   Formulate and bring out industrial and trade policy of the province in order to complement and substantiate the national policies.

   Enact legislations for establishment of industrial

[18] One example was cited during the discussion that a ketchup industry in Sunsari District (Province One) is using the imported tomato to produce Ketchup while the tomato grown in Sarlahi district are not finding market and farmers are compelled to sell their harvest a at a throw away price.

estate, parks and zones within the province.

Develop project banks based on feasibility studies for facilitation of foreign and domestic investment.

b. Develop physical infrastructures for enabling investment climate in the province.

Explore and identify key infrastructures for facilitation of industry and trade.

Implement program for development such infrastructures in coordination with federal government.

Recommend government of Nepal for development of border infrastructures in key locations.

Establish industrial village at each municipality.

c. Promote micro, cottage and small industries and help them to be the driver of growth and prosperity.

Create venture capital fund for supporting the start-up enterprises and business incubation.

Set up technology development fund for supporting the technology improvement, reducing waste and improving energy efficiency.

Help in setting up gift/souvenir houses for display and sales of the MCSI products.

Carry out financial literacy programs for the potential entrepreneurs.

Support small enterprises to participate in national trade fairs.

d. Prioritize key industrial sectors that are of importance from national perspectives

Identify five key manufacturing sectors of the province and prepare plan for their development along the value chain.

Implement plan for development of the products and related services.

Enhance market access opportunities of priority products (in cooperation with government of Nepal).

e. Focus on creating enabling environment for investment (supported by skill development program and appropriate institutional infrastructures)

Prepare HR development plan for meeting the skill requirement by the industries.

Carry-out training and skill development program in collaboration with government of Nepal.

Establish directorate of industry and trade.

Develop effective monitoring and evaluation mechanism.

5.4 List of potential projects in industry sector:

Long list of projects under the industry sector were identified during the consultation workshops held in Janakpur, Birgunj, Bardibas and Lahan. Meanwhile some of such projects were suggested by the stakeholders during focus group discussions in various districts. All these list were thoroughly discussed in the workshops organized during the second phase and the participants were allowed to prepare the prioritized list on the basis of nine parameters that were as followings;

Strategic value	Feasibility, do-ability	Quick wins
Costs	Co-benefits	Acceptability
Dependency	Effectiveness	Risks and sustainability.

Altogether 10 projects were prioritized and selected from among the 25 projects.

Some of the projects have been merged in view of the similarity in nature and processes of implementation. Details of these projects are as given below:

5.5 Project details

Project 1: Creation of baseline data, resources profiling, formulation of industry and trade related policies and regulations.

Project Location	Province Two.
Project Type	Data collection, survey and preparation of industrial profile, policy and regulations. (Related with Objective I)
Name of the project	Creation of baseline data, resources profiling, formulation of industry and trade related policies and regulations.
Project duration	One-Two Years

Features/characteristics of the project: The local level governance structure and the geographical jurisdiction introduced therein resulted into merging of various wards, village development committees and municipalities existed prior 2015. The Constitution of Nepal promulgated in 2015, has made a provision of restructuring the state under three tiers of governance whereas the provincial governments and the local level municipalities (both urban and rural) are given with the authority and responsibility of carrying out developmental activities in various sectors including industry and trade. For this, they are supposed to prepare their own periodic and annual plans.

Development of plan and programs needs adequate baseline information on availability of existing resources and future potentials. This requires collection of basic demographic data, availability of land, water, forest and mineral resources, human resources capacity, and the level of various infrastructures, including the transport, and border infrastructures, existing industry and IT related infrastructures. The provincial government and the local municipalities require to develop the resource profile, prepare land use map and make assessment of future potentials to support the formulation of pragmatic plan and program of the province as well as of the local level.

Project Components:
In order to prepare the groundwork for future planning and ushering the province in industrial development, the Provincial government is supposed to take up the following tasks under the project.

- Carry out survey and resource mapping of the province to create database and inventories
- Work out industrial clustering based on geographical areas/municipalities.
- Develop Industrial policy including for FDI, formulate provincial enterprises Act and regulations
- Improve coordination with Municipalities
- Develop project banks for foreign and domestic investment.

Budget and financing:

Total budget	NRs. 150 million
Proposed allocations for 2019-20	NRs. 100 million.
Source of funding	Provincial government-P2
Remarks (if any)	Budget estimation: NRs. 1 million*136 municipality= 136 mill+14 million for compilation, data analysis, report preparation and printing etc.

Development modality:

Role of Federal Government	Coordination with the provincial governments for creating uniform types of industrial profiles and provide financial support.
Role of the Provincial Government.	Implementation of the project-completion of planning exercises
Role of local level	Participate with the provincial government in creating data base, preparation of industrial profile.
Role of Private Sector/Chambers	Support the initiatives and provide feedback.

Project 2: Industrial villages in each municipality.

Project Location	Province Two.
Project Type	Promotion of micro, cottage and small industries by providing co- location under a single enclosure (Related with Objective III)
Name of the project	Industrial villages in each municipality.
Project duration	One-Five Years

Features/characteristics of the project: The work required would be carrying out study and site selection for the industrial villages in the province in a phased manner. Out of 136 municipalities in the province, 68 will be covered under the first five year plan. Accordingly 10-15 industrial villages (sub-projects) may be undertaken during the first year of implementation. Such villages will be preferably located in the north-south highway and the two east west highways; one in the north and another Hulaki Highway on the south.

Project Components:

a. Carry out survey, feasibility study and site selection and proposed size (perimeter of the sub-project area).

b. Design of the infrastructures and development modality.

c. Develop operation and maintenance modality in consultation with stakeholders, particularly with municipalities and local chambers.

d. Allocate budget for construction and development.

Budget and financing:

Total budget	NRs. 680 million
Proposed allocations for 2019-20	NRs. 100 million.
Source of funding	Provincial government-P2
Remarks (if any)	Budget estimation 10 million for each municipality over the next five years.
The project could be financed on public private partnership basis.	The program will cover at least 50% of the municipalities within the next 5 years and will provide support in the infrastructure development, training for the potential industrial workers and marketing.

Development modality:

Role of Federal Government	Provide national guidelines for industrial villages and financial support for development.
Role of the Provincial Government.	Take lead in implementation; develop construction, operation and maintenance modalities. Coordination with municipalities and industries.
Role of local level	Assist in finding the location sites for industrial village; coordination with private sector businesses and provincial government.
Role of Private Sector/Chambers	Support the initiatives and actively participate in development, operation and maintenance of the facilities.

Project 3: Feasibility study and land acquisition at Aurahi municipality in Mahottari for developing provincial industrial zones.

Project Location	Mahottari district
Project Type	Development of provincial industrial zone (related with objective II)
Name of the project	Feasibility study and land acquisition at Aurahi for provincial industrial zones.
Project duration	One Year

Features/characteristics of the project: The previous study has indicated that Aurahi Municipality (around 5 km south west from Bardibas) has been found as one of the appropriate locations for establishing a provincial level industrial zones. The area is covered by bushy forest and grasses and is the reclaimed land of the flash floods. Provincial government may initiate the following process in order to develop the industrial zone in the designated location.

Project Components:

Detailed feasibility study and preparation of project report.

Obtain permission from the Government of Nepal/Ministry of Forest for possession of the land by the provincial government to develop industrial zones.

Construction of boundary wall, roads and river training and protection works.

Budget and financing:

Total budget	NRs. 1 billion (tentative)
Proposed allocations for 2019-20	NRs. 200 million.
Source of funding	Provincial government-P2
Remarks (if any)	Realistic cost estimate could be obtained after detailed study to be carried out during the first year.

Development modality:

Role of Federal Government	Provide technical and financial support for development of the facilities.
Role of the Provincial Government.	Take lead in implementation; develop construction, operation and maintenance modalities. Coordination with municipalities and industries.
Role of local level	Coordination with private sector businesses and provincial government.
Role of Private Sector/Chambers	Support the initiatives and actively participate in development, operation and maintenance of the facilities.

Project 4: Detailed feasibility study to develop Jatahi-Dhalkebar and Inarwa (Dhanusa) - Bardibas (along the railway line) and Lahan-Thadi as the second and third industrial corridor of the province.

Project Location	Dhanusha, Mahottari and Siraha.
Project Type	Development of two additional industrial corridors. (related with objective II)
Name of the project	Detailed feasibility study and land acquisition for development of infrastructures.
Project duration	One Year

Features/characteristics of the project: With the rehabilitation and extension of the railway line along Jayanagar-Inarwa-Janakpur-Bardibas corridor and the ongoing works upgrading the Jatahi-Dhalkebar road, there are potentialities of transforming these as the economic and transit corridors of Nepal. Similarly, the border crossing of Thadi-Laukaha at the Siraha border has been opened in 2009, as additional trading route for Nepal-India trade. The national highway of India is just few kilometers away from the border and there are potentialities of setting up industries along the road corridor passing from Lahan to Thaadi. Hence, the provincial government shall undertake study for development of industrial clusters and trade related infrastructures that could be developed along the corridor. Such a study would also indicate how the private sector service providers could make best use of the facilities being created in the corridor.

Project Components:

- Detailed feasibility study and preparation of project report.
- Land acquisition (possession) for the development of physical infrastructures

Budget and financing:

Total budget	NRs. 15 million (Study-5 million, land acquisition/partially-10 million)
Proposed allocations for 2019-20	NRs. 15 million.
Source of funding	Provincial government-P2, supported by the Federal Government.
Remarks (if any)	Realistic estimated cost could be obtained after detailed study to be carried out in 2019-20. Accordingly, allocations can be made in the ensuing years.

Development modality:

Role of Federal Government	Provide technical and financial support for development of the facilities. Negotiate with the government of India for operationalization of these corridors for trade and transit.
Role of the Provincial Government.	Take lead in implementation; develop construction, operation and maintenance modalities/guidelines. Coordination with municipalities and industries.
Role of local level	Coordination with private sector businesses and provincial government.
Role of Private Sector/Chambers	Support the initiatives and provide feedback.

Project 5: Establish provincial level skill development and training center at Birgunj, Janakpurdham and Rajbiraj.

Project Location	Parsa, Dhanusha and Saptari
Project Type	Create industry enabling environment (related with objective V)
Name of the project	Detailed feasibility study and land acquisition for development of infrastructures.
Project duration	One-Four Year

Features/characteristics of the project: Lack of skills is a major impediment in the development of industry in the country in general and in Province Two in particular. The high rate of outmigration of labor force is also fueled by the lack of skill that could otherwise create employability of the labor force within the country. Higher number of skilled persons is equally important for attracting investment in agriculture, industry and service sectors of the economy.

Given the size of population (5.4 million), it is felt that three vocational training centers need to be established in three different locations of the province, the first one targeting the districts of Bara, Parsa, and Rautahat, the second in Janakpurdham for the districts of Sarlahi, Mahottari and Dhanusha and the third in Rajbiraj for the districts of Siraha and Saptari.

Project Components:

- Carry out feasibility and detailed study for setting up three training centers along with identification of sites.
- Land acquisition.

  Approval/permission from the respective regulatory agencies (e.g. CTEVT).
- Initiate development of physical infrastructures including buildings, road, drainage etc.

Budget and financing:

Total budget	NRs. 25 million (Study-5*3 million, land acquisition/partially-10 million)
Proposed allocations for 2019-20	NRs. 25 million.
Source of funding	Provincial government-P2, supported by the Federal Government.
Remarks (if any)	Total estimated cost for development and operation could be obtained after the detailed feasibility study.

Development modality:

Role of Federal Government	Provide approval as well as technical and financial support for development of the facilities.
Role of the Provincial Government.	Enact provincial legislation for development, operation, and maintenance. Take lead in implementation; Coordination with municipalities and industries.
Role of local level	Coordination with provincial government and assist in study, site selection and acquisition of land.
Role of Private Sector/Chambers	Support the initiatives and provide feedback.

Project 6: Fund for supporting the women, disadvantaged groups and the poorest of the poor (targeted group for entrepreneurship development).

Project Location	All districts (Province Two).
Project Type	Creation of Fund for supporting the entrepreneurship development of the disadvantaged groups (related with objective III)
Name of the project	Fund for supporting the women, disadvantaged groups and the poorest of the poor
Project duration	One Year- Long Term.

Features/characteristics of the project: The number of registered micro, cottage and small enterprises is more than 39,000 in the province. Of these, numbers in service sector is highest (around 20,000) followed by manufacturing 12,000 and agriculture and forestry around 5,000[19]. There is no organized and effective system to upkeep and support those vital industry that is linked with the income and employment opportunities with large swathes of rural population, particularly women and disadvantaged groups.

The provincial government shall consider developing a comprehensive support program for these industries along with the creation of support fund. At the same time the provincial government will also identify clusters of specific industries for maximizing the efficiency of support program.

Project Components:

- Create a dedicated Directorate or Board to look into the issues of micro, cottage and small industries.
- Formulate a comprehensive support package for development of MCS industries.
- Establish a revolving fund to support the enterprises and develop strong regulatory framework and guidelines for effective operation and management of the fund.
- Delineate the responsibilities of managing the fund to competent authority created by the government.
- Develop regular monitoring and follow up mechanisms.

Budget and financing:

Total budget	NRs. 100 million
Proposed allocations for 2019-20	NRs. 100 million.
Source of funding	Provincial government-P2, supported by the Federal Government.
Remarks (if any)	The work should start with the enactment of legislations for mobilization of the fund.

Development modality:

Role of Federal Government	Provide technical inputs for operationalizing the fund. Provide budgetary support for setting up the revolving fund.
Role of the Provincial Government.	Enact provincial legislation for mobilization of the fund. Take lead in implementation; Coordination with municipalities and industries.
Role of local level	Coordinate with provincial government and the local industries. Advocacy and dissemination of the benefits accrued to the MCS industries.
Role of Private Sector/Chambers	Support the initiatives, encourage local entrepreneurs to participate in increasing production and productivity of their enterprises.

[19] Source: Industrial Statistics; Department of Industry, 2018.

Project 7: Special programs for development of fish, vegetables and fruit processing industries

Project Location	Mahottari and Dhanusha for fish processing. Sarlahi and Bara for vegetable processing and Saptari and Siraha for fruit processing industries.
Project Type	Development and implementation of special programs for supporting the valued added activities for fish, fruits and vegetables (related with objective V)
Name of the project	Special programs for development of fish, vegetables and fruit processing industries
Project duration	One-Two Year

Features/characteristics of the project: The province is rich in the production of sub-tropical fruits, vegetables and fish and remains as source of supply of these products to major city centers in Nepal. However, there are occasions when the farmers and producers of these crops are affected due to unhealthy competition, oversupply and imports of similar goods from India. Hence it is imperative to protect the farmers from the vulnerability of market fluctuations. Creation of processing facilities in the district will help them to sell the product to the processing units as the raw material that in turn helps to fetch a good price to the farmers as well as to the processor. Such a facility could be either managed by the farmers groups themselves or their cooperatives in support of the local municipalities.

Project Components:
The project would comprise of the following components;

- Techno-economic feasibility study; selection of sites (location) for processing units in the districts; mode of development and operation and maintenance modalities of the units.
  Support for cold chain (chilling centers, refrigerated vehicles and the cold warehouse).
- Delineation of the role and responsibilities for each stakeholder.
- Development of sustainability plan.

Budget and financing:

Total budget	NRs. 10 million
Proposed allocations for 2019-20	NRs. 10 million. (Feasibility and development of action plan)
Source of funding	Provincial government-P2, supported by the Federal Government.
Remarks (if any)	The work should start with the detailed feasibility along with road map for mode and means of development, operation, and maintenance and sustainability plan. This would also entail to policy, regulatory and institutional level interventions.

Development modality:

Role of Federal Government	Provide financial and technical support to the provincial government.
Role of the Provincial Government.	Coordinate with DCC and local municipalities and farmers groups. Take lead in implementation.
Role of local level	Coordinate with provincial government and the local producer's groups. Help in designing and implementation of sustainability plan.
Role of Private Sector/Chambers	Support the initiatives, encourage local producers in increasing production of their enterprises.

Project 8: Construct/upgrade at least five farm to market access road at each district (15kmX5).

Project Location	All 8 districts.
Project Type	Development of transport infrastructure for linking the production center/farm to markets (related with objective II)
Name of the project	Construct/upgrade at least five farm to market access road at each district
Project duration	Five year and more.

Features/characteristics of the project: The conditions of the village and municipal roads are not in good shape in the province. They need extensive repair and rehabilitation. The provincial government shall help the local municipalities in building/rehabilitation of such roads. The first year will focus on identification, survey, design and implementation of emergency rehabilitation works requiring immediate attention in terms of priority. Length of such road will not generally exceed 15 km and would link the farms to the trunk roads extending north-south or east west.

The Provincial government will develop project selection criteria and implement the construction work on a priority basis. This will be a continuing project over an extended period of five years or more.

The task will be taken under two phases. During the first year, 2 such roads in each district (8*2=16) will be undertaken, followed by 3 other such roads in the second year (8*3=24). The construction and development works will also be carried out in a staged manner.

Project Components:
The project would comprise of the following components;

- Feasibility study, design and preparation of cost estimates of the farm to market access roads identified by the DCC in consultation with the municipalities.
- Detailed design of the road and bridges, if any.
- Delineation of the responsibility of construction, operation and maintenance.

Budget and financing:

Total budget	NRs. 32 million
Proposed allocations for 2019-20	NRs. 32 million. (Detailed feasibility study of 16 roads in the first year and development of action plan.
Source of funding	Provincial government-P2, supported by the Federal Government.
Remarks (if any)	Cost of project preparation for each 15 km road is estimated to be NRs. 2 million and 16 such road requiring NRs. 32 million.

Development modality:

Role of Federal Government	Provide financial and technical support to the provincial government.
Role of the Provincial Government.	Coordinate with DCC and local municipalities. Take lead in implementation.
Role of local level	Coordinate with provincial government and the local producer's groups. Help in designing and implementation of sustainability plan.
Role of Private Sector/Chambers	Support the initiatives.

Project 9: Revival of agriculture tools factory and establishment of a chemical fertilizer industry (with identification of implementation modality)

Project Location	Parsa (Agricultural Tools Factory). Dhanusha or Mahottary for fertilizer factory.
Project Type	Development of physical infrastructures for promotion of industry and investment (related with objective II).
Name of the project	Revival of agriculture tools factory and establishment of a chemical fertilizer industry
Project duration	Five year and more.

Features/characteristics of the project: The provincial government will take the initiatives in association with the federal government for revival of the Agricultural Tools Factory of Birgunj which was closed in early 2000. Running of the factory is important for the farmers as this could provide tools and machinery to the agricultural farms and farmers. The factory needs remodeling and technology upgradation in order to remain competitive in the market. Thus appropriate modality for running the industry will also be explored and implemented with the support of government of Nepal.

Similarly, the Provincial government will also explore the feasibility of setting up a Chemical Fertilizer factory in the province with a view to substitute the large volume of import of fertilizers from outside the country. With the gradual increase in the supply of electricity in the country, the feasibility of setting up such industry needs to be re-explored and hence, the provincial government will include this as part of initiatives for the program in 2019-20.

Project Components:
The project would comprise of the following components;

- Carryout detailed techno-economic feasibility for (i) revival and modernization of agricultural tools factory of Birgunj and (ii) establishment of a chemical fertilizer factory either in Mahottari or Dhanusha.
- Carry out consultations with various stakeholders of the province on the outcome of study.
- Chart out future plan of action and implement it.

Budget and financing:

Total budget	NRs. 10 million
Proposed allocations for 2019-20	NRs. 10 million. (Detailed techno- economic feasibility study of the two important industrial infrastructures and development of action plan).
Source of funding	Provincial government-P2, supported by the Federal Government.
Remarks (if any)	Future actions to be decided after the study, followed by consultation with various stakeholders.

Development modality:

Role of Federal Government	Provide financial and technical support to the provincial government.
Role of the Provincial Government.	Take lead in carrying out study and organize consultation workshops/meetings.
Role of local level	Coordinate with provincial government.
Role of Private Sector/Chambers	Support the initiatives. Provide feedback.

Project 10: Persuade with the federal government on projects and program of national importance.

Project Location	Province Two
Project Type	Implement investment and trade enabling projects and programs (related with objective II and objective IV).
Name of the project	Persuade with the federal government on projects and program of national importance.
Project duration	One year and more.

Features/characteristics of the project: Various trade, investment, and commerce related issues on the province are also of transnational types and some of these issues are very much important from the nations as well as from province's perspectives. Hence, the Provincial Government will take up the issues at the national level and will work closely with the Federal Government of Nepal in order to streamline those matters.

Project Components:

The project would comprise of the following components;

- Expediting the construction works of Hulaki road, expansion of north- south road, national highway and railway network.
- Construction of check-dams in Churia region for storage and recharge of water table in Terai.
- Designating Jatahi as the border post for international trade.
- Develop Lahan-thadi as another industrial corridor.

Budget and financing:

Proposed allocations for 2019-20	NRs. 5 million. The budget is proposed for consultations, organizing meetings and seminar, awareness creation and visit of delegation to the national capital and so on.
Source of funding	Provincial government-P2.
Remarks (if any)	This will be a continuing process until the big infrastructure projects and bilateral agreement with the neighboring countries are reached in respect of border regulations.

Development modality:

Role of Federal Government	Make investment in large sized projects that are beyond the jurisdiction of the provincial government. Negotiate with the government of foreign countries. Maintain coordination with the provincial government.
Role of the Provincial Government.	Organize meeting, workshops and seminars etc. on issues of national and provincial importance. Work in collaboration with the federal government to find the solutions to the problems in industry and trade. Establish good rapport with federal government and local level.
Role of local level	Coordinate with provincial government.
Role of Private Sector/Chambers	Support the initiatives. Provide continuous feedback on trade, transit, transport and industry related issues.

Chapter 6: Implementation Plan

6.1 Strategies for implementation

Government intervention in the industry sector should primarily focus on developing a sound and pragmatic development plan, creating an investment enabling environment through proper promotional policies backed by good governance. Similarly, government should also focus on development of basic infrastructures like transport, energy, special economic zones and soft infrastructures like information and modern communication technologies that creates incentives to the potential investors to remain engaged in the industrial business.

The industry sector development strategy in Province Two requires intervention at the following five levels.

a. Prepare groundwork for future plans

b. Bring out legislations, and enabling policies and strategies.

c. Develop industry related infrastructures.

d. Establish an effective system of public-private dialogue and cooperation and,

e. Create linkages of the industrial development program with poverty alleviation and social equity.

Ground work for development of plan and programs: The province is a new structure formed under the state restructuring framework of the Constitution of Nepal-2015. The province lacks basic data and information at the disaggregated or the municipal level which were constituted by merging several wards and local level bodies (VDCs and municipalities) existed before the promulgation of the new constitution. Hence, collection of basic demographic and economic and social data/ features is very much important in formulation of the strategic, periodic or annual plan of the province. Situation assessment and analysis of each sector can be carried out on the basis of such data. Hence, the primary task for the provincial and local level is to collect the data of each community, ward and municipal areas so that these could aggregated to form the provincial level of basic demographic, and socio-economic profile. An industrial profile of the province should be prepared for facilitating the future plans of the province.

Legislations, enabling policies and strategies: The development of industry sector relies upon a number of enabling policies, strategies and the regulations that are more transparent, predictable and facilitative for attracting domestic and foreign investment and healthy growth of industries. Hence, the provincial government should embark upon bringing out provincial industrial policy that provide overall direction to the process of industrialization. The provincial government may seek to attract industrial investment by providing additional incentives to the incumbent industries. Similarly, legislation for regulation of the industries within the legal jurisdiction of the province could be passed by the provincial parliament in order to increase transparency, and predictability in operation of industries. However, a cautious approach should be undertaken in devising such rules and regulations that there would be no extra burden to the industries and the provisions do not contradict with the provisions laid in the national laws and policies.

Development of industry related infrastructures: The development of infrastructures is key to overall socio-economic development of the province including the development of industry sector. The government of Nepal in its Budget Speech-2018 has focused in developing industrial infrastructures in various provinces of the country (refer Annex-4). The provincial government should take a two pronged approach in developing appropriate infrastructures; first by making its own investment for project preparation for all types of small, medium and large sized projects creating a pool of investment projects of which the small and medium sized projects could be undertaken from the resources available to the provincial government. On the other hand, the provincial government should persuade with the federal government for development of large infrastructures like national highway, strategic roads, railways, border facilities, special economic zones and industrial states that are vital to stimulating the overall socio-economic development of the province.

Increasing public-private dialogue and cooperation: The role of private sector in development of industrial infrastructures and production processes cannot be overstated. Governments are increasingly turning

to the private sector as an alternative source of funding for development of physical infrastructures in the light of facing constraints on public resources and shrinking fiscal space. Private sector possess resources, technical knowledge and management techniques for efficient utilization of the available resources. They are also key players in setting up and operation of industrial ventures and hence should be given prime role in production of goods and service and complement the effort of government in development of new product, techniques and processes. Government in such cases should be facilitator and enabler rather than being in business on itself. The provincial government, thus, may develop policy and strategies in accelerating the private sector investment in infrastructures and industrial ventures on one side while they should consider constituting an effective public private dialogue mechanisms for bringing private sector as the trusted partner in overall development processes.

Industrial development for poverty alleviation and social inclusion. Development of industrial ventures in the province should focus on utilization of local resources and skills. Province Two is comparatively rich in agricultural productions; paddy, wheat, maize, pulses are the major crops which is followed by the production of sub-tropical fruits like, mango, banana, and litchi, vegetables like tomato, sponge-gourd, luffa gourd, okra lady's finger, potato, bitter gourd among others. The province demonstrates good performance in dairy products. The annual production of milk in the province is 257,212 Mt. which is 14 percent of the total milk production of the country.[20]

The province houses 39,415 micro, cottage and small industries which comes around % of the total number of such industries in the country. Of these, almost 50 percent are in the service sector followed by manufacturing (28 percent), agro-forestry based (12 percent), construction (4 percent) and the rest in tourism, and energy (refer Annex-3). There should a well-crafted plan and program to increase the productivity of those MCS industries as well as the agricultural sector in order to bring benefits of industrialization to the poor, marginalized people and disadvantaged people of the province.

6.2 Institutional arrangements

The provincial government should consider in creating suitable institutions to advance the agenda of industry and trade. The composition of the provincial ministries shows that multiple sectors have been clubbed together in the process of accommodating all activities within the framework of seven ministries. The ministry looking after the industry sub-sector is combined with tourism, forest and environment while the industry sub-sector also mandated to look into the issues of internal trade, supplies and consumer protection. Such an arrangement diffuses the attention of the ministry, losing focus on industrial development. Hence, some important institutional framework should be created in order to advance the development agenda in its true spirit. This would require;

Create a dedicated directorate/department to look into the issues of industry, supplies and consumer's welfare: This will provide an opportunity to deal with the issues of industry, trade and consumer affairs in a discreet manner, follow- ups and effective monitoring the activities in a regular way.

Create provincial level public private dialogue mechanisms: Such an institutional mechanisms could be constituted under the chair of the Vice Chairperson of the Policy Commission and members could include secretaries of various ministries, chairperson of the local chambers, product associations, and representatives of micro, cottage and small industries. The Secretary of MOITFE could be designated as the member secretary of the committee. A detailed work program and terms of references should be outlined in order to make the committee effective towards achieving the objectives of its formation.

Strengthen vertical and horizontal coordination: The provincial government has the prominent role of establishing coordination with the federal government for availability of resources and authority for taking up various tasks that are crucial for the province but lies outside the jurisdictional area of the provincial government. Similarly, it has to maintain coordination with the local municipalities and support them in taking up the developmental tasks in their territorial areas. The third aspect is the inter-ministerial coordination for timely delivery services and effective implementation of the development program. Similarly, such horizontal coordination would be required between the provinces for the program and projects that are of cross-provincial nature. The provincial government should establish appropriate mechanisms of coordination in order to make smooth sailing of the developmental activities.

Follow up, monitoring and evaluation of the plan and projects: The provincial government should carry on the task of regular follow up, time bound monitoring and evaluation of the periodic plan and identified projects to ensure that projects undertaken have been implemented properly, effectively and efficiently and are on way of achieving its objectives. The progress of implementation and outputs therein should be the indicator for measuring performance of the relevant institutions and actors and be a part of the reward and punishment system.

[20] Source: MOAD: Statistical Information on Nepalese Agriculture 2072-73 (2015-16); http://moad.gov.np/public/uploads/1142453195-STATISTIC%20AGRICULTURE%20BOOK_2016.pdf

6.3 Implementation matrix

Implementation Period: Short; 1-2 Yrs. Medium; 3-4 Yrs. Long; 5 Yrs. and beyond

Project/Sub-projects	Implementation period	Responsible Agency	Support Agency	Cost estimate (Tentative) NRs.	Remarks
Creation of baseline data, re-sources profiling, formulation of industry and trade related policies and regulations.	Short (1-2 yr.)	PC, MOITFE	Municipalities (136)	150 million	Mobilization of municipality office bearers and staffs for data collection.
Industrial villages in each municipality.	Long (5 Yr.)	MOITFE	OCMCM PC Provincial Parliament.	680 million	50 percent of the municipalities will be covered in 5 years.
Feasibility study and land acquisition at Aurahi municipality in Mahottari for developing provincial industrial zones.	Short (1 Yr.)	MOITFE	OCMCM PC and MOEAP	1 billion (200 million in first year)	Cost estimates will be available at the end of 1st year.
Detailed feasibility study to develop Jatahi-Dhalkebar and Inarwa (Dhanusa)- Bardibas (along the railway line) and Lahan-Thadi as the second and third industrial corridor of the province.	Short (1 Yr.)	MOITFE	OCMCM, PC, MOEAP	15 million.	Study-5 mill. Land acquisition (partial) - 10 million.
Establish provincial level skill development and training center at Birgunj, Janakpurdham and Rajbiraj.	Medium (3-4 Yrs.)	PC	MOITFE, MOSD and MOEAP	25 million	Study-15 mill. Land Acquisition (first year)-10 mill.
Fund for supporting the women, disadvantaged groups and the poorest of the poor (targeted group for entrepreneurship development).	Short to ling term (1-5 Yrs.)	MOITFE	OCMCM, MOEAP,	100 million	The fund should be established along with enactment of legislation.
Special programs for development of fish, vegetables and fruit processing industries	Short (1-2 Yrs.)	MOLMAC	OCMCM, PC, MOEAP	10 million.	Cost for feasibility study and development of action plan.
Construct/upgrade at least five farm to market access road at each district (15kmX5).	Long term (5 Yrs. and more)	MOPID	MOITFE, MOEAP, Municipalities	32 million..	Detailed feasibility study for 8*2 roads in the first year.

Project/Sub-projects	Implementation period	Responsible Agency	Support Agency	Cost estimate (Tentative) NRs.	Remarks
Revival of agriculture tools factory and establishment of a chemical fertilizer industry (with identification of implementation modality)	Short to long (1-5 Yrs.)	OCMCM	PC, MOICS, MOF	10 million.	Detailed study and development of action plan
Persuade with the federal government on projects and program of national importance. Expediting the construction works of Hulaki road, expansion of north-south road, national highway and railway network. Construction of check-dams in Churia region for storage and recharge of water table in Terai. Designating Jatahi as the border post for international trade. Develop Lahan-thadi as another industrial corridor.	Short to long term (1-5 Yrs.)	OCMCM, PC	MOEAP MOPIT NPC MOFSC MOICS	5 million	The budget is intended for meeting, visits, consultation with the concerned stakeholders.

Note: OCMCM: Office of the Chief Minister and Council of Ministers, PC: Policy Commission, MOEAP: Ministry of Economic Affairs and Planning, MOF: Ministry of Finance, MOICS: Ministry of Industry, Commerce and Supplies, NPC: National Planning Commission, MOFSC: Ministry of Forest and Soil Conservation, MOITFE: Ministry of Industry, Tourism, Forest and Environment, MOSD: Ministry of Social Development.

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Annex 1: Summary of findings of the workshops/ meetings

1. Workshop in Janakpur (20 February 2019)

The ARUP Team explained the purpose of this planning workshop. The team highlighted on the need of field level quantitative data based on census or survey that will form a baseline for periodic planning of the province. Identification of baseline, or as is, situation helps in setting a pragmatic goal and develop the pragmatic plan for the province. The questions put forward to the participants were as follows;

1. What are the existing capital assets available with the Province?
2. What is the vision?
3. What are the challenges?
4. What are the opportunities and the way forward?

The following summarizes answers received from various participants:

Existing capital and assets:

The province is well connected with other province of the country as well as with the Bihar State of India by the road and railway link.

Abundance of the cultural heritage and religious sites is another strength of the province. Viswa (Parsa), Gadhimai (Bara), Jaleshwor (Mahottari), Ram-Janaki Temple (Dhanusha), Salehas (Siraha), Kankalini and Sakhada (Saptari) are prominent religious and cultural heritage sites that provides immense opportunities for tourism circuit. Besides, there is a Islamic cultural center in Mahottari district which can be developed as the pilgrimage sites for the Muslims from India and Nepal.

Province two possess all fertile land that have immense potentiality of growing various agricultural crops; paddy, wheat, maize, and millet; horticultural crops like sub-tropical fruits, and vegetables; presence of various ponds and fish currently raised in the ponds are also important assets of the province. Mango,litchi, jackfruit, pineapple are the major fruits grown here while tomato, cabbage, cauliflower, leafy vegetables etc. are the major vegetable crops.

The flat land of terai makes it easier for construction of infrastructures including road and railways.

Large manufacturing industries are located in Birgunj-Simara corridor. Altogether, there are 8 sugar mills in Bara, Sarlahi, Rautahat, Dhanusha and Siraha districts. The other industries in the province are; rice and oil mills, paper mill and cement industries, particularly in Dhanusha and Siraha district.

Micro, cottage and small industries (MCSI) are scattered over areas of construction industries, furniture and fixtures, hotel and restaurant, among others. Some women in Dhanusha and Mahottari districts are engaged in Mithila Art and Painting which is the unique for this province.

The province houses almost 5.4 million people which is 20 percent of the national average. The number of economically active population (15-59 age group) is 45 percent[21], which may be considered as the valuable asset of the province.

Vision of the province:

The vision should focus on creating employment opportunities within the province through the development of agriculture and industrial sectors.

Enhancing happiness may be set as alternative vision for the province.

Challenges

Revival of the existing industries is a big issue. The loss of production of paddy and sugarcane has hampered the growth of rice and sugar mills. Hence revival of these industries need to be tied up with the production of respective crops. Besides, enhancement in the production of major crops will help in backward integration/value addition to the industries. Reversing the trend of declining production is a big challenge.

Lack of cold warehouse and processing facilities resulted in wastage of mango fruits and tomato, particularly during bumper harvest.

Large tract of land within the province is deprived of irrigation facilities. This has resulted into low yield and production. Bangladesh is taking advantages of irrigation facilities despite less geographical area of production. Yield of crop in Nepal is very much low. Hence, irrigation expansion program should

[21] According to CBS Statistics-2011.

be implemented as part of crop improvement program.

The status of public health is low in comparison to other provinces. The people in the province face incidence of various types of infectious and non-infectious diseases including, heart diseases, rheumatic diseases, HIV, mal-nutrition and higher number of fatal road accident. The province has comparatively higher maternal and infant mortality rate. There are no prominent health institutions in the province except an eye hospital in Lahan.

There is no excavation, research and investigation on historical and prehistoric sites: For example: Not much facts and findings are explored except the simple narrative that Goddess Sita was born in Janakpur.

The provincial government should ensure the availability of resources for implementation of proposed plan and projects. Effective implementation is a much debated issue; there is a big gap between plan and implementation; example; allocated money for landfill site were returned back over the last year.

Lack of trained human resources is a big challenge for implementation of the plan and program. Only the trained and educated human resources can help achieve the goals of periodic plans.

Siltation is a big problem for agriculture as the fertile land is being covered by the floods and deposits of sand and boulders that are carried by the flash flood and rivulets flowing from Churia region.

Middle-men are sapping the benefits of agricultural production; vegetables and fruits are purchased at a very low price from the farmers and ultimate consumers are compelled to pay a high price, there by bringing hefty profit to the middlemen.

Resources obtained from the federal government is not enough commensurate to the level of contribution made by the province in national exchequer. Hence more resources need to be allocated to the province.

Opportunities and the way forward.

Aim at bringing happiness to the people. Larger vision should be happiness to the people of Province Two. The sub-sectors of agriculture, industry and tourism merely is not sufficient; focus should be on social sectors as well such as education and health; let the social sector, particularly education and health sector move together for bringing prosperity to the people.

We should aim at catching up with the development process and economic progress of neighboring countries of India and China. This will serve as a milestone for economic development and growth of infrastructures.

Agriculture: Focus on increasing production of agricultural products as raw materials for the industries. This may require bringing changes in method and processes of production and reduce the cost. Cost of labor, and transportation, are essentially important elements in bringing down the cost of delivery. The comparative cost of delivery shows that delivery of apple to Kathmandu from Jumla is higher than from China-Tibet.

Production of cereal crops and fish is the identity of the province. Hence, focus should be on improving production and productivity of these agro-products. Similar opportunities are also available on industry, trade and tourism.

Sunkoshi diversion project must be implemented as early as possible. This project has the potentiality of being a game changer in increasing agricultural production in the province.

Enhancing agricultural production and productivity may require; lifting ban on land holding ceiling, adaptation of new technologies; promotion of organic farming; availability of fertilizers to the farmer on time and moreover enforcement of support price mechanism for ensuring market to the products.

Fertile and flat land is the asset; similarly young population forms a productive workforce: abundant water in the rivers like Koshi and Narayani should be exploited to the benefit of the province.

Connectivity: Connectivity is another important factor for faster economic development; this is unmatched with other provinces. It is not only the road and rail but also the people to people connectivity with the southern border that could be helpful in sharing and bringing prosperity to the people.

Road connectivity is another important asset for the province. Construction work and rehabilitation of road and rail infrastructures and construction of Hulaki road must be completed at the earliest.

Agricultural and village roads should be developed in order to ease the market access to the farmers.

Industry and trade: Province Two is bordered with one of the highly populated states of India. Bihar has been able to transform the economy within a short period of time. They have demonstrated a stellar growth of economy. Province Two can benefit by enhancing production of agriculture,

industry and service and linking the products with the big markets of India.

The public owned cigarette factory should be reestablished since this is directly connected with the income and living of the tobacco growing farmers. Government should look into the possibility of establishing a fertilizer manufacturing factory in the province.

Processing and packaging of the fruits, vegetables and fish product should be given priority and also a basis of industrialization.

The provincial government should be given greater role in allowing the foreign investment in the province.

Cement and chemical fertilizer are the potential large industries that can be set up in the province and also become vehicle of job creation.

Jatahi customs should be upgraded to the main customs. Jatahi-Dhalkebar should be promoted as the next potential industrial corridor with the facilities of dry port and special economic zones.

Regulation of border trade is very much important. In absence of this, the people crossing the borders for trade and social visits are harassed by the border securities and regulating agencies.

Tourism: Tourism is another important sector; we should consider about developing Ramayan circuit as the religious tourism; Janakpur is the birth place of goddess Sita, born around 10,000 years ago. Viswa has the Budhist shrine; we can think of Hindu, Buddhist and Muslim circuit in the province. Janakpur could be Mecca and Medina for Hindu pilgrimage if appropriate plan for this could be devised and implemented.

Consider in linking the existing ponds with tourism by developing fountains for amusement.

Education and health: Focus on developing multi-speciality hospitals that can attract patients from Bihar and adjoining districts of Sindhuli, Ramechhap. Jaanakpur may be developed as the hub for education. Invest in the maternal and child health.

Research and development is important for achieving progress of the economy. Developed countries have invested a lot in research; we should follow the suit. Provincial government should focus on research and development for increasing production and productivity.

Human resources is important-develop skills and provide opportunities for employment within the country and within the province. Education is the most important factor in order to implement the program and projects in time. Hence, the provincial government should consider bringing out a comprehensive HRD plan in order to meeting the HR need of the industries.

Energy, governance and others: There should be a concerted plan to harness solar energy despite that the province do not have any hydropower projects.

Churia region is the lifeline of Terai. Water table is depleting at a faster rate.

Deforestation of Churia must be stopped. Churia conservation program should be implemented effectively.

The proper coordination between the central and provincial government is a must in order to gear up the development processes.

Participants:
Dr.Hari Bansha Jha, Vice Chairman, Policy Commission: Dr. Surendra Jha, Member, Policy Commission: Mr. Mohan Lal Chaudhary, Member, Policy Commission: Dr. Bijaya K Singh: Ms. Poonam: Er. Prakash Shah: Mr. Chandra Shekhar: Mr. Prachanda M Singh: Mr. Basant Gautam, EPI Team: Mr. Purushottam Ojha, EPI Team: Ms. Pratistha Swanr, EPI Team: Mr. Bishnu Kunwar, EPI Facilitator: Mr. Sachin, ARUP Consultant: Mr. Andrew, ARUP.

2. Bardibas: (21 February 2019)

The Chief Administrative Officer (CAO) of the municipality Mr. Agni P Adhikary, gave a brief introduction of the municipality. He told that Bardibas municipality was composed by bringing eight VDCs together and covers an area of 315 square kilometer. This is a fast growing city in Terai with a total household of 14,000 and population of 70,000.

The meeting was conducted under the chairmanship of Mayor Mr. Bidur Kumar Karki of the municipal city.

Major points discusses were as follows;

Assets/strength

a. The municipality is strategically located with easier access to capital city Kathmandu and the southern border to India. Mahendra (east-west) highway passes through the city center making it possible to link with the east and west part of the country. Fast track linking Kathmandu with Terai and proposed Nijgarh international airport also adds value to this city due to nearby location to these infrastructural facilities. The municipality also serves as the terminating station of Jayanagar-Bardibas railways. All those transport infrastructures provides a strong base for future development of not only for the municipal areas but also the province as a whole.

b. The municipality possess immense potentialities of producing high value agricultural crops like fruits, vegetables and medicinal and aromatic plants.

c. The municipality has large tract of riverbed and fallow land which can be reclaimed for development of industry, special economic zones and container freight stations. These lands could be developed and bought to use with support of the provincial and federal government.

d. There are potentialities of promoting religious tourism. Tuteshwor and Panchadhara temple are two famous temple which could be developed as the potential sites of religious tourism.

e. Local farmers are enticed to cultivate medicinal and aromatic plants, particularly Chamomile. This is becoming popular due to high return of the yield in comparison to other crops.

Vision:

Enhance the income and employment opportunities through development of high value agricultural crops and increasing industrial production.

Challenges:

a. Creating database and reliable information system for supporting the formulation of strategic and periodic plan.

b. Depletion of forest and sources of water in Churia region.

c. Lack of permanent irrigation system for enhancing productivity of the land.

d. Poor conditions of existing roads, particularly within the municipality.

e. Lack of skilled human resources to provide technical support to agriculture and industries.

f. Temporary migration of the young people to other countries for employment; shortage of workforce to be engaged in agriculture and industries.

g. Difficulties in obtaining sufficient financing for development. Municipality has limited budget. Support from the federal and provincial government is not sufficient to implement large sized projects.

Opportunities/way forward

a. Promote one ward one product program

b. Develop a master plan with clear vision for economic development.

c. Develop a comprehensive HRD plan for meeting the requirement of technical human resources.

d. Increase awareness among local people on benefits of planting new varieties and changing cropping pattern.

e. Develop a plan to use the fallow, barren and unutilized tract of land left by the streams and rivers.

f. Construct check dams in the Churia region for storage and recharge of the ground water and also for providing drinking water to the municipal areas.

g. Implement programs to black top and improve the existing roads in the municipality.

h. Create a digital profile of the municipality for supporting future planning.

i. Implement programs for making the municipal area as a distribution hub with the development of SEZ and container freight stations.

j. Promote river bed farming. The municipal area also comprises of large tracts of lands covered with sand and dunes during rainy seasons and left high and dry during rest of the year.

k. Use public land for developing model agricultural

village. (Such villages could be developed as clusters of production and sales of specific agricultural crops.)

3. Birgunj (22nd February 2019)

The interaction program was attended by Hon'ble Lal Babu Raut, Chief Minister, Dr. Hari Bansh Jha, Vice Chairman, Policy Commission, Dr. Surendra K Jha, and Mr. Mohan Kumar Chaudhary, both of them member of Policy Commission, Mr. Bijaya Sarawagi, Mayor of Birgunj Metropolitan City and other dignitaries of the Province and office bearers of Birgunj Chamber of Commerce and Industries.

The major points discussed were as follows:

The proposed periodic plan is supposed to focus on agriculture, industry and tourism. But during the discussions in Janakpur, various stakeholders opined that education and health sector should also be included as the priority sector for overall socio-economic development of the province.

Assets/strength

a. Leader in technical education and agricultural production during 1970s and 80s. The province is rich in fertile land, forest resources and bio-diversity. The districts of this province produced rice and wheat in the past for export.

b. With the introduction of federalism, the provincial and local governments are now equipped with authorities to implement development program and projects that are of concern of the local people.

c. Large number of young population and social harmony.

Vision

With a long term goal of achieving prosperity and happiness to the people of province, the five year period will focus on optimal use of resources for development of agriculture and industry sector.

Challenges

a. The province is lagged in education; public education system is deteriorating.

b. Low level of literacy, ignorance and social taboos.

c. Lack of skills and trainings and low level of FDI.

d. Low level of public health in comparison to other provinces. Budget allocation in health sector, particularly in child health is minimal.

e. Agriculture is not competitive in comparison to neighboring states of India. The scale of economies is high and farmers get wider subsidy for production in India.

f. Providing round the year irrigation facilities for increasing agricultural production and productivity.

g. Harmonization and coordination of activities among provincial and local government.

h. Climate change is affecting the life and living of the people. Preservation of Churia region has been a great challenge.

i. Resources crunches for implementation of the projects. The annual budget of the province is NRs. 29 billion. This is insufficient.

j. Public procurement acts and regulation are the barriers in development efforts.

Opportunities/way forward

a. Identify the projects of provincial pride and implement them.

b. Implement Sunkoshi Diversion and Churia Conservation as a priority project.

c. The provincial government should bring out policy of directly subsidizing the farmers in agriculture. It should be a direct cash transfer.

d. Maintaining greenery is another important task of development effort. Maintain greenery around the major infrastructure projects like ICD, ICP and along major highways.

e. Focus on industries that uses local raw materials; having potentialities of adding value and generating employment.

f. Establish vocational and technical education at each municipality. The vocational education program should be linked with the need of industries.

g. Increase investment in development of infrastructures.

h. Amend the public procurement acts and regulations and make them facilitative rather than obstructive.

i. Explore the feasibility of developing ICP in Jatahi and Special Economic Zones (SEZ) in Mahottari district.

j. Focus on creating employment; technology is displacing employment. Establish coherence between the industrial and agricultural policies.

k. Bring women and Disadvantaged Groups (DAG) in the industrialization process by training and facilitation.

l. Maintain balance between development need and environment conservation.

m. Focus on quality of production and high value goods.

n. Bring program to bring the informal economy to the formal channel in a phased manner.

o. Reduce the government interference on pricing of the goods.

p. Population policy should be tied up with the industrial development policy.

q. Focus on upgrading and replacement of outdated technology by modern ansd smart technologies.

r. Simplify the industry registration procedures and relevant regulations in order to encourage both domestic and foreign direct investment.

4. Lahan (24th February 2019)

The meeting was presided by Mr. Ashok Amatya, President of Lahan Chamber of Commerce and Industries and attended by the representatives of business communities and office bearers of the Chamber.

Major issues discussed were as follows; Issues and challenges

a. Cost of production (agricultural and industrial production is normally higher in Nepal in comparison to India. Focus should be on reducing the cost of business.

b. Bank interest rate is not congenial to encourage investment in industries.

Prospects

Province Number Two has big potentials of running agro-based industries and cement industries which can utilize the limestones of neighboring districts.

Opportunities and the way forward

a. Maintenance of quality of goods is important for small scale industries. For example; the mineral water producing industries should strictly adhere to maintain the quality of production.

b. The existing government regulations focus more on punitive actions than facilitation and correction. The industries should be allowed to correct their shortcomings if any, rather than taking stern action on account of innocent default.

c. Siraha and Saptari districts produce large amount of food-grains. The road connecting north to south in these two districts need to be declared as the Industrial Corridor with special dispensation on tax benefits and other incentives.

d. Agro-based industries should focus on producing food grains and fish products.

e. Education and health should be included in the categories of industries; tourism industries should be promoted.

f. Focus on establishing industrial villages; carry out training program extensively in order to meet the demand of the local industries.

g. SEZ could be developed on the northern part of Siraha district.

h. Focus on mango based industries; Pickle, fruit juice and marmalade can be produced.

i. Develop cold storage facilities to preserve the fruits and vegetables; (a storage facility is being constructed with the support of Provincial government-80% and local cooperative-20%). Needs more such facilities in the district.

Annex 2: Number of industries registered with the Department of Industry

(Up to 2017-18)

S.N	District	No of industries	Total investment (NRs billion)	Employment numbers	Remarks
1	Saptari	12	0.8	1139	
2	Siraha	11	17.0	1789	
3	Dhanusha	40	8.2	3912	
4	Mahottari	8	2.3	1141	
5	Sarlahi	18	4.9	3096	
6	Rautahat	10	1.6	1423	
7	Bara	230	36.3	23,598	
8	Parsa	172	22.2	15,651	
	Total	**501**	**93.3**	**51,749**	

Source: Industrial Statistics; 2017-18; Department of Industry, Government of Nepal.

Sugar industries in Province Two

District	Numbers	Remarks
Saptari	-	
Siraha	1	Mirchaiya
Dhanusha	-	
Mahottari	1	Ramnagar
Sarlahi	3	Indu-shanker, Annapurna, Mahalaxmi
Rautahat	2	Shree Ram, Garuda
Bara	1	Reliance sugar mill, Manahrwa.
Parsa	-	
Total	**8**	

Source: Sugar Mills Association of Nepal-2019

Cement factories in Province Two[22]

1. Cosmos Cement Ind.Pvt.Ltd, Dhanusha
2. R.M.C. Cement Ind. Pvt. Ltd. Birgunj
3. Shuva shree Jagadamba Cement Pvt. Ltd. Birgunj
4. Narayani Cement Ind. Pvt. Ltd. Birgunj
5. Vishwokarma Cement Ind. Pvt. Ltd.
6. Krishna Cement Ind. Pvt. Ltd. Birgunj
7. Salimar Cement Ind. Pvt. Ltd. Birgunj
8. Star Cement Ind. Pvt. Ltd. Birgunj
9. Reliance Cement Ind. Pvt. Ltd.
10. Shree Cement Ind. Pvt. Ltd. Birgunj
11. Ambey Cement Ind. Pvt. Ltd. Birgunj
12. Bishal Cement Industries, Birgunj
13. Arniko Cement Industries, Birgunj
14. International Cement Industries, Birgunj

[22] Souce: Nepal Cement Industries Association.

Annex 3: Special economic zones in Province Two

Name/Location	District	Features	Status of implementation
Simara	Bara	Extended over 564 hectare, being developed in three phases	Construction-ongoing
Umaprempur	Dhanusha	55 ha.	Feasibility study
Jhunkunwa	Rautahat	106 ha.	Feasibility study
Gobindapur	Siraha	106 ha.	Feasibility study

Source: Website of Special Economic Zone Authority, Government of Nepal; www.seznepal.gov.np

Number of MCSI in Province Two

District	Mfg	Energy	Ag+Fr	Tourism	Minerals	Services	Const.	IT	Total
Saptari	793	2	489	33	20	1978	175	0	3490
Siraha	1649	0	648	76	0	3216	9	0	5598
Dhanusha	1469	3	506	151	0	3701	7	1	5838
Mahottari	970	0	341	87	0	2188	335	0	3921
Sarlahi	1345	0	420	136	0	2048	273	0	4222
Rautahat	966	0	801	378	0	1389	396	0	3930
Bara	1539	3	965	26	2	1877	25	0	4437
Parsa	3170	0	755	12	0	3550	492	0	7979
Total	**11,901**	**8**	**4925**	**899**	**22**	**19,947**	**1,712**	**1**	**39,415**

Note: Mfg. = Manufacturing; Ag+Fr. = Agriculture and forestry, Const. = Construction; IT. = Information Technology.
Source: Statistics of MCSI; Department of Industry-2018.

Annex 4: Government's plan and program on developing industrial infrastructures as mentioned in the Budget Speech and Economic Survey.

Government of Nepal in its Budget Speech for the year 2018-19 has announced to develop at least one Industrial Estate, One Economic Zone and one Special Economic Zone in each province under public private partnership and in coordination with the provincial government. Budget has been earmarked for feasibility study of such industrial infrastructures. (Para 101 of Budget Speech-2018).

Industrial village will be established at each municipality within next three years on the basis of public-private participation. For the coming year (2018-19), NRs. 280 million has been earmarked for development of at least 20 industrial villages at each province (ibid; Para 102).

Foreign investment will be encouraged in the value added and export oriented industries. Industry registration process will be simplified. Tax incentives will be provided to the industries that are able to start production within the committed time. Budget is earmarked for development of electricity and road connectivity to the industries (ibid; para 104)

Government has adopted the policy of establishing at least one industrial estate at each province with a size not less than 667 hectare (1000 Bigha). Accordingly, the process of land acquisition has been started for such industrial estate of Damak in Jhapa, Mayurdhap in Makawanpur, Shaktikhor in Chitwan, Motipur in Rupandehi, Naubasta in Banke and Daizi in Kaanchanpur district (Economic Survey-2018; para 9.25).

Process is underway for feasibility study and announcement of the industrial estate in Murtiha of Sarlahi district, Chyangli in Gorkha, Laxmipur in Dang, Satakhani in Surkhet and Lamki in Kailali district (ibid; para 9.26).

Annex 5: Prioritization of Industry Sector Projects (Province Two)

Industry												
		Selection Criteria (1-5)										
Objectives & Sub-objectives	Projects	Criteria 1	Criteria 2	Criteria 3	Criteria 5	Criteria 6	Criteria 7	Criteria 8	Criteria 9	Criteria 10	Total Score	Rank
		Strategic Value	Dependent (to what extent is this project dependent on)	Co-benefit (how beneficial is this project to other	Quick Wins	Cost	Feasibility: Doability, fundability	Effectiveness: Achieving the objectives	Acceptance: Community & other stakeholders	Risks and Sustainability	Total Score	
1. Develop policy, strategic and regulatory framework for industrial development of the Province. 1.1 Carry out survey and resource mapping of the province and create inventories. 1.2 Formulate and bring out industrial and trade policy of the province. 1.3 Enact legislations for establishment of industrial estate, parks and zones. 1.4 Develop project banks based on feasibility studies.	1. Carry out survey and resource mapping of the province and create inventories and database.	5	3	3	3	4	5	5	5	R=5 S=5	43	2
	2. Formulate and bring out industrial and trade policy of the province.	5	3	4	4	3	4	5	5	R=5 S=5	43	3
	3. Enact provincial legislations for promotion and regulation of industries.	5	3	4	4	5	5	5	4	R=5 S=5	44	1
	4. Introduce price support mechanism and fund for purchase of agro- products.	3	3	3	2	1	2	3	4	R=1 S=3	25	25
2. Develop physical infrastructures for promoting investment climate in the province. 2.1 Explore and identify key infrastructures for facilitation of industry and trade.	1. Develop project banks for foreign and domestic investment.	5	3	3	4	1	3	4	4	R=3 S=4	34	12
	2. Construct/upgrade at least five farm to market access road at each district (15kmX5).	4	2	5	4	2	3	4	5	R=4 S=4	37	6

2.2 Implement program for development such infrastructures. 2.3 Recommend government of Nepal for development of border infrastructures. 2.4 Establish industrial village at each municipality.	3. Improve district and village roads (existing roads)	4	2	5	5	2	3	3	5	R=2 S=4	35	10
	4. Persuade for implementation of Sunkoshi-Kamala diversion project.	5	1	5	2	1	3	4	5	R=3 S=3	32	18
	5. Carry-out feasibility and modalities of revival and modernization of agri-tools factory and establishment of chemical fertilizer industry (Implement on PPP basis)	5	2	4	3	1	4	3	5	R=2 S=4	33	15
	6. Construct check-dams in Churia region for storage and recharge of water table in Terai.	4	2	3	4	2	3	4	5	R=2 S=4	33	16
	7. Initiate the process of designating Jatahi as the border post for trade	4	2	4	3	1	2	3	4	R=2 S=3	28	24
	8. Carry-out feasibility study to develop Lahan- thadi as another industrial corridor.	4	2	3	3	2	3	4	5	R=3 S=3	32	19
	9. Develop SEZ at Aurahi municipality in Mahottari	5	2	5	4	2	4	4	5	R=2 S=4	37	8
3. Promote micro, cottage and small industries and support them to be the driver of growth and prosperity. 3.1 Create venture capital fund for supporting the start-up enterprises and business incubation. 3.2 Set up technology development fund. 3.3 Help in setting up gift/souvenir houses for display and sales of the MCSI products. 3.4 Carry out financial literacy programs for the potential entrepreneurs. 3.5 Support small enterprises to participate in national trade fairs.	1. Develop industrial village at each municipality.	5	2	5	5	3	4	4	5	R=3 S=4	40	4
	2. Create a fund for supporting the women and DAG entrepreneurs.	5	3	4	5	2	4	4	5	R=4 S=4	40	5
	3. Create fund for supporting the micro, cottage and small industries. Establish technology improvement fund	5	2	5	4	2	4	4	4	R=3 S=3	36	9
	4. Develop and implement special package programs targeting women entrepreneurs	5	2	4	5	1	3	3	5	R=3 S=3	34	13

4. Prioritize key industrial sectors that are of importance from national perspectives 4.1 Identify five key manufacturing sectors of the province and prepare plan for their development along the value chain. 4.2 Implement plan for development of the products and related services. 4.3 Enhance market access opportunities of priority products (in cooperation with government of Nepal).	1. Develop provincial plan in coordination with the national periodic plan	5	2	3	5	4	5	4	4	R=3 S=4	39	6
	2. Create a joint mechanism with the central government to expedite the implementation of Hulaki road, expansion of north-south road, national highway and railway network.	4	2	3	4	4	4	4	5	R=3 S=5	38	7
	3. Liaise with federal/ central government for creating another set of border infrastructures in Jatahi.	5	2	3	3	5	4	3	4	R=2 S=3	34	14
5. Focus on creating enabling environment for investment (supported by skill development program and appropriate institutional infrastructures) 5.1 Prepare HR development plan for meeting the skill requirement by the industries. 5.2 Carry-out training and skill development program in collaboration with government of Nepal. 5.3 Establish directorate of industry and trade. 5.4 Develop effective monitoring and evaluation mechanism.	1. Carry-out river training program in order to control flood. Integrate road construction and tree plantation with development of embankment.	3	2	3	4	1	3	3	4	R=3 S=3	29	22
	2. Implement special programs for development of fish, vegetables and paddy production	4	2	4	5	3	3	4	4	R=2 S=4	35	11
	3. Strengthen agricultural knowledge centers for technical support to the farmers.	4	2	3	4	2	3	3	4	R=3 S=3	31	21
	4. Establish provincial level model agricultural farms and research centers for different crops including sugarcanes.	5	2	4	3	2	3	3	5	R=2 S=3	32	20
	5. Establish provincial level skill development and training center at Birgunj, Rajbiraj and Janakpurdham.	5	2	4	4	1	3	4	4	R=2 S=4	33	17

Note: 1. Rating level, High-5. Moderately high-4. Medium-3. Moderately low-2 Low-1:
2. Cost, Risk and Dependency is inversely rated.

Section 3

Sectoral Development Strategy of Province Two (Agriculture)

Agriculture Sector Development Strategy of Province Two

1. Background Information

Located in the south eastern part of the country Province 2 is comprised of eight of the twenty Terai districts of Nepal. Chure (Churia) or the Shiwalik Hills are the natural border of the province in northern side, while southern side has an international border with India. The Koshi River and Koshi Tappu Wildlife Reserve acts as provincial demarcation border between Province 2 and Province 1 in the east. The demarcation line between Chitwan National Park and Parsa National Park acts as provincial border between Province 2 and Province 3 in the west. In terms of land area it is the smallest province comprising 9,661 square kilometers or 6.56 percent of the total land of the country (Governance Facility, 2018). Its elevation ranges from 61 to 925 meters above sea level (UNFCO, 2013).

Agriculture is the main occupation and major source of livelihood of the people. Almost 55 percent of the total land area is cultivated compared to minimum of 6 percent of total land in Karnali province (Province 6) to maximum of 22 percent of the total land in Province one. Large rivers including Koshi and Narayani as well as several other rivers provide water for irrigation. In addition there are several deep and shallow tubewells providing irrigation. Available statistics shows that more than 74 percent of the agricultural land is irrigated, though it was reported that less than half of the said area gets irrigation during dry season. Information on year round irrigated area is, however, not available. Fertile agriculture land and comparatively better irrigation facility (compared to 15 % in Province 6 and 53 % in province 1) makes this province number one in agricultural production and productivity (Governance Facility, 2018).

2. Methodology (Workshop, interaction, FGD, and scope of study and limitations)

This strategy paper is based on both the secondary and primary sources of information. Secondary sources include publications available at the central offices, on the websites, and district and provincial offices. Annual reports published by then District Agriculture Development Offices (DADO) and District Livestock Services Offices (DLSO) were collected and reviewed. At province level Structure of Provincial Ministries, Present Situation and Commitment[1] published by the Ministry of Land Management, Agriculture and Cooperatives was reviewed.

Number of workshops and meetings, key informant interviews and focus group discussions were conducted to gather views of political leaders, government staff and general public. Three Strategy Formulation Workshops were organized two in Janakpurdham on 13 January and 6 May 2019 and other in Birgunj on 22 February 2019. Similarly two group meetings were held with representatives from different sections of the society one on 20 February 2019 in Janakpurdham and another with officials of Bardibas Municipality, Bardibas, Mohottari on 21 February, 2019.

Regional Agricultural Research Center and Rice research Program of Nepal Agricultural Research Council (NARC), Agriculture Knowledge Centers, Veterinary Hospital and Livestock Services Specialist Centers, Animal Quarantine Offices, Irrigation Project Offices, Provincial Ministries and Policy Commission were visited and consultation made with concerned officials during 20 to 27 February 2019. A focus group discussion was held at Ministry of Land Management, Agriculture and Cooperatives, Jankpurdham on 25 February 2019, where high level officials from the Planning Division, Directorates for Agriculture and Livestock and Fisheries Development and planning participated.

3. Literature review

3.1 Land holding

Majority of the farmers are operating less than one hectare of land. The average holding was 0.84 ha per household in 2011. Because of traditional system of dividing land among the male member of the household (The new constitution of Nepal has entitled daughters also on parents' land) and in-migration from other parts of the country has caused land to be divided into several pieces. Only 17% of the land owners have single parcel of land, 47% have 2 to 3 parcels and land of 2% of owners is spread in more than 10 parcels (CBS, 2013). Such fragmentation of agricultural land has caused difficulties in mechanization of farming activities.

[1] In Nepali

3.2 Crops

Province 2 contributes about 13 percent to national production from agriculture including livestock sector. Within the province, contribution of agriculture in total GDP is 39 percent compared to the national figure of 29 percent (EPI, 2019). The plain landscape, better irrigation facility and favorable climate of the province allow cultivation of several crops common to tropical and sub-tropical environment, cereals being dominant among them. National Sample Census of Agriculture, 2011 shows that almost 78 percent of cultivated land was covered with cereals followed by legumes (11%). Cash crops and oilseeds occupied another 4 percent and 3 percent of the cultivated land, respectively (CBS, 2013).

Province 2 is traditionally popular as granary of Nepal. 21.61 percent of cereal, 20.7 percent fruits, 25.88 percent of vegetables and 13.7 percent of potato production of the country is produced in the province. Among the different types of fruits mango is most important as 68 percent of total mango production of the country takes place in the province. Sugarcane is most important cash crop and almost 65 percent of sugarcane production of the country takes place in the province (MOALD 2017).

Paddy is the most important among the cereals contributing to two thirds of cereal production in the province followed by wheat (26%). Maize contributes about 8 percent of cereal production. Millets and barley are other cereals produced in the province, but their contribution in total production is less than one percent (MOALD 2017).

Parsa and Bara are among the districts having high productivity of cereals, paddy being the most important. Parsa recorded paddy productivity of about 3.9 mt per ha closely followed by Bara (3.8 mt/ha) in 2016/17. On an average productivity of total cereals was 3.7 mt per ha in Parsa and 3.5 mt per ha in Bara in 2016/17.

Despite the province having largest proportion of agriculture land covered by irrigation facility, fertile soil and favorable farming environment some of the districts within the province do not produce enough food for consumption. According to data published by MOLD three of the districts, namely Rautahat, Sarlahi and Siraha were food deficit by 41,269 mt, 2,866 mt and 1,844 mt foodgrains, respectively while the rest of the districts produced surplus (MOALD, 2017).

3.3 Livestock

Livestock are an integral part of the agricultural production system, providing almost all of the traditional draught power and fertilizer (manure) for crop cultivation. Oxen and male buffaloes are also used for ploughing and transport of agricultural inputs and products. At the same time crop by- products constitute major part in livestock feed.

Cattle, buffalo, goat, sheep and pig are the major animals and chicken and duck among major poultry birds kept in the province. According to Sample Census of Agriculture 2011, the average herd size of cattle was 2.1 heads, average hdrd size of buffalo 1.6 heads, goat 3.2 heads, sheep 3.5 heads, pig 2.8 heads and poultry (chicken) birds 14.6 heads among those that keep the animals (CBS, 2013).

The province is not strong in terms of milk production. Despite large number of large ruminants in the province milk production in the province is recorded at 14.3 percent of total national production. Similarly, 13.7 percent of meat and 6.2 percent of egg is produced in the province (MOALD, 2017). The major reason for low milk yield per lactating animal is reported to be low quality of animals. During informal discussion with concerned officials at Veterinary Hospital and Livestock Specialist Offices, it was revealed that as high as 87 percent of cattle are local breeds having average milk yield of about 2 liters per day.

The province is basically fish hub of Nepal and is getting more popularity in the recent past. According to Ministry of Agriculture and Cooperatives, fish pond area was 3,523 ha in 2006/07 (MOAC, 2007) which swelled to 6,278 ha in 2016/17, an increase of around 78 percent in ten years. There was also increase in productivity by 33 percent in the same period resulting to 31,606 mt fish production in 2016/17 (MOALD, 2017). In 2016/17 fish production in province-2 accounted for 57 percent of total fish production in the country.

4. Enabling environment, Issues and challenges (SWOT analysis)

4.1 Enabling Environment

Agriculture is main occupation and major source of livelihood for almost all people in Province 2. It is said that farming and animal husbandry skills are inherited by birth. The fertile flat land, an extension of Gangetic Plain, is traversed

by several rivers that provide water for irrigation. Followings are some of the major enabling environment for the development of agriculture in the province.

- Government keen to develop agriculture sector.
- Government policy of distributing public land and unused private land to landless on fix time lease basis.
- Vegetable farming on unused sandy soils on river-sides (Bagar Kheti) being promoted.
- Government planning to provide soft loan in agriculture and related enterprise development.
- Scope of industrial crop production as there are agro-based industries such as sugar mills and cigarette factory and are being added some more in near future.
- Government planning to introduce "one ward one agriculture and one veterinary technician" policy.
- There are seven research stations under NARC developing and disseminating technologies on paddy, sugarcane, oilseeds, agriculture implements and many more.
- Fertile plain agricultural land suitable for all sorts of tropical and sub-tropical crops including cereals, pulses, oil seeds, industrial crops, fruits, vegetables, spices, medicinal and aromatic plants (MAPS).
- Suitable environment for fish and livestock including cattle, buffalo, goat, pig and poultry.
- Irrigated by perennial large rivers including Narayani and Koshi and several other rivers
- Existing and potential tubewells for ground water irrigation
- Sunkosi-Kamala and Sunkosi-Marine diversion for additional irrigation in near future

4.2 Issues and Challenges

Despite province 2 being traditionally granary of Nepal with almost three fourths of its irrigated agricultural fertile land, it has been suffering from several issues and challenges. The smallest province (in terms of area) has second largest population to support. Population density is 559 persons per square kilometer, highest among the provinces of Nepal. There is also large number of landless population to be supported. Several parts of the area become inaccessible during Monsoon due to flooding and inundation. The major issues and challenges in agriculture including livestock are listed below[2].

- Lack of modern variety of crops and livestock breed as research activities not given sufficient priority.
- Adoption of available technology is also slow as many farmers are illiterate and lack necessary skills.
- High cost of production as there is labor scarcity (as high as 36% of economically active population are out of the country to find better jobs) and low level of agriculture mechanization partly for lack of sufficient agricultural roads (field to farm roads)
- Mechanization is difficult as size of holding is declining due to traditional system of each male member entitled to the parent's land
- Agriculture mechanization is also slow as majority of the farmers are unable to invest large amount on their own
- Lack of irrigation water during winter and spring season, though as high as 74 percent is reported to have irrigation facility
- Agriculture getting lower priority in the government budget in recent years (populist budget)
- Quality of agricultural inputs (planting materials, fertilizer, agro-chemicals) questionable and also not available on time
- Ground water table is lowering due to massive deforestation resulting into drying of some of the tube-wells.
- In the absence of proper storage facility of agricultural products farmers are often forced to sell their products immediately after harvest, resulting in large share of price gain going to middlemen.
- In the absence of modern milling facility (rubber sheller rice mill) part of grain is lost during processing
- Some of the agricultural land remains fallow as youths go out in search of better opportunities
- Agricultural products have to compete with other side of Indo-Nepal border where inputs are highly subsidized.
- Land productivity declining due to low organic matters in the soil (1 to 1.5 %[3]), and desertification/siltation of land
- Fast urbanization without proper planning has been using fertile agricultural lands for non-agriculture purposes.
- Agriculture extension system is not working properly due to recent change in structure.
- In the absence of prompt agricultural extension

[2] The list is prepared based on consultation with government officials and key informants during field visit from 20 to 27 February 2019 to Province-2; workshops organized on 13 January and 6 May 2019 in Janakpurdham and on 22 February in Birgunj; and brief meetings on 20 February in Janakpurdham and on 21 February in Bardibaas and published documents including MOLMAC, 2018 and UNFCO 2013.

[3] Reported by concerned scientist at Agriculture Research Station, Parwanipur.

services farmers rely on Agrovets which are mainly concentrated on their own profit.

- Farmers are skeptical in shifting to comparatively more profitable cash crops due to risk of crops not being sold (market failure).
- There are no livestock resource centers. Now improved cattle and buffalo are being imported from India illegally as India does not allow animal export. Therefore importers cannot produce certificate of origin. This has created difficult situation to customs check points[4].
- Lack of laboratories for soil test and certification of quality of food products
- About 87% cattle are local breed with average of 2 liter milk per day and 120 days lactation period
- Majority of buffalo are Murrah cross breed but due to inbreeding their average productivity is 6 liter per day against potentials of 20 liter per day.
- Farmers are either ignorant or reluctant to treat/vaccinate their livestock against diseases and parasites.
- Forage is not sufficient, especially during winter and farmers usually do not feed concentrates or silage that causes low yield of animal products
- Mango is the most important fruit in the province, but some of the old orchards are alternate bearing (fruiting in alternate years).

4.3 Comparative advantages of the province (Compared to other provinces and other countries)

The warm temperature and irrigation allow three crops grown per unit of land in a year, provided that there is sufficient irrigation facility. The East-West highway passing through all of the districts, many North-South roads crisscrossing it and East-West Hulaki Road being constructed along the middle of the province make it easy to market the products within and to other provinces. It is hoped that production of high value products, mainly vegetables, fruits, fish and milk will be at least doubled with opening of Nijgadh-Kathmandu Express way and east-west railway in near future. Followings are some of the advantages of the province[5].

Three different agro-climatic zones: North middle and south to produce different commodities

- Potential to establish processing industries for high value agricultural products including MAPs, fruits and vegetables.
- Potential for establishing dairy processing industries.
- Plain land feasible for mechanization that helps reduce cost of production and quick operation living enough time for next crop.
- Opportunity to cultivate industrial crops including sugarcane and tobacco as eight sugar factories and one tobacco factory are operating in the province.
- Largest proportion of agricultural land irrigated among the provinces facilitating multiple crops grown throughout the year.
- Potential to increase cropping intensity up to 300% with year round irrigation facilities
- Easy connectivity from east to west and north to south
- Road connectivity between India and Nepal
- Transportation costs and time to be reduced with proposed east-west railway and Nijgadh-Kathmandu express way.

Large market in the other side of Indo-Nepal border (400 million population living in UP, Bihar and West Bengal provide market opportunities to agricultural products)

Limited information is available regarding comparative advantage of the province compared to other countries. A study by Nimesh Salike and Benli Lu (2015) based on revealed comparative advantage (RCA) index found that Nepal has comparative advantage of production and export of cardamom, ginger, lentils, tea, noodles, medicinal herbs, essential oils, pashmina and wool products among the agricultural products. Province 2 has great potentials of producing and export of ginger, medicinal herbs and lentils among those having comparative advantage. Informal discussions with officials at Agriculture Knowledge Centers and local trades revealed that those products are already being produced and exported to domestic and international markets after meeting local demands.

4.5 SWOT Analysis

Based on the consultation meetings with different stakeholders and points described in previous sections following SWOT matrix is prepared.

[4] Reported by officials of Animal Quaratine Office, Birgunj.
[5] Source same as mentioned in foot note 1.

STRENGTHS	WEAKNESSES
Fertile plain agricultural land suitable for all sorts of tropical and sub-tropical crops Suitable environment for fish and livestock farming Six seasons allowing almost all types of crops Irrigated by perennial large rivers including Narayani and Koshi and several other rivers Existing and potential tubewells for ground water irrigation Large number of fish ponds producing 57 percent of fish in Nepal and sufficient scope to increase area as well as productivity Large number of young manpower available for farming Vegetable being exported to other parts of the country including Kathmandu and Pokhara Best quality mango production (especially Siraha and Saptari) Scope of vale addition on agricultural products, especially fruits, vegetables and MAPs Dedicated farmers and their indigenous knowledge of crop cultivation	Lack of modern variety of crops and livestock breed. Slow adoption of available technology Many farmers illiterate and lack necessary skills. Mechanization difficult as size of holding is declining Lack of irrigation water during winter and spring season Agriculture getting lower priority in the government budget in recent years Quality of agricultural inputs questionable and not available on time High post harvest losses during storage and processing Fast urbanization without proper planning damaging fertile agricultural lands. No livestock resource centers for improved/hybrid breeds. Lack of laboratories for soil test and quality certification Low productivity of cattle and buffalo High incidence of diseases and parasite in livestock Forage/fodder not sufficient, especially during winter Alternate bearing nature of old mango orchards
OPPORTUNITIES	**THREATS**
Potentials to irrigate additional land with Sunkosi-Kamala and Sunkosi-Marine diversion High potentials of extending ground water irrigation Potential to increase cropping intensity up to 300% with year round irrigation facilities Potentials of production and marketing of high value products, mainly vegetables, fruits, fish and milk with opening of Nijgadh-Kathmandu Express way and east-west train facility. Large market of agricultural products in the other side of the Indo-Nepal border High potentials of shifting to high value crop production Scope of establishing and/or expansion of agro- based industries for value addition and replace imported ready to eat food products.	Possibility of acute shortage of agriculture labor as about 36% of economically active population are out of the country to find better jobs. Ground water table is lowering due to massive deforestation resulting into drying of some of the tubewells. Agricultural products have to compete with other side of Indo-Nepal border where inputs are highly subsidized. Desertification/siltation of land may cause lowering crop productivity Flooding and inundation makes some of the areas inaccessible during Monsoon. Farmers are skeptical in shifting to cash crops due to risk of market failure. Absence of internationally accredited laboratories with sufficient test parameters limiting export of agricultural products

5. Planning approach

5.1 Vision

Attain sustainable prosperity through land reform, modernization and commercialization of agriculture.

5.2 Objectives and Sub-Objectives

Objectives and sub-objectives of the agriculture sector for the plan period are listed in the following table:

Objectives	Sub-Objectives
1. To increase production and productivity through development and dissemination of improved agricultural technologies.	1.1 Strengthen research bases for development and dissemination of ecology specific modern technologies including high yielding variety seed, livestock breed; and efficient water use techniques. 1.2 Promote inter-agency coordination and collaboration among government, educational and agriculture research institutions to promote the result-oriented application of technologies. 1.3 Develop rural infrastructure, and mechanization of agricultural processes. 1.4 Increase cropping intensity through introduction of high-quality short duration varieties.
2. To commercialize production and export of products through their scientific production and improved post harvest management practices.	2.1 Encourage production of low-volume, high-value commodities in areas with potentialities. 2 2. Promote the development of crop and livestock-based industries with priority on value-added processing. 2.3 Promote market infrastructure and increase the access of producer to markets by developing efficient mechanisms for post harvest handling of products. 2.4 Set standards and strengthen quality control facility for crops and livestock products in order to make them competitive in domestic and international markets 2.5 Promote activities to publicize exportable commodities identified by the Nepal Trade Integration Strategy, 2016
3. To improve resource productivity through cost minimization and efficient utilization of resources.	3.1 Effective institutional efforts for scientific land management including land consolidation and mechanization. 3.2 Move toward semi-commercial and commercial farming from existing subsistence farming system 3.3 Increase the competitiveness of agricultural and livestock products by reducing their costs of production through effective R&D 3.4 Encourage youths to take up commercial farming by turning farming into an attractive and prestigious profession. 3.5 Establish strong knowledge sharing /communication platforms
4. To increase production of agricultural and forest based products while reducing impacts of climate change	4.1 Conserve, promote and utilize agro-biodiversity by protecting and promoting local and indigenous plants, animals and bird species 4.2 Develop and expand research-based environment-friendly agro-technologies to minimize the adverse impacts of climate change 4.3 Promote the use of organic fertilizers to the extent possible

5.3 Strategies

1. Ensure sustainable agriculture development through formulation of appropriate laws, regulations and plans in collaboration with provincial and local bodies
2. Develop coordination mechanism among agricultural education, research and extension system for overall development of agriculture sector
3. Promote private sector investment in agriculture value chain
4. Transform the subsistence and semi-subsistence agriculture production system to sustainable commercial system.
5. Enhance technical, commercial and organizational capacity of farmers, groups and cooperatives and encourage them to collaborate in production and marketing.
6. Increase competitiveness of farmers, cooperatives and private sectors through development of agriculture information system including necessary infrastructures
7. While reducing adverse impacts of climate change, increase production and income through development and dissemination of climate resilience technologies

5.4 Operating Policies

1.1 A mechanism will be developed to facilitate between provincial and local government bodies in preparing coordinated plans.

1.2 An integrated service model will be prepare and implement to facilitate livestock, crops, fish and MAPs farming.

1.3 Important additional policies, regulations and plans related to agricultural development will be developed and implemented in priority basis.

2.1 Arrange will be made to provide adequate resources to the research organizations in the province to help them develop area specific modern technologies.

2.2 Coordination mechanist among education, research and extension will be developed to popularize/disseminate technologies developed and recommended by the research organizations.

2.3 Agriculture colleges will be established to fill the gap of agricultural technical manpower.

2.4 Resources will be allocated to run agriculture related courses in schools.

2.5 Model farm/resource centers will be established for easy access of farmers to modern technology and techniques.

2.6 Tissue culture laboratory will be established to produce quality planting materials of fruits, floriculture and MAPs.

2.7 Hybrid livestock and poultry birds will be introduced and also will run other genetic improvement program to improve quality of existing livestock for increased supply of milk, meat and eggs.

3.1 Necessary infrastructure and easy credit arrangements will be made to increase/ strengthen collaboration of private and cooperative sector in agricultural production, processing and trade.

3.2 Arrangement will be made to construct and operate slaughter houses in collaboration of private and cooperative sectors for the benefit of farmers and consumers.

3.3 Private and cooperative sectors will be mobilized to establish chemical as well as organic fertilizer, agriculture implements and pesticides production industries.

3.4 Arrangements will be made to attract investment from domestic and foreign investors in the development and operation of special economic zones

4.1 Entrepreneurs involved in sustainable commercial farming will be rewarded based on additional quantity of production and employment generated.

4.2 Commercial farms will be facilitated through provision of modern technology and soft loans, if required.

4.3 Necessary laws, rules and regulations will be enacted to facilitate contract farming and buy-back guarantee systems.

4.4 For industrialization of agriculture value chain at least three agricultural industrial zones will be developed where appropriate joint venture industries will be established in collaboration among public, private and cooperatives.

4.5 Local youths will be encouraged to take up commercial farming by turning farming into an attractive and prestigious profession.

4.6 Competitiveness of agricultural products will be increased by identification of technologies that help reducing the costs of their production, through research and development.

4.7 Land consolidation program will be implemented as a part of agriculture commercialization drive.

5.1 Production, processing and marketing of products through cooperatives will be promoted.

5.2 Enterprises run with combined effort of private, cooperative and group will be promoted through incentives on the basis of performance.

5.3 Agricultural marketing infrastructures including efficient mechanisms for quality tests, processing, packaging and monitoring will be developed at most appropriate locations and access of farmers in those markets will be assured.

5.4 Arrangements will be made to recognize the on-going project as collateral for providing credit by banks, and interest grants will be provided to entrepreneurs as an incentive for commercialization.

5.5 Integrated services provision will be made to control/minimize livestock diseases, pests and improve genetic quality of livestock.

5.6 Promotional activities will be carried out to publicize exportable crops and commodities identified by the Nepal Trade Integration Strategy, 2016.

6.1 Agriculture information centers will be established for timely dissemination of information on weather, market prices and demand/ supply situation.

6.2 Integrated modern methods of technology dissemination will be utilizing for rapid expansion of modern farming technologies.

6.3 Expansion of irrigation facility, market infrastructures and agriculture roads will be in priority.

6.4 Appropriate storage facilities including cold stores will be constructed in collaboration with cooperatives and private sector

7.1 Research-based and environment-friendly agro-technologies will be developed and expanded to reduce the adverse impacts of climate change while protecting, promoting and using agro-biodiversity.

7.2 Local communities will be encouraged in preserving and protecting indigenous plants, animals and bird species.

7.3 Use of chemical fertilizer and pesticides will gradually replaced by environment friendly plant nutrients, bio-energy and farming practices.

7.4 Mass awareness programs will be launched regarding climate change ant its probable negative impact and solutions.

5.5 Programs

To attain the objectives of the plan several development programs need to be implemented. Some of the indicative programs are listed as follows.

- Mechanization of crop, livestock and fish farming.
- Promotion of industries based on locally produced raw material for value addition.
- Promotion of modern technology and management practices in crop, livestock and fishery sector covering from basic inputs to final product (to cover Value Chain).
- Establishment and expansion of laboratories for control/eradication of diseases and pest in crop and livestock
- Collection, analysis, safe keeping and dissemination of information related to land, outputs, prices and demand.
- Hands-on training and capacity enhancement of farmers and other stakeholders of the respective value chains
- Hands-on training to farmers on silage making storage and livestock feeding practices
- Simplification and promotion of crops and livestock insurance system
- Construction, management and regular monitoring of agriculture wholesale markets in each district and also sub-district level as per the requirement
- Establishment and management of model agriculture farm, livestock farm and resource center to facilitate farmers in learning and acquiring technology and techniques.
- Establishment of agriculture services centers in unified commercial production pocket areas.
- Special program to promote and popularize improved fodder/forage production and pasture development, including fodder/forage seed multiplication
- Strengthen existing agriculture product collection center and warehouse and construct new ones (including cold store) to reduce marketing cost and post harvest losses.
- Establish/strength collection/chilling center to promote dairy industry.
- Establish slaughter house and regulate animal slaughtering and marketing of meat products
- Strengthen veterinary hospital in each district and sub-district levels.
- Add two Agriculture Knowledge Center and two Veterinary Hospital and Livestock Services Specialist Centers
- Construction and operation of Plant Protection Laboratory, Soil Testing Laboratory and Food Technology and Quality Control Laboratories.
- Infrastructure development and strengthening of Fish Development Farms.
- Special Agriculture/Livestock program to facilitate poor, Dalits and indigenous people for self employment.
- Development and dissemination of climate-smart agriculture technologies.

- Special program to promote BAGAR KHETI (vegetables and melons production on riverside sandy soils).
- Adoption of integrated pest and nutrition management.
- Establishment and operation of meteorological forecasting center at province level.
- Especial program to promote organic farming.
- Introduction of modern post harvest technology including storage and processing for value addition.

5.6 List of proposed projects

Discussions were held about type of projects that might be required and feasible, with stakeholders during the meetings, workshops and individual consultation in Province-2. Following is a long list as per their suggestions.

1. Scientific soil management/improvement
2. Value addition on agricultural products by processing, packaging and branding
3. Land consolidation
4. Research to focus on reducing cost of production
5. Establishment of Agriculture College and Technical Training Center
6. Resource center for cattle, buffalo, goat
7. Construct large pond for recharge of aquifer
8. Commercialization of agriculture
9. Revive the agricultural implements industry
10. Save Chure range forest cover and build check-dams to trap debris and recharge aquifer.
11. Increase research and development facilities (coordinate with NARC and other research agencies)
12. Establish/strengthen agricultural market infrastructures and their management.
13. Establish model farm/ resource center/ demonstration farms
14. Establish food testing and certification laboratory
15. Custom hiring system for promoting mechanization in agriculture
16. Promote Bagar Kheti (sandy river sides) for vegetable cultivation
17. Community based seed multiplication program with cooperative marketing features
18. Production and certification of good-quality seeds and high-yielding breeds by strengthening the government and private farms/centers.
19. Soil health improvement project (green manure, vermin compost, livestock)
20. Develop/promote bio-pesticide technologies to treat plants and animals using locally available herbs
21. Moringa (Soijan) plantation in large scale as part of nutrition enhancement program (One house one Soijan tree campaign suggested)
22. MAPs, fruit and vegetable processing (agro-based industry)
23. Fine rice (Basmati) promotion
24. Commercial fodder and forage production
25. Establishment of modern slaughter house
26. Buffalo calf fattening center
27. Veterinary hospitals in private sector
28. Machinery and technical assistance to farmers to introduce direct seeded rice and other resource conserving technology
29. Integrated agriculture services centers in unified pocket areas which has been declared the site for the commercial production of a particular agricultural good
30. Warehouse and drying facility, especially to save spring rice from post harvest losses.
31. Floriculture development for north of East-West Highway
32. Pangasius fish farming that has much higher productivity compared to species being farmed
33. Fish processing, packaging and branding with cold chain starting from the field.
34. Commercial cattle farming (model farm with minimum 100 herd size)
35. Network of modern information technology (weather, prices, demand etc).
36. Capital grants and soft loans (specially targeted for providing employment to youths) for running agro-businesses and provision of needs-based entrepreneurship-development and skill-based training.
37. Strengthen agriculture and livestock extension centers established in each municipality under local government bodies and ensure coordination among those centers and AKC/VHLSSC.

5.7 Priority Projects

The long list of projects was presented in an Economic Development Strategy Consultation Workshop on 6th May 2019 in Janakpur for verification and prioritization of the list of projects. Each of the proposed project was discussed in agriculture group and plenary

session and evaluated against several criteria including strategic value, dependency (to what extent is this project dependant on other things?), co-benefit to other projects (how beneficial is this project to other projects in the sector?), co-benefit to other sector (how beneficial is this project to other sectors?), quick wins, cost, feasibility/doability/fundability, effectiveness in achieving the objectives, acceptance by community & other stakeholders and risks & sustainability. Based on those criteria following ten priority projects were selected for inclusion in the upcoming periodic plan from the long list of projects.

SN	Projects
1	Increase research and development facilities (coordinate with NARC and other research agencies)
2	Establish food testing and certification laboratory
3	Production, certification and safe storage of good-quality seeds by strengthening the government and private farms/ centers producing/handling the products.
4	Establish a network of modern information technology (weather, prices, demand etc) in coordination with Agriculture Information Center
5	Establish/strengthen agricultural market infrastructures including collection center, market shade and storage facility
6	Scientific soil management/improvement with mobile soil lab
7	Establish Integrated agriculture services centers in unified pocket areas which has been declared the site for the commercial production of a particular agricultural product
8	Establish of Agriculture College and Technical Training Center
9	Promote Floriculture development for north of East-West Highway
10	Introduce/operate custom hiring system for promoting mechanization in agriculture

Brief discussion of each of the priority projects is presented in the following sections.

1. Increase research and development facilities (coordinate with NARC and other research agencies)

   Increasing agricultural productivity remains a central concern of developing countries. This is because it is a major factor determining the level of income of the farming sector, in meeting the food requirements of continually expanding populations and in generating foreign exchange to finance domestic programs, amongst others. Agricultural research has an important role to play in meeting these targets, since many of the new technologies, inputs, and techniques of production that increase agricultural productivity are developed through agricultural research. A transformed agricultural research system helps to achieve sustainable food and income security for all agricultural producers and consumers, particularly for resource-poor households, whether they are in rural or urban areas. Sustainable agricultural intensification itself means producing more food and agricultural products from the same overall resources (such as land, labor and water), while reducing the negative environmental impacts.

   The Nepal Agricultural Research Council (NARC) is the country's main agricultural research and development (R&D) agency, accounting for almost three-quarters of total research capacity and more than 60 percent of agricultural R&D expenditures (Rahila et al, 2011). Another government agency "Nepal Academy of Science and Technology (NAST)" and some nongovernmental organization (NGO) such as Local Initiatives for Biodiversity, Research and Development (LI-BIRD), Forum for Rural Welfare and Agricultural Reform for Development (FORWARD), and the Center for Environmental and Agricultural Policy Research and Development (CEAPRED) are also involved in R&D in agriculture.

   NARC has seven research centers in the province including national program for rice, sugarcane and oilseeds; and agricultural implements research and testing centers. The centers have developed several improved variety of different crops and are also in the process of producing some more improved location specific varieties and breeds. However, adoption of the improved technologies has been slow. There is also tendency of using farm saved seeds rather than replacing the farm saved seed with certified seed in regular intervals. Lack of coordination among government research centers, NGOs and extension agencies including Agriculture Knowledge Center (AKC) and Veterinary

Hospital and Livestock Service Specialist Center (VHLSSC) has been blamed as major problem in effectively taking the research products to farmers' field.

Followings are the major activities to overcome the obstacles and improve agricultural productivity in the province.

i. Create a high level committee comprised of officials from NARC, other research centers, NGOs involved in R&D, AKC and VHLSSC to effectively coordinate technology generation and dissemination.

ii. Strengthen the research centers through additional resources (financial and HRD).

iii. Provide subsidy on foundation and certified certified seeds

2. Establish/enhance capacity of food testing and certification laboratory

Quality is an important factor when it comes to any product or service. With the high market competition, quality has become the market differentiator for almost all products and services. Quality control is essential for building a successful business that delivers products that meet or exceed customers' expectations. It also forms the basis of an efficient business that minimizes waste and operates at high levels of productivity. A quality control system based on a recognized standard, such as ISO 9001 published by the International Organization for Standardization, provides a strong foundation for achieving a wide range of marketing and operational benefits. Since the province -2 is moving forward with an objective of exporting agricultural products importance of quality certification is very important.

Department of Food Technology and Quality Control (DFTQC) and its offices located in different parts of the country are responsible for quality testing and certification of food products. There are five offices under DFTQC in province-2. They are Food Technology and Quality Control Office located in Janakpur, Food import export quality control office located at Jaleswor of Mahottari, and three Food Technology and Quality Control Division Offices located at Rajbiraj of Saptari, Jaleswor of Mahottari and Malangwa of Sarlahi. While those offices are running with limited capacity due to resource constraints producers are not interested to get their outputs tested fearing that the product may be sub-standard and rejected. Followings are the activities to be supported by the government to improve the situation.

i. Strengthen the quality testing/ certification laboratories through additional resources (financial and HRD).

ii. Train the entrepreneurs on ways and means of quality improvement/ maintenance and minimum quality standards to be maintained for domestic and international markets, and means of quality control.

iii. Subsidize cost of quality testing for short time until entrepreneurs are convinced that quality certification is for their enterprise to compete in domestic and international markets

3. Production, certification and safe storage of good-quality seeds by strengthening the government and private farms/centers producing/handling the products.

Availability of quality seed of improved variety is considered as crucial factor for realizing productivity. It is proved that use of quality seed alone can increase productivity by 15-20% (MADE Nepal, 2017). However, lack of quality seed continues to be one of the greatest challenges in bridging the vast yield gap. Due to its plain land with better irrigation facilities Province-2 is in better position to produce improved seeds, mainly of cereals. It can highly contribute in seed production as the government has targeted to increase seed replacement rate (SRR) of rice from 15.06% in 2015 to 24.25% in 2015, maize from 14.43% in 2015 to 31.57% in 2015, wheat from 13.09% in 2015 to 22.53% in 2025, potato from 9.0% in 2015 to 15.0% in 2025 and vegetables from 80% in 2105 to 90% in 2015 (NSB, 2013).

Followings are the activities to be supported by the government to improve profitability of farmers through seed multiplication.

i. Easy access of seed production groups/ cooperatives to foundation seed with subsidy on seed prices.

ii. Coordination among Agriculture unit of municipality, Agriculture Knowledge Center and agriculture research centers.

iii. Construction of appropriate seed stores at strategic locations.

4. Establish a network of modern information technology (weather, market prices, demand etc.) in coordination with Agriculture Information Center

   Information and communication has an important role to play in agricultural development. It helps in empowering the rural people by providing better access to natural resources, improved agricultural technologies, effective production strategies, markets, demand/supply situation, prices, banking and financial services and many other aspects such as weather. The existing agricultural information system is limited in broadcasting prices in major markets and weather information in macro level. Dissemination of price information is also less useful as there is time lag between collection and dissemination of those information.

   Farmers in remote areas are not benefited from the present system of ICT as they do not have access to FM, television and internet. They normally walk long distance with their product only to know that prices are not as expected. This situation has been a major disincentive to farmers in producing for market.

   To cope with the situation the government needs to come up with the following programs:

   i. Collection of vital information including size and use of agricultural land, supply/demand of agricultural inputs, irrigation status, quantity of different products, products utilization and marketing.

   ii. Regular collection and dissemination of information on demand/supply and prices of agricultural commodities.

   iii. Establish agricultural information centers with hi-tech mechanism to provide information to stakeholders as and when required.

5. Establish/strengthen agricultural market infrastructures including collection center, market shade and storage facility

   Production is the half the work done for any producer, either a farmer or an agribusiness firm. Agricultural marketing plays an important role not only in stimulating production and consumption, but in accelerating the pace of economic development. Its dynamic functions are of primary importance in promoting economic development. For this reason, it has been described as the most important multiplier of agricultural development. Proper agricultural marketing arrangements help in optimization of resource use and output management, increase in farm income, widening of markets, growth of agro-based industries, adoption and spread of new technology, employment, increased income and better living, among others.

   In the absence of proper post harvest facility including markets, most of the farmers sell their products at farm gate or local markets to middlemen without grading, packaging and labeling the products. The commodities are passed through middlemen to ultimate consumers adding cost to the commodity. Due to this producers' share in consumers' price is very low.

   There is ample scope of value addition at producers' level through the following activities:

   i. Construction/improvement of collection centers with grading, packaging and storage facility at strategic locations.

   ii. Training the stakeholders on appropriate post harvest operations including harvesting, grading and safe storage to maintain quality of the products.

   iii. Construction/improvement of rural roads (Krishi Sadak) connecting major production pockets to collection centers.

6. Scientific soil management/improvement with mobile soil lab

   Soil fertility and plant nutrition have very important role in sustaining increased agricultural productivity. Soil fertility decline continues at an alarming rate in Nepal. Trend has shown that one of the major factors responsible for slow growth or stagnation of agricultural productivity is the soil fertility decline. The depletion of macro and micro nutrients in soil are resulted due to intensive cultivation, soil erosion, inadequate supply of organic manure, crop residue, green manure, and injudicious use of chemical fertilizers (Rijal, 2001).

Focusing on the importance and need for soil-fertility management, a soil-testing mobile van program was introduced in Nepal by Soil Management Directorate, Hariharbhawan. With the introduction of the mobile lab, famers could get their soil tested for nutrient deficiencies and fertilizer requirements at their doorsteps. Using mobile lab, spatial distributions of chemical properties, including pH, organic matter (OM), total nitrogen (N), available phosphorus (as P2O5), and available potassium (as K2O) were examined in soil samples taken from the 0 to 15 cm depth from selected agricultural fields in eight different districts in the mid-hills and Terai regions of Nepal. For each crop to be grown, farmers were provided with individual soil health reports and fertilizer recommendations (rate, amount, and type). This program not only allowed scientists and farmers to work closely and share information but also served as a model for the nation to successfully transfer technology for improving soil health and sustainability (Pandey et.al. 2017). This model can be applied in province-2 for the benefit of the farmers.

Followings are the activities to be supported within this project.

i. Purchase and deploy mobile soil laboratories with well trained personnel to operate them.

ii. Create a team of scientists, laboratory technicians and local government representative to coordinate and monitor the activities and results.

iii. Provide training to farmers on the effective selection and use of fertilizers, plant protection materials and appropriate crops based on type and quality of soil.

7. Establishment of integrated agriculture services centers in unified pocket areas which has been declared the site for the commercial production of a particular agricultural product

Majority of the farmers in the province-2 are operating less than one hectare of land. Agriculture census conducted in 2011 shows that the average holding was 0.84 ha per household (CBS, 2013). Most of those farmers grow food crops, oilseeds, pulses, vegetables, so on and also keep livestock as part of subsistence farming. This means that they need several types of inputs including seed, fertilizer, other agrochemicals, agricultural implements, feed and veterinary services. They also need technical consultation as most of them are not aware of modern variety and methods of cultivation. It is very costly and time taking to visit different shops and offices every time they need one or another inputs, medicines, and technical services. Therefore, establishment of integrated service centers is proposed.

There are two components to be considered while establishing such integrated service centers. First, the location of service center should be such that a farmer easily can visit the center in any season; need not to allocate more than one day for travel, consultation and other official formalities. Second, all sort of inputs, implements, technical services including veterinary services and medicines and credits are available under one roof. Farmers will be more benefited if the integrated service center and agriculture market are in the same location.

Followings are the major activities to be supported by the government to establish/ operate integrated service center (ISC).

i. Physical infrastructure to operate the ISC

ii. Deployment of a team of technical persons to handle agronomy, horticulture, plant protection, fishery, veterinary and other related issues.

iii. Soft loan to operate agricultural inputs, implements and veterinary medicines store.

8. Establishment of Agriculture College and Technical Training Centers

One of the major reasons of slow adoption of improved technology is lack of education among the farmers. In the absence of proper knowledge about the technology farmers often do not adopt or partially adopt technology resulting in low or no impact on production and profitability. A study by Oduro et.al. (2014) also found that as educational level increases, output increases with secondary school education having the highest returns on agricultural productivity. The study concluded that education is important to the improvement of agricultural productivity such that formal education opens the mind of the farmer

to knowledge, non- formal education gives the farmer hands- on training and better methods of farming and informal education keeps the farmer abreast with changing innovations and ideas and allows farmer to share experience gained.

Although there are some training centers and some of the schools have included basic agriculture education in their curriculum, the arrangement is not enough for educating/training entrepreneurs on modern farming practices from production to post harvest practices.

Followings are the activities to be supported by the government under this project.

i. Operate at least two agriculture colleges in the province providing higher education in crop farming and livestock care.

ii. Support schools and polytechnic institutions for inclusion of agriculture in their curriculum.

iii. Arrange refresher trainings to technical persons at regular interval to keep them up-to-date on changing modern technologies and techniques.

9. Promote Floriculture development for north of East-West Highway

The floriculture business in Nepal is booming and becoming more innovative with urbanization spreading rapidly over the last few years. Demand for flowers is traditionally high during festival season. Rose, gladiolus, tuberose, gerbera, carnation and orchid are the popular flowers in addition to traditional Nepali flowers such as Sayapatri, Makhamali and Godawari grown in Nepal. In the past, flowers were either used in the process of worshiping or used by hotels for decoration purposes. However, situation is changed and nowadays, middle-class people have started buying flowers to present as gifts during other special occasions. Compared to the limited variety of flowers available in the past, many hybridized variety of flowers are now grown and marketed in Nepal. It is reported that domestic production is not enough to cater the need. According to Floriculture Association Nepal (FAN) Nepal imported flowers and garlands worth around Rs 110 million for the Tihar festival alone in 2018. It was also reported that huge amount of flowers are being imported in Janakpur during Janaki Bibaha and other special occasions. This clearly indicates that there is huge scope of producing additional flowers not only for domestic but for international markets.

Commercial floriculture has been successfully introduced in area along and north of the east-west highway of province-2 for two reasons (i) ease of transporting the product and (ii) well-drained suitable soil for flower cultivation. However, farmers face a myriad of problems such as unavailability of hybrid planting materials, absence of land leasing policy for consolidated farming, high cost associated with cultivation, hassles in getting a bank loan and the lack of support from the government. This is holding back the industry from fully taking off.

Followings are the major activities to support floriculture development

i. Provision of easy access to improved/ hybrid planting materials and equipments including import permits.

ii. Provision of subsidy on planting materials and essential equipments.

iii. Training the stakeholders on production, harvesting, handling and storage techniques.

10. Introduce/operate custom hiring system to promote mechanization of agriculture

In custom hiring system, high-cost agricultural machinery such as tractors, combine harvesters or threshers are purchased by a group of farmers or a body, for use by all in return for a fixed payment. This saves cost and optimizes usage, to make it financially viable. Over the years, agriculture mechanization has helped to increase production and profitability, improve the use of inputs, reduce the costs of production, and assist in income-building and employment opportunities. Custom hiring services (CHS) is an important mechanism through which most small holders can access services of agricultural machinery. CHS not only help to generate non-farm income but also enables farmers to produce a second or multiple crops in a year by reducing the turnaround time and increasing productivity. Custom hiring has been used in Nepal (especially in Terai where farm land is accessible by machinery and plot sizes are larger) individually, but no systematic CHS is initiated. Small farmers complain that

the machineries are not available as per requirement and costly prohibiting their use. Establishment of formal custom hiring center, preferably owned by cooperatives, will be beneficial to small farmers and women in terms of reduced drudgery, reduced cost and increased cropping intensity.

Government support is required in the following major activities to promote custom hiring centers.

i. Soft loan (low or no interest) from commercial banks.

ii. Exemption of tax on import of the machinery/ implements that are not produced in Nepal.

iii. Land consolidation among the likeminded people having land together.

5.8 Outcomes

With an increase in coordinated effort and of the widespread application of agricultural research and provision of extension services, technology and equipment, there will be substantial increase in agricultural products. While area under main season paddy and wheat will not change much; area under spring paddy and winter/spring maize will increase. The combined effect will be an increase of total cereal production by six percent per annum. There will be an increase in vegetable area as well as productivity with a combined effect of seven percent increase in production per year. Fish production will increase by seven percent per annum as a result of increase in pond area and productivity. Among the livestock products, milk production will increase by an average of five percent while production of egg and meat will be increasing by an average rate of seven percent per annum.

Based on the above projection province-2 will produce 2,624,885 mt of food grains (gross) including 1,786,197 mt of paddy, 208,865 mt of maize, 3,224 mt of millet, 676,305 mt of wheat, 295 mt of barley in fiscal year 2023/24. Among the major cash crops production of potato is expected to reach to 448,305 mt from 352,996 mt in 2016/17 and production of sugarcane will be 2,639,564 mt in 2023/24 from 2,078,397 mt in 2016/17. In terms of per capita, production of cereals (gross) will be increased to 400 in 2023/24 from 337 kg per capita in 2016/17, an increase of 67 kg per capita. Similarly, per capita availability of fruits, vegetables, milk, meat and egg will be increased by about 7 kg, 41 kg, 9 kg, 2 kg and 3 Nos., respectively by 2023/24[6].

The status of food and nutrition security in vulnerable areas will be improved, market infrastructures such as storage facilities and collection centers will be enhanced, modern technology and equipment will be used in food-related research, and quality standards for the import and export of foodstuff will be established.

6. Implementation plan

6.1 Investment in Priority Projects

It is estimated that a total of NRs 3,520 million will be required over the five year period to implement the priority projects. Out of the estimated total investment public sector will be spending NRs 2,270 million while the private sector (including cooperatives) will be investing NRs 1,250 millions as given in the following table. Salient features of each of those projects are given in Annex.

[6] Estimated based on population data published by Ministry of Population and Environment (MoPE, 2017) and production data by Ministry of Agriculture and Livestock Development (MOALD, 2017).

SN	Projects	Costs (in millions NRs)		
		Public	Private	Total
1	Increase research and development facilities (coordinate with NARC and other research agencies)	120		120
2	Establish/enhance capacity of food testing and certification laboratory	500		500
3	Production, certification and safe storage of good-quality seeds by strengthening the government and private farms/centers	100	500	600
4	Establish a network of modern information technology (weather, market prices, demand etc.) in coordination with Agriculture Information Center	200	50	250
5	Establish/strengthen agricultural market infrastructures including collection center, market shade and storage facility	100	100	200
6	Scientific soil management /improvement with mobile soil lab	100		100
7	Establishment of integrated agriculture services centers in unified pocket areas which has been declared the site for the commercial production of a particular agricultural product	100	100	200
8	Establishment of Agriculture College and Technical Training Centers	900	100	1,000
9	Promote Floriculture development for along and north of East-West Highway	50	100	150
10	Introduce/operate custom hiring system to promote mechanization of agriculture	100	100	200
	Total	**2,270**	**1,250**	**3,520**

6.2 Institutional arrangements

The overall responsibility of implementing the proposed periodic plan will be with the Provincial Government of Province 2. There are 21 offices under the Ministry of Land Management, Agriculture and Cooperatives (MOLMAC) of provincial government (MOFAGA, 2018) in addition to divisions/departments within MOLMAC that will be directly involved in implementation and monitoring the planned activities. Seven agricultural research centers under central management of Nepal Agricultural Research Council (NARC, 2018) will be instrumental in designing and implementation of research and development activities. There are three Plant Quarantine Offices one each in Birgunj, Parsa; Malangawa, Sarlahi; and Jaleswor, Mahottari and two animal quarantine offices, one each in Birgunj, Parsa; and Janakpur, Dhanusha under Central Government to facilitate checking/ regulating plant and animal health and products in internationally traded goods.

Stakeholders including government officials and political leaders raised concern over some of the development offices being under control of central government. Because of dual administrative responsibilities, officials of those centrally administered offices had some difficulties in performing their duties in the past. It is suggested that the government consider putting them under provincial government.

Agriculture Knowledge Center (AKC) and Veterinary Hospital and Livestock Service Specialist Center (VHLSSC) are the two development offices responsible to coordinate agriculture extension services in their respective districts. There are six AKC and six VHLSSC offices to cover eight districts which seem odd against one office in each district in the past. Adding 2 offices each of AKC and VHLSSC is suggested.

6.3 Implementation matrix

All of the activities listed in preceding sections are grouped into eight. The activities under each of the programs are listed in the following gantt chart and tentative time-line shown by shadowing the concerned cells.

Chart 1: Indicative Timeline of Activities

SN	Programs	Activities	Pre-plan	Year 1	Year 2	Year 3	Year 4	Year 5
1	**Acts, Laws**	Enactment of Act, laws, by-laws etc						
		Enforcement and Monitoring						
2	**Technology**	Identification of appropriate technologies						
		Dissemination/promotion						
		Evaluation and modification						
3	**Mechanization**	Identification of appropriate machines/tools						
		Promotion/distribution						
4	**Training**	Need identification						
		Training technicians/trainers						
		Training farmers						
5	**Physical infrastructure**	Site identification						
		Feasibility and DPR						
		Construction						
		Operation						
6	**Information Dissemination**	Collection of information on marketing and prices						
		Upgrade						
		Information dissemination						
7	**Institutional reform**	Review present setup and identify any changes if required						
		Reform/re-structure						
8	**Coordination**	Coordination meetings among research, extension and NGOs						

By the time of implementation of the proposed periodical plan, most of the acts, laws, by-laws, rules and regulations will be enacted for facilitating smooth operation of agriculture production, trade and related activities. Remaining essential laws will be enacted in the first year of the proposed plan.

Some of the improved/modern technologies including machineries/tools are already identified and are being used successfully. Those can be promoted starting from the first year of the plan. Additional technologies will be identified/developed in the first year. Their regular upgrading and dissemination will be continued.

Capacity enhancement including training will be a regular activity with first training the technicians/trainers in every two years interval. Those technicians will disseminate skills to farmers and other stakeholders at regular basis. The training curriculum will also be reviewed and revised in every two years interval as technologies may change or newer problems arise in the course of time.

While renovation, repair and maintenance will be regular phenomenon, construction of new infrastructure will take time. It is estimated that the first year will be spent on feasibility and design of the infrastructure, while another one or two year will be required in construction, depending upon size of the infrastructure.

Dissemination of vital information such as weather forecast, market information such as demand and prices are vital for the stakeholders. Designing necessary formats, collection of basic information and their management system will be completed in the first year. While some of the information dissemination activities will be initiated in the first year, regular updates will be available to users in most convenient system (including mobile apps and dedicated websites) from second year onwards.

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Annex: Salient features of Priority Projects in Agriculture in Province-2

1. Research and Development

Name of Project	**Increase research and development facilities (coordinate with NARC and other research agencies)**
Type	Research and Development
Sector	Agriculture

Project Location

Province	Province-2
Project location	All with coordination committee located at MOLMAC in Janakpur

Project components

Create a high level committee comprised of officials from NARC, other research centers, NGOs involved in R&D, AKC and VHLSSC to effectively coordinate technology generation and dissemination.
Strengthen the research centers through additional resources (financial and HRD).
Provide subsidy on certified seeds

Development modality

Role of the Federal Government	Coordinate with NARC to provide additional financial and human resources
Role of Provincial Government	Form coordination committee and arrange sufficient budget
Role of private sector	Facilitation and feed-back

Development period

On-farm testing of technologies	1 Year
Dissemination of technology in public	2 Year
Coordination, monitoring and evaluation	Continuous

Financials

Total Project cost	NRs 120,000,000
Government financing	NRs 120,000,000
Private sector financing	

Expected outcomes

Pocket specific improved variety of crops and livestock breed development/tested and adopted	10
Production	5 % increase in major crops, 6% in milk and 7% increase in fish production
Beneficiaries	11, 000 households

2. Food quality control and certification

Name of Project	**Establish/enhance capacity of food testing and certification laboratory**
Type	Quality testing and certification
Sector	Agriculture

Project Location

Province	Province-2
Project location	Rajbiraj, Janakpur, Malangawa and Birgunj

Project components

Strengthen the quality testing/certification laboratories through additional resources (financial and HRD).
Train the entrepreneurs on ways and means of quality improvement/maintenance and minimum quality standards to be maintained for domestic and international markets, and means of quality control.
Subsidize cost of quality testing for short time until entrepreneurs are convinced that quality certification is for their enterprise to compete in domestic and international markets

Development modality

Role of the Federal Government	DFTQC to provide additional financial and human resources
Role of Provincial Government	Budget for renovation of laboratories, equipments and chemicals
Role of private sector	Facilitation and feed-back

Development period

Construction/renovation	1 Year
Training and capacity enhancement	1 Year
Quality testing and certification	Continuous

Financials

Total Project cost	NRs 500,000,000
Government financing	NRs 500,000,000
Private sector financing	-

Expected outcomes

Samples tested and certified	4,000 per year
Value addition	10 % on market price
Beneficiaries	4, 000 enterprises

3. Seed value chain development

Name of Project	**Production, certification and safe storage of good-quality seeds by strengthening the government and private farms/centers producing/handling the products**
Type	Improved seed
Sector	Agriculture

Project Location

Province	Province-2
Project location	All

Project components

Easy access of seed production groups/cooperatives to foundation seed with subsidy on seed prices.
Coordination among Agriculture unit of municipality, Agriculture Knowledge Center and agriculture research centers.
Construction of appropriate seed stores at strategic locations

Development modality

Role of the Federal Government	Coordination of NARC and other research organizations
Role of Provincial Government	Coordination among Agriculture unit of municipality, Agriculture Knowledge Center and agriculture research centers.
	Budget for subsidy on foundation and certified seeds Budget for subsidy on construction of modern seed stores
Role of private sector	Construction and operation of seed stores Seed storage and trade of quality seeds

Development period

Construction/renovation	2 Year
Training and capacity enhancement	1 Year
Quality seed supply	Continuous

Financials

Total Project cost	NRs 600,000,000
Government financing	NRs 100,000,000
Private sector financing	NRs 500,000,000

Expected outcomes

Increment in Seed Replacement Rate of major crops	5 %
Value addition	10 % on farm gate price
Beneficiaries	56, 000 households

4. Information and Communication

Name of Project	**Establish a network of modern information technology (weather, market prices, demand etc.) in coordination with Agriculture Information Center**
Type	ICT
Sector	Agriculture

Project Location

Province	Province-2
Project location	All

Project components

Collection of vital information including size and use of agricultural land, supply/demand of agricultural inputs, irrigation status, quantity of different products, products utilization and marketing.
Regular collection and dissemination of information on demand/supply and prices of agricultural commodities.
Establish agricultural information centers with hi-tech mechanism to provide information to stakeholders as and when required.

Development modality

Role of the Federal Government	Coordination among provinces
Role of Provincial Government	Collection of vital information including size and use of agricultural land, supply/demand of agricultural inputs, irrigation status, quantity of different products, products utilization and marketing and other relevant information and information dissemination.
Role of private sector	Information dissemination in coordination with the government

Development period

Construction/renovation	2 Year
Training and capacity enhancement	1 Year
Collection and dissemination of information	Continuous

Financials

Total Project cost	NRs 250,000,000
Government financing	NRs 200,000,000
Private sector financing	NRs 50,000,000

Expected outcomes

Beneficiaries	At least 283, 000 households will be able to plan crop cultivation and marketing of the products due to timely availability of price and weather related information.

5. Agricultural market infrastructures

Name of Project	**Establish/strengthen agricultural market infrastructures including collection center, market shade and storage facility**
Type	Market promotion
Sector	Agriculture

Project Location

Province	Province-2
Project location	One each in eight districts of province 2.

Project components

Construction/improvement of collection centers with grading, packaging and storage facility at strategic locations.
Training the stakeholders on appropriate post harvest operations including harvesting, grading and safe storage to maintain quality of the products.
Construction/improvement of rural roads (Krishi Sadak) connecting major production pockets to collection centers.

Development modality

Role of the Federal Government	Coordination among provinces
Role of Provincial Government	Construction/improvement of collection centers with grading, packaging and storage facility and agricultural roads at strategic locations. Training the stakeholders on appropriate post harvest operations
Role of private sector	Information dissemination in coordination with the government

Development period

Construction/renovation	2 Year
Training and capacity enhancement	1 Year
Operation, monitoring and evaluation	Continuous

Financials

Total Project cost	NRs 200,000,000
Government financing	NRs 100,000,000
Private sector financing	NRs 100,000,000

Expected outcomes

Value addition	10 % on farm gate price of marketed products
Beneficiaries	80, 000 traders/entrepreneurs

6. Soil Quality Improvement

Name of Project	**Scientific soil management /improvement with mobile soil lab**
Type	Soil quality improvement
Sector	Agriculture

Project Location

Province	Province-2
Project location	All

Project components

Purchase and deploy mobile soil laboratories with well trained personnel to operate them.
Create a team of scientists, laboratory technicians and local government representative to coordinate and monitor the activities and results.
Provide training to farmers on the effective selection and use of fertilizers, plant protection materials and appropriate crops based on type and quality of soil.

Development modality

Role of the Federal Government	Technical manpower
Role of Provincial Government	Purchase and deploy mobile soil laboratories with well trained personnel to operate them Training the stakeholders on selection of crops and appropriate fertilizer based on soil characteristics
Role of private sector	

Development period

Procurement	1 Year
Training and capacity enhancement	1 Year
Operation, monitoring and evaluation	Continuous

Financials

Total Project cost	NRs 100,000,000
Government financing	NRs 100,000,000
Private sector financing	-

Expected outcomes

Number of soil samples tested and recommended crop type and fertilizer requirement	50,000 samples per year
Increase in crop production	5 %
Beneficiaries	57, 000 households

7. Integrated agriculture services centers

Name of Project	**Establishment of integrated agriculture services centers in unified pocket areas which has been declared the site for the commercial production of a particular agricultural product**
Type	Technical Services and Inputs
Sector	Agriculture

Project Location

Province	Province-2
Project location	One each in eight districts of Province 2

Project components

Physical infrastructure to operate the ISC
Deployment of a team of technical persons to handle agronomy, horticulture, plant protection, fishery, veterinary and other related issues.
Soft loan to operate agricultural inputs, implements and veterinary medicines store.

Development modality

Role of the Federal Government	
Role of Provincial Government	Physical infrastructure. Professional staff to cover different sub-sectors of agriculture.
Role of private sector	Modern machinery and agricultural inputs

Development period

Construction	3 Year
Training and capacity enhancement	1 Year
Operation, monitoring and evaluation	Continuous

Financials

Total Project cost	NRs 200,000,000
Government financing	NRs 100,000,000
Private sector financing	NRs 100,000,000

Expected outcomes

Production increment	5% in crops, 6% in milk and 7% in fish production
Saving in cost of production	Rs 1,000 per household per year
Beneficiaries	80, 000 farmers

8. Educational Institutions

Name of Project	**Establishment of Agriculture College and Technical Training Centers**
Type	Human resource development
Sector	Agriculture

Project Location

Province	Province-2
Project location	Bardibas and Birgunj

Project components

Operate at least two agriculture colleges in the province providing higher education in crop farming and livestock care.
Support schools and polytechnic institutions for inclusion of agriculture in their curriculum.
Arrange refresher trainings to technical persons at regular interval to keep them up-to-date on changing modern technologies and techniques.

Development modality

Role of the Federal Government	Coordinate with Universities
Role of Provincial Government	Physical infrastructure. Arrange suitable land Finance operating costs of college Support schools and technical schools for including/running agriculture education in their curriculum
Role of private sector	Modern machinery and agricultural inputs

Development period

Construction/development	3 Year
Capacity enhancement	1 Year
Operation, monitoring and evaluation	Continuous

Financials

Total Project cost	NRs 1,000,000,000
Government financing	NRs 900,000,000
Private sector financing	NRs 100,000,000 (Private schools)

Expected outcomes

Number of agriculture graduates	100 per year
Number of technical manpower (undergraduates)	1,000 per year

9. Flower Value Chain Development

Name of Project	**Promote Floriculture along and north of East-West Highway**
Type	Floriculture
Sector	Agriculture

Project Location

Province	Province-2
Project location	Along and north of East-West Highway

Project components

Provision of easy access to improved/hybrid planting materials and equipments including import permits.
Provision of subsidy on planting materials and essential equipments.
Training the stakeholders on production, harvesting, handling and storage techniques.

Development modality

Role of the Federal Government	Policy to allow access to technology and inputs including import.
	Finance physical infrastructures
Role of Provincial Government	Provision of subsidy on planting materials and essential equipments.
	Training the stakeholders on production, harvesting, handling and storage techniques.
Role of private sector	Develop required infrastructures
	Production and trade (including export) of flowers

Development period

Construction/development	2 Year
Training and capacity enhancement	1 Year
Operation, monitoring and evaluation	Continuous

Financials

Total Project cost	NRs 150,000,000
Government financing	NRs 50,000,000
Private sector financing	NRs 100,000,000

Expected outcomes

Incremental income	500,000 per household
Beneficiaries	11, 000 households

10. Agricultural mechanization

Name of Project	**Introduce/operate custom hiring system to promote mechanization of agriculture**
Type	Custom hiring
Sector	Three most appropriate location of the province as model centers

Project Location

Province	Province-2
Project location	Three most appropriate location of the province as model centers

Project components

Soft loan (low or no interest) from commercial banks.
Exemption of tax on import of the machinery/ implements that are not produced in Nepal.
Land consolidation among the likeminded people having land together.

Development modality

Role of the Federal Government	Policy to allow opening up custom hiring centers Import tax exemption on agricultural machine/implements not produced in Nepal
Role of Provincial Government	Easy access to loans with project itself as collateral Payment of interest on purchase of machine/implements, as subsidy
Role of private sector/cooperatives	Establish custom hiring centers

Development period

Construction/development	2 Year
Training and capacity enhancement	1 Year
Operation, monitoring and evaluation	Continuous

Financials

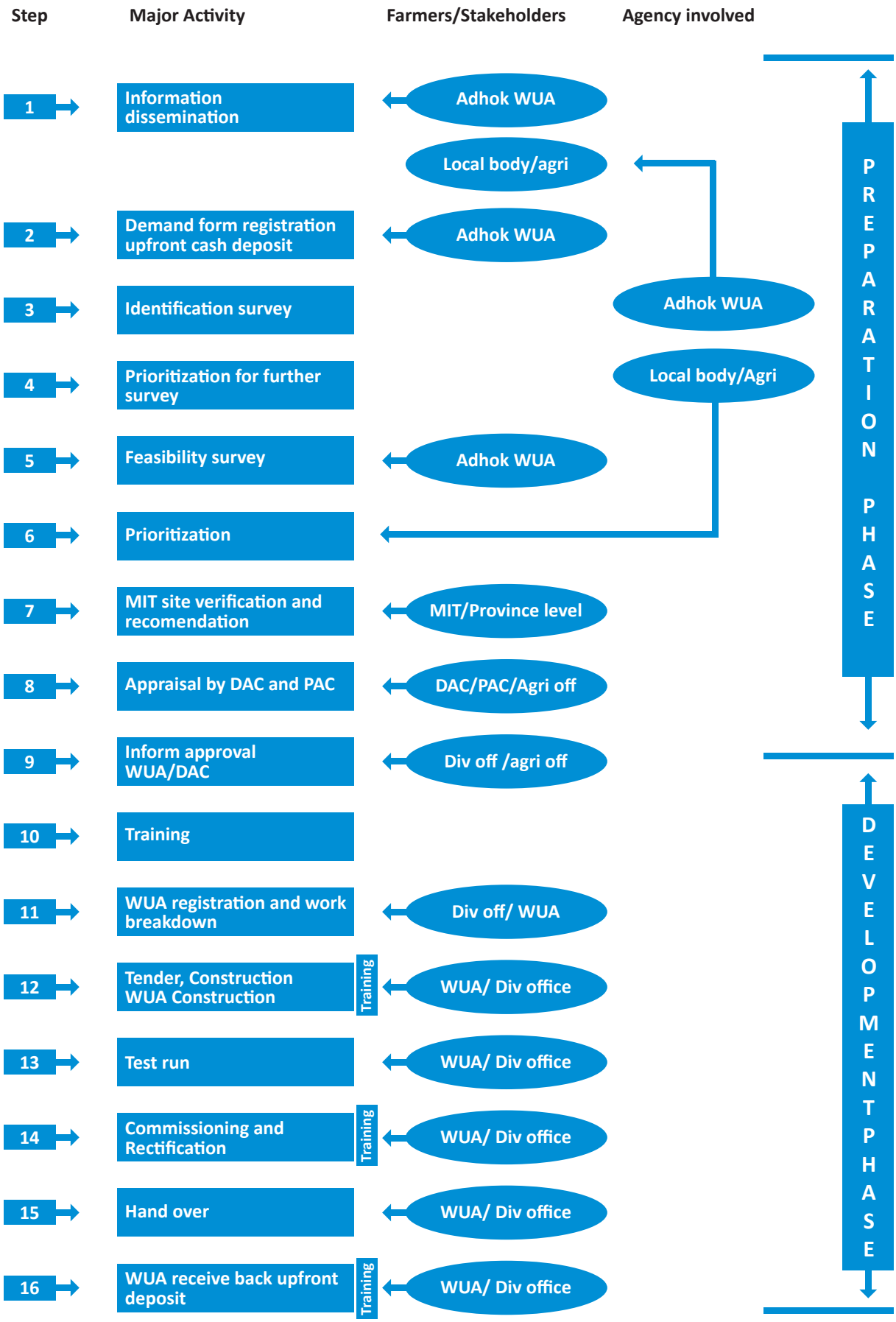
Total Project cost	NRs 400,000,000
Government financing	NRs 100,000,000
Private sector financing	NRs 300,000,000

Expected outcomes

Saving in cost of production	Rs 1,000 per hectare per year
Increase in cropping intensity	25 %
Beneficiaries	3, 000 households

Annex 1

A Model for Implementation Process: (NISP Model)



Annex 2

Criteria for the Selection of a project for Feasibility study (NISP model) *(Table 1)*

S.No.	Criteria for priority setting for a project	Score	Weightage
1	Reliable water availability	Poor (1-3) Fair (4-6) Good (7-8) Excellent (9-10)	25
2	Farmers enthusiasm towards the project and their commitment		25
3	Environmental situation		15
4	Soil condition for irrigation suitability		15
5	Market accessibility, agriculture support services with credit facilities		10
6	Command area of the project(limitation of size)		10
	Total weighted score		

Criteria for the ranking of a project for implementation (NISP model) *(Table 2)*

S.No.	Criteria for priority setting for a project	Score	Weightage
1	The sub-project has reliable water availability for the proposed investment and there is no negative impact on other users of the same source	Maximum score 10	20
2	Farmers are prepared to mobilize and contribute resources (cash, labor, land, animals and materials) for the implementation of the improvements to the maximum extent possible		20
3	The sub-project has an EIRR of at least 10% preferably 15-20%		15
4	The sub-project has low cost per hectare		10
5	The sub-project does not have land acquisition problem.		15
6	The sub- project has an existing WUA, or if not operational at present has a good chance of revival or creation without much delay.		10
7	The sub-project is environmentally sound.		10
	Total weightage score		

Annex 3

Criteria for the Prioritization of project for implementation: (NISP model) *(Table 3)*

S.No.	Criteria for priority setting for a project	Score	Weightage
1	Source of water	Maximum score 10	15
2	Level of technical difficulty		10
3	Main Canal		10
4	Existing command area		10
5	Environmental considerations		5
6	Agriculture situation		20
7	Accessibility		5
8	Beneficiaries commitment		15
9	Pattern of land holding		10
	Total weightage score		

List of People consulted during the study:

1. Mr. Shiv Kumar Sharma, Former DG, Department of Irrigation, presently working on Irrigation Master Plan.
2. Mr. Dan Ratna Shakya, Secretary, Ministry of Physical Planning and infra structure Development, Karnali Pradesh.
3. Mr. Krishna Belbase, DDG, DWRI
4. Mr. Rabindra Thapa, SDE, WRPPF, DWRI
5. Mr. Ajaya Adhikari, SDE, WRPPF, DWRI
6. Mr. Bir Singh Dhami, SDE, DWRI
7. Mr. Ajaya Raj Adhikari, SDE, Hydro, DWRI, New technology
8. Mr. Biplav Parajuli, WRPPF, Irrigation Master Plan
9. Mr. Rajendra Prasad Sah, Division Chief, Narayani Irrigation Management Division
10. Mr. Barun Karna, SDE, Bagmati Irrigation Project
11. Mr. Bhakta Lal Karna, SDE, Bagmati Irrigation Project
12. Mr. Ram Kumar Khang, SDE, Saptari Division
13. Mr. Baidehi Sharan Datta, SDE Parsa Division
14. Mr. Bhagawan Jha, SDE Dhanusha Division
15. Mr. Bhilananda Yadav, SDE, Mahattari
16. Mr. Shyamanand Yadav, SDE, Siraha Division
17. Mr. Madan Mohan Jha, SDE, Koshi Pump Irrigation
18. Mr. Chet Bahadur Gurung, division Chief, Mahottari Ground water division
19. Mr. Puspa Raj Dahal, Hydrologist Mahottari Ground Water Division
20. Mr. Bikash Thakur, Hydrologist Mahottari Ground Water Division
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25. Mr. Ganesh Bahadur, AO Bheri Corridor Irrigation Development Program
26. Mr. Dhan Bahadur Hitan, Sr. AO, Surkhet Division

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7. Wikipedia

Annex 4

Tentative Implementation Plan

S. No.	Descriptions	Unit	Quantity	Years of Imlementation				
				1	2	3	4	5
1	Improvement of existing irrigation schemes (surface scheme) to ensure assured irrigation in 5000 ha of existing irrigated land.	ha	5000	800ha	1000 ha	1000 ha	12000ha	1000 ha
2	Improvement of existing irrigation schemes (ground water) to ensure assured irrigation in 4800 ha of existing irrigated land.	no	120	20	25	25	25	25
3	Major rehabilitation of irrigation scheme (surface) including modernization of system infrastructures to ensure assured irrigation in 11000 ha of existing irrigated land.	ha	11000	1000 ha	2000 ha	2500 ha	3000 ha	2500 ha
4	Ground water development in the area of surface irrigation to supplement water in dry period (October to June) and / or new area of irrigable land to ensure assured irrigation in 145,000 ha of existing irrigated land.							
	a) shallow tubewell in southern part, electric	No	5000	500	800	1200	1500	1000
	b) shallow tubewell in southern part, diesel	No	19500	2000	3000	5000	5000	4500
	c) Shallow tubewell with solar power	No	500	70	80	100	150	100
	d) shallow tubewell in northern part	No	5000	500	800	1200	1500	1000
	e) Deep tube wells as per need	No	400	70	80	100	150	100
5	Agriculture Road development in the farm land.							
	Sub total							
6	Operation and Maintenace of irrigation schemes to meet regular and emergency maintenance and thereby ensure assured irrigation in existing irrigation systems.	Percent	100					
7	Institutional development and coordination activities, to empower WUA and ensure its participation in irrigation activities, including ISF collection. (activities may include, workshop and interaction meeting with the agriculture group and capacity building training, model site visits etc of the farmers)	Percent	100					
8	Research and development initiatives (may include some model site for new technology like solar pumps, sprinklers, recharge ponds, study of surface and ground water reservoir, aquifer mapping etc)	Percent	100					
	Grand Total Investment of 5 yrs					**15,161,600,000**		

Annex 5

Tentative Investment Cost

S. No.	Descriptions	Unit	Quantity	Rate	Amount	Remarks
1	Improvement of existing irrigation schemes (surface scheme) to ensure assured irrigation in 5000 ha of existing irrigated land.	ha	5000	175000	875000000	
2	Improvement of existing irrigation schemes (ground water) to ensure assured irrigation in 4800 ha of existing irrigated land.	no	120	1000000	120000000	
3	Major rehabilitation of irrigation scheme (surface) including modernization of system infrastructures to ensure assured irrigation in 11000 ha of existing irrigated land.	ha	11000	350000	3850000000	
4	Ground water development in the area of surface irrigation to supplement water in dry period (October to June) and / or new area of irrigable land to ensure assured irrigation in 145,000 ha of existing irrigated land.					
	a) shallow tubewell in southern part, electric	No	5000	100000	500000000	
	b) shallow tubewell in southern part, diesel	No	19500	150000	2925000000	
	c) Shallow tubewell with solar power	No	500	1500000	750000000	
	d) shallow tubewell in northern part	No	5000	500000	2500000000	
	e) Deep tube wells as per need	No	400	7500000	3000000000	
5	Agriculture Road development in the farm land.	km	4000	50000	200000000	
	Sub total				**14720000000**	
6	Operation and Maintenace of irrigation schemes to meet regular and emergency maintenance and thereby ensure assured irrigation in existing irrigation systems.	@1 % of above cost			147200000	
7	Institutional development and coordination activities, to empower WUA and ensure its participation in irrigation activities, including ISF collection. (activities may include, workshop and interaction meeting with the agriculture group and capacity building training, model site visits etc of the farmers)	@1 % of above cost			147200000	
8	Research and development initiatives (may include some model site for new technology like solar pumps, sprinklers, recharge ponds, study of surface and ground water reservoir, aquifer mapping etc)	@1 % of above cost			147200000	
	Grand Total Investment of 5 yrs				**15161600000**	

NOTE:

Assumptions made as;

Considering the area to be irrigated as,282,545 ha, ie 50 % of the irrigated area of 565,091 to bring the round the year irrigation to 50 % + from 30 % of present level

	Assumptions made as;	Area in ha		
1.	38 % of 372138 ie 141412 existing at present	141412	141412.4	
2.	2 % (of 282545)increased from improvement of existing surface system	5000	5650.9	5000
3.	existing surface system	11000	11301.8	11000
4.	120 deep tubewells*to be repaired to give 4800 ha	4800	4800	
5.	10000*5*2.5=1,25,000	125000	20800	
6.	Deep tubewells 100 per yr makes 80*5*40=20000	16000	75000	
7.	O & M budget for 50 % of existing area @ Rs 303212	16000		
8.	2000 per ha ie 372138/2*2000	91000		
9.	50, 000 shallow	60000 per ha		
10.	500 deep	per ha reh	175000	350000

Tentative Investment Plan (Total investment of NRs 20500 million

S. No.	Descriptions	Unit	Amount	Years of Imlementation				
				1	2	3	4	5
1	Improvement of existing irrigation schemes (surface scheme) to ensure assured irrigation in 5000 ha of existing irrigated land.	NRs	875000	131250	175000	175000	218750	175000
2	Improvement of existing irrigation schemes (ground water) to ensure assured irrigation in 4800 ha of existing irrigated land.	NRs	120000	18000	24000	24000	30000	24000
3	Major rehabilitation of irrigation scheme (surface) including modernization of system infrastructures to ensure assured irrigation in 11000 ha of existing irrigated land.	NRs	3850000	577500	770000	770000	962500	770000
4	Ground water development in the area of surface irrigation to supplement water in dry period (October to June) and / or new area of irrigable land to ensure assured irrigation in 145,000 ha of existing irrigated land.							
	a) shallow tubewell in southern part, electric	NRs	500000	75000	100000	100000	125000	100000
	b) shallow tubewell in southern part, diesel	NRs	2925000	438750	585000	585000	731250	585000
	c) Shallow tubewell with solar power		750000	112500	150000	150000	187500	150000
	d) shallow tubewell in northern part	NRs	2500000	375000	500000	500000	625000	500000
	e) Deep tube wells as per need	NRs	3000000	450000	600000	600000	750000	600000
5	Agriculture Road development in the farm land.	NRs	200000	30000	40000	40000	50000	40000
	Sub total		14720000	2208000	2944000	2944000	3680000	944000
6	Operation and Maintenace of irrigation schemes to meet regular and emergency maintenance and thereby ensure assured irrigation in existing irrigation systems.	NRs	147200	22080	29440	29440	36800	29440
7	activities, to empower WUA and ensure its participation in irrigation activities, including ISF collection. (activities may include, workshop and interaction meeting with the agriculture group	NRs	147200	22080	29440	29440	36800	29440
8	Research and development initiatives (may include some model site for new technology like solar pumps, sprinklers, recharge ponds, study of surface and ground water reservoir, aquifer mapping etc)	NRs	147200 15161600	22080 2274240	29440 3032320	29440 3032320	36800 3790400	29440 3032320
	Grand Total Investment of 5 yrs					**15,161,600**		

Section 4

Sectoral Development Strategy of Province Two

(Irrigation Sector)

Sectoral Development Strategy of Province Two
(Irrigation Sector)

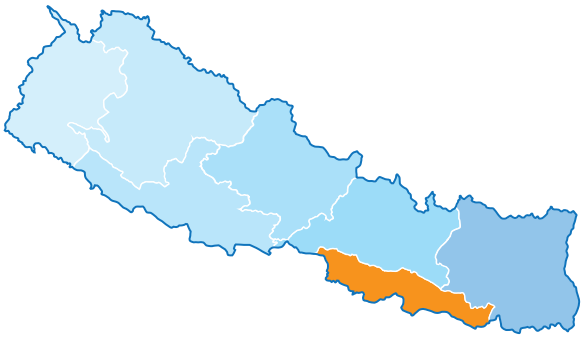
1. Background Information (Introduction to the province existing situation of the irrigation sector)

1.1 Background

Province 2 located on the south-eastern part of the country is sandwiched between two large rivers Koshi in the east and Narayani on the west.

The province comprises of 8 districts Saptari, Siraha, Dhanusha, Mahottari, Sarlahi, Rautahat, Bara, and Parsa. Being the smallest province with 9,661 sq km of Nepal's total area of 147,181 sq km in area, it has second largest population of 5,404,145 as per 2011 census of Nepal. This makes it most densely populated province in the country.

Flat plains of Terai, the chure bhaber, rivers like Koshi, Narayani, Bagmati, & Kamala, a number of lakes or ponds and large ground water reservoirs etc are the main natural resources of the province. Besides the above rivers, it has many flashy rivers those originate from Mahabharata range and flow down to the Indian boarder, which carry a large amount of debris with them. These rivers not only cause the bank erosion but also cause desertification of the agriculture land. Using the above available resources province 2 has to perform its development activities in the sustainable manner.



Location of Province No. 2

Map of Province No.2, Nepal

1.2 Existing Irrigation facility and its potentiality

In the context of irrigation facilities, Koshi pump irrigation system (35,000 ha) in the east, Narayani Irrigation system (37,400) in the west and Bagmati Irrigation project (40,000 ha) and Kamala Irrigation Project (25,000 ha) in the middle part of the province are the major Irrigation Project presently being run by the central government (as AMIS, Agency Managed Irrigation System) and serving in the province. Apart from these projects there are number of small and medium size farmer's managed irrigation systems (FMIS) under surface irrigation systems and similarly under-ground water utilization system covering total irrigation facilities to nearly 372,138 ha of land in the province. The share of surface and ground water is found to be about 60 % and 40 % respectively near to the national figure.

Agriculture, Irrigable, and Irrigated Area in different district:

S. No.	District	Total area (Hectare)	Agriculture area (Hectare)	Irrigable area (Hectare)	Irrigated area (Hectare)	Potential area for irrigation development (Hectare)
1	Saptari	136300	97153	75061	59,534	15,528
2	Siraha	118800	81365	79453	47,185	32,268
3	Dhanusha	118000	76767	75908	47,964	27945
4	Mahottari	100200	68473	65825	18,176	47,650
5	Sarlahi	125900	87291	83863	59,187	24,677
6	Rautahat	112600	66475	65145	62,945	2,200
7	Bara	119000	69568	66727	38,088	28,639
8	Parsa	135300	55214	53109	39,060	14,049
	Total	**966,100**	**602,306**	**565,091**	**372,138**	**192,953**

The table above shows the irrigation development and its potential in the province. The province has about 565,091 ha (about 25%) of irrigable land out of 2,265,479 ha of the country, out of which 372,138 ha (about 65 %) of land is irrigated. But the national figure shows that only 38 % of irrigated area is provided with the year round irrigation facility with the existing infrastructures, owing to the poor performance of the system and lack of sufficient surface water at the source.

Note:

1. A correction of 50% deduction has been made in the irrigated area, through Ground water, to compensate the overlap of the irrigated area of ground water development in the area of surface irrigation.

2. Methodology (Workshop, interaction, FGD, and scope of study and limitations)

2.1 Methodology

The following chronicle steps have been followed under the methodology for the preparation of this document.

Collection of documents and the literature.

Collection of data and information from formal and informal sources

Interaction with different stakeholders

Focus group discussion with the governmental organizations.

Group Discussion with the members of Policy Commission.

Workshop in the presence of people of all walks of life, especially politicians businessman, leader farmers, government and non government representatives, opinion leaders, media personnel etc

Visit to different irrigation divisions, project offices, management divisions, Ground water divisions, ministries and the department of water resources and irrigation etc.

Preparation of questionnaire and collection of information through emails from defined groups.

People from different walks of life contributed through their active participation in the stakeholder interaction program and the consultation workshops.

2.2 Scope of Work:

Nepal's Constitution mandates Provincial governments to formulate and implement periodic plan and annual budget (Article 59) for the overall socio-economic development of their provinces. Accordingly, the Government of Province Two is in the process of formulating their first periodic plan for the next five years (2019-24). The Policy Commission in Province Two is leading on this. As a first step, this planning body intends to prepare an approach paper for the Plan. As a parallel activity, they are also preparing sector strategies for key economic sectors, including irrigation, agriculture, industry, and tourism. They have requested the Economic Policy Incubator (EPI) for technical support. In this particular assignment, EPI seeks to engage a national consultant to prepare sectoral strategies for irrigation in Province Two.

As the other provinces, province 2 is at its initial stage of planning for the overall development of the province. Province 2 is rich in its Land resource having 565,091 ha, or about 25% of 2,265,000 ha of whole irrigable land of the country. Being a flat land, abundant ground water reservoir, easy access the province has good irrigation and agriculture potential. Strategic Irrigation development planning hence can play a crucial role in the overall development of the province.

As stated in the Terms of Reference, TOR, the main scope of the work is to prepare a provincial development strategy for the next 5 years

incorporating its objectives, sub- objectives with due consideration for sustainability, inclusiveness and feasibility. It also states to establish a long list of projects and identify the policy constraints by conducting literature review and studying the data on irrigation compiled from formal and informal sources.

Final draft of provincial irrigation sectoral strategy need to be included the key irrigation development priorities, vision, goal, objectives, strategy, expected outcome, investment plan and the implementation plan of major activities.

2.3 Objectives:

The primary objective of this consultancy is to support provincial planning bodies in formulating irrigation development strategy as a part of the Approach Paper which will ultimately feed into the first ever Provincial Five-Year Plan 2019/20-2023/24.The strategy will identify and prioritize key projects including necessary cost estimates. This will also be useful for developing mid-term expenditure framework (MTEF) which all Provinces are supposed to undertake as part of their periodic planning and annual budgeting process.

The assignment will take days throughout February-May 2019.

2.4 Limitations:

Due to time constraint data used are taken from the secondary source only. That is why there was limitation of;

a. Availability of detailed field level data.

b. Detailed Cost estimates for the projects

c. Objectively verifiable comparative advantage vis-à-vis the Province, other provinces, the country and other countries and objectively verifiable competitiveness indicators.

Since the country has just jumped into the provincial system, it is hence difficult to get the provincial data especially the economic indicators, previous objectives, achievements, lession learned etc.

3. Literature review

Water is one of the principal physical resources that can play a major role in enhancing the pace of overall development of a country. Sustainable development of water resources can significantly contribute to poverty alleviation and economic growth. Recognizing the need for comprehensive management and development of water resources for realizing optimal benefit, Water Resources Strategy (WRS) was formulated and approved in January 2002. The goal defined by the strategy was to "improve the living standard of Nepalese people in a sustainable manner".

Irrigation, one of the major sectors of water resources, has been established as the prime contributor to improving agricultural production and to stabilizing agricultural production in the country.

3.1 Water Resources Strategy (WRS) Irrigation Issues as highlighted in WRS 2002

- Reorientation of supply-driven approach
- Poor performance of irrigation systems
- Lack of effective implementation of Agriculture Perspective Plan (APP)
- Farmers' dependency syndromes and sustainability
- Problems of river management
- Weak institutional capability
- Symbiotic relationship between agriculture and irrigation (weak linkages)
- Strengthening of Water User

3.2 National Water Plan

Following the Water Resource Strategy, National Water Plan was formulated in 2005 to support the WRS 2002 and to guide the water related development activities. The major doctrines of the NWP are integration, coordination, decentralization, popular participation and implementation of water-related programs within the framework of good governance, equitable distribution and sustainable development.

National goals for the irrigation subsector set out in the Water Resource Strategy (2002) and National Water Plan (2005) are;

Full development of the irrigable lands and full realization of irrigation system performance and productivity.

Specific goals include;

near full (97%) development of irrigable lands,

increasing cropping intensity to 200% or more,

full management transfer (of agency increasing system efficiency to more managed than 50%, systems), and increasing irrigation service fee collection to 75%.

3.3 Agriculture Perspective Plan 2005

Another important document guiding the Irrigation development is the Agriculture Perspective Plan 2005. The APP strategy states

as; accelerate the agricultural growth rate sufficiently to obtain strong multiplier effects on growth in employment, both in agriculture itself and in nonagricultural sectors. Growth is to occur through technological change in crop agriculture, the consequent demand pull on high- value commodities, increasing specialization, and trade. The technological change is to be achieved through investment in research and extension, which is expected to generate the improved technology; through policies promoting fertilizer use and improved water control, which will embody the technology, and through specialization and trade made possible by investment in roads and other market. In which irrigation is obviously considered as a prime input.

Well-controlled water is essential to reducing risk and to introducing the water regimes of the high-yield crop varieties that drive the green revolution. Year-round irrigation is a prerequisite of the high-cropping intensities that drive rapid output growth. Both are necessary to shift to high- value commodities that will soon become the most important source of agricultural growth in Nepal and represent a major portion of the 4 to 6 percent agricultural growth rates that characterize the most successful cases of development

The strategy of the terai package is centered on food grain production However, that priority must be attended to concurrently with several others the well-controlled year-round irrigation, efficient fertilizer distribution, all-weather agricultural roads, and rural electrification.

3.4 Irrigation Master Plan, IMP 2018

Irrigation Master Plan, IMP 2018 (still on Draft form) could be a crucial document for the planning of irrigation development. It principally focuses on projects for development of water resources to increase the irrigated area and for increased water supply to existing irrigation systems. These projects are complimentary to programs for modernization, management transfer, stakeholder capacity building and agriculture support.

Irrigation is the application of controlled amounts of water to plants at needed intervals. Irrigation helps to grow agricultural crops, maintain landscapes, and re-vegitate disturbed soils in dry areas and during periods of less than average rainfall. Irrigation also has other uses in crop production, including frost protection, suppressing weed growth in grain fields and preventing soil consolidation. In contrast, agriculture that relies only on direct rainfall is referred to as rain-fed or dry land farming.

Irrigation has been established as the prime contributor to improving agricultural production and to stabilizing agricultural production in the country. Irrigation water , besides improved variety of seeds, fertilizers, credit facilities and access to market, is the main input for increasing productivity by increasing the cropping intensity for agriculture production. Irrigation reduces the risk by diminishing the adverse effects of rainfall variation and uneven water supply on crop growth and yield. The reduction in risk provides an incentive to use cash inputs at optimal level. It also permits farmers to switch to a higher value crop mix. The existing average cropping intensity for cereal crops in the country is 12% mainly due to the non-availability of irrigation water, whereas the total cropping intensity, including other crops, is 159.3%. The cropping intensity where irrigation is available round the year has gone up to 220%. Irrigation efficiency in the country is assumed to be below 30% at present.

In the dry season, without the provision of water through irrigation, few crops can be grown. However, at present, only 38% of the irrigated area is provided with water on a year- round basis. On the other hand, during years of intense rainfall both crops and infrastructure are likely to be damaged. The provision of year-round irrigation, both as supplementary irrigation during the monsoon season and full irrigation during the dry season is crucial to achieve the full potential of the country's agriculture resources. Moreover, protection from floods will both save irrigation infrastructure from damage and destruction while protecting standing crops. Overall, the incidence of poverty in irrigated areas in Nepal is about half of that in rain-fed areas. With irrigation the risk of crop failure is mitigated and farmers are incentivized to invest in more productive farming and high value crops. The provision of irrigation is thus a crucial input in meeting the country's food security goals, adapting to climate change impacts and improving rural livelihoods. In order for irrigation to have its full potential impact, it must be complemented by improved water distribution and efficiency, strengthening of water user associations, improved system operation and maintenance, improved farming technologies and marketing, and protection from catastrophic floods.

3.5 Irrigation development potential :

As shown in the table below, irrigation infrastructure development for a total of

1,454,617 ha. out of 2,265,479 ha of irrigable land has been made so far in the country. The data show as the surface irrigated area of 960,776 ha and the ground water irrigation of 493,841 ha, giving a total of 1,454,617 ha. Hence the 810,862 ha of land is yet to be developed out of 2,265,479 ha of irrigable land. Out of which 270,362 ha of land is to be covered from whole terai and the rest 540,500 ha in the hills and mountains which could be taken as an irrigation potential of the country.

Table 8-1: Irrigation Development Potential

Catagory (ha)	Terai	Hill	Mountain	Total
Agricultural Land	1,479,768	1,565,706	401,288	3,561,322
%	43%	45%	12%	
Total Irrigable Lands 33	1,479,768	626,513	159,198	2,265,479
%	65%	28%	7%	
Existing Irrigated Land				
Surface Water	7223,522	191,126	46,128	960,776
Ground Water	485,884	7,957		493,841
Total	1,209,406	199,083	46,128	1,454,617
%	83%	14%	3%	
New Irrigated Land	270,362	427,430	113,070	810,862
%	33%	53%	14%	
Potential Irrigated	**1,479,768**	**626,513**	**159,198**	**2,265,479**

An important output of Irrigation Master Plan 2018 is the presentation of a project selection tool, as a method of multi-criteria analysis (MCA) of prospective projects for comparative ranking by technical, economic, social and environmental criteria.

It is also found from the study that The majority of the surface water resource (more than 70%) occurs during the monsoon (June to September), a period of relatively low irrigation demand and there is always shortage of irrigation water during winter and spring (October to May) which shows the challenge for irrigation development of new lands and intensification of existing irrigated lands. This necessitates either the inter basin transfer or the storage and transfer of surface water during the dry seasons (winter and spring), or the pumping of groundwater to provide the irrigation water round the year.

3.6 Irrigation Development in Province 2

Being a major contributor of crop production, province 2 is found considerably rich in irrigation development compared to the other province. Chandra Nahar (10,500 hectare), the first Irrigation canal of the country is still running in Saptary district of the province. Intervention of available resources, with the available knowledge and skills is found to have been made like in Koshi, Narayani, Bagmati, and kamala apart of the other small streams and ponds etc. Ground water abstraction has also been made to some extent. All together the figure of the irrigated area of the province, is 372,138 ha (out of 565,091 ha of irrigable land) comes to be the highest in the country. But the problems as identified are;

the water availability is almost 38 % only for the year round irrigation.

the system developed are also running at very low efficiency,

Reorientation of supply-driven approach

Poor performance of irrigation systems

Lack of effective implementation of Agriculture Perspective Plan (APP)

Farmers' dependency syndromes and sustainability

Problems of river management

Weak institutional capability

Symbiotic relationship between agriculture and irrigation (weak linkages)

Strengthening of Water User

3.7 Development Potential and Options

Development potential for irrigated agriculture includes;

i. Intensification of existing irrigated lands (out of 372,138 ha), through development of water resources to increase cropping intensities and modernization of system

infrastructure and operation and management, and

ii. Expansion of rest of irrigable lands (approx 192,953 ha) through the development of water resources, both surface water and groundwater, and associated system and farm development.

Surface Water;

It is found that there is always shortage of irrigation water during dry season and only 38 % of land is provided year round irrigation through the existing system. To attain the provincial goal for the subsector, it will require substantial investment in water resources development and modernization of existing systems, options are:

- Improvement of existing irrigated area (systems);

  There is potential to improve the performance of the existing 372,138 ha of irrigated lands (improvement of irrigation systems), to increase cropping intensities, conveyance efficiency, distribution equity and productivity. Considerable amount of investment will be required to attain the improvement in system performance through modernization and improved on-farm production. This will certainly increase the system efficiency and sub sequent increase in the cropping intensity so as to increase the overall agriculture productivity to some extent. But this is not sufficient to achieve year round irrigation in whole of the irrigated land.

The shortage of irrigation water in dry period for the irrigated land and additional water for the new irrigable area can be achieved either from large scale water transfer projects and/or ground water sources, to achieve year round irrigation on existing/new irrigated land.

It is found from the recent study that there is potential for large scale projects for development of surface water, principally by water transfer. It is expected that the surface water development of large scale water transfer projects, namely Sunkoshi-Marine and Sunkoshi-Kamala diversion will expand 180,000 ha of the irrigated area in the province. This will obviously take time and a huge investment.

Groundwater systems;

for existing areas irrigated from groundwater, there is potential for improvement through improvement of infrastructure and system management, and on-farm improvements. In addition to this ground water development is necessary for the supply of irrigation water during the dry period (September to June) in the surface irrigation system (which we call the conjunctive use of surface and ground water) and also to supply irrigation water in new area of irrigation development.

4. Issues and challenges (Enabling environment, SWOT analysis)

The Constitution of Nepal, 2015 provides powers in each of three tiers of governments –the central or the Federal govt., the provincial or the States govt. and the local bodies (or the Urban and Rural Municipalities). Article 59 of the constitution mandates Provincial governments to formulate and implement periodic plan and annual budget for the overall socio-economic development of their provinces. In general, planning, procurement and implementation of major infrastructure projects will be coordinated by the central level where as the large and medium size projects will be run by the province level and the local bodies will only be in charge to plan, implement and operate smaller irrigation schemes within their geographical boundaries. The tentative definition of major, large, medium and small irrigation schemes in terms of command area can be tabulated as below.

Referring to the present structure, the provincial government will run its development activities through the irrigation and water resource divisions available in each district to develop large and medium scale projects in the province.

Project Category	Terai	Hills	Remarks
Major	CCA > 5000 ha	CCA > 1000 ha	Central level
Large	2000 ha >CCA > 5000 ha	500>CCA > 1000 ha	Province level
Medium	200 ha >CCA > 2000 ha	50>CCA > 500 ha	Province level
Small	CCA< 200 ha	CCA<50 ha	Local level

Issues and challenges in the irrigation development can be discussed in the following SWOT analysis.

STRENGTHS	WEAKNESSES
Apart from many small/medium irrigation schemes in different parts of the province, following Irrigation schemes can be considered as major/important irrigation infrastructures in the province. Chandra Nahar (the first Irrigation canal of the country) in Saptary district. (10,500 hectare) Koshi Pump Irrigation and distribution system (35,000 hectare, in eastern part of province) Narayani Irrigation system (37,400 hectare, in the western part of province) Bagmati Irrigation (40,000 ha) and Kamala Irrigation (25,000 ha) in the middle part of the province Irrigation facility provided in 372,138 ha (ie nearly 65 % of irrigable land) of agriculture land through surface and the ground water system, which is 25% of the national irrigated area of 1,454,617 ha. Availability of Ponds/Lakes Flat land and easy access for agricultural activities.	Lack of year round Irrigation water, only 38 % of the irrigated land is believed to be provided with year round irrigation. The irrigation system running at very low efficiency Weak water users mobilization Very poor ISF collection and weak O & M Lack of Operation and Maintenance Budget Southern part lacks surface irrigation water Most of the small/medium schemes provide seasonal irrigation water, only in the rainy season. Supply driven programs/projects Weak institutional capability Weak linkage /coordination among the agri-irri institutions. Use of traditional practices
OPPORTUNITIES	**THREATS**
Southern part has abundant ground water resource and easy to abstract Bara Parsa quite rich in surface Water Resources. Possibilities of diversion projects (Sunkoshi- Marine and the sunkoshi Kamala), although will be handled by the central government. Bagmati Irrigation Project can irrigate 122, 000 ha of land after sunkoshi marine diversion Kamala Irrigation Project can irrigate 129,000 ha of land after Sunkoshi-Kamala diversion Large area of agriculture land still waiting for assured irrigation water Nearly 35% of irrigable land has to reach the irrigation facility.	Water logging Inundation Desertification of farm land River/watershed management including chure bhabar mgmt. Prioritization of projects/schemes and Political commitment Involvement of middleman in construction and maintenance. Absence of own-ness in the water users.

SWOT ANALYSIS:

It is shown in the above SWOT illustration that nearly 65 % of the irrigable land has been provided the irrigation facilities so far and 35% of it remains undeveloped or untouched. There is possibilities of two large diversion projects, Sunkoshi-Marine and Sunkoshi-Kamala and quite good opportunities of the ground water development for the further intervention for the remaining 35% of land to be developed. At the same time it is also found that only 38% of irrigated land is provided with the year round irrigation, the irrigation system developed so far also running at very low efficiency, because of many reasons like sometimes there is no water at the source, the Water Users' Association who runs the system is not active or may be not empowered, there is lack of O&M budget and no ISF (Irrigation Servie Fee) Collection to meet the O and M expenses etc.

The policy of conjunctive use of surface and ground water would be the best policy for the irrigation development of the province 2, we thus need to divide our development initiatives in two parts so that we can deliver reliable, equitable, year round irrigation to our irrigable land of the province and hence can contribute in the increased agriculture production.

Part I: additional irrigation infrastructure development

Part II: Intensification of existing infra structures

and the irrigated lands. Part I: additional irrigation infrastructure development:

To provide irrigation facility to the remaining un-irrigated area we need to have expansion of the rest of irrigable lands (approx 192,953 ha) through the development of water resources, both surface water and groundwater, and associated system and farm development etc. Possible options are;

Sunkoshi-Kamala Diversion and Sunkoshi Marine Diversion (which covers almost, 250,000 ha, ie almost 50% of the total irrigable area of the province) could be the life- line projects for the irrigation development of province 2. In addition to this Koshi barrage proposed to be built at Chatara will also intensify the irrigation facility in eastern part of the province. The province will have to push to accelerate these programs those are to be developed by the central government.

Ground Water Development is an effective option that we need to adopt for the irrigation development for immediate effect in new or un-irrigated area. We have abundant ground water reservoir which can be abstracted easily, through shallow tube wells especially in the southern part of the province where as deep tube wells may be necessary in northern part.

Part II: Intensification of existing infra structures and the irrigated lands.

Improvement and rehabilitation of the existing irrigation schemes (surface and ground water both) is also equally important to increase cropping intensities in the irrigated area. The Irrigation schemes which have been developed so far, in the irrigated area are also running at a very low efficiency, supplying water for a very short period (june to September) or supplying no water and need major rehabilitation. Intensification of existing infrastructure and the irrigated land may include;

Improvement of existing irrigated lands
This requires improvement of existing irrigated land through development of water resources to increase cropping intensities, conveyance efficiency, distribution equity and productivity.

Modernization of system infrastructure.
This requires investment to increase cropping intensity, either from improvement in system performance through modernization or major rehabilitation of surface water schemes so as to achieve improved on-farm production.

- Ground water development and its conjunctive use;

  for existing areas irrigated from groundwater, there is potential for improvement through improvement of infrastructure and system management, and on-farm improvements.
  For existing areas irrigated from surface water requires supply of water in dry season (October to June) even after the system improvement to make the best conjunctive use of surface and ground water.

Improvement in operation and management.

o Operation and management can be improved through the empowerment of the WUAs through capacity building trainings, improvement in ISF collections etc.

Widening Agri-irri linkage in the project planning and operation process

Research and development initiatives

Project selection and Prioritization.

o The project should be selected with set criteria so that the best use of the investment could be achieved. A model of project selection criteria and the project development process is depicted in the Annex 1-3

Conservation of Chure Bhabar,

Chure Bhaber has been a great challenge for agriculture and social development of province 2. Following measures could be suggested for the conservation of Chure and improvement of downstream water resource. This area presently being intervened by the central government, hence the provincial government may again push the centre for following activities in Chure Bhaber.

o Developing recharge ponds/Check Dams

o Conservation and protection programs.

5. Comparative advantages of the province (Compared to other provinces and other countries)

Province 2 is the most accessible, small, manageable, homogenous and cohesive province among the all provinces of the country. Being accessible in all parts of the country it is easier to provide necessary services to the people. The province can also take the advantage of easy access to India, in its development endeavors. Compared to the other province, province 2 can generate necessary commodities at cheaper rates. The infrastructure development obviously will be cheaper than that of the others. In a comparative data of irrigated area, province 2 is found to have ranked in highest position which also shows that the province is most potential for the irrigation development especially in ground water development.

Command Area under Surface and Ground Water by Province (IMP-2018)

Province	Surface Water								Ground Water	Grand Total
	National/ DOI	Agency Assisted FMIS	Non Assisted FMIS	DoLIDAR	Non Conv	Un-identified	Out of Criteria	Total		
1	82,877	72,933	7,183	3,361	1,707	17,278	13,838	199,177	99,726	298,903
2	187,009	65,032	10,984	0	968	11,446	7,506	282,945	183,056	466,001
3	9,516	33,803	8,750	2,580	3,467	12,574	2,582	73,272	15,262	88,534
4	14,274	26,034	5,044	0	1,451	11,168	6,076	64,047	21,144	85,191
5	107,218	85,680	11,521	3,173	2,083	6,430	979	217,084	118,503	335,587
6	0	17359	712	5589	1217	3385	5323	33,585	470	34055
7	38,644	31,223	2,642	4,234	1,921	7,619	4,383	90,666	55,680	146,346
Total	**439,538**	**332,064**	**46,836**	**18,937**	**12,814**	**69,900**	**40,687**	**960,776**	**493,841**	**1,454,617**

Source: Irigation Masterplan (Draft)

6. Planning Approach

Vision

The national water sector goal has been defined as 'living conditions of Nepali people are significantly improved in a sustainable manner.'

Vision of Irrigation policy 2070

Year round irrigation is provided in every agricultural land so as to contribute in increased agriculture productivity.

In view of the above national goals and the findings SWOT analysis the provincial goal of the Irrigation Development can be defined as "Year round irrigation facility is provided in sustainable manner through the conjunctive use of surface and the ground water so as to contribute in increased agricultural productivity".

Objectives/sub-objectives.

To achieve the above provincial goal, the objectives and sub objectives of irrigation development can be summarized in the following specific points.

Main Objectives:

Following 2 main objectives can be set to provide year round irrigation through conjunctive use of surface and ground water.

1. To provide assured irrigation in 20,800 ha of irrigated land through improvement and modernization of existing irrigation schemes of surface and ground water system.
2. To provide assured irrigation in 91,000 ha of agricultural land through ground water development in water scarce area of new and existing irrigated land.

Sub-Objectives of Irrigation development

a. Increasing the average cropping intensity of 200 % or more in the irrigated area.

b. Ensuring that all the users from head to tail have the convenient access to required quantity of water as and when required.

c. Increasing agriculture production and enhancing food security through irrigation.

d. Promoting the empowerment of irrigation water users.

e. Ensuring ISF collection to contribute 40 % of O & M cost.

f. Ensuring Agri-irri linkage/coordination in the irrigation activities.

g. Promoting research and development activities in the modernization of irrigation.

Policy/strategies

To be sustainable, a development plan needs to be more closely integrated with sustainable social and economic development. The irrigation development hence needs to be guided with the following principles so as to achieve the set goal of "Year round irrigation facility is provided in sustainable manner through the conjunctive use of surface and the ground water so as to contribute in increased agricultural productivity".

Social Development Principles

- People affected by a project should be encouraged to participate or take ownership, as appropriate.
- Irrigation development should directly contribute to improved health and living conditions.

- Irrigation development should ensure long -term foodsecurity.
- Socially and economically disadvantaged/ vulnerable groups (e.g. poor, disabled) should be considered for targeted assistance to ensure that they benefit significantly from projects.
- Irrigation development helps to reduce the incidence of poverty, unemployment and under-employment
- There should be more gender-balanced participation.
- Appropriate technology that is affordable, manageable and cost-effective and which will generate local employment opportunities should be emphasized.

Economic Development Principles

- Irrigation development should contribute significantly to economic output.
- Irrigation development should address poverty alleviation and employment generation.
- Irrigation development should be one of the main components for increasing food production.
- The economic benefits of Irrigation development should be shared equitably by region and by income group.

Environmental Sustainability and Irrigation Development

A sustainable development protects conserve and manage natural resources and ecosystems while orienting technological, economic and institutional changes to meet the needs of the present and future generations. Sustainable growth requires that the rate of consumption of natural resources does not exceed the rate of their regeneration.

- Should protect the environment and conserve the biodiversity of natural habitat; and
- Irrigation development should prevent and mitigate water-induced disasters.

Overall Policy Principles for Irrigation development

Overall policy principles that are to be used to guide the irrigation development of the province 2 includes:

Economic efficiency and social equity shall guide the irrigation development and management.

Operation and maintenance of the irrigation system shall be decentralized in a manner that involves autonomous and accountable Water users group.

Participation of and consultation with all stakeholders shall constitute the basis of Irrigation development.

Institutional and legal frameworks for coordination and transparency shall be an essential feature of irrigation development and management.

Wider adoption of the best existing technologies and practices, as well as rapid innovation and adaptation of both institutional arrangements and new technologies, shall be ensured.

Outcomes and major activities (long list of projects)

Major outcomes of the study that the provincial government would need to accommodate in their 1st five year planning can be summarized in the following points.

Improvement of existing irrigated lands.

Modernization of system infrastructure.

Ground water development and its conjunctive use.

Improvement in operation and management by;

- Motivating WUAs in irrigation development and ISF collections
- providing 60 % O & M budget for large and medium scale schemes

Research and Development initiatives

Ensuring involvement of all the stakeholders through set criteria and process of Project selection, Prioritization and development.

Major activities to address the above outcomes and to achieve the set objectives can be summarized below.

1. Improvement of existing irrigation schemes (surface scheme)) including modernization of system infrastructures to ensure assured irrigation in 16000 ha of existing irrigated land.
2. Improvement of existing irrigation schemes (ground water) to ensure assured irrigation in 4800 ha of existing irrigated land.
3. Ground water development (preferably shallow tube wells) in the area of surface irrigation to supplement water in dry period (October to June) and/or in new area of irrigable land to ensure assured irrigation in 91,000 ha of existing irrigated land.
    a. Shallow tubewell in southern part, electric 5000 nos
    b. Shallow tubewell in southern part, diesel 19500 nos
    c. Shallow tubewell with solar power 500 nos
    d. Shallow tubewell in northern part 5000 nos e.g. Deep tube wells as per need 400 nos
4. Operation and Maintenace of irrigation schemes to meet regular and emergency maintenance thereby ensure assured irrigation in existing irrigation systems.

5. Agriculture Road development in the farm land.
6. Institutional development and coordination activities, to empower WUA and ensure its participation in irrigation activities, including ISF collection. (activities may include, workshop and interaction meeting with the agriculture group and capacity building training, model site visits etc of the farmers)
7. Research and development initiatives (may include some model site for new technology like solar pumps, sprinklers, recharge ponds, study of surface and ground water reservoir, aquifer mapping etc)
8. Churiya Conservation and watershed management including check dams for trapping debris and protection works. (to be implemented by the center)
9. Sunkoshi Marine Diversion Multipurpose Project. (to be implemented by the center)
10. Sunkoshi Kamala Diversion Multipurpose Project (to be implemented by the center)

7. Implementation plan:

As the document refers to the first periodic plan for the next five years (2019-24), implementation of the activities will have to be performed in the coming five years from 2019/20 to 2023/24. Implementation of the activities in right way is essential to achieve the set goals and objectives. Improvement in existing infrastructures and institutions and use of abundant ground water resource especially through shallow tube wells is the key to the successful implementation to achieve the set objectives of year round irrigation to 50% or more, area of irrigable land.

There are eight irrigation divisions one in each district, four ground water development divisions through which the implementation of the activities can be achieved. Apart from this local bodies can also be mobilized to achieve the set goals of the province. Some necessary corrections are suggested in present organization structures to achieve better implementation. Research and development activities can be performed through the provincial department or the directorate, which has been proposed in new structure of the organization.

Implementation plan in graphical form is shown in the Annex 4.

Investment plan (cost estimated, investment from public and private sector)

To attain the provincial goal for the irrigation subsector, it will require substantial investment in water resources development and modernization of existing irrigation systems. A some of NRs 15,161.6 millions is proposed for the investment in the irrigation subsector in the activities like, improvement of existing system, ground water development (preferably shallow tube wells) strengthening of the institutions and research and development. Details of cost and the investment plan is shown in the Annex 5 & 6 respectively

Institutional arrangement:

Presently there are eight water resource and irrigation development divisions one in each district for surface water development and river managements and four Ground water development divisions in Parsa (Birganj), Sarlahi (karmaiya), Mahottari (Jaleswor), and Siraha (Lahan) for ground water development.

As we are proposing large and medium scale projects to be implemented through the province level, it will be required to strengthen the present structure by some province level department or a directorate so as to enhance and appraise the project proposals with sufficient discussions before it is implemented through the division offices.

Similarly ground water divisions are in need of electrical sub engineer, mechanical sub engineer, junior hydro-geologist and AOs in their divisions, some of which are recently curtailed in present structure.

Implementation matrix (value chain)

Implementation activity is the important aspect to add full range of value chain in different phases of irrigation development including, project inception, development and post project phases. Value chain of irrigation service cannot function in isolation in its vertical chain or the set of activities. The important aspect of value chain approach is that it also considers the “Horizontal impacts on the chain, such as inputs and finance provision, extension support and general enabling environment, farmers readiness and their ability to access to markets profitability which lead to broader range of value chain intervention. Some companies for some goods agree to support the farmers through input supply, land preparation, extension advice and transporting produce to their premises.

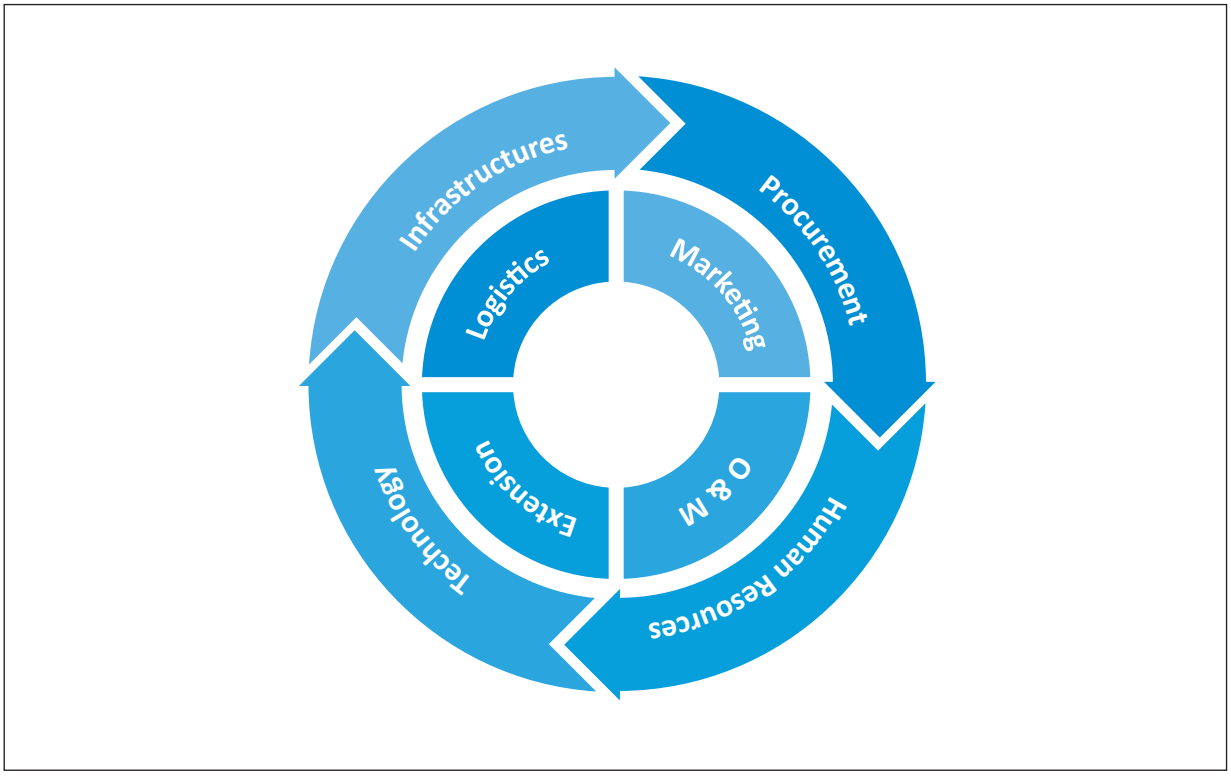
There is positive correlation of agricultural growth with the investment in irrigation infrastructures and the other technologies. The government has responsibility to provide essential services or the infrastructures such as rural roads, agriculture roads, agriculture research and extensions etc to differentiate the product/services from the other competitors of the other provinces / countries.

The value chain of the irrigation development is thus to identify the cost effective technology by reducing cost and optimizing the investment so as to

maximize the benefits. The advantages of value chain can be seen by breaking the activities into smaller pieces to understand the cost and benefit. This is generally shown through the process of economic analysis and represented by the economic internal rate of return (EIRR). Value chain analysis hence is a continuous process and relevant /useful tool to develop and maintain sustainable and competitive services in which the activities are divided in two major categories, support activities and the primary activities as shown below to obtain the effective value chain of the services.

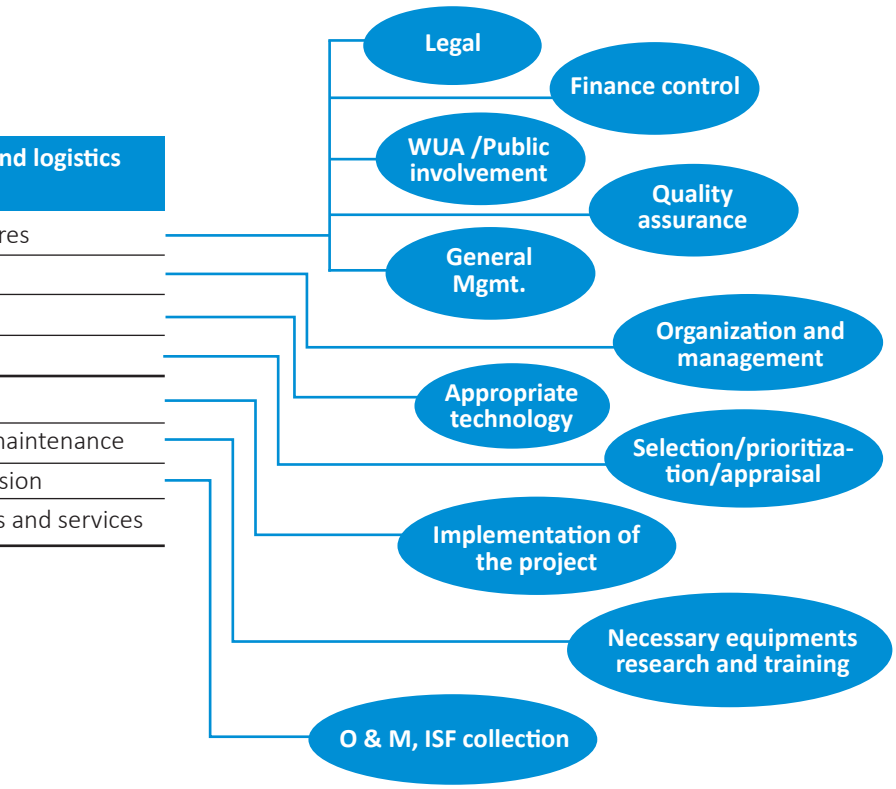
Support activities:	**Primary activities:**
Firm/intrastructures	Inbond logistics Outbound
Human Resource	logistics Operation and
Technology	Maintenance
Procurement	Marketing & sales and services

Support activities are very crucial as they help primary activities to work more efficiently.



Extended activities over the above major activities can be shown as below:

Major	Infrastructures and logistics
Support Activities	Firm/infrastructures
	Human Resource
	Technology
	Procurement
Primary Activities	logistics
	Operations and maintenance
	Agriculture extension
	Marketing & sales and services



Section 5

Sectoral Development Strategy of Province Two

(Tourism Sector)

Sectoral Development Strategy of Province Two
(Tourism Sector)

1. Background:

Tourism sector is considered as one of the fastest growing largest composite industry as international travel arrivals reached 1.4 billion in the year 2018 (UNWTO) which was just around 25 million in the year 1950. It is forecasted further to cross 2 billion by 2030. Tourism is considered as service sector comprising of accommodation services, food and beverage services, air and surface transport services, airport services, travel organizing services, guiding services, art, craft and souvenir services, cultural, leisure and recreation services. "The growth of tourism in recent years confirms that the sector is today one of the most powerful drivers of economic growth and development. It is our responsibility to manage it in a sustainable manner and translate this expansion into real benefits particularly to all local community creating opportunity for jobs" said by UNWTO Secretary General Zurab Pololikashvii in a Press Release 19003 of UNWTO on 21 January 2019.

Pattern of tourism is seen affected globally by the changing level of disposable income, use of technology, demographic change in life expectancy, gender equality, and sensitivity towards environment. Along with the enhanced knowledge, the values in tourism are seen moving towards appreciation of destination features, experiencing novelty, participating along with destination community, and feeling something achieved.

The tourism growth is the result of awareness worldwide of the sector's potential to lead economic growth, social inclusion, and cultural and environmental preservation (UNWTO). "Inclusive growth and ensuring a future with quality jobs are the concerns of governments everywhere. Travel & tourism which already supports one in every ten jobs in the planet, is a dynamic engine of employment opportunity." Gloria Guevara, President & CEO, World Travel & Tourism Council.

World Travel & Tourism Council recognizes that travel and tourism's total contribution is much greater and aims to capture its indirect and induced impacts. Its total contribution to global GDP is 10.4 percent and estimated to reach 11.7 percent by 2028. In 2017 tourism sector created 9.9 percent of total employment and expect to have its share of 11.7 percent by 2028. Similarly, international tourism as visitor export is accounted as 6.5 percent of total export in 2017 which is expected to be 6.9 percent by 2028. Tourism investment in 2017 remained to the tune of US$ 882.4bn which is 4.5 percent of total investment and expect 5.1 percent by 2028.

Nepal, since the very first periodical plan in the 50s, has identified tourism as a sector to be developed for its economic growth and development. Its objectives are seen ranging from earning foreign currencies, creating employment, generating revenue to regional development.

After the promulgation of new Constitution in the country in the year 2015, seven Provinces came into existence. And Nepal got engaged into rigorous process of implementing Federal system. All seven Provinces in the country after its elected representatives are focused on its development and growth agenda assessing its strength on available resources. Province II also under the Policy Commission has identified Tourism as one of its prospective sector to be developed for its economic achievement.

1.1. Introduction of the Province:

Province II is composed of 8 Districts which were named and delineated for administrative purposes in the past regime. Districts are still recognized for the purpose of administrative coordination of local bodies within the Province. From West to East Parsa, Bara, Rauthat, Sarlahi, Mahottari, Dhanusha, Siraha, and Saptari are the districts of this Province. The Province with area of 9,661 sq.km. is the smallest representing just 6.56 per cent of the total area of the country but comprises largely the fertile plain lands. Contribution of the Province to national GDP accounts 16.2 percent. Three major economic sector of the Province at present are Agriculture, Industry and Services which contributes 18 percent, 24 per cent, and 12.4 percent to province GDP (Budget speech, Province 2, 2075/76).

Province with population of 5,404,145 (census of 2068 AD) which represents 20.4 percent of the country is one among the two most populated provinces of the country. However, 2.5 million of its population belongs to the status of multi-dimensionally poor in index. Economically active population in the province is 31 per cent which is lower than national average of 39.9 percent (Budget Speech 2075/76).

Province is composed of more urban municipalities than rural municipalities demonstrating its characteristics of population density and road infrastructure. There are 73 Municipalities, 59 rural municipalities, 3 sub- metropolis, and 1 Metropolis under this province. Province is rich in irrigated land for agriculture contributing 23 per cent to national GDP with production of major cereals as paddy, wheat, maize. But Province is on net food deficit and average per capita income is among three lowest provinces with US $ 922 (Federal Nepal: Provinces, comparative analysis of economic and administrative data and challenges, Governance facility Jan 2018). Bara district ranks higher in average per capita as US $ 1480 followed by Parsa as US $ 1223 but Siraha as US $ 689 and Mahottari low with US $ 681. Labor productivity of the province is higher to national average as 103.5 percent (Province Budget Speech 2075/76)

Province is getting environmentally sensitive due to degradation along the Churiya Siwalik range of hills in its northern edge. Province is lowest in forest areas with only 4 per cent of national total and also lowest in conservation area with just 627 sq.km. Which is just 2.2 per cent of total national conservation area. Province is also poor on water resources and no new hydro power project is in pipeline (Federal Nepal:

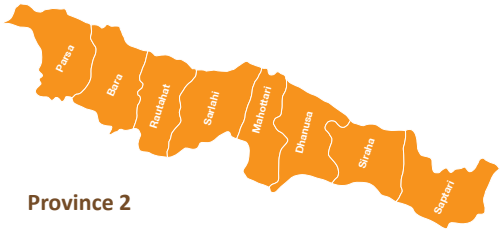
Provinces, comparative analysis of economic and administrative data and challenges, Governance facility Jan 2018).

It has highest infant mortality and life expectancy rate is among the highest. Literacy rate is lowest with 50.2 per cent and lowest rate of access to toilet but high on access to safe drinking water.

This Province does have highest density of national and rural road with 24.4 percent of the total 70,474 km. of road. The major connecting link for the Province is the Mahendra Highway (East West Highway) which runs longitudinally across the Province. However, all major cities of the Province remain disconnected from this highway. Janakpurdham, Rajbiraj , Birgunj and Gaur lie 25, 10, 24 and 42 km south of the Mahendra Highway, respectively. The Tribhuvan Highway does not cross as much of the Province as the Mahendra Highway, but it is most important link as it connects the Province to Kathmandu and to the India. The starting point of Tribhuvan Highway i.e. Birgunj is the most important International Gateway and trade way for this Province and entire country and hence known as "The Gateway of Nepal". In terms of revenue generation, Birgunj custom point is the largest. Birendra highway which is connected to Mahendra highway from Headquarter of Rautahat district Gaur to the Chandranigahpur (largest city of Rautahat) which is 42km in length. Province is connected by national capital with three domestic airport of Simara, Janakpur, and Rajbiraj.

The number of medium and large scale industry in the Province is counted as 501 providing employment to the tune of 52,000. The province ranks 4th in the number of micro, cottage, and small scale industries numbering 42,302 representing 13 per cent of the national total.

Province thus can be considered as economically lagging behind in relation to tremendous potentiality of harnessing its strength of resources implementing well designed strategic plan backed by effective policy program intervention with due priority to the prospective sectors of advantage.



Province 2

1.2. Existing Situation of Tourism:

Nepal, since its political change in early 50s witnessed international arrivals motivated by high mountain adventure in the Himalayas followed by cultural motivation in 60s concentrating around capital city of Kathmandu. Tourism is getting momentum with growth in Nepal since its first perspective plan in 1972 with institutional set up of Tourist Board to Department of Tourism, Ministry of Tourism and Nepal Tourism Board as National Tourism Organization.

Tourism is one of the most vulnerable sector with direct implications of political upheavals, war, terrorism, conflict, incidences as 9/11, recession, and epidemics. Nepal experienced set back on international arrivals time to time because of the incidents as supply embargo during political turmoil in 1990, Hijacking of Indian airline flight which was averted by effort of Visit Nepal Year campaign of 1998. Similarly, Royal massacre in 2001, royal takeover in 2004, followed by insurgency, which was addressed by another national campaign of Nepal Tourism Year in 2011.

Recent political transformation under the Federal structure, particularly after the completion of three tier election, started to show growth with nearly 1.2 million as record arrivals (NTB Press Release 2019). Along with the stability in the government, economic agenda is getting priority and potentiality of tourism is highlighted in many of the public documents though direct contribution of tourism to national GDP is below 5 percent.

Nepal is positioned in global tourism market with its strength of nature and culture based heritages. Over 1/5th of country's land area being under protected zone and four World heritage sites have been its major base of attraction. Trip Advisor has listed Nepal among top 25 best Destinations. Lonely Planet has designated Nepal as one of the Best Value Destinations. Motivation to visit Nepal is substantially remaining holiday purpose with 70 percent, while 15 per cent for pilgrimage, and 8 per cent for adventure activities of trekking/climbing in the year 2017 (MOCTCA Annual Statistics 2018).

Air transport is playing dominant role in Nepalese tourism due to its land-locked situation and geo-physical topography. Over 80 per cent of its total arrivals in 2017 used Air transportation. Within the country, tourism activities are remaining limited to certain

location due to transport constraint. Out of 56 airports, only 32 are in operation and 20 domestic air operators are engaged. Though Air Service Agreements are concluded with 38 countries, only 30 airlines are operating with around 8 million of annual capacity of seats. (On the basis of MOTCA Annual Statistics)

However, Province II has benefit of international entry and exit through surface transport as out of seven such points, Birgunj in Parsa is one among them though number of third country nationals entering from Birgunj was just 1100 out of 179,641 as total surface entry in the year 2017, which accounts only 0.6 percent. (On the basis of MOTCA Annual Statistics) A survey of Indian visitors to Nepal entering by surface transport conducted by Nepal Tourism Board in the year 2009, showed Birgunj and Vittamod of Janakpur in this Province as prominent for Indian nationals among eight such points in the country.

Estimated number of Indian tourists entering Nepal by Land using Vehicles:

Border Point	Pax by Bus	Pax by Mini- bus	Pax by Car/Jeep	Pax by Bike	Total
Birgunj	27,320	6,072	34,648	4,250	72,290
Vittamod (Janakpur)	25,360	4,128	43,200	7,529	80,217
Kakarvitta (Province I)	13,280	3,696	40,250	3,621	60,847
Biratnagar (Province I)	5,520	360	12,288	3,017	21,185
Mahendranagar (Province 7)	7,480	-	32,040	4,047	43,567
Dhangadi (Province 7)	-	-	5,284	590	5,874
Bhairawa (Province 5)	99,760	7,632	28.628	4,724	1,40,744
Nepalgunj (Province 5)	120	-	4,554	57	4731
Total	**1,78,840**	**21,888**	**200,892**	**27,835**	**4,29,455**

Source: Survey of Indian Visitors to Nepal by Land, 2009, Nepal Tourism Board, 2010

Above survey data demonstrated Birgunj and Janakpur remaining major entry points of the Province for Indian nationals with 16.8 percent, and 18.7 percent respectively totaling 35.5 percent share of Indian nationals visiting Nepal through land route using surface transport vehicles.

Neighboring countries as India, China, and Sri Lanka are emerging prominently as top source market occupying nearly 33 percent of total annual arrivals in the country. Seasonality is still remaining as an issue with Peak trough ratio of 1:2.7. (On the basis of MOTCA Annual Statistics) Nepal Government by next year 2020 has ambitiously targeted arrivals of 2 million annually observing campaign of Visit Nepal Year.

Hotel capacity is limited to around 40,000 beds concentrating mostly around Kathmandu, Pokhara, Chitwan, and Lumbini. Over 90 per cent of the International Tourism activities are limited to six sites of the country along Kathmandu, Pokhara, Chitwan, Lumbini, Everest, and Annapurna. (On the basis of MOTCA Annual Statistics). Similarly, Travel and Trekking Companies are registered in number as 3824 and 2637 respectively but most of them are concentrated in Kathmandu, and Pokhara. (MOTCA Annual Statistics)

Country specific basic indicators published on Nov, 2018 by UNWTO states Nepal's inbound arrivals as 940 thousand with average stay of 12.6 nights in 2017 sourcing 11.17 percent from Americas, 34.57 percent from East Asia and Pacific, 21.81 percent from Europe, 26.6 percent from South Asia. However, average expenditure per day is very low as US$ 54 and outbound is 1197 thousand with total expenditure of US$ 889m. (UNWTO, Nov 2018)

World Travel & Tourism Council estimates Nepal's visitor exports in 2018 is 1048 thousand and expects to reach 1673 thousand by 2028. Contribution to GDP by foreign visitor spending is estimated 43 percent, and domestic spending to 57 percent while global contribution from foreign visitors spending is 27.3 percent and domestic visitors spending is higher as 72.7 percent. Total Arrival figures of Nepal seems varying on different sources most probably due to methodology. However, it clearly showed the contribution of Domestic tourism in Nepalese economy is substantial, which is not recorded by official data of Nepal.

World Travel & Tourism Council mentions total contribution of tourism to national GDP of Nepal is US$ 1919.8 which comes to 7.8 percent. On the basis of tourism contribution to GDP, Nepal

stands on the rank of 120 out of 185 countries. Similarly, direct and indirect employment is created to the tune of 1027 thousand which comes 6.6 per cent of the total and expected tourism employment of 1323 thousand (7.0 per cent) by 2028. Visitors export in 2017 is mentioned US$ 713.3m as 28 per cent of the total export and expecting US$1251.0m by 2028 as 32 per cent of total export. Investment in tourism is low as US$ 170.7m which is just 2.3 per cent of the total investment and estimated to reach US$ 289.5m by 2028. (World Travel & Tourism Council)

However, segregated arrival data relating tourist, their purpose of visit, length of stay, and source market are not recorded by any agency at provincial and district level. Nepal, countrywide, in relation to its potentiality due to availability of tourism resources, its development is lagging behind. Particularly, Province II do not seem to have benefitted even up to national level in developing tourism. Fundamental reason could be its overemphasis on agriculture and industry sector rather than tourism sector in past development effort. Potential sites in the Province are observed to be used limited along the traditional way of visiting temples for pilgrimage including Janaki temple in Janakpur from domestic and neighboring India source market. Parsa National Park as an attraction of flora fauna is also visited from Chitwan side of Province III rather than Parsa side due to risky road from Kathmandu to Simara. Therefore, foreign tourist visiting Parsa National Park with its abundance of protected flora and fauna is below 1 percent of the total Park and Conservation area visitors since last five years.

Number of Foreign Visitors to National Park and Ratio to Parsa National Park:

Park	Year 2069/70	Year 2070/71	Year 2071/72	Year 2072/73	Year 2073/74
Parsa National Park	192	379	263	235	417
Total in All Parks and Conservati on Areas	508212	555663	514277	387383	604091
Parsa share to total	0.03%	0.06%	0.05%	0.06%	0.0

Source: Department of National Park and Wildlife

In Parsa, Bara, and Rauthat districts, agriculture is remaining predominant occupation as nearly 54.79 percent, 46 percent, and 73 percent respectively of economically active population are dependent on it. Earnings from tourism is not significant but appears to have made little dent on the livilihood of the majority of ethnic groups by domestic tourism. (Integrated Tourism Development and Management Plan 2009 – 2013 for Parsa, Bara, Rauthat Districts and surroundings, Terai Tourism Development Committee, September 2008)

At Provincial level presence of Travel operators are not seen, and investors are not giving priority to this sector resulting the state of tourism at present being most unorganized. Domestic and tourists from India are observed visiting religious historical sites on their own information. However, accommodation facilities are developed to certain extent but limited to specific urban centers as Birgunj, Simara, and Janakpur which are not recognized internationally as Star rated as many of those business units are not under the national network of Hotel Association. But, many sub-standard lodging facilities are seen coming up with local investment along the urban centers and highways which are not monitored with specific standard by any agencies. All such facilities are found targeting to serve the transit clients moving along the highways.

Present capacity of Accommodation facility:

Location	Bed Number	Average Tariff per night Rs	Occupancy percent	Number of Employee	Standard	Tentative gross cost per room Rs
Janakpur city	300	4000/-	60	120	good	50 lac
Broader Janakpur	1000	3000/-	50	400	ordinary	30 lac
Birgunj	13000	2500/-	50	4000	Good to ordinary	25 lac
Bardibas	300	3000/-	60	60	Good to ordinary	30 lac
Lahan	1000	2000/-	50	200	ordinary	25 lac

Source: Based on the information during focused person to person meeting with (1) Mr Vijaya Jhunjhunwala, Welcome Hotel, Janakpur (2) Cuberage Alam, Secretary General, Nepal Hotel and Tourism Association, Parsa, (3) Bishnu, President, Siraha Samaj (4) Dinesh Mahato, Lahan (5) Rakesh Kumar Gupta, Ward 7 President, Lahan Municipality

There seems to be over 7500 rooms in the Province including all the lodges and hotels. They are registered with Cottage and Small Industry Office or Company Registrar Office not with Department of Tourism. Many of the hotels are voluntarily organized under Nepal Hotel and Tourism Business Association.

Assuming average 50 percent occupancy with length of stay of 3 days shows annual movement of around 1million visitors in the Province. Guests around Birgunj hotels are motivated by recreation tourism of casino particularly from India on business or holidays.

Hotel bookings, as responded by operators, are estimated around 25 percent online, 35 percent by NGOs, and remaining by operators of Kathmandu or direct consumers. Guests at hotel are around 50 percent from neighboring India, 25 percent domestic and remaining 25 percent from long haul third countries.

Brief Assets for Tourism are expressed during the workshop and in different publications are remaining as follows:

District	Religious	Cultural	Natural	Historical	Events	Others
Parsa	Viswa Vihar, Gahawamai, Bindabasini, Parasnath, Koilabhar mai, Bhumarimai Bhatha temple of Dugdhesore Mahadev		Parsa National Park, Lauka Dah close to Ghoda machan	Alau Durbar Ranigunj Parsa gadhi	Baisakh Purnima Babadham Gadhimai mela	
Bara	Gadhimai, Krishna mandir, Sahajnath mandir Kankalinimai, Ranibas, Sanukhiyamai Hariharpur mandir, Sddhesorenath mahadev Baragadhi mandir, Jitpur Gadhimai, Raj devi, Devi mai, Ramjanaki mandir		Gadhiwarba pond, Jharkhuria pond, Gadiganga tal, Ishara Pokhari, Halkhoria lake Kamini Daha, Sophiri lake	Simraungadh, Bara gadhi, Kabahi durbar		
Rauthat	Pataura Mahadev, Idgah, Rajdevi temple Puranewa math		Barahawa Lake Margahr Wetland Nunthar Kamala picnic spot	Bishrampur		
Sarlahi	Jangesore Mahadev, Malangwa baba Chimanimai		Nadi Lake, Nariman tal			Murtiya
Mahottari	Jalesorenath, Mathiyani Math, Laxmi Narayan Mandir, Tutesore mahadev, Sonamai sthan	Tasmaiya Baba Kotha, Ratwara math		Karik sthan		

District	Religious	Cultural	Natural	Historical	Events	Others
Dhanusha	Ram Mandir, Janaki Mandir, Hanuman Mandir, Janak Mandir, Kupesworenath Mahadev, Hanushadham, Dhanaujisthan Udayaswore Mahadev, Dhanesore Mahadev, Manimandap, Vivaha mandap	Mithila Art, Jhijiya, Sama Chakheba, Jharri dances	Agni Kunda, Angraj Sar, Beeshahara sagar, Bihar Kunda, Bindhichowk Pokhari, Biral sagar, Chapkai pokhari, Devpura lake, Dhanu sagar, Ganga sagar, Gautam Sarobar, Ithi pokhari, Kapalmochani sagar, Kuti pokhari, Laski pokhari, Shiva sagar, Maharaj sagar, Manipaltal, Murali sagar, Parseni sagar, Rukmini sagar, Singrahi lake Subbaji pokhari, Tarahi pokhari, Laksman sar and many others		Vivaha panchami, Ram Navami, Chath, Jhulan	Brihat Parikrama Ramayan circuit
Siraha	Kankalidevi, Rajdevi, Nandababa Saswatnath, Uttaraini		Sahalesh, Kamal daha Manik daha, Baba tal	Pakdiyagadhi		Golbazar Brick factory
Saptari	Chhinnamasta Kankalimai					

2. Methodology:

2.1. During the field visits by sector expert, two Workshops cum discussion at Janakpur, one in Birgunj, and one in Bardibas were organized with key stakeholders. Interaction with representatives of related public agencies, and Focus Group Discussion with business and policy makers were carried out to define the resource assets available in the province, identifying issues and challenges to develop the sector, and views on possible intervention of policy environment as well as specific projects and programs to capitalize the available assets into economic output for the prosperity of the province by developing basis for specific time bound strategic plan for the province. Subjective statements and observation of stakeholders were considered for recommending planning approach as qualitative source of information.

Secondary information were collected by reviewing the published and unpublished reports and documents from the Ministry of Culture, Tourism, and Civil Aviation, National Planning Commission, Nepal Tourism Board, Tara Gaon Development Board, Greater Janakpur Development Committee. Provincial documents as Budget, Policy programs and presentation made by Policy Commission were based for the review.

Analysis is based on review of general background, physical structure, and socio-economic conditions of the Province.

2.2. Limitations: Absence of base line data related to tourist arrival, source market, per capita spending, length of stay, spending pattern, accommodation facilities, occupancy, tariff, travel operators at Province level and even District or local level has been great constraint in determining the industry capacity, and volume and value of the sector. There has not been any thematic studies at Province and local level related to tourism activities. It is the first planning exercise at Provincial level and process is to be understood in the context of implementing federalism in the country.

For the purpose of this study and exercise, tourists are considered as per the definition provided by UNWTO which defines tourists as people who travel and stay in places outside their usual environment for more than 24 hours and not more than one consecutive year for leisure, business and other purposes not related to the exercise of an activity remunerated from within the place visited.

Cost estimates for the identified projects need further verification with input from the technical expert.

Objectively verifiable comparative advantage vis-à-vis the Province, other Provinces, the country, and other countries and objectively verifiable competiveness indicators are limited due to absence and non- availability of data.

3. Literature review:

First Periodical Plan (1956-1961) of the country recognized tourism as another means of acquiring Foreign exchange after export trade and recorded arrival of around 5000 international tourist in a year establishing Tourism Development Board in 1957. Second Three year Plan (1962-1965) mentioned program for hotel and travel facilities along with publicity, and sites for development were spelled out as Kathmandu, Pokhara and

Lumbini in present Province III, IV, and V. Third Plan (1965-1970) for the first time, Birgunj in Parsa was picked up to establish tourist office to facilitate surface arrivals. Fourth Plan (1970-1975) envisaged regional development concept with north south growth axis and prepared Tourism Master Plan to develop sector in a planned way which was published in the year 1972.

Master Plan underscored (1) Sightseeing tourism characterized by short stay, (2) Trekking Tourism, distinctive in Nepal, (3) Nepal-Style Tourism, which is combination of cultural sightseeing and activity oriented, (4) Recreational Tourism targeting Indian visitors, and (5) International Pilgrimage. (Nepal Tourism Master Plan 1972)

The Nepal Tourism Master Plan 1972 anticipated impulses from Tourism on industrial and agricultural activities and designed promotion programs to encourage such linkages under the aims of import substitution, employment and income formation. But no attempt has been made to define this. According to one survey referred by Development Research and Communication Group in 1980, the tourists tested spent an average 24 percent of their expenditure on handicrafts, while 29 percent on accommodation and 23 percent on food. (Development Research and Communication Group, 1980). Burger also revealed shares of 18 to 25 percent on handicrafts during 1974/75. (Veit Burger, 1980). Although no detailed impact studies are available, there is evidence that tourism has become a strong promoter of traditional arts and crafts at a time when these skills were about to vanish for lack of patronage. (Nepal Tourism Master Plan Review, 1984)

The 1972 Plan makes it quite clear that in order to sustain growth anticipated for the Plan's second phase up to 1980, a concerted marketing strategy should have been set in motion….. Basic to this is the establishment of a tourism promotion board which, while under the Ministry, must be able to operate outside the government system. (Nepal Tourism Master Plan Review, 1984)

Under the Sixth Plan (1980-1985) Tourist Information Centers of Janakpur and Birgunj were strengthened. During the Ninth Plan (1997-2002), Nepal Tourism Board was established and operated as public private partnership agency for the functioning of National Tourism Organization dissolving Department of Tourism.

Tourism Vision 2020 states for the first time, "in the context of growing expectation of the people, government intends to develop tourism aiming two million annual arrivals by 2020 adhering people-centered approach…"

Province II is spread along the southern part of Nepal known as Terai. Cultural assets of Terai area are considered as potential resource for the development of tourism. SWOT analysis of Nepalese Tourism in vision 2020, one of the strengths is clearly mentioned as "Multi-cultural, multi-ethnic, multi-lingual yet harmonious society, unique Newari architecture of Kathmandu valley, Lumbini and other UNESCO world heritage sites, Kumari – the living goddess, more festival than days in a year, tourist friendly and hospitable people, diverse cultures in Terai region" (Vision2020, MOTCA 2011)

Ample temples and deities based on faith of religion are scattered along the Province where visitors are attracted till today though such movement is not organized in the form of travel industry. Sporadic highlights from time to time by certain events and media about these assets has drawn attention of domestic and neighboring country visitors. Similarly myth and legends are cited in different publication which can be developed as theme of travel. Chinnamasta, is renowned as a place of enlightenment located near city of Rajbiraj, District headquarter of Saptari. In its premises, there is Sakhada Devi Temple which is a wish fulfilling temple with Goddess Sakhada Devi with the dead devil on her foot, very popular among the devotees of Nepal and India. The temple is surrounded by three types of Koshi River, two types of Tri-yuga and two types of rapid rivers. Similarly, Salahesh garden near Lahan of Siraha district is 38 km from Rajbiraj. Locals believe that the wishes of devotees who pray with pure intentions get fulfilled. The Nepali New Year is celebrated here with much pomp. (Article on A Journey through History and Nature published in inflight magazine Yatra of Buddha Air, Issue # 34 Feb 2019)

Janakpur is a world renowned pilgrimage site as an important place in Hindu epic "Ramayan" known as the birth place of Sita, consort of god Ram. Janaki Temple also known as Naulakha is popular site for Hindu pilgrims. Similarly, Lord Shiva's Bow is said to be buried in the depths of Dhanusha, a nearby place of Janakpur. Janakpur is capital of Mithila, an ancient State where Mithila art, as an ancient painting method in which color is extracted from wheat, flowers, and grass, turmeric and other natural products are still in practice. (Brochure of Hotel Welcome, Janakpur)

Tourism in Nepal has experienced growth together with the increase in international arrivals. Despite of several decades' efforts on expanding tourism in the country, the market network within the country has not been able to expand at desired level, Khumbu region in the east, Kathmandu valley and Chitwan National Park in the center, and Pokhara and the Annapurna region within the western region have dominated the whole tourism market in the country. Despite of being close proximity of the Chitwan National Park, Parsa Wildlife Reserve turned to National Park in the Province which is the core of attraction of Parsa district has not been able to attract more visitors inside it. (Integrated Tourism Development and Management Plan 2009 – 2013 for Parsa, Bara, Rauthat Districts and surroundings, Terai Tourism Development Committee, September 2008)

One of the national policies spelled out for the tourism development in the country states that "Appropriate structure will be developed for sharing benefit of tourism business among women, madhesi, indigenous ethnic minority and marginalized in process development initiating village based tourism as sub-sector of tourism through inclusive and cooperative means. (Tourism Policy 2009)

One of the major positive factor in the context of newly implemented structure of Federalism, is building competitive strength among the Provinces to attract more arrivals for their economy elevated, which certainly need to have independency in promoting tourism in each Province. (Article on Federal, Provincial, and Local level and Tourism by Bhim Prasad Pant, former secretary general of Nepal Association of Tour and Travel Agents, published on Arthik Abhiyan dated March 8, 2019)

Draft Approach paper on 15th periodical 5th plan has envisaged Nijgadh (Bara, Province II) International Airport, Gautam Buddha International Airport (Bhairawa, Province V), Pokhara International Airport (Province IV), Capacity enhancement of Kathmandu International Airport Province III), Upgrading Nepalgunj (Province V) and Dhangadhi (Province VII) Airport to International Airport as game changer infrastructure for tourism. Similarly, tourism

destination development and beautification, Lake circuit of Phewa, Tilicho, Shey Phoksundo, Rara, and Religious circuit of Pashupati, Lumbini, Janakpur, Muktinath, Devghat, Khaptad, and Barah Chetra are mentioned as game changer tourism products to be developed. (Draft Approach Paper for 15th Periodical Plan with longer term vision, 2076/77 -2080/81, National Planning Commission, March 2019)

4. Issues and challenges:

Nepal as a country of most prospective destination has not been able to grow and benefit as its share in global tourism is remaining negligible. It is constrained with multiple factors as insufficient basic infrastructure as air and reliable surface transport network along with related facilities of health, hygiene, utilities as electricity and drinking water. Community capacity is constrained due to absence of required level of skill to cater standard services. Site specific Destination management is not in place leading to hassles and harassment to visitors. Recreational facilities are limited resulting low per capita tourist spending. Nepalese tourism industry is remaining weak in value chain linking destination to generating source market losing substantial portion of tourist spending outside the country.

Naturally all these structural issues are applicable to all the provinces. Among the Provinces of the country, Province II is further lagging behind in developing and getting benefit of tourism sector. Recreational facilities, standardized accommodation facilities, organized travel tour operation, qualitative tour transport facilities, publicity and promotion in generating source market were completely found lacking.

During past efforts country's image in generating market particularly long haul Europe, North America, Australia, and Japan remained focused on Himalayas and its ambience of beauty due to success of all eight thousand meters high peaks climbing along with highest on earth Mt Everest in the decade of fifties. Kathmandu, the capital city emerged as destination for culturally motivated visitors pioneered by hippies in the decade of sixties. Due to location of only international airport in Kathmandu, it became the hub of tourism with expansion to Everest and Annapurna for soft adventure of trekking. Pokhara came into loop being a gate way to Annapurna and latter Chitwan National Park was added combining Kathmandu and Pokhara with unique Nepal itinerary of Culture, Wildlife, and Himalayan gateway of Pokhara followed by the development of air and surface transport and hotel accommodation facilities. Province II remained out of this loop in Nepal tour circuits.

One more factor remaining the basic objective of developing tourism in the country pronounced from the very first periodical plan starting from 1956 till eighth plan ending 1997 as earning foreign currency particularly convertible currency for the balance of payment of the economy, promotion was not focused in neighboring India linking the attraction of religious sites particularly Hindu motivation as source market. Only on the Ninth Plan (1997-2002), objective of tourism sector development broadened to establish backward and forward linkage enhancing employment, and income to village level by promoting as a premium destination in the market. The tenth Plan (2002-2007) objective got mentioned Priority to promote in neighboring country market by preserving historical cultural religious heritages. It has, therefore, been natural the sites and resources of attraction based on historical religious potentiality which largely spread along the Province II got attention very lately in promoting tourism.

Dilapidated, unaccounted, visibly unappealing situation, and traditional way of using the historical and religious heritages by the locals are the major issue to turn those resources into saleable tourism products in the Province. Upgrading such historical, religious sites keeping the inventory, preparing layout design, beautification, renovation, greeneries, lighting, standardizing the signage with aesthetic sense mobilizing local government is the major challenge.

Creation of alternative livelihood opportunities by additional income generating engagement to local communities particularly rural village through tourism resource base is negligible. For the inclusive development of marginalized village and ethnic communities, tourism activities are to be extended from the main hubs to get them benefitted. Their capacity to be engaged and involved in tourism related activities are very low.

During the discussion on workshop with multi-agency participation, many issues and challenges were expressed which may have direct implication to tourism sector development of the Province.

Fundamental issue is Visitors at present are unorganized. Organized Tours, circuits, itineraries, and packages are not developed and offered in the market due to lack of travel office and tour operators. Ad hoc tours from the neighboring country are conducted by the operators from outside. There is absence of ground handling Travel tour services including tour vehicles as it was expressed during the workshop. Travel industry in the Province limited to hotel/lodge operators which are seen depending on walk in clients and India based operators. There is no formal network developed for organized tours of varied itineraries along the Province.

Recreational activities alienating with the motivational factors to visit the destination are to be identified

and developed to lengthen the stay and increase per capita spending of tourists to enhance economic return from tourism. At present such activities are at very limited except on accommodation and fooding on specific sites.

Mostly visitors at present are generated from India, and domestic market except transit arrivals entered from the Province to go to other Provinces.

Many of Indian pilgrims arrive with their own Bus arranged by Indian operators going up to Muktinath. Mostly they bring their own food and cook by themselves as they are not guaranteed for pure Hindu vegetarian food in the Province.

State investment directly relating to tourism industry development and market promotion focusing to the potentialities of the Province remained very negligible. However, few sites and pictorials are included in the international promotion and ad hoc planning at local level and basic infrastructure relating to airports and roads are undertaken by the government. Absence of Skilled manpower for tourism services are greatly felt by tourism industry as training and retention is difficult due to foreign employment craze in the Province.

Patna one of the market source city in northern India is linked with regular Bus Service to Janakpur at Rs 700/- taking just 5 hours, but similar regular bus service is broken another urban center Lucknow in India only up to Vittamodh at the border and no management to pick up visitors in organized way by Nepalese industry operators.

There is also absence of Entry and exit points along the border for third country visitors as many foreign Hindus coming to Ayodhya (800km) in India cannot enter Nepal but many of them may have interest to visit Hindu sites and temples in the Province as it is not far in distance.

Province is not directly connected yet for long haul tourism market till the completion and operation of proposed Nijgadh International Airport barring third country tourists to the Province which made the destinations of the Province at the mercy of Kathmandu based travel operators.

Deterioration of Chure range which mostly lies along the northern part of the Province due to overexploitation of natural resources is posing threat of negative environmental impact on the greeneries, and water source on the physical landscape of the Province.

Additional Security for the visiting tourists is of great concern. At present very few number of tourism police is available along the Janaki temple of Janakpur. Basically, those visiting on their own as "FIT" not guided by reliable travel Tour Company, security is to be assured enhancing its strength.

There is absence of accommodation facilities basically medium standard for pilgrims and culturally motivated visitors along the potential sites as it is limited to area of Birgunj, and Janakpur, and along the highway as transit night stay facility.

Railway transport service is not yet operated which shows tremendous prospect for arrivals.

In the absence of Provincial Tourism management institution there has not been possible to establish institutional arrangement between tourism industry and travel operators of the Province with operators from source market of India or Kathmandu to link long haul market. Reliable and cost effective accessibility along with marketing is needed to bring visitors to the site. The attractions of the Province is not yet marketed in a concerted way due to absence of provincial destination management agency. Vehicles entering Nepal with tourists are facing harassment in many places which discourage and dis-image destination. Facilitation of information and currency exchange at entry point of border is absent. Tourism industry is not getting any preference on Bank loan, and land cost is getting very expensive to invest in hotel.

Birgunj Integrated Check post has started its operation from April 7, 2018. However, passengers coming from rail transport stops at Raxaul and to enter from Integrated Check Post they have to cross extra 5 km. which incurs additional transport cost. Therefore, Passengers are not entering from this Post in spite of the provision of Immigration services at Integrated Check Post.

Lahan area along Siraha District is facing issue of qualitative skilled Human resource for hotel industry, and there is great need of facility for MICE tourism to cater growing demand from bordering Indian Territory for organizing meetings and conventions according to Mr Ashok Amatya, President, Siraha District Industry and Commerce Association.

5. Enabling Environment:

Provincial Chief Ratnesore Lal Kayastha presenting policy and program of Provincial government for the fiscal year 2075/76 at Province Assembly stated that in spite of the presence of diverse cultural resources, geographically most accessible and being center of international trade, Province is left behind from the development perspective. Mentioning among the sectoral policies for the development of the Provincial

economy, policies relating to tourism were expressed in encouraging to preserve religious cultural heritage, establishing cultural preservation center, identifying model cultural villages, recognizing dharmasala, hotel, vegetarian food restaurants, worship material producing industries with certification. It is also mentioned to establish Provincial Tourism Board to promote religious tourism identifying, upgrading, and managing sites and spots of religious and touristic significance. Similarly policy indicated to encourage private sector in promoting historical and religious touristic attractions as Janaki temple, Dhanusadham of Dhanusha; Chhinnamasta, Theliya daha, Shambhunath, Dinabhadri, Kankalini of Saptari; Salahesh, Mahadevmath, Kamala Uttaraini, Baba tal, Kamaldaha, Rajdevi temple of Siraha; Nadiman tal, Mahadevsthan, Murtiya, Sati Bihula, Narayanpur Nazir Majar of Sarlahi, Matihanisthan, Madaiko Marba, Banauli Bidyapatisthan, Sonamaisthan, Padaulsthan, Geurka, Jalesorenath, Rauja Mazar of Mahottari; Gadimai, Simraungadh, Jharokhar pokhari, Tribenidham of Bara; Shivamandir of Rauthat; Gahawamai temple, Parasnath temple, Viswa Baudha sthal, Vatha Shiva Mandir of Parsa. Beautification will be done around Janaki temple, and collaborating with private sector Parsa Wildlife area will be made attractive to develop tourism.

Budget speech of the fiscal year 2075/76 of the Province spelled out as one of its main objective to minimize level of poverty by improving the level of citizen's income level. Tourism is considered as one of the potential sector to improve income level. As one of the priority to preserve and promote unique historical and cultural heritage, budgetary provision are made for the preservation of religious, cultural, and archaeological sites as Janaki, Chhinnamasta, Rajdevi, Jalesore temple, Dhanushadham, Simraungadh, and Gumba and Madarsa of the Province. It is also expressed in the Budget speech, about beautification greening streets, cities, villages, ponds, rivers, and temples. Budgetary provision are made to equip Hospitals in the Province which will help for health motivated tourism in the future. Similarly, provision for tourism infrastructure, garden, park, ponds, information dissemination, to construct RamJanaki Doli Bisauni ghar facilitating pilgrims coming during Mithila Parikrama festival are made in the budget. Budget is allocated to construct view tower with telescope in Narayan Danda of Sarlahi. (Budget Speech of the fiscal year 2075/76, Province II, Ministry of Economic Affaires and Planning, Janakpur, 2075)

Investment Board of Nepal has listed Nijghad International Airport with estimated investment of US$ 6.5b, and Janaki Heritage Hotel and Cultural Village with estimated investment of US$ 20m on the Project Bank for the Investment Summit scheduled on March 29, 2019 in Kathmandu. Similarly, Biratnagar Regional Airport with estimated investment of US$ 364m in Province I is also on the Project Bank list. Realization of Biratnagar as International airport may improve issue of air accessibility from long haul source market improving its competitiveness basically showing the potentiality of tour circuits extending from Province I to Province II.

Opportunities of tourism in the Province need to be translated into reality with visible outcome of impact on economic conditions.

Air Service, Transportation and infrastructural improvements are essential elements in tourism development. There must be more coordinated effort devoted to providing essential public services for tourism. This will probably not happen unless the tourism office is sufficiently strengthened, from policy through technical capacity, and given more power and authority to put policy implementation into practice. (Nepal Tourism Master Plan Review, Report to Ministry of Tourism, 1984)

6. SWOT Analysis:

Strength	Weakness
Air and Surface transport Connectivity	Basic infrastructure of road n holiday recreation
Birgunj, a major international entry exit point with frontier formality	Absence of ground handling vehicles
Railway network link to neighboring India	Accommodation hotel facilities
Janakpur and Jalesore unrestricted entry exit points for Indian and Nepali nationals	Absence and low interest of i facilities
Janakpur, Dhanushadham, Gadimai, Parsa National Park, Salahesh are nationally identified destinations	Absence of recreational activities
Existence of heterogeneous ethnic community as Dhanuk, Yadav, Tharu, Musahar, Koiri, Kewat, Jhangads with unique cultural identity	No destination management
Popular Mithila culture extending cross border and recognized Mithila capital as Janakpur	Absence of skilled human resources
Established historical/ religious based festivities as Vivaha Panchami, Chath, Ram	Lack of concerted destination
Navami drawing hindu visitors	No institutional mechanism to encourage private sectors for
More than 115 ancient ponds with historical and mythological significance	No effective land use plan
Relatively higher productive labour force	Absence of reliable energy so
Political will designating tourism as sector of priority	High number of out migration
	Low sanitation and garbage d

Opportunities	Weakness
Proposed second international airport at Nijgadh and fast track to Kathmandu	More competitive adjoining
Increasing number of middle income population along the secondary cities closer to Province in neighboring India	Difficulty in retaining skilled
Nadi tal Sarlahi, Dhanesore Mahadev of Dhanusha, Margahr Wetland and Pataura Mahadev of Rauthat, Simraungadh of Bara, Ghadiwarba Pokhari of Parsa, Chinnamasta of Saptari are listed as new destinations under VNY 2020 campaign	Deterioration of environmen
Untapped resources of Mithila cultural heritage as Mithila Parikrama, Ramayan	Deterioration of environmen
Circuit, reliving mythology based events	Over tiltation to Hinduism
People to people level socio-cultural relationship existing traditionally in the neighboring potential source market of India	Fragile governance
Operation of Integrated Chekpost in Birgunj	
Railway track to Birgunj Sirsiya Dryport can be extended for International railway Terminal	

7. Comparative advantages of the Province (Compared to other Provinces and other countries)

7.1. Comparative Budget of the Provinces for the fiscal year 2075/76 showed Province II in rank third after Province I and III but in terms of internal resource it ranks only on fifth:

Province	Total Budget Rs. 000	Current expenses Rs 000	Province Internal Source Rs 000
I	3593.6	1492.6	366.78
II	2978.69	1482.56	131.10
III	3561.56	1386.26	933.37
IV	2402.33	691.55	169.95
V	2809.03	1146.59	240.00
VI	2828.28	663.85	50.00
VII	2506.56	1335.08	49.30

Source: Online news 2075/ 05/05

Budgetary provision shows that there will not be budget crunch for the development projects provided the institutional capacity of budget spending is effective. However, capacity of internal source of Province II is very limited as only 4 percent of its proposed total budget.

7.2 The Travel & Tourism Competitiveness Report of 2017 published by World Economic Forum clearly mention the competitiveness in tourism is based on following four broad factors:

Enabling Environment

- o Business Environment
- o Safety and Security
- o Health and Hygiene
- o Human Resources and Labour Market
- o ICT Readiness

Travel & Tourism Policy and Enabling Conditions

- o Prioritization of Travel & Tourism
- o International openness
- o Price Competitiveness
- o Environmental Sustainability

Infrastructure

- o Air Transport Infrastructure
- o Ground and port infrastructure
- o Tourist Service Infrastructure

Natural and Cultural Resources

- o Natural Resources
- o Cultural Resources and Business Travel

On the basis of above 14 factors Province II possess advantage on resources, but has to build competitiveness on enabling environment and Infrastructure particularly related to Tourist Services.

Country wise, World Travel and Tourism Council research forecasts that between 2016 and 2026, the 10 fastest growing destinations for leisure- travel spending will be India followed by Angola, Uganda, Brunei, Thailand, China, Myanmar, Oman, Mozambique, and Vietnam. Out of those 10 destinations, 6 belong to surrounding Asian neighbors which certainly pose great competition to Nepal and its Provinces in this decade.

Global rank of Nepal in competitiveness is 103 out of 136 countries in the year 2017. Province II has to target and achieve at least national mark of this competitiveness. At present, Province II within the country may rank after Province III, IV, I, and V but it is not yet been researched. Therefore, Province II has to capitalize potentials of its tourism by deliberate strength of planning and policy implementation.

7.3 Air transport tariff from Kathmandu to different cities of Province II in Comparison to other cities of competitive Provinces:

Fare is based as normal fare one way as provided by Nepal Airlines on its website. Fare basis by each airlines may differ as per their marketing policy. Just to ascertain competitive advantage from the perspective of air access on fare comparison to other destination of competitive Provinces from Federal capital Kathmandu, Province II do have advantage.

8. Planning approach:

8.1 Development Concept:
Present stage of socio-religious sentiment based scanty pattern of tourism is to be reoriented in an organized and systematic industry based tourism to achieve desired level of economic return with benefit to destination as people centric tourism.

On the basis of initial assessment of basic infrastructure, investment in tourism facilities, and geo-physical realities, primary features of motivation of Tourism development in the

Province can be on a spatial pattern:

- Parsa, Bara, and Rauthat focusing to consolidate for Business segment developing as recreational tourism
- Sarlahi, Mahottari and Dhanusha focusing to develop in establishing as a Religious culture centered tourism
- Siraha, Saptari to initiate for village/farm/community based alternative tourism strengthening for future tourism activity. (Alternative tourism is based on principle of sustainable, eco, adventure, responsible, controlled, regulated, value based rather than traditional recreation, holiday and leisure)

Development Package can be clustered along urban center of Birgunj as Gate way to Nepal facilitating, standardizing, organizing and expanding tourism services for recreational activities; while Cultural/religious tourism development package will be clustered along Janakpur and surrounding restoring/renovating heritage, beautifying and developing tours with its myth and legend. Alternative tourism packages will be developed focusing community, farm, village, nature and special interest based tours along eastern districts of the Province. Transit tourism along the East West Highway corridor will be developed with extended day tours along the vicinity for lengthening stay and spend.

Role of Province government be established in Tourism as:

- Coordination with Federal agencies, national tourism agencies, and local agencies for implementation of tourism product development and basic public works related infrastructure Projects and programs
- Patronizing projects of Convention centers, theme Parks, Visitor centers, cultural centers, museums, mega sport centers, archaeological and historical researches, heritage preservation and renovation
- Partnering with private sector for investment in tourism recreation, foods, beverage, tour itineraries, transport operation and management
- Developing varieties of tours and circuits as tourism products with information and documentation to be presented in generating market
- Marketing and publicity of province as tourism destination at generating market
- Coordinating local municipalities for intervention action as standardizing signage, hoardings, beautification of public places, lightings, greeneries, and event management

8.2 Vision and Overall Goal:
Increasing the Contribution of tourism sector in the macro economic performance of the Province, Creating employment opportunity, Generating alternative income to destination community, and Revenue to government by promoting religious/cultural/nature based tourism activities.

8.3 Main Objective:
Improving and expanding tourism services and range of tourism activities in the Province for economic value of the product packages by increased awareness of such services and activities in the generating market with:

Increased number of arrivals, (indicator, annual arrival of tourists)

Increased per capita visitor spending, (indicator, per capita per day spending) and

Increased length of stay (indicator, average number of days stayed)

8.4 Specific Objectives:

8.4.1 Developing tourism products that cater diversified domestic and international demand in the generating market:

Collect information from local government of potential tourism sites and resources

Determine the extent of intervention to develop as tourism product from among the inventory

Ascertain the possible market segmentation for particular tourism product

Package the tour product based on Religious theme, Cultural theme, Historical/archaeological theme, Lake/pond theme, Recreation/holiday theme, MICE theme, Festival/Event theme, sports theme, Village/Farm/Ethnic theme

Develop publicity materials and marketing tools to generate demand for the developed product packaging suitable to the identified segmentation

Create Brand wave for the product at Provincial, National, Regional and International level

8.4.2 Establishing the enabling governance, regulatory framework for investment in tourism projects and services

Develop Madhesh tourism policy, decide regulatory mechanism, prepare travel operation guidelines

Develop incentive package to investors on tourism related business and industry

Design and enforce heritage preservation, sustainable guidelines, aesthetic and beautification codes

Develop distinct and visible destination image creation guidelines and enforce along all tiers of authorities and private sector

Establish data collection and data management system disaggregated at provincial, district and local level

Establish Provincial Tourism Board with representation from all districts and industry representatives for coordination, destination management, and marketing

Set up institutional secretariat under the Board to implement tourism related programs and projects

Develop sets of indicators for Monitoring and Evaluation

Establish revenue generating and sharing policy, procedures to tax at appropriate point of the value chain within the scope designated by the constitution

8.4.3 Establishing, enhancing and consolidating the tourism hosting industry capacity improving infrastructure, services and skill

Improve air transportation, rail transportation, and road transportation to facilitate cost effective and competitive accessibility to all tourism sites and circuits

Improve tourism service facilitation as accommodation, recreation, information

Increase tourism awareness among the authorities, general hosting community, travel service providers to establish tourism friendly atmosphere

Enhance security services to assure the visiting tourists

Improve skill and capability for enhanced qualitative service delivery of industry professionals to all targeted market and clients

Ensure reliability and quality of basic services as hygiene, sanitation, garbage disposal, water supplies, utility, communication, gift, shopping, retailing

9. Policy/ Strategy (recommended):

Provincial tourism policy is recommended to be guided by developing new Tourism products on the basis of resources identified, improving present products to upgrade image and activity involving destination community for people centric tourism for its sustainability along with the creation and development of basic infrastructure, and building marketing strength.

Some of the strategic actions are recommended as:
Develop multi-sectoral collaboration mechanism for creating tourism environment

Develop concept of Constructing and operating Mithila museum and Art center at Janakpur to reinstate destination image of ancient capital of Mithila and promote along the Maithili speaking districts of Bihar and Jharkhand in India

Collaborating with existing Hospitality related College or Institute to produce qualitative human resources needed in the sector

Coordinate with related agencies for Casino operating License at recognized Hotels to develop recreational tourism

Promote and facilitate in organizing unique events annually on indigeneous themes as wrestling, Oil massage, ethnic food festivals

Developing guidelines for beautification and decorative presentation of ponds and lakes coordinating with local government and National Lake Conservation Development Committee (NLCDC)

Coordinate for Early completion of Hulaki sadak which connects all the eight Districts

Lobby and advocate for Early Completion of following Railway infrastructure for the operation of railway transport:

- Bardibas – Janakpur- Jainagar (India)
- Janakpur – Biratnagar o Janakpur – Nepalgunj
- Janakpur – Birgunj

Provide guidelines for common design of Information counters at all tourism sites

Develop Special Incentive package in consultation with private sector investors to attract investment, and encourage for supply of standard facilities needed to tourists as Cultural heritage boutique resorts, thematic fun parks, and recreational amenities

Explore availability and enlist public land to provide to developers of tourism facilities on longer term lease

Develop standard Partnership policy with private agencies for creation of tourism related activities and amenities

Initiate to conclude Agreement between outbound operators of India and Inbound operators of the Province to facilitate standardized tour operation and joint publicity in the market

Leverage on Existing basic infrastructure along with newly developed infrastructure

Explore to Create activities as agro-based along the farm land, water based recreation at river belts for length of stay and spending venues

Develop Partnership in investing to create Farm-based resort on diverse ethnic community to bring marginalized group into tourism

Explore to Design extended tours and circuits with neighboring Provinces of 1, 3, 4, and 5 conducting regular discussion with related agencies of such provinces and private tour operators.

Explore combined tour packages with India.

Initiate to Brand Province as Religious and cultural center of mainstream national tourism

Initiate to enlist Mithila Culture on UNESCO world heritage site for the global recognition of Provincial tourism

Integrate people going for the foreign employment equipping them with publicity materials and kits along with orientation to make them aware of tourism potentiality of the Province

Organizing press conference and road shows along the adjoining cities and urban centers of Uttar Pradesh, Bihar, West Bengal

10 Projects and Programs:

Along the longer list of Projects identified during the series of workshop and focused discussion with stakeholders, priority criteria were developed with weightage and top 10 projects were identified to be implemented during the plan period to achieve the stated objectives and desired outcome .

SN	Project Name	Location	Description and components	Expected Outcome	Estimated cost
1	Preparing detail inventory of key tourism resources as sites/activities/ events	Province Two covering all the Districts and Municipalities	As Province two is not yet under the national tourism grid though certain spots and sites were identified and recognized by national periodical Plans. Potential tourism resources to attract tourist in the Province seems immense as cited by different publication and studies in the past. There may be many sites and spots with potentiality of developing tourism even in interiors of the Districts of the Province which needs to be catalogued and listed for the purpose of development and planning. During the process of tourism development, it is but natural to have a base of potential tourism assets as sites, vantage points, heritage, temples, shrines, ponds and lakes, legends and myth, festivities, folklore, which are to be catalogued and documented. **Components:** 1. Design a template to catalogue and list resource inventory as tourism assets 2. Initiate Collecting District and Municipality-wide Potential tourism attraction spread in the Province.	Broadening the base of tourism development activity with specific Tourism Products based on resources which can be offered in diverse market segment benefitting destination communities.	Rs 150m.

SN	Project Name	Location	Description and components	Expected Outcome	Estimated cost
			3. Categorization of Resource Inventory to match prospective market segmentation as culture and history-based, nature and eco-tourism based, religious and spiritual based, Agro and farm-based, rural or village based alternative community tourism. **Market Demand:** Domestic, neighboring country, as well as international market are expanding due to increasing mid-income population, and special interest tours of high end in long haul market. Due to outbound burst from India basically, destinations are analyzing their own products to revamp and innovate to seize opportunity of growing demand. Province two, being rich in diverse but sensitive cultural and religious resources needs to customize varied demand in the changing market. **Responsible Agencies:** Provincial government in close cooperation with local governments		
2	Development of specific Tour Circuits	Districts and Municipal-ities in the Province	In order to facilitate national and international tourism operators to take up the Tourism Products of Province two in the market for sale, Product packaging is critically essential. Packaging product involves Detail destination information, recreational activities, logistic facilities, and pricing on different theme based on motivational tourism resources available in the province as: 1. Mithila Parikrama; Ramayan Circuit. 2. Religious tours centering Janakpur – Tour on Steps of Ram ; Panchakoshi Parikrama, Dhanushadham, Jalesore, Matihani temple linked with Sita Vivaha, Kanchan ban (10KM), Chiresorenath Shiva temple (16km)	Increased number of arrivals and income from tourist spending with the increased breakthrough in tourism product of the Province in the market. Tourism got organized by Marketing with travel tour operators in the generating market. With any additional arrival and stay, the backward linkage with the local economy got intensified directly benefitting the community in their level of employment and income on retail business, souvenir business, guiding, accommodation and revenue to the government.	Rs 500m

SN	Project Name	Location	Description and components	Expected Outcome	Estimated cost
			3. Tours of Sacred Ponds – Ganga sagar, Agni Kunda, Bihar Kunda, Ratna sagar, Sita Kunda, Dhanush sagar, 4. Multi-religious tour of Buddhist, Jain, Muslim, and Hindu sites; Rajdevi temple tours; Gadhimai – Sahalesh – Kankali mai tour 5. Mai temple tours as Gadhimai, Devi mai, Thanimai, Kalikamai, Durgamai, Sonamai. 6. Nature based tours along Parsa National Park and Koshi Tappu Wetland Reserve 7. Historical tours along Simraungadh, Parsa gadhi 8. Alternative tours as Eco-tours, community based tours 9. Event based tours as Chath, Holi Development of tours are mostly based on service centers for logistic and infrastructures. Along Bara Parsa cluster, tours for Business tourism with recreational activities, while Janakpur and surroundings cluster can have tours motivated by religious and culture elements. Along the East West highway transit tourists can have extension of day tours. Preliminary assessment and during the workshop in the Province, feedback from the participants demonstrated existence of attraction scattered in different Districts. However, due to infrastructural limitation, and difficulty in coordinating multiple agencies relating to delivery of services, tour and travel operators at the center and generating market are remaining shy in initiating to package the tours. Therefore, pro-active lead must come from Provincial tourism authority to pioneer and breakthrough in packaging such potential tours. **Components:** 1. Collecting detail destination information on attractions,		

SN	Project Name	Location	Description and components	Expected Outcome	Estimated cost
			motivation, duration, distances, logistics, choices of facilities, prices, choices are compiled for tour itineraries. 2. Invite potential national market players as tour operators based in Kathmandu, Birgunj, and Pokhara to assess the possibility of sales of such itineraries. 3. Organize familiarization tours from neighboring country and long-haul market-based operators to experience the itinerary. 4. Finalize and adjust tour itineraries on the feedback of operators 5. Initiate for inclusion of tour package in operator's sales manual by negotiating terms and incentive mechanism to test the tours in the market 6. Develop market collaterals as brochures, maps and incentives to be taken up on marketing programs. **Market and Demand:** Globally the outbound travel is in increasing trend and neighboring country India and Domestic travel market is growing with stability in the country and increasing economic prosperity. The religious, historical, archaeologically and many unexplored experiences along the sites and spots of the Province demonstrates higher potentiality of sales of its well packaged tour products. Basically, religious and culture tours are intended to Domestic and neighboring India market, Nature based Eco-tourism products are intended to Long haul and Neighboring India market. **Responsible Agencies:** Provincial government and tourism entrepreneurs.		

SN	Project Name	Location	Description and components	Expected Outcome	Estimated cost
3	Tourism Awareness and Preparing Guidelines for the operation of community run accommodation	All the Districts and Municipal-ities	In order to enhance tourism service capacity, tourism awareness among the officials of public agencies along different tiers, and skill among the workforce at different tiers of service industry is must for qualitative tourism development. Designing, developing, conducting massive tourism awareness programs and training at different tiers of work in the industry is essential to improve and establish tourism hosting capacity. As Province two was left behind in Human Resource capacity in the past, development of tourism greatly depends on its understanding, engagement, skill particularly reflecting in values, attitude, behavior, and delivery of service relating to concept of hospitality. Implementation of Massive awareness programs as campaign for tourism is needed to this Province in establishing favorable destination. Host residents are less capable for operating high end tourism services and industry. Therefore, need to encourage to operate smaller accommodation services with standardized service delivery for satisfactory tourist spending and reliable service delivery with support of Clean Cooking devices for health and environment. Lodge owners do not have exposures on many simple but latest development of technology for safety and efficiency of operating accommodation facilities. Setting Standard Design and Developing guidelines on establishment and operation of small-scale lodging and homestay facilities will enhance hosting capacity of tourism in the Province, and benefit community directly by engaging in such profession. **Components:** 1. Identify Category of Awareness program at different tiers of	Enhance the quality of service with increased tourist spending. Also, it will establish the image of the Province as tourism friendly destination with changed attitude and behavior of destination communities and service providers. Achieve Increased engagement of local people to increase income	Rs 400m

SN	Project Name	Location	Description and components	Expected Outcome	Estimated cost
			Public Agencies as: 1. Policy Decision Makers, Executives, Front liners; 2. Accommodation operators, Business entrepreneurs, Retailers, Transport operators, Taxi drivers; 3. Farmers, Artists and Craftsmen 2. Collect information on establishment and operation modality adopted by small lodge and homestay in other provinces 3. Develop terms of reference for the expert and hire expert agency or persons to design, develop guidelines and conduct awareness and training 4. Design and develop Awareness curricula, and different skill training manuals and materials with experts and practitioners from other Provinces 5. Discuss the draft guidelines with operators, and municipalities for its implementation 6. Identify and list the participants of different awareness and training programs 7. Bring in place the regulation for its enforcement and adherence 8. Prepare the schedule of such programs at different level and areas 9. Conduct the awareness and training programs continuously for five years targeting at least 20,000 persons 10. Implement and enforce the guidelines with effective supervision for its adherence **Market and Demand:** Quality in service delivery to visiting tourists is very demanding. Market is oriented for its human resource in dealing the visiting tourists in any destination. Nature of the industry demands		

SN	Project Name	Location	Description and components	Expected Outcome	Estimated cost
			positive attitude and giving value to service irrespective of any discrimination. Nepal as a country of destination do have positive image. However, compared to established sites of the country along Province 1, 3, and 4, Province two is lying behind. Only by enhancing this soft and invisible part of the industry, Province two can improve in its tourism sector performance to a great extent. Province has tremendous prospect of attracting domestic tourists as well as from neighboring market motivated by recreation and pilgrimage along specified sites and location. Standardized Smaller scale lodging and homestay product can cater this segment of the market. Along with improved facility, pricing, and publicity, further demand is created to sustain and assure the return. **Responsible Agency:** Provincial government in collaboration with Municipalities and Accommodation industry Associations		
4	Developing Day tours	Different Sites of Province	Stay and activities are very important to get economic return from the tourists. Average days of stay in the Province at present is not recorded but feedback from the workshop and consultations with stakeholders indicate it is very short one or two days. Along the cluster of East West Highway, accommodation facilities and food outlets are seen growing but these facilities are used only as transit at present. Therefore, day tours are to be identified and developed to offer for the extension of stay and spending. Day tours are possible along the clusters of Birgunj Simra, Janakpur, Lahan, Rajbiraj, and from another urban center. Arrivals may have been motivated by any reasons, but such tours will evolve further economic activities.	Increase length of stay of visitors and increased spending with additional creation of income and employment to destination community. Development and conduction of such tours helps to establish People centric tourism benefitting local people who are not in mainstream tourism industry	Rs200m

SN	Project Name	Location	Description and components	Expected Outcome	Estimated cost
			Day tour can be designed as visit to Mango orchard in Nawalpur Horticulture Center, International Border tour to Thari/Laukah, Farm tours to agricultural farmland, Village tours to indigenous ethnic villages, tour to industrial centers, art centers, and museums. Such tours facilitate integrating tourism with local community specially marginalized people. **Components:** 1. Identify and classify possible day tours based on farming, ethnicity, village settings, industrial products, temples, river, wildlife, landscape, industrial zones, gardens, parks, museum and so on. 2. Consult and discuss to establish the management mechanism and benefit sharing with related agency and group of people for preparing such visit as selecting village, farmland. 3. Develop tour guiding, audio visual interpretation, refreshment facilities, souvenir shops, parking facilities, beautification along the sites of day tour. 4. Complete MOU or agreement needed with sites owners for tour conduction. 5. Discuss and establish information dissemination, booking procedures with tourism travel operators and municipalities **Market and Demand:** At present movement of domestic, neighboring country, and representatives of development partners as INGOs and NGOs are seen main clients as consumers of travel tourism industry products. They are not staying longer and spending more due to absence of venues and activities. Development of day tours or short tours can create demand in existing market and add further motivation to return.		

SN	Project Name	Location	Description and components	Expected Outcome	Estimated cost
			Responsible Agencies: Provincial government in consultation with Municipalities and Travel operators/Hotel operators		
5	Marketing and Branding	Province	Growth in Tourism and creation of demand for the destination greatly depends on formulation and implementation of marketing plan. Marketing Plan set the mix of destination Products, with marketplace to establish image and brand, pricing for sales of tours, and promotional means along with distribution channels. Brand value is developed in the Plan with Brand creation and ownership of stakeholders backed by appropriate promotional programs and publicity collaterals. Province two is not yet known with its brand in generating market except with element of Janaki temple in Janakpur. Province has to face competition with other Province of the country apart from other emerging destinations at generating market **Components:** 1. Rigorous discussion among diverse stakeholders to establish a provincial destination brand as "Destination of Legend and Myth" or else under national destination brand of "Naturally Nepal" 2. Prepare Terms of reference for the study and formulation of Province Tourism Marketing Plan and get experts selected 3. Formulate detail marketing Plan with strategic programs for five years to be implemented by Provincial Tourism Board 4. Develop different collateral for the publicity campaign along the segmented generating market guided by the marketing plan 5. Explore for Memorandum of	Establish provincial destination image in the generating market helping to generate additional arrivals with growth on tourism business and activities	Rs 500m

SN	Project Name	Location	Description and components	Expected Outcome	Estimated cost
			Understanding with Group or Association of outbound Travel operators based in generating market for encouragement of organized travel to the Province and guaranteed service delivery **Market and Demand:** Tourism market is very sensitive as well as competitive. Province two is needed to breakthrough in the potential market with caution without impairing its unexplored status of cultural religious assets and need to erase the prevailing perception of unorganized destination among the travel operators in the market. This demands very systematic and consistent approach with clear vision of market segment and incentives designed to draw attention of operators. Precise Marketing Plan with Brand image will support cost effective promotional campaign. **Responsible Agency:** Provincial government through Province Tourism Board in collaboration with tourism related industry associations		
6	Develop and upgrade Brihad Parikrama with Bishramsthal	Dhanusha	A very famous religious carnival like tour for almost 2 weeks observed during month of Falgun. This event is also popularly known as Mithila Bihari Parikrama. It starts from Mithila Biharisthan and idol of Ramjanaki is brought to Janakpurdham and after worship Parikrama starts from Hanumannagar then Kalyanesore Mahadev -then Girijasthan – then Matihani – Jalesorenath -then Madai- then Dhruba Kunda- then Kanchanban- then chhiresore mahadev Parbata- then Dhanushdham- then Saptapokhari- thenAurai Harsai- then Karuna- then Bishaul- then Janakpur. Road along this carnival which were fixed with rituals at different places are to be upgraded to facilitate increasing number of arrivals. At each ritual place	Hindu Signature Event will be established drawing attention of global Hindu fraternity promoting and Enhancing facilitation on pilgrimage to participate at this event.	Rs 1000m

SN	Project Name	Location	Description and components	Expected Outcome	Estimated cost
			facility for the participants are to be constructed and managed. At each site of night stay along this Parikrama, resting place Bishramsthal or Dharmasala are to be built (nearly 10 within Nepal and starting and ending 2 days each in India). This Carnival like event lies between territory of Nepal and territory of India and thus carries attraction to both the country. This event can be promoted as Hindu Carnival with more infrastructural facility and organized management, and interesting fun-ful gimmicks. **Components:** 1. Assess the present level of participants and available infrastructure to identify gaps 2. Consultation with all stakeholders to add different recreational and fun filled activities. 3. Build appropriate facilities for resting place and dharmashala 4. Design and develop advance booking system for participation to this Parikrama 5. Promote by different means as Hindu signature events all over the world. **Market and Demand:** This Province do have tremendous opportunity to draw and attract Hindus of the World. Hindu religion-based carnival like worship and rituals along the 10-15 days circuit of Parikrama can be a flagship product. Domestic and neighboring India market can generate millions of visitors by well managed and guaranteed creation of facilities along this circuit road. **Responsible Agencies:** Provincial government in collaboration with Department of Archaeology, Local Guru Purohits, and travel operators.		

SN	Project Name	Location	Description and components	Expected Outcome	Estimated cost
7	Visible Identity as specialized destination and Standardization of Signage	All parts of the Province	Distinct and unique Visibility of tourism destination for its image is very important. Tourists coming from different source market imagine before its arrivals and try to match with reality on arrival. Province two has opportunity to create such visibility with some gimmicks to compete with other Provinces in the country. It can have uniform colors on the building at street and roadside if not all. It can designate a separate lane for decorated bullock cart which are with comfortable seat along the newly constructed six lane road of Janakpur Dhalkebar. Similarly, enforce cover of Rikshaw three wheelers on one standardized color symbolizing Ram Sita wedding event. Signage along the public places facilitates information as well as guide the movement. The color, languages, size, materials, location, uniformity are important features of signage. Developing a standardized Signage which is environmentally compatible design and material to be placed in whole Province along the highways, airports, touristic sites and public places will enhance visibility as distinct destination. Such Standardized and uniform in color, language for the indication, basic info, and maps possibly with distances facilitate visiting tourists for their movement. Different languages including the local language are to be selected. **Components:** 1. Conduct series of Discussion with Physical Planning Agency and bullock cart owners, owners of Riksha, artists, and environmentalist for designating a lane, adopting uniform building color, and inputs on decoration of cart, cover of riksha, and design of signage. 2. Discussion with local Municipalities for the	Enhance visibility and image of the Province with further positioning of specialized Tourism destination in the market. Improve the status of facilitation to tourists for their movement and enrich visitors with information relating to the destination.	Rs.300m

SN	Project Name	Location	Description and components	Expected Outcome	Estimated cost
			mechanism of enforcement, maintenance, and cost sharing. 3. Collect information and design on internationally accepted criteria for the signage 4. Enlist and determine on consultation the location for the placement of signage 5. Prepare the accepted and standardized decoration of bullock carts, riksha covers, and Signage sufficiently 6. Enforce to operate bullock carts and uniform colored riksha, and place the signage along the selected highways and enlisted points of locations and sites **Market and Demand:** Visual pollution has been one of the major issues and detrimental factors to be taken into consideration in developing tourism. Particularly destination like Province two is in the fast track of overall development which brings massive change in physical structure resulting unplanned growth. Capital city of the country Kathmandu has faced this trend. Such trend erodes the attractiveness based on emotional settings and cultural essence of any destination. Tourism market is always looking for the sites and destination which are balancing the development aspiration retaining its ancient features. Many Hindu along the world will be willing to visit and experience this Province as a destination for religious sentiment. **Responsible Agency:** Provincial government to be enforced managed by local government		
8	Upgrading appeal of tourism sites	Tourism Sites of Province	Present state of cultural resources along different temples, Math, sacred ponds, and sacred sites are used only for religious rituals. This is the opportunity to turn these resources into economically viable tourism products. Such	Increased arrivals, stay, and spending are expected by upgrading the appeal of tourism sites.	Rs.800m

SN	Project Name	Location	Description and components	Expected Outcome	Estimated cost
			historical, religious, cultural, and archaeological sites and heritage resources are to be restored, preserved, and renovated to develop as destination spots to attract and make visitors stay for tourism activities. Beautification is to be based on its myth, legend and sentiments carried by these sites. Landscape architect has to build imagination on elements of historical evidence, belief of the people and recreation to tourists to design and renovate such resources as tourism products. **Components:** 1. Select and prioritize from resources the heritage, and ponds to be restored, renovated, and beautify 2. Hire landscape architect for the design and monitoring development of such resources 3. Prepare layout design to restore, beautify, and renovate 4. Start restoring and renovating the sites and heritage as prioritized **Market and Demand:** Recently domestic tourism exploring interesting sites for recreation, leisure, vacation has been immensely in increase. Province needs to position its products in this trend targeting this segment. This project is based on combination of religious sentiments of matured populace combined with youth looking for novelty. Along with domestic tourists, international tourist basically from northern India who are facilitated to travel to Nepal due to easy frontier formalities demonstrates huge market for the product to be established by this project. Students, and researchers can be major visitors with this product in the market. **Responsible Agencies:** Provincial government in consultation with Department of Archaeology and Implementation management by local government		

SN	Project Name	Location	Description and components	Expected Outcome	Estimated cost
9	Annual Tourism Conference	Birgunj or Janakpur	Tourism as an industry requires investment. Recreational facilities are developed and offered by business entrepreneurs in the market. Therefore, close discussion, confidence to complement the policy environment and investment mobilization, common platform for policy makers and potential business entrepreneurs are essential. Annual Conference inviting to participate by all stakeholders will work as common platform to explore investment and achieve integrated policy coherence. **Components:** 1. Collect potential list of domestic and international investors 2. Prepare baseline policy incentives offered to potential investors 3. Prepare shopping list of projects where investment is envisaged 4. Invitation to potential investors to participate at Tourism Investment focused Conference 5. Organize Tourism conference to be held annually for the mobilization of investment. **Market and Demand:** Domestic as well as Foreign Investors are always in search of projects which are viable, and return is guaranteed. Destinations which demonstrates future potentiality of developing tourism do have more prospects of investment by domestic and foreign investors. Province tow is yet underutilized for tourism. Therefore, conference organized to share the status, incentives, and areas of investment will immediately may give result of investment in different recreational and infrastructural requirements for tourism. **Responsible Agencies:** Provincial government in consultation with Board of Investment, Service Providers	Create positive environment for investment mobilization in tourism facilities and development	Rs. 100m

SN	Project Name	Location	Description and components	Expected Outcome	Estimated cost
			Association, and Federation of Nepalese Chamber of Commerce and Industry		
10	Sound and Light Show	Dhanusha Siraha	Stay and activity is important for higher spending in the economy. Sound and light based on historical or religious theme to be presented in the evening will attract domestic, and international tourists and encourage to stay at least a night. Sound and light show is not yet introduced in any sites of the country though its technology is not new, but it provides competitive edge with other Province of the country. Rangabhumi, Dhanushadham, and Salahesh garden can be selected to start with sound and light show as these sites are spacious and carries interesting theme of history and legend. **Components:** 1. Acquire service of theme writer acquiring the available information and documents of cultural experts 2. Finalizing the themes, conduct discussion with municipalities for its operation, maintenance, management and revenue. 3. Assess environmental and emotional impact of such activity and show 4. Procure needed equipment and materials 5. Conduct test shows inviting stakeholders and operators of generating market 6. Publicize the show **Market and Demand:** For domestic tourist and visitors from neighboring India especially coming from northern States of India are eager to experience new things. Sound and Light Show at the evening after dark makes those clients' stay back. Social media and multiplier effect of show discussed by tourists back home creates more motivation for other to generate demand to destination.	Increased length of stay and spending.	Rs. 1500m

SN	Project Name	Location	Description and components	Expected Outcome	Estimated cost
			Responsible Agencies: Provincial government in collaboration with Municipalities for operation and management of the Show and share revenue as agreed.		

11. Implementation plan

Investment plan (cost estimated, investment from public and private sector) as indicated above in the table

Institutional arrangement:

- Establish Provincial Tourism Board with specific function of:

  Policy coordination vertically with Federal and Local Agencies,

  Destination marketing in generating market, and collaborating with national tourism board for long haul market

  Facilitating for Tourism Product development and investment facilitation

  Implementing Province level tourism related projects and programs within the policy framework of Provincial government
- Board is to be structured with representation from all Districts of the Province and Private industry operators not exceeding 11 members
- Funding for the Board can developed with annual contribution of certain percentage from all the districts on the ratio of tourism revenue of local government
- Regular Monitoring and Evaluation of tourism projects and programs
- Facilitate in Creating Destination Management Unit at Local governing body (Matrix)
- Form Coordination committee at District level to facilitate and harmonize circuit tours along multiple local government tourism promotion

Policy Council is expected to monitor the implementation of the programs on baseline general development indicators and activity performance indicators

12. Outcomes:

- It is expected to double the employment in tourism sector by implementation of the plan
- Impact is expected on increased income to industry with increased revenue to government
- By the end of the first periodical plan, tourism industry and economic contribution is expected to the par of national level
- Competitive strength vis a vis with other Province I, III, IV, and V will be at par.

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Annex 1

Longer List of Project for reference:

Project	Description	Responsible Agency	Outcome	Estimated Cost Rs
Preparing Resource Inventory	Preparing detail Inventory of Temples, Shrines, Monastery, ponds, sites of religious, cultural and historical significance. Documenting events and festivals based on religious, historical, and cultural values.	**Provincial government involving local governments**	**Resources be publicized to generate additional arrivals**	**200m**
Upgrading appeal of tourism sites	Restoring, renovating, preserving heritage and ponds with beautification getting support of landscape architecture	**Design and layout by Provincial government and Implementation by local government**	**Additional arrival and increased stay and spending**	**800m**
Sound and Light	Selecting at least three sites of historical significance for sound and light theme based presentation as Salahesh garden, Rangabhumi, Dhanushadham	**Provincial government coordinating with local government**	**Increased arrival, stay, and spending**	**1500m**
Construction of Visitor Service Center	Tourist/Visitor Service and facilitation center at Integrated Check Post Birgunj, and Janakpur	**Provincial government**	**Increased Stay and spending**	**500m**
Feasibility Study	International Passenger Railway Terminal at Birgunj near Sirsiya ICD	**Provincial government in consultation with Federal government**	**To catch up scale in tourism volume at national level**	**100m**
Art and Cultural center	Establishment of Mithila Artifact and souvenir center with skill development and Research on myth related to Sita and Ramayan	**Provincial government**	**Establish Province as specialized Cultural destination in national tourism map**	**500m**
Development of Tour Circuits	Detailing Mithila Parikrama. Ramayan circuit. Multi- religious tour of Buddhist, Jain, Muslim, and Hindu sites. Tours of Sacred Ponds. Rajdevi temple tours. Gadhimai – Sahalesh – Kankali mai tour. Religious tourism centering Janakpur – Panchakoshi Parikrama, Dhanushadha m, Jalesore, Matihani temple linked with Sita Vivaha, Kanchan ban (10KM), Chiresorenath Shiva temple (16km)	**Provincial government**	**Marketing with travel tour operators in generating market for organized tours**	**500m**

Project	Description	Responsible Agency	Outcome	Estimated Cost Rs
Visible Identity as special destination	**Designating a separate lane for decorated bullock cart with comfortable seat along the six lane road of Janakpur Dhalkebar. Coordinate with bullock cart owner to participate for touristic gimmick. Change Rikshaw three wheelers cover in one standard color with beautification in Janakpur**	**Provincial government**	**Integrate local community in tourism activity**	**For decoration of bullock cart and rikshaw 100m**
Developing Day tours	Designating Mango orchard for tour in Nawalpur Horticulture Center developing tour guides, brochure, audio visual presentation and refreshment center and gift store Industrial tour along the Industrial corridor	**Provincial government**		**200m**
Attracting at Parsa National Park from Parsa	**Upgrading with beautification and provision of Interpretation center with naturalists at the entrance of Parsa National Park to attract and encourage from Parsa rather than Chitwan. Include Kailash Batha, Elephant camp Dugdesore Mahadev**	**Provincial Government**	**Divert visitation of National Park from Chitwan to Parsa**	**100m**
Signage and indication	**Province need to have standardized uniform signage in all streets and sites to give visible impact. Designing the most appropriate materials and structures and colors to be enforced**	**Design and prepare by Provincial government to be enforced and maintained by local government**	**Enhance visible impact to establish destination image**	**100m**
Guidelines for operation of community accommodation	**Developing guidelines for operation of community based lodging and homestays for standard, hygienic safety, and security conducting training**	**Provincial government**	**Increased engagement of local people to increase income**	**50m**
Feasibility Study to establish International Convention Center	**Birgunj has been a major economic and trade center of the nation. Infrastructure of Accessibility is available with prospect of attracting for MICE segment**	**Provincial government**	**To draw additional arrivals with high end spending**	**100m**
Develop Farm tours, Village tours, international Border tours as Thari/Laukah	**From the tourism centers of Birgunj, Janakpur, Lahan and other cities, conducted tours to selected Villages and Season based selected Agro- Farm to integrate local people with tourism**	**Provincial government in consultation with local government**	**People centric tourism benefitting local people not in mainstream tourism industry**	**100m**
Establishing Event Management Company on partnership with private sector	**Janakpur is sacred place of Hindu rituals marriage. To capitalize this emotion, professional marriage event managing company needs to be established to pioneer such product in the market and organize in a reliable demonstration of pomp and galore**	**Provincial government and local government**	**Establishing Janakpur as center of Marriage**	**100m**

Project	Description	Responsible Agency	Outcome	Estimated Cost Rs
Marketing and branding	**Prepare marketing plan with production of sufficient collaterals to launch destination promotion in potential market**	**Provincial government**	**Generate additional arrivals**	**800m**
Digitization	**Digitization and internet network connectivity to link destination to generating market for information dissemination and direct bookings. Even Homestay units are to be facilitated to have direct marketing through e-commerce eliminating intermediaries**	**Provincial government**	**Facilitating efficient industry operation**	**200m**
Establishment of Travel Service Company	Travel service company for creating reliable and organized travel, a company needs to be established in partnership with private sector. Travel tour Bus Service will be operated by the company for different pilgrimage circuit as Tribeni (Nawal parasi) to Chinnamasta and other sites in the Province	**Province government in partnership with private sector**	**Enhanced tourism operation**	**100m in partner-ship**
Surface Road Infrastructure	Widening and improving Road between Janakpur and Bhittamode at the border. Widening and improvement of Road Gadimai- Simraungadh Early completion of Hulaki sadak Early operation of railway transport from India	**Provincial government collaborating with Federal government**	**Reduce time and cost of travel for competitiveness**	**Federal source**
Airport Infrastructure	Upgrade and improve Janakpur, Rajbiraj and Simara airports with Safety and night landing facilities	**Collaborating with Federal government**	**Reduce time and cost for competitiveness**	**Federal source**
Parikrama Road with Bishramsthal	Parikrama Road enhancement with provision of Bishramsthal (nearly 10 within Nepal and starting and ending 2 days each in India)	**Provincial government**	**Enhancing facilitation on pilgrimage**	**500m**
Tourism Awareness	**Conduct massive awareness program at provincial and local level**	**Provincial government collaborating with local government**	**Establish Province as tourism friendly and upgrading capacity to be involved in tourism for additional income**	**100m**
Production of Promotional Collaterals	**Design and determine market specific, segment specific public materials, audio-visuals**	**Provincial government with input from local government**	**Establish iconic image of the Province in generating market to draw attention of potential visitors**	**500m**
Annual Tourism Conference	**Organizing annually tourism conference withall stakeholders toexplore investment and achieve integrated policy coherence**	**Provincial government**	**Create positive environment for tourism with investment mobilization**	**50m**

Project	Description	Responsible Agency	Outcome	Estimated Cost Rs
Resort construction at Nunthar along Bagmati river of Rauthat District	Extending a stay changing present pattern of day visit with water based activities	Provincial government in partnership with Local government and Private sector	Model to be replicated as resort in other sites combining accommodation with other activities for increased stay and spending	50m
Total				7200m

ACCELERATING INVESTMENT AND INFRASTRUCTURE
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