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Government of Nepal

National Planning Commission

Central Bureau of Statistics

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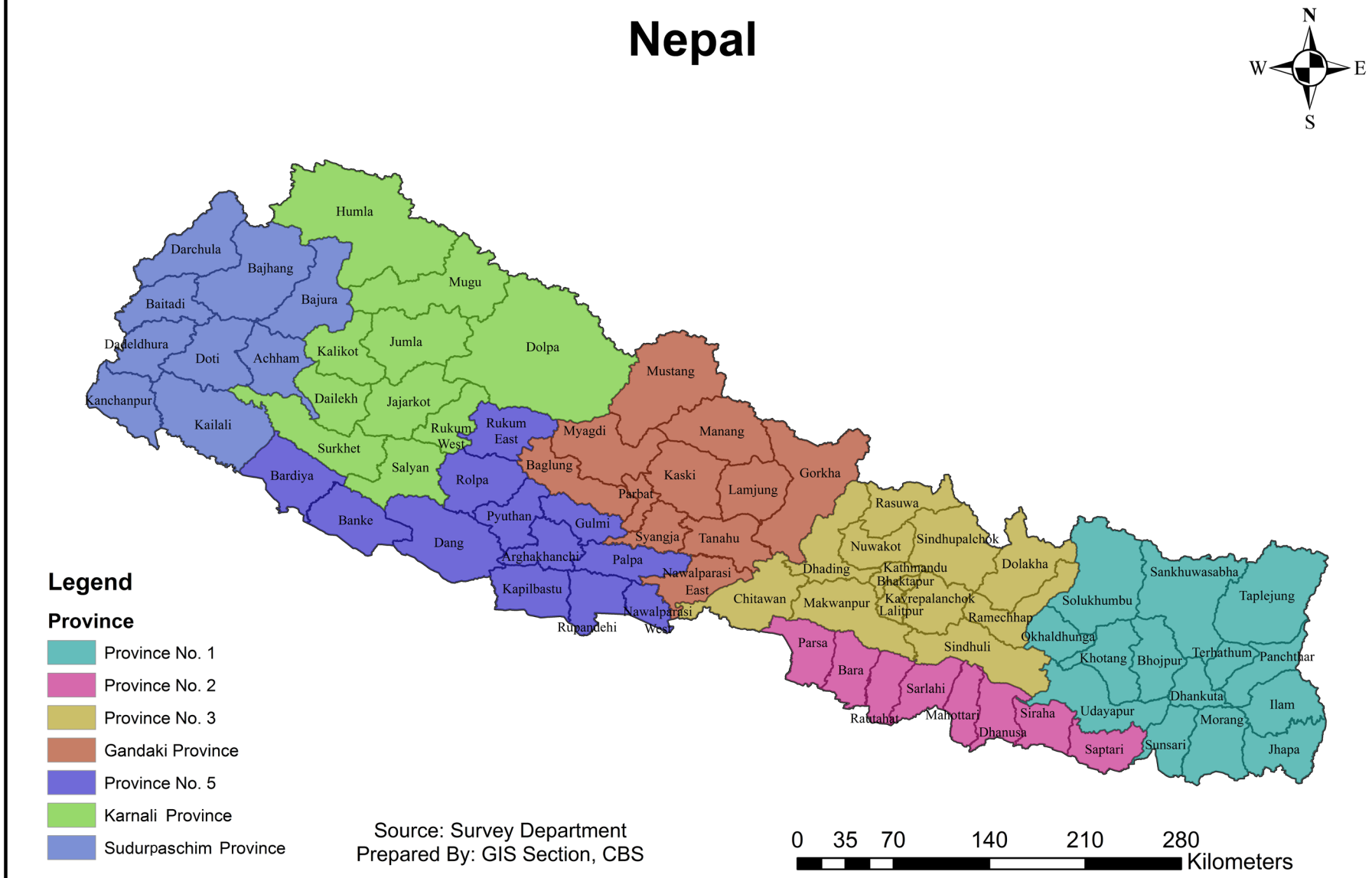
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Preface

Environment is a multi-disciplinary topics directly related to the nature, human being and their activities. Concerns have been growing widely about changing environment and its impact upon the lives of the earth. In fact, areas of most researchers and efforts of most scientists are being concentrated towards environment in one way or the other. Accordingly, priority of the Government of Nepal has also been focused towards environment, be that in the name of “the Climate Change" or "Conservation" or " the quality of life of the people" and committed to combating climate change and achieving sustainable development goals (SDGs). Therefore, Central Bureau of Statistics (CBS), in the context of the increasing demand for environment related data, has been attempting to bring out special publication since decades and the present edition "Environment Statistics of Nepal 2019" is the 9th in the series.

This is an update to the previous edition and has compiled data based on the classification of the United Nations Framework for the Development of Environment Statistics,2013 (UN FDES,2013) covering topics on environmental conditions and quality, environmental resources and their use, residuals, extreme events and disasters, human settlements and environmental health and environmental protection, management and engagement. I hope that this edition will be useful to planners, policy makers and other users as well.

I would like to express my gratitude to the government and non-government agencies for providing valuable data and supports to bring out this publication in its present form.

I would like to thank Mr. Nebin Lal Shrestha, Deputy Director General of the Bureau for his overall guidance to bring out this publication. Mr. Sushil Kumar Sharma, Director, Environment Statistics Section deserves special thanks for shouldering the responsibility to accomplish the whole tasks of the compilation and bringing out this publication in time. I would like to thank Mr. Pramod Raj Regmi, Director of the Environment Statistics Section for his contribution. Statistics Officers Mr. Tulasi Prasad Paudel, Mr. Tej Kumar Darlami and Statistics Assistant Mr. Bhim Bahadur Shakha are also thankful for their sincere involvement in the compilation of this publication.

Similarly, Practical Action Nepal deserves our special appreciation to providing technical support for this publication.

Finally, I would like to request all users to provide any valuable comments and suggestions for improving our publication in future.

March, 2019
Kathmandu, Nepal

Suman Raj Aryal
Director General
Central Bureau of Statistics

Acronyms and Abbreviations

ACA	Annapurna Conservation Area
ANCA	Api- Nampa Conservation Area
As	Arsenic
BOD	Biological oxygen demand
Ca	Calcium
CBS	Central Bureau of Statistics
Cd	Cadmium
CFC	Chlorofluorocarbons
cfu	Coliform
CFUG	Community Forest User Group
CH_4	Methane
CITES	Convention on International Trade in Endangered Species of World Fauna and Flora
CO	Carbon monoxide
CO_2	Carbon dioxide
COD	Chemical oxygen demand
CV	Coefficient of Variation
dBA	Decibel A
DDT	Dichloro diethene tricloroethen
DHM	Department of Hydrology and Meteorology
DO	Dissolved oxygen
DMG	Department of Mines and Geology
DWSS	Department of Water Supply and Sewerage
DWIDM	Department of Water Induced Disaster Management
EIA	Environmental Impact Assessment
ft^3	Cubic feet
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse Gases

Ha	Hectare
HC	Hydrocarbon
HHs	Households
Hr	Hour
ICIMOD	International Centre for Integrated Mountain Development
IPCC	Intergovernmental Panel on Climate Change
ISIC	International Standard of Industrial Classification
IUCN	International Union for Conservation of Nature
KCA	Kanchanjanga Conservation Area
K_2O	Potassium oxide
kg	Kilogram
KL	Kiloliter
Km	Kilometer
Km^2	Square kilometer
KUKL	Kathmandu Upatyaka Khanepani Limited
KWh	Kilowatt hour
L	Liter
L/d/p	Liter / day / person
lcd	Liter consumption/day
LPG	Liquefied Petroleum Gas
LRMP	Land Resource and Mapping Project
Lt/min	Liter per minute
m	Meter
M	Million
M^2.	Square meter
M^3	Cubic meter
m^3/ min	Cubic meter per minute

m^3/yr	Cubic meter per year
mg/l	Milligram per liter
MCA	Manaslu Conservation Area
mg/m^3	Milligrams per cubic meter
ml	Local magnitude / milliliter
mld	Million liter/day
mm	Millimeter
MoSTE	Ministry of Science, Technology and Environment
MoF	Ministry of Finance
mt.	Metric ton
N	Nitrogen
NA	Not Available
Na	Sodium
NARC	Nepal Agriculture Research Council
NAST	Nepal Academy of Science and Technology.
NCCIS	National Climate Change Impact Survey
NDHS	Nepal Demographic and Health Surveys
NGO	Non-Governmental Organization
NLSS	Nepal living standards survey
NO_2	Nitrogen dioxide
NP	National Parks
NSIC	Nepal Standard Industrial Classification
NWSC	Nepal Water Supply Corporation
O_3	Ozone
ºC	Degree Celsius
ODS	Ozone depleting substance
P_2O_5	Phosphorus pentaoxide
pb	Lead
pH	Hydrogen-in concentration
PM_{10}	Particulate matter less than 10 microgram (0.07 g/m3)
PO_3	Phosphate
ppb	Parts per billion

ppm	Parts per million
ppt	Parts per trillion
RETs	Renewable Energy Technologies
Rs.	Rupees
SAE	Small Area Estimation
SEEA	System of Environmental Economic Accounting
SD	Standard Deviation
SO_2	Sulphur dioxide
SO_4	Sulphate
SO_x	Oxides of Sulphur
SPM	Suspended Particulate Matter
SPNP	Shey-Phoksundo National Park
SNP	Sagarmatha National Park
TDS	Total Dissolved Solids
TOE	Tones of Oil Equivalent
TSP	Total suspended particulates
TSS	Total Suspended Solids
TYIP	Three Year Interim Plan
UNEP	United Nations Environment Programme
UNFDES	United Nations Framework for the Development of Environment Statistics
UV	Ultra Violet
WECS	Water and Energy Commission Secretariat
WHO	World Health Organization
WP	Watt Power
WW	Waste Water
µe's	Micro- environments
µg/m^3	Microgram per cubic meter
UNSD	United Nations Statistics Division
WMO	World Meteorological Organization

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CHAPTER I
Introduction

Introduction

Background

The term environment has been derived from a French word "Environia" means to surround. It refers to both abiotic (physical or non-living) and biotic (living) environment. The word environment means surroundings, in which organisms live. Environment and the organisms are two dynamic and complex component of nature. Environment regulates the life of the organisms including human beings. Human beings interact with the environment more vigorously than other living beings. Ordinarily environment refers to the materials and forces that surround the living organism.

In other words, environment refers to those surroundings that surrounds living beings from all sides and affect their lives in total. It consists of atmosphere, hydrosphere, lithosphere and biosphere. Its chief components are soil, water, air, organisms and solar energy. It has provided us all the resources for leading a comfortable life.

Environment Management in Nepal

Nepal has been facing two types of environmental challenges; problems generated by the pressure on natural resources and air as well as water pollution, and the problems generated by climate change for which the country is not responsible but has to face the impacts which could be more severe in future. It has been realized that sustainability of the development depends much upon the management of the environment and hence, the expenditure on environmental management today is in fact, a reliable investment for the safe future.

Nepal has ratified several national and international treaties and conventions regarding environmental issues and has arranged for the corresponding national legislative instruments, policies and institutional infrastructure to uphold its commitments. The constitution of Nepal, Article 30 states "Every citizen shall have the right to live in a clean and healthy environment". The country has adopted the notion of green development to minimize stress on the environment and to mitigate the impacts of climate change. However, weak institutional capacity and inter-agency coordination to handle issues relating to environment and climate change, as well as the inadequate means and resources to address these problems are some of the challenges faced by this sector.

Issues relating to Environment have been addressed since the 6th five years periodic plan. In early seventies, priorities were given to address soil erosion, flood and landslides and conserve forest resources in the policies, strategies and programs of the periodic plans. In early eighties, emphasis was given on the policy of reducing water pollution generated by industries and urban areas. At the same time, efforts were made to manage resources through people's participation. Remarkable achievements were gained in community forestry but problems began to emerge in urban areas and industrial estates particularly of pollution of solid waste, air, water and noise. On the other hand, rural areas continued to suffer from soil erosion, flood, landslides and reduction in the sources of water. Nevertheless, various initiatives were taken by the government, Non-Governmental Organizations (NGOs), and private sector to address these problems. The government formulated policies and enacted Acts and regulations such as Environment Protection Act 1996, Environment Protection Rules 1997, Ozone Depleting Substances Consumption Rules 2001 etc. Environment Impact Assessment (EIA) for development works was institutionalized and standards related to the industrial effluents and air quality was implemented.

The 12th three-year interim plan (TYP) of the government of Nepal stresses on the need for effective monitoring system for the implementation of approved standards, strengthened coordination mechanism amongst the line ministries and agencies, and harmonizing environment and sectoral policies and programs. Similarly, the 13th three-year interim plan emphasizes on decentralized approach to implement the environment programs from central to local level. The Fourteenth National Plan (2016/17-2018/19) aims to integrate the goals of environmental protection and adaptation to climate change in pursuing national development.

The brief concept paper of Fifteenth Plan (2019/20- 2023/24) has laid out the following goals and strategies for the environmental sector;

- Healthy and balanced ecological system, pollution-less and clean environment
- Bio diversity protection
- Climate change adaptation
- Disaster resilient society and economy

In summary, the priorities for environment sector development of the government of Nepal based on the periodic plans of the National Planning Commission are as following;

- Clean environment
- Green jobs and poverty reduction
- Climate adaptation and resilience
- Promotion of alternative energy
- Low-Carbon Development path
- Resource efficiency
- Gender equality and social inclusiveness
- Disaster risk reduction

- Increase forest coverage

Similarly, the priorities for the generation and use of Environment Statistics are;

- Enhancing the production of timely, reliable, disaggregated and demand-driven sectoral statistics.
- Maximizing the use of quality statistics to foster evidence based planning and policy formulation, monitoring and evaluation from central to local level.

Environmental Issues and Sustainable Development Goals

In line with the global sustainable development goals, Nepal in 2030 needs to achieve prosperity that is not only shared, but also lasting. This requires ensuring that economic growth be designed to go hand in hand with protecting and harnessing Nepal's natural resources and people's health, while investing sufficient resources into preparedness to address external and internal environmental threats. Envisioning Nepal 2030 foresees a major drive towards making Nepal's cities and villages not only more connected but also more livable – with clean air, clean water, proper garbage management, and sufficient green space. A better management of our environmental resources will determine the extent to which major sources of Nepal's prosperity, such as tourism, agriculture and hydroelectricity can be harnessed.

Environment Statistics and its Development in Nepal

The need of statistics on environmental aspects has been realized particularly after 1970s. With the growing problems of environment, policy makers, planners, development workers felt the need of new dimension of official statistics namely environment statistics for the sustainable development of the country.

According to the Framework for Development of Environment Statistics (FDES), the objective of environment statistics is to provide information about the environment, its most important changes over time and across locations and the main factors that influence them. Environment statistics seek to provide high-quality statistical information to improve knowledge of the environment, support evidence-based policy- and decision-making, and provide information for the general public and specific user groups.

The scope of environment statistics covers biophysical aspects of the environment and those aspects of the socioeconomic system that directly influence and interact with the environment. The scope of environment, social and economic statistics overlap. It is not easy—or necessary—to draw a clear line dividing these areas. Social and economic statistics that describe processes or activities with a direct impact on, or direct interaction with, the environment are used widely in environment statistics. They are within the scope of the FDES. Other relevant social and economic statistics, which are not part of environment statistics, are also required to place environmental issues in context and facilitate the integrated analysis of environmental, social and economic processes. The use of consistent definitions and classifications among these fields supports their integration. When properly integrated, data and other inputs from social and economic domains enrich the analysis of environment statistics.

Environment statistics synthesize data originating from various types of sources. Thus, the data used to produce environment statistics are not only compiled by different collection techniques, but also by various institutions. Types of sources include

i. statistical surveys (e.g., censuses or sample surveys of population, housing, agriculture, enterprises, households, employment, and different aspects of environment management)

ii. administrative records of government and non-government agencies responsible for natural resources, as well as other ministries and authorities;

iii. remote sensing and thematic mapping (e.g., satellite imaging and mapping of land use and land cover, water bodies or forest cover)

iv. monitoring systems (e.g., field-monitoring stations for water quality, air pollution or climate)

v. scientific research and special projects undertaken to fulfill domestic or international demand.

Different users need environment statistics at different levels of aggregation and depths of information. They may need cross-cutting environment statistics data sets, for instance regarding climate change. In other cases, they may be interested only in particular topics and themes pertaining to specific sectoral analysis and policymaking. Policy- and decision-makers at the highest levels and the general public would tend to use environmental indicators and more aggregated statistics. Environmental administration, researchers, analysts and academics may be more inclined to examine extensive and detailed environment statistics.

Central Bureau of Statistics (CBS) first published a Compendium on Environment Statistics in 1994 which provided valuable insights into the importance and usefulness of the subject matter. 'A Compendium on Environment Statistics 1998 Nepal' was brought as second publication with an attempt to analyze available data on various aspect of the environment of Nepal. However, database on the environment was limited. Therefore, CBS continued attempts to bring out the environment related statistics by compiling and publishing its publication 'Environment Statistics of Nepal, 2001' in the form of environment

database of Nepal. The present issue of 'Environment Statistics of Nepal, 2019' is the 9th in the series.

Framework for Development of Environment Statistics

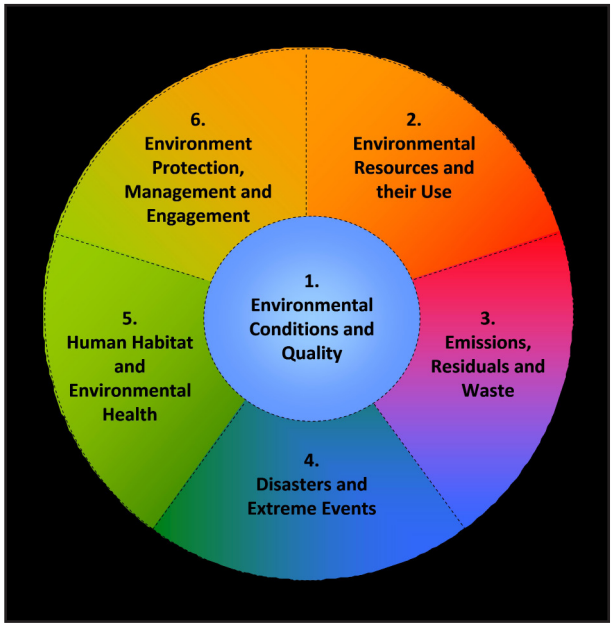

Chart 1

In order to standardize the environment statistics being compiled by different countries, the United Nations Statistics Division (UNSD) developed and published in 1984 'A Framework for the Development of Environment Statistics (FDES)'. The FDES sets out the scope of environment statistics by relating the components of the environment to information categories that are based on the recognition that environmental problems are the result of human activities and natural events reflecting a sequence of action, impact, and reaction. The contents of the FDES are "statistical topics"; they are those aspects of environmental concerns that can be subjected to statistical description and analysis. It is a flexible framework for developing and organizing environmental and related socio-economic information.

Since the publication of FDES in 1984, there have been a number of scientific, political, technological, statistical and experience-based developments which necessitated the revision of FDES. The United Nations Statistical Commission, at its 41st session in February 2010, endorsed a work programme and the establishment of an Expert Group for the revision of the FDES. The members of the Expert Group represented producers and users of environment statistics of countries from all regions and international organizations. Specialized agencies and nongovernmental organizations were also involved at different stages of development of this framework.

After conducting a due consultative process and pilot testing, the draft FDES was finalized by the Expert Group, and UN Statistical Commission at its 44th Session held in 2013 endorsed the revised framework as the framework for strengthening environment statistics programmes in countries and recognized it as a useful tool in the context of sustainable Development Goals and Post 2015 Development Agenda. Final official edited version of FDES 2013 has been released by UNSD in June 2016.

The FDES 2013 is a multipurpose conceptual and statistical framework that is comprehensive and integrative in nature. The FDES is structured in a way that allows links to economic and social domains. It seeks to be compatible with other frameworks and systems, both statistical and analytical, such as for instance the System of Environmental-Economic Accounting (SEEA), the Driving force – Pressure – State – Impact – Response (DPSIR) framework, and the Sustainable Development Goals (SDGs) indicator framework.

The FDES organizes environment statistics into a structure consisting of components, subcomponents, statistical topics, and individual statistics using a multi-level approach. The first level of the structure consists of six fundamental components that follow the FDES conceptual framework.

The first component brings together statistics related to the conditions and quality of the environment and their change. The second component groups together statistics related to availability and use of environmental resources (ecosystem provisioning services, land and subsoil resources). The third component includes statistics related to the use of regulating services for the discharge of residuals from production and consumption processes into the environment. Statistics related to extreme events and disasters (both natural and technological) and their impacts are covered by the fourth component. The

fifth component brings together statistics related to environmental conditions and impacts within human settlements. The sixth component groups statistics relevant to societal responses and economic measures aimed at protecting the environment and managing environmental resources.

Chart 1 shows the six components of the FDES. The dotted lines separating the components are an indication of the continuous interactions among them. These interactions are between and among all the components of the FDES. It should be noted that a two dimensional diagram can only provide a limited visualization of the complex and interrelated nature of the relationships between humans and the environment. All the six components are intrinsically related with each other. The revised FDES uses a multi-level approach. The first level of the structure defines the six fundamental components. Each individual component is further broken down into its respective sub-components (second level) and statistical topics (third level). Each level uses numbering conventions. The final level contains the actual individual environment statistics.

The FDES 2013 sets out a comprehensive (though not exhaustive) list of statistics (the Basic Set of Environment Statistics) that can be used to measure the statistical topics relating to environment and to develop national environment statistics programmes. This Basic Set of Environment Statistics is designed with enough flexibility to be adapted to individual countries 'environmental concerns, priorities and resources and it follows a progression of three tiers:(a) Tier 1 is the Core Set of Environment Statistics with 100 indicators, which are of high priority and relevance to most countries and have a sound methodological foundation.(b) Tier 2 includes environment statistics that are of priority and relevance to most countries but need more investment in time, resources or methodological development.(c) Tier 3 includes environment statistics which are either of less priority or require significant methodological development.

The Core Set of Environment Statistics (i.e., Tier 1) represents a broad consensus of opinion; as such, it is intended to foster collection, coordination and harmonization of environment statistics at the national, regional and global levels in the short-term. Consequently, depending on their priorities and resources, countries are encouraged to consider producing Tier 2 and Tier3 statistics in the medium- and in the long-term respectively.

FDES and SDG

The UN General Assembly in its 70th Session considered and adopted the 2030 Agenda for Sustainable Development, which includes 17 goals (referred to as Sustainable Development Goals) and 169 targets. At the core of this agenda for sustainable development is the realization that for any development intervention to be sustainable, it must take into account the social, economic, and environmental consequences it generates, and lead to conscious choices in terms of the trade-offs, synergies and spin offs it creates. The 2030 Agenda and its indicator framework have, therefore, highlighted a number of statistical areas, which would be required for monitoring the achievement of the SDGs. The environmental dimension of sustainable development is fully reinforced in the goals on oceans and marine resources, ecosystems and biodiversity, land degradation and desertification, and is also mainstreamed/embedded under all other goals. Almost half of the SDG targets require environment statistics in order to be able to compile its indicators and enable regular monitoring of progress. Presumably because of the concurrent development of the two frameworks, FDES 2013 has a strong linkage with the SDG indicator framework.

Organization of the Report

Following the FDES 2013, the tables of the publication Environment Statistics of Nepal, 2019 have been categorized into seven chapters, corresponding to the components of FDES 2013.

Chapter I outlines the background and introduction to the environmental problems facing Nepal, the policy focus of the government of Nepal and development of the environment statistics. Chapter II of the book contains statistical tables related to Environmental Conditions and Quality which include statistics about the physical, biological and chemical characteristics of the environment and their changes over time. Chapter III contains statistical tables related to Environmental Resources and their Use. Environmental resources include natural resources, such as subsoil resources (mineral and energy), soil resources, biological resources, water resources and land. They may be naturally renewable (e.g. Fish, timber of water) or non-renewable (e.g. Minerals). Chapter IV presents data on Residuals. This contains statistics on amount and characteristics of residuals generated by human production and consumption processes, their management and their final release to the environment. Chapter V presents the available statistical table on the extreme events and disasters. It includes the extreme events and disasters and their impacts on human well-being and the infrastructure of the human subsystem. Chapter VI contains the statistical tables on the environment in which human live and work, particularly with regard to living conditions and environmental health. These statistics are important for the management and improvement of the conditions related to human settlements, shelter conditions, safe water, sanitation and health, particularly in the context of rapid urbanization, increasing pollution, environmental degradation, disasters, extreme events and climate change. Chapter VII contains data on Environmental Protection, Management and Engagement. Mainly this chapter is organized around the available data on Environmental Protection and Resource Management Expenditure, Environmental Governance and Regulation, Extreme events preparedness and Disaster Management and Environmental Information and Awareness.

Annex I includes Basic Set of Environment Statistics which is identified by FDES 2013. Annex II includes a Glossary of major terminologies to facilitate common understanding.

CHAPTER II
Environmental Conditions and Quality

Table 2.1.1 : Annual Minimum, Maximum and Average Temperature by Stations

Station	2013			2014			2015			2016			2017		
	min	max	avg	min	max	avg	min	max	avg	min	max	avg	min	max	avg
Anp Chour	NA	NA	NA	13.7	27.9	20.8	NA	NA	NA	NA	30.0	NA	NA	NA	NA
Baglung	NA	NA	NA	NA	NA	NA	15.4	26.9	21.1	NA	NA	NA	15.4	28.1	21.8
Bahrabise	NA	NA	NA	14.6	28.3	21.5	NA	NA	NA	15.3	28.5	21.9	NA	NA	NA
Baitadi	9.1	23.4	16.3	7.5	21.9	14.7	8.1	23.3	15.7	11.1	24.9	18.0	7.1	24.8	15.9
Bajura (Martadi)	9.5	23.6	16.6	11.7	23.9	17.8	12.2	23.9	18.1	13.0	24.9	19.0	12.6	24.5	18.5
Bandipur	15.6	24.8	20.2	16.0	25.5	20.8	16.0	26.1	21.1	16.7	26.6	21.6	NA	NA	NA
Begnas	15.8	28.2	22.0	15.9	28.5	22.2	16.3	28.6	22.4	16.0	29.4	22.7	16.2	29.6	22.9
Beni Bazar	NA	NA	NA	NA	NA	NA	NA	28.3	NA	NA	NA	NA	NA	NA	NA
Besishahar	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bhairahawa (Agric)	18.0	30.8	24.4	18.6	30.6	24.6	19.4	31.3	25.4	19.3	31.7	25.5	19.4	31.7	25.5
Bhairahawa Airport	19.1	30.7	24.9	19.0	30.6	24.8	19.3	30.9	25.1	19.4	31.6	25.5	19.1	31.5	25.3
Bhaktapur	NA	NA	NA	11.2	25.5	18.3	12.0	26.0	19.0	12.3	26.6	19.5	12.2	26.9	19.5
Bharatpur	27.4	46.0	36.7	19.4	30.9	25.1	19.4	30.7	25.1	17.9	31.5	24.7	19.7	31.8	25.7
Bhimgithhe	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	14.1	27.5	20.8
Bhorletar	NA	NA	NA	NA	NA	NA	18.4	29.5	23.9	17.6	29.3	23.5	NA	NA	NA
Bijuwar Tar	15.7	28.5	22.1	NA	NA	NA	15.3	29.2	22.3	15.9	NA	NA	15.7	29.9	22.8
Biratnagar Airport	19.3	31.0	25.2	19.4	30.6	25.0	19.8	30.4	25.1	19.8	31.0	25.4	19.9	31.0	25.4
Birganj	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	20.4	31.8	26.1
Buddhanilakantha	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butwal	NA	NA	NA	19.6	30.0	24.8	19.5	30.3	24.9	18.9	31.7	25.3	19.3	31.7	25.5
Chainpur (East)	12.4	25.3	18.8	13.6	25.5	19.5	13.5	25.0	19.2	13.9	25.5	19.7	15.4	25.8	20.6
Chainpur (West)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chainpur Bajhang Aws Climate	12.9	24.5	18.7	NA	NA	NA	NA	NA	NA	13.9	27.9	20.9	NA	NA	NA
Chandra Gadhi	19.5	31.9	25.7	19.1	32.3	25.7	19.4	32.2	25.8	NA	NA	NA	NA	NA	NA
Changu Narayan	13.2	24.2	18.7	13.1	24.1	18.6	13.1	24.3	18.7	13.6	24.5	19.1	NA	NA	NA
Chapkot	16.9	28.6	22.7	17.2	29.3	23.3	17.3	29.3	23.3	17.5	30.1	23.8	NA	NA	NA
Charikot	11.0	21.0	16.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chatara	NA	NA	NA	NA	NA	NA	19.9	31.2	25.5	19.6	32.1	25.9	19.0	31.7	25.3
Chaurjhari Tar	NA	NA	NA	14.7	29.3	22.0	14.9	29.2	22.0	15.2	29.7	22.5	14.8	28.9	21.8
Chautara	NA	NA	NA	NA	NA	NA	NA	NA	NA	13.9	24.6	19.3	13.6	25.4	19.5
Chhoser	0.1	14.8	7.4	NA	13.6	NA	NA	13.2	NA	1.0	14.5	7.7	0.5	14.4	7.4
Chisapani(Karnali)	18.8	29.2	24.0	19.3	29.4	24.3	19.5	29.6	24.6	NA	NA	NA	NA	NA	NA
Dadeldhura	11.4	22.3	16.8	11.5	22.0	16.7	11.7	21.4	16.5	12.4	22.6	17.5	12.1	22.0	17.0
Dailekh	14.3	25.4	19.9	13.9	25.5	19.7	14.0	24.5	19.3	14.9	25.3	20.1	NA	NA	NA
Dainsili	NA	NA	NA	NA	NA	NA	NA	NA	NA	13.7	25.3	19.5	14.2	21.0	17.6
Damak	NA	NA	NA	NA	NA	NA	16.6	31.5	24.1	18.8	31.6	25.2	NA	NA	NA
Daman	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Damauli	17.9	30.3	24.1	NA	NA	NA	NA	NA	NA	17.6	30.6	24.1	NA	NA	NA
Dandaswara	11.7	24.3	18.0	10.9	24.7	17.8	13.1	23.8	18.5	15.2	24.3	19.8	15.0	24.4	19.7
Darchula	12.6	26.5	19.6	13.6	28.2	20.9	13.8	27.0	20.4	14.9	27.5	21.2	14.8	27.0	20.9
Darchula New	14.7	28.1	21.4	NA	NA	NA	14.7	28.4	21.5	15.2	29.5	22.3	15.4	29.1	22.2
Dhading	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dhangadhi(Attariya)	18.1	30.2	24.1	17.4	30.4	23.9	17.9	30.0	24.0	18.3	31.2	24.7	18.4	31.2	24.8
Dhankuta	15.2	25.7	20.4	15.3	25.5	20.4	15.4	25.1	20.3	15.8	25.4	20.6	15.6	25.4	20.5
Dharan Bazar	20.3	29.9	25.1	20.2	29.7	24.9	20.4	29.8	25.1	20.8	30.1	25.5	20.6	30.5	25.6
Dhulikhel	NA	NA	NA	12.1	21.3	16.7	11.9	18.2	15.1	12.5	18.7	15.6	NA	NA	NA
Dhunche	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dhunibesi	15.8	26.9	21.3	16.0	27.0	21.5	16.6	27.6	22.1	16.5	27.8	22.1	16.0	27.8	21.9
Diktel	NA	NA	NA	NA	NA	NA	14.0	NA	NA	14.4	23.2	18.8	14.2	23.0	18.6
Dipal Gaun	5.3	22.3	13.8	NA	NA	NA	4.5	22.7	13.6	5.6	23.8	14.7	5.5	22.4	14.0
Dipayal (Doti)	16.0	30.8	23.4	15.9	31.2	23.5	15.7	30.7	23.2	15.6	31.1	23.4	15.5	30.8	23.2
Dumkauli	19.2	29.9	24.5	18.9	30.5	24.7	19.1	NA	NA	19.2	34.0	26.6	19.3	33.6	26.4
Dunai	8.8	21.0	14.9	8.5	19.5	14.0	NA	NA	NA	NA	NA	NA	11.1	20.8	15.9
Gaida (Kankai)	18.4	30.6	24.5	18.2	30.6	24.4	18.5	30.6	24.6	15.6	31.4	23.5	NA	NA	NA
Gam Shree Nagar	11.0	23.8	17.4	NA	NA	NA	NA	NA	NA	10.9	23.8	17.4	10.9	23.7	17.3
Gaur	17.1	22.6	19.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ghale Kharka	NA	NA	NA	12.6	21.2	16.9	12.8	22.4	17.6	13.2	21.9	17.5	NA	NA	NA
Ghorai (Dang)	16.2	28.7	22.5	16.2	29.1	22.6	16.4	29.0	22.7	16.8	29.4	23.1	16.9	29.2	23.1
Godavari	9.3	23.3	16.3	9.6	23.7	16.6	11.4	23.5	17.4	11.6	23.8	17.7	NA	24.1	NA

Station	2013			2014			2015			2016			2017		
	min	max	avg	min	max	avg	min	max	avg	min	max	avg	min	max	avg
Godavari(West)	20.2	30.9	25.5	NA	30.5	NA	19.8	30.2	25.0	19.7	31.4	25.5	NA	NA	NA
Gokuleshwar	15.1	28.1	21.6	NA	NA	NA	14.6	28.1	21.4	14.7	28.8	21.7	14.7	28.8	21.7
Gorkha	17.0	28.1	22.6	NA	NA	NA	17.0	28.2	22.6	17.5	28.8	23.1	17.1	28.1	22.6
Gulariya	NA	NA	NA	NA	NA	NA	18.7	30.2	24.4	18.6	31.0	24.8	NA	NA	NA
Gurja Khani	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hardinath	NA	NA	NA	19.2	29.5	24.3	19.8	30.3	25.0	19.8	30.4	25.1	19.8	30.4	25.1
Hetaunda N.f.i.	17.2	29.4	23.3	17.2	29.6	23.4	17.4	29.3	23.3	17.7	29.8	23.8	17.7	29.6	23.6
Humde	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.1	14.6	8.3	NA	14.4	NA
Ilam Tea Estate	NA	NA	NA	13.3	24.1	18.7	13.9	23.7	18.8	15.0	24.0	19.5	NA	NA	NA
Jajarkot	NA	26.5	NA	NA	26.7	NA	NA	26.3	NA	NA	27.6	NA	NA	NA	NA
Jalesore	19.2	30.8	25.0	NA	NA	NA	18.8	29.9	24.4	NA	NA	NA	NA	NA	NA
Janakpur Airport	19.7	30.5	25.1	19.8	30.6	25.2	20.1	31.1	25.6	20.0	31.4	25.7	20.1	31.2	25.6
Jhingrana	12.9	24.5	18.7	NA	NA	NA	NA	NA	NA	13.9	27.9	20.9	13.4	27.0	20.2
Jiri	8.9	21.0	14.9	8.6	21.2	14.9	8.9	20.9	14.9	9.1	21.6	15.3	8.8	21.4	15.1
Jomsom	6.2	17.8	12.0	5.8	17.8	11.8	5.9	17.6	11.7	6.1	18.7	12.4	6.1	18.4	12.3
Jumla	5.5	21.6	13.6	4.9	21.9	13.4	5.3	21.5	13.4	6.4	22.2	14.3	6.4	21.6	14.0
Jumla A/P	5.0	21.2	13.1	4.4	21.8	13.1	4.3	21.4	12.9	4.3	22.5	13.4	3.6	21.8	12.7
Jyamirebari	NA	NA	NA	11.8	22.9	17.4	12.5	23.9	18.2	13.0	24.0	18.5	12.6	23.0	17.8
Kabre	12.0	22.5	17.2	12.0	22.9	17.5	12.0	22.4	17.2	NA	22.9	NA	12.6	23.1	17.9
Kaigaun	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Kakani	11.3	20.3	15.8	11.6	20.5	16.0	11.6	20.2	15.9	12.0	21.0	16.5	NA	NA	NA
Kanyam Tea Estate	10.1	20.7	15.4	10.1	21.2	15.7	12.5	20.9	16.7	NA	NA	NA	NA	NA	NA
Karmaiya	20.1	31.0	25.5	20.2	30.6	25.4	20.3	30.9	25.6	NA	NA	NA	20.4	31.7	26.0
Kathmandu Airport	12.9	26.4	19.7	13.0	25.9	19.5	13.0	26.1	19.6	13.3	26.3	19.8	13.2	26.2	19.7
Kechana	19.2	30.7	24.9	19.0	30.5	24.8	19.4	30.8	25.1	NA	NA	NA	19.5	30.8	25.1
Khadbari	15.8	24.7	20.3	16.3	25.0	20.6	16.5	NA	NA	16.9	24.8	20.9	16.5	24.9	20.7
Khairini Tar	17.1	29.4	23.3	17.3	29.9	23.6	17.3	29.8	23.6	17.4	30.4	23.9	17.5	30.2	23.8
Khajura (Nepalganj)	18.5	30.4	24.5	18.3	30.7	24.5	18.7	30.9	24.8	15.3	31.7	23.5	NA	NA	NA
Khanchikot	12.9	20.9	16.9	12.3	21.2	16.7	11.9	21.1	16.5	13.1	22.1	17.6	13.2	22.0	17.6
Khokana	11.2	24.8	18.0	10.9	25.1	18.0	11.1	25.4	18.3	11.5	26.5	19.0	11.5	25.9	18.7
Khudi Bazar	15.7	NA	NA	NA	NA	NA	NA	NA	NA	16.0	28.4	22.2	NA	NA	NA
Khumaltar	12.6	24.5	18.6	12.6	24.9	18.7	12.5	24.7	18.6	12.8	25.0	18.9	13.0	25.4	19.2
Kushma	15.0	28.6	21.8	14.9	28.9	21.9	15.1	28.4	21.7	13.7	29.4	21.6	NA	NA	NA
Lahan	19.7	30.2	25.0	NA	NA	NA	19.9	30.5	25.2	20.4	31.0	25.7	19.9	31.1	25.5
Lete	6.4	17.0	11.7	NA	NA	NA	6.3	17.3	11.8	7.2	17.7	12.4	7.2	17.6	12.4
Libang Gaun	NA	NA	NA	11.5	25.6	18.5	9.8	25.5	17.7	13.2	26.7	19.9	13.5	26.6	20.0
Lumbini	NA	NA	NA	18.6	30.2	24.4	18.8	31.1	24.9	18.8	31.6	25.2	18.7	31.8	25.2
Lumbini Mandir	18.8	30.3	24.6	18.6	30.2	24.4	18.8	31.1	24.9	18.8	31.6	25.2	NA	NA	NA
Lumle	12.4	20.4	16.4	12.2	20.4	16.3	12.2	20.3	16.2	12.6	NA	NA	12.4	20.8	16.6
Mahendra Nagar	18.0	30.0	24.0	17.7	30.0	23.9	18.3	30.1	24.2	18.3	31.0	24.6	18.3	30.8	24.6
Malepatan (Pokhara)	14.6	27.2	20.9	15.3	27.2	21.2	15.8	27.2	21.5	16.3	28.1	22.2	15.1	27.9	21.5
Mandan	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mangalsen	NA	NA	NA	NA	NA	NA	13.6	25.6	19.6	14.1	26.2	20.2	13.9	25.7	19.8
Manma	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9.7	23.5	16.6
Manthali	18.1	31.5	24.8	17.0	31.3	24.1	16.7	31.1	23.9	NA	31.5	NA	17.3	31.2	24.3
Manusmara	19.0	30.4	24.7	18.6	30.4	24.5	19.6	30.4	25.0	19.4	30.6	25.0	19.2	30.7	25.0
Mehalkuna	NA	29.9	NA	NA	30.4	NA	16.6	30.2	23.4	NA	31.0	NA	NA	NA	NA
Musikot(Rukumkot)	NA	NA	NA	12.1	25.1	18.6	12.2	25.1	18.6	13.7	25.7	19.7	13.8	25.3	19.5
Nagarkot	10.4	19.3	14.8	10.5	19.7	15.1	10.3	19.5	14.9	10.7	20.1	15.4	10.7	20.0	15.4
Nagma	NA	NA	NA	NA	NA	NA	8.1	22.3	15.2	9.1	23.0	16.0	9.0	22.7	15.9
Nepalgunj Airport	18.3	30.7	24.5	18.0	31.1	24.6	18.5	30.7	24.6	18.6	31.7	25.1	NA	NA	NA
Nepalgunj(Reg.off.)	19.5	29.6	24.6	19.4	29.6	24.5	19.8	30.2	25.0	20.0	31.4	25.7	NA	NA	NA
Num	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nuwakot	16.1	28.3	22.2	16.5	27.3	21.9	NA	NA	NA	17.0	27.9	22.4	16.6	27.9	22.3
Okhaldhunga	11.5	22.6	17.0	12.3	22.4	17.4	12.9	22.4	17.6	13.6	22.8	18.2	13.1	22.8	18.0
Oli Gaun (Patkani)	NA	NA	NA	NA	NA	NA	NA	NA	NA	11.7	22.5	17.1	14.2	28.1	21.1
Pakhribas	12.4	21.2	16.8	12.5	21.4	17.0	NA	NA	NA	13.1	21.7	17.4	12.9	21.5	17.2
Panchase	NA	NA	NA	NA	NA	NA	NA	NA	NA	8.4	18.3	13.3	NA	NA	NA
Panchkhal	NA	NA	NA	NA	NA	NA	NA	NA	NA	15.1	29.5	22.3	NA	NA	NA
Panipokhari(Kathmandu)	13.6	27.7	20.6	13.7	25.9	19.8	14.7	28.7	21.7	13.7	29.8	21.7	13.6	29.2	21.4
Pansayakhola	NA	NA	NA	NA	NA	NA	NA	NA	NA	12.6	21.0	16.8	NA	NA	NA

Station	2013			2014			2015			2016			2017		
	min	max	avg	min	max	avg	min	max	avg	min	max	avg	min	max	avg
Parasi	17.7	31.4	24.6	18.8	31.0	24.9	19.0	31.1	25.0	16.9	31.7	24.3	18.7	31.4	25.1
Parwanipur	19.4	30.3	24.8	19.2	29.9	24.6	19.2	30.4	24.8	19.5	30.7	25.1	19.2	30.5	24.9
Patan (West)	13.2	25.5	19.4	13.1	25.4	19.3	12.7	25.4	19.0	13.8	26.5	20.2	13.8	26.4	20.1
Patan New	13.4	24.2	18.8	NA	NA	NA	13.4	24.3	18.9	14.0	25.2	19.6	13.9	25.0	19.4
Phatepur	17.6	31.3	24.4	19.3	30.7	25.0	19.9	31.0	25.4	NA	NA	NA	19.8	32.1	26.0
Phidim (Panchther)	15.8	27.3	21.5	15.7	27.0	21.3	NA	NA	NA	NA	27.1	NA	NA	27.0	NA
Pokhara Airport	16.1	27.1	21.6	15.9	27.5	21.7	16.4	27.3	21.9	16.7	28.0	22.3	16.4	27.9	22.1
Pokhara Reg. Off.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pusma Camp	NA	NA	NA	14.1	25.4	19.7	15.0	25.0	20.0	15.6	25.8	20.7	NA	NA	NA
Rajbiraj	19.6	29.9	24.7	19.9	NA	NA	20.7	30.3	25.5	21.0	31.0	26.0	20.8	30.0	25.4
Rampur	NA	30.6	NA	17.9	30.7	24.3	18.1	30.4	24.3	NA	30.9	NA	17.8	31.0	24.4
Rani Jaruwa Nursery	20.2	32.9	26.5	20.4	32.5	26.5	NA	NA	NA	19.0	32.0	25.5	NA	NA	NA
Rara	NA	NA	NA	NA	NA	NA	3.8	15.3	9.5	4.3	16.4	10.4	4.1	NA	NA
Salleri	2.6	24.1	13.4	NA	NA	NA	NA	20.1	NA	6.3	21.8	14.0	NA	NA	NA
Salyan Bazar	14.6	NA	NA	14.5	26.8	20.6	14.2	25.9	20.1	14.4	26.0	20.2	14.6	25.9	20.3
Sandhikharka	NA	NA	NA	NA	NA	NA	13.7	NA	NA	14.2	27.3	20.7	14.3	27.6	20.9
Sarmathang	NA	NA	NA	6.9	16.5	11.7	NA	NA	NA	7.8	16.7	12.2	7.8	16.4	12.1
Semari	15.5	30.9	23.2	NA	31.7	NA	17.9	31.0	24.5	18.5	32.4	25.4	18.8	32.1	25.5
Sikta	16.5	31.0	23.7	17.2	31.0	24.1	17.8	31.0	24.4	17.7	31.9	24.8	NA	NA	NA
Silgadhi Doti	NA	NA	NA	12.9	28.1	20.5	13.5	26.5	20.0	14.6	26.9	20.7	14.0	26.5	20.2
Simara Airport	17.7	31.0	24.3	17.6	30.6	24.1	18.5	31.2	24.8	18.8	31.2	25.0	18.3	30.9	24.6
Simikot	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.5	16.7	11.6	6.3	16.3	11.3
Sindhuli Madhi	17.3	29.3	23.3	NA	NA	NA	NA	NA	NA	16.3	29.9	23.1	NA	NA	NA
Siraha	17.7	31.2	24.4	16.7	31.2	24.0	15.7	31.8	23.8	NA	NA	NA	13.8	32.1	23.0
Surkhet (Birendra Nagar)	15.7	29.8	22.7	15.4	29.3	22.4	15.5	29.2	22.3	15.5	29.9	22.7	15.5	29.5	22.5
Syangja	15.5	27.8	21.7	15.5	NA	NA	NA	NA	NA	15.6	28.2	21.9	15.6	28.2	21.9
Tamghas	NA	22.9	NA	12.2	23.3	17.8	12.2	NA	NA	13.0	24.2	18.6	12.4	23.9	18.2
Tansen	15.4	26.2	20.8	15.5	26.4	20.9	14.8	26.5	20.6	14.0	26.7	20.3	12.8	26.3	19.6
Taplejung	12.1	22.1	17.1	12.4	22.5	17.4	12.5	22.3	17.4	13.0	22.6	17.8	12.7	22.9	17.8
Tarahara	17.8	30.4	24.1	18.1	30.2	24.2	18.7	30.4	24.5	18.9	30.7	24.8	NA	NA	NA
Taulihawa	18.6	30.0	24.3	NA	30.1	NA	18.8	NA	NA	19.1	31.2	25.1	19.2	31.1	25.1
Terhathum	11.8	24.6	18.2	11.8	24.9	18.3	13.4	24.0	18.7	NA	24.4	NA	NA	NA	NA
Thakmarpha	5.5	19.5	12.5	4.8	19.2	12.0	5.3	19.0	12.1	4.4	18.8	11.6	3.9	18.1	11.0
Tikapur	17.9	30.7	24.3	18.4	30.6	24.5	18.6	31.1	24.8	17.9	32.0	24.9	17.4	31.8	24.6
Timure	11.8	22.8	17.3	11.0	22.9	17.0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tulsipur	NA	NA	NA	NA	NA	NA	17.0	27.5	22.3	17.4	28.0	22.7	NA	NA	NA
Udayapur Gadhi	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	18.9	NA	NA

NA= Not Available

Source: Department of Hydrology and Meteorology, 2018

Table 2.1.2 : Precipitation by District and Station

(precipitation in mm)

S. N.	District / Station Name	Latitude	Longitude	Elevation (masl)	1971-2000					1981-2010				
					Annual	Monsoon	Winter	Pre Monsoon	Post Monsoon	Annual	Monsoon	Winter	Pre Monsoon	Post Monsoon
1	Banke, Nepalganj	28° 06'	81° 40'	165	1350.8	1137.8	60.7	93.1	59.2	1445.25	1220.40	58.83	102.70	63.43
2	Bara, Simara Airport	27° 10'	84° 59'	130	1806.2	1488.7	41.4	193.4	82.6	1907.89	1593.96	39.72	199.79	74.42
3	Chatara,Sunsari	26° 49'	87°10'	183	2137.9	1694.9	40.1	243.5	159.4	2131.35	1646.20	37.16	286.10	161.91
4	Chitawan, Rampur	27° 37'	84° 25'	256	1995.8	1634.5	48.1	221.1	92.1	NA	NA	NA	NA	NA
5	Dadeldhura,Dadeldhura	29° 18'	80° 35'	1848	1383.7	1003.8	131.4	200.7	47.9	1398.48	1012.46	128.30	204.08	53.64
6	Dang , Ghorahi	28° 03'	82° 30'	634	1600.8	1341.9	57.7	127.2	74	1582.69	1322.21	51.32	141.85	67.31
7	Dhankuta,Dhankuta	26° 59'	87° 21'	931	1008.7	722.5	38.7	182.6	64.8	991.20	717.20	38.00	179.70	56.30
8	Dhanusha, Janakpur	26° 43'	85° 58'	90	1395.6	1137.4	34.7	150.4	73.1	1551.68	1263.15	31.16	191.58	65.77
9	Doti, Dipayal	29° 15'	80° 57'	617	1145.2	802.4	122.8	172.4	47.6	1117.79	792.95	110.73	162.14	51.95
10	Gorkha,Gorkha	28° 00'	84° 37'	1097	1779.6	1352.3	57.6	305.4	64.3	1670.57	1271.51	56.76	294.79	47.49
11	Gulmi,Tamghas	28° 04'	83° 15'	1530	1954.3	1585.2	85.1	216.3	67.7	1883.69	1517.19	78.99	226.31	61.19
12	Ilam, Ilam Tea State	26° 55'	87° 54'	1300	1713	1370.5	37.1	227.2	78.3	1655.59	1321.21	38.82	218.03	77.51
13	Jhapa, Kankai (Gaida)	26° 35'	87° 54'	143	2903.6	2391.2	39.2	312	161.2	2733.04	2230.14	36.33	300.96	165.59
14	Mustang, Jomsom	28° 47'	83° 43'	2744	257.7	135.4	24.3	58.8	39.1	266.96	143.22	25.74	65.94	32.05
15	Jumla,Jumla	29° 17'	82° 14'	2300	843.6	544.3	88.1	162.1	49.1	811.50	531.23	81.48	153.26	45.53
16	Kailali, Dhangadi	28° 41'	80° 41'	170	1792.5	1561.7	68.5	109.9	52.4	1889.78	1634.71	77.73	116.12	61.21
17	Kaski, Lumle	28° 18'	83°48'	1740	5360.4	4541.4	100.5	481.8	236.7	5514.72	4682.39	103.95	497.71	230.66
18	Kaski, Pokhara	28° 13'	84° 00'	827	3951.5	3126.6	79.1	550.4	195.4	3898.71	3118.67	79.25	544.42	156.36
19	Kathmandu ,Kathmand Airport	27° 42'	85° 22'	1336	1439.7	1125.6	46.3	203.3	64.5	1454.84	1130.25	46.27	218.84	59.48
20	Lamjung, Khudibazar	28° 17'	84° 22'	823	3364.5	2750	95.6	395.8	123	3374.98	2743.19	96.96	432.29	102.53
21	Makawanpur, Hetauda	27° 25'	85° 03'	474	2331.3	1917.1	52.4	258.4	103.3	2459.58	2021.75	51.76	285.61	100.45
22	Manang, Chame	28° 33'	84° 14'	2680	935.3	575.7	102.7	183.6	73.2	951.51	597.25	103.86	188.23	62.17
23	Morang, Biratnagar	26° 29'	87° 16'	72	1881.1	1522.5	31.4	227.6	99.6	1891.82	1510.31	31.52	252.35	97.65
24	Nawalparasi, Dumkauli	27° 41'	84° 13'	154	2289.4	1907.8	51.5	240.9	89.2	2395.16	1964.29	55.28	280.61	94.99
25	Bara,Nijgadh	27°11'	85°10'	244	2033	1673	40.1	216.8	103	1971.82	1658.83	38.32	193.44	81.23
26	Nuwakot,Nuwakot	27° 55'	85° 10'	1003	1978	1639.1	51	208.9	78.9	1874.73	1544.91	49.73	214.06	66.04
27	Okhaldhunga,Okhaldhunga	27° 19'	86° 30'	1720	1755.2	1401.6	38.1	233.4	82.1	1772.55	1419.22	38.52	241.18	73.63
28	Palpa, Tansen	27° 52'	83°32'	1067	1520.7	1274.1	71	130.4	45.3	1581.53	1312.66	65.03	146.08	57.77
29	Parbat, Kushma	28° 13'	83°42'	891	2498	2044.4	68.7	269.1	99.1	2584.36	2168.49	70.49	269.76	75.63
30	Dailekh,Dailekh	28° 51'	81° 43'	1402	1838.5	1504.1	96.6	182.4	55.4	1801.41	1489.43	89.29	175.57	47.11
31	Dolakha, Jiri	27° 38'	86° 14'	2003	2266	1815.4	52.1	307.9	90.6	2353.16	1899.52	54.97	315.87	82.80
32	Rupandehi, Bhairahawa	27° 31'	83° 26'	109	1673.1	1444.6	44.8	105.7	78	1725.24	1463.94	50.25	125.38	85.67
33	Sankhuwasava, Chainpur	27° 17'	87°20'	1329	1435	982.3	36.6	334.3	81.8	1473.63	1023.59	39.63	337.20	73.20
34	Saptari, Rajbiraj	26° 33'	86° 45'	91	1493.1	1231.4	35.1	157.1	69.5	1529.41	1237.18	30.58	183.94	77.72
35	sindhuli,Sindhuligadhi	27° 17'	85°58'	1463	2827.2	2232.2	50.7	368.8	175.6	2667.08	2163.09	42.96	334.60	126.44
36	Surkhet, Birendranagar	28° 36'	81° 37'	720	1603.1	1312.6	96.2	139.2	55.1	1628.38	1336.05	95.31	144.96	52.06
37	Syangja, Syngja	28° 06'	83° 53'	868	2888.8	2281.1	73.4	418.8	115.5	2850.87	2273.66	69.18	410.06	97.96
38	Tanahu, Khairanitar	28° 02'	84°06'	500	2328.8	1707.3	67.1	464	90.4	2332.34	1721.05	65.38	469.68	76.22
39	Taplejung,Taplejung	27° 21'	87° 40'	1732	2010.9	1401.7	56	447.5	105.7	1989.17	1391.41	57.98	441.87	97.90

Note : 30 years in normal.

Source: Department of Hydrology and Meteorology

Table 2.1.3: Annual Rainfall by Station (in mm)

S.N.	Station	Year				
		2013	2014	2015	2016	2017
1	Agimir	1684.6	NA	1005.9	1517.3	1061.6
2	Aisealukhark	1626.2	1502.4	2561.1	2492.8	NA
3	Ambapur	1738.8	1454.6	1176.7	1233.5	1642.8
4	Amlekhganj	1884.4	1642	1461.6	505.8	1808.7
5	Anarmani Birta	3135.7	1716.4	1846.7	3448	NA
6	Anp Chour	NA	NA	NA	1588.1	1628.4
7	Archale	3142.9	1511.7	1483.7	1923.4	1810.5
8	Asara Ghat	NA	1189.7	1119.8	899.7	1056.5
9	Atraulitar	2712.2	1862.9	1211.1	1635.5	NA
10	Badhichaur	2248.3	1700.4	1265.8	1398.3	1433.6
11	Baghara	3455.2	NA	2855.9	3307.5	2706.4
12	Baglung	NA	NA	2062.4	2137.3	2011.6
13	Bahrabise	2517.8	2627.5	NA	2613.2	2880
14	Bahun Tilpung	1518.1	NA	NA	1606.2	1243
15	Bahunipati	1768.7	1462.3	1898.3	1600.9	1471.5
16	Baijapur	2261.1	1061.9	710.5	786.4	574
17	Baitadi	1567	943.5	1068.9	1185.6	1445.1
18	Bajura (Martadi)	2341.6	2022.5	1724.1	2023.2	2061
19	Baldyanggadi	1625.2	NA	1309.2	2071.9	1819
20	Bale Budha (Tallo Dhungeshwor)	NA	1550.5	948.4	889.6	1118.6
21	Baliya	2577.3	1910.4	1886.5	1855.7	2213
22	Bandipur	1598.3	1483	1159.9	1378	NA
23	Banganga	2416.4	1941.5	1525	1692.9	1026.8
24	Bangga Camp	NA	2327	2832.3	1446.8	1508.3
25	Bardaghat	1859.6	NA	1360.5	1776.8	2763.8
26	Bargadaha	2114.6	1791.9	1750.3	1865.8	1972.8
27	Barmajhiya	1495.5	1095.6	920.3	1481.5	1709.9
28	Barpak	4536.7	3464.6	2649.7	4673.2	2907.3
29	Basti	NA	NA	NA	NA	995
30	Bau Khola (Bam)	322.9	753.5	484.6	695.4	740.6
31	Bega	1942.5	1990.2	1735.6	2447.1	1876.3
32	Begnas	2997.7	3331	3008.3	3458.3	3065.2
33	Belauri Santipur	1502.9	1266.5	1642.7	1990.6	1489.8
34	Belmar	1189.7	1637.1	942.9	1021.4	972.4
35	Beluwa (Girwari)	2651.6	1783.3	1558.1	3007.1	2400
36	Beluwa(Manahari)	1823.8	1306.1	1462	1581.1	NA
37	Beni Bazar	1491.5	NA	1506	1755.3	NA
38	Bhadaure Deurali	3886.2	4097.1	4456.3	4362.7	NA
39	Bhagawanpur	1048.9	1226.9	1532.4	817.8	1033.2
40	Bhagwanpur	1841	NA	1191	1639.2	NA
41	Bhairahawa (Agric)	1965.7	1342	1041.1	1579.7	1891.4
42	Bhairahawa Airport	NA	1551.3	1335.2	1604.8	1717.2
43	Bhajani	1786.5	1387.9	1340.7	1568	1426.1
44	Bhaktapur	NA	1060.8	1125.1	1286	1089.4
45	Bharatpur	4117.3	3668.4	3830.3	4124.1	2040.7
46	Bharse	2597.1	2552.4	1783.5	2694.5	NA
47	Bhimgithhe	2753.3	2463.9	1756.1	1917.5	2659.7
48	Bhorletar	NA	NA	1656.9	NA	2257.7
49	Bhujung	NA	NA	5138.7	3972.4	NA
50	Bichawa	1668.1	1012.7	1243.5	1586.5	1416.8
51	Bijayapur (Raskot)	1555.9	1225.9	1355	1197.3	1786.9
52	Bijuwar Tar	1581.4	987.6	962.9	1776.5	1060.7
53	Binayak	1047.6	NA	NA	986	1241.1
54	Biratnagar Airport	1471.4	1547.5	940.1	1826.5	1038.2
55	Birganj	NA	NA	NA	NA	1227.4
56	Biunthari	NA	NA	279.4	423.2	726.5
57	Bobang	2147.9	2405.7	1780.5	2179.9	2619.8
58	Butwal	2034.8	2726.1	NA	3368.1	3525.5
59	Chainpur (East)	1568.6	1291.9	1293.4	1391.7	1142.5
60	Chainpur Bajhang Aws Climate	NA	915.6	947.8	1011.9	NA
61	Chandra Gadhi	2937.5	970	1209.4	1841.4	NA

S.N.	Station	Year				
		2013	2014	2015	2016	2017
62	Changu Narayan	1822.1	1637.9	1180.7	1706.4	1336.3
63	Chapa Gaun	1391.5	1074.5	771.2	1149.9	NA
64	Chapkot	2710.6	1783.8	1104.9	1626.2	NA
65	Charikot	1820.1	2009	NA	NA	2684.4
66	Chatara	2056	1644.5	2190	2894	1564.7
67	Chaumala	2618.8	2025.2	2064.2	1916.9	2313.8
68	Chaurikhark	2039.6	2312	1475.5	2134.3	1515
69	Chaurjhari Tar	1420.5	899.5	988.3	1256.2	1209.9
70	Chautara	2173.9	NA	NA	2003.6	1572
71	Chautha	1483.8	1610.7	1041.7	1256.7	1228.3
72	Chepuwa	2736.1	2769.3	2527.3	2972.9	2758.3
73	Chhekampar	NA	1137.3	NA	750.5	NA
74	Chhoser	270.3	244.4	255.1	251.8	269.4
75	Chisapani (Syangja)	NA	1319.4	933.7	1292.3	NA
76	Chisapani Bazar	1832.2	1391.6	1429.3	1710.7	1367.5
77	Chisapani Gadhi	1890.2	1614.9	1434	1646.6	NA
78	Chisapani(Karnali)	3138.7	3390.5	2302.5	2526.2	NA
79	Chiuri	1156.8	805.8	478.8	1680	1133.6
80	Chumchet	NA	NA	574.3	839.8	617.5
81	Chundi Rangha	1631.2	1979.2	1437.1	2163.8	1557
82	Dadeldhura	1548.1	1512.5	1264	1300.5	1374.1
83	Dadimadi	697	1345.1	1389.8	1590.1	1774.8
84	Dailekh	1808.9	1404.5	1493.2	1462.5	1673.8
85	Dainsili	2319.1	1293.6	1927.4	2575.7	2244
86	Damak	2433.1	NA	1833.1	NA	NA
87	Damauli	1940	1266.9	NA	1172.1	NA
88	Dandagaun	1786.9	1451.7	1292.1	1271.6	1234.9
89	Dandaswara	3144.4	3338.8	3313	3163.6	2698
90	Darbang	2500.7	2840.1	2182	3049	2379.8
91	Darchula	1858.3	1839.7	1964.9	3036.5	2463.3
92	Darchula New	2009.4	NA	1727.5	2251.3	2485.7
93	Darma	1865.6	1488.7	NA	NA	1026.2
94	Daugha	1338.7	903.5	711.7	958.3	1235.8
95	Dedhgauntar	NA	1518.4	1190.7	NA	2204.1
96	Deurali Nawal	1962.5	NA	2377.8	2750.2	NA
97	Dhakeri	1588.9	1610.7	1467	1511.3	1692
98	Dhangadhi(Attariya)	2449.6	1533.2	1823.3	1592.9	1607.4
99	Dhankuta	982	567.6	799.2	1068.2	936.5
100	Dhap	6512.2	3268.4	3850.1	6737.4	NA
101	Dharan Bazar	2212	1684.9	1802.7	2362.2	2215.7
102	Dharmpaniya	1845.1	1767.4	1447.4	1735	1957.6
103	Dhaulatiya (Dallekhdhar)	2786.6	2703.1	1929.8	2636.1	2749.2
104	Dhulikhel	1009.7	1264.3	1219.3	1258.3	NA
105	Dhunche	NA	NA	1491	NA	NA
106	Dhunibesi	1731.7	1358.6	981	1135.6	1179.3
107	Diktel	NA	NA	1509.1	1868.8	1509.8
108	Dingla	2018.3	1646.3	2176.8	2357.4	1557.8
109	Dipal Gaun	1117.8	803.7	869.4	877.9	911.3
110	Dipayal (Doti)	1085.5	911	888.2	1124.4	957.3
111	Dodhara	2169.7	2278.3	1866.4	1842.8	1798.4
112	Dolal Ghat	1199.6	1082.1	878	1009.3	1179.1
113	Dovan	1703.8	1234.1	2359.7	1711.8	NA
114	Dumkauli	2703	2320.5	2109.2	2523.5	1961.3
115	Dumkibas	2384.1	2075	1523.2	2307.7	3051.5
116	Dumrakot	1166.2	1008.9	936	805.2	751.9
117	Dunai	435.2	428	NA	488.4	556.9
118	Duwachaur	2546.4	1707.8	1724.1	NA	NA
119	Faleni	NA	3319.9	2641.8	4073.7	3247.6
120	Gadhawa	837.5	1048.8	943.8	1072.3	1496.9
121	Gaida (Kankai)	2678.9	2075	2079.9	2529	NA
122	Gaighat	764.5	834.4	1009.7	804.2	1575.1
123	Gaira	1421.9	1977.2	1410.9	1760.2	1962.8
124	Gajuri	1280.7	NA	1141.1	1693.3	NA
125	Galkot	2415	3062.8	3691.8	3854.7	2800.1
126	Gam Shree Nagar	1394	820.6	726	979.8	778.2

S.N.	Station	Year				
		2013	2014	2015	2016	2017
127	Gamtha	NA	1412.9	1239.7	1661.7	1103.6
128	Gandakot	3265.6	1777.5	1144.2	1605.7	1845.9
129	Gangadi	1602.5	1289.1	946.1	1198.4	1661.2
130	Garman Darbar	3132.8	NA	2276	2968.5	1628.2
131	Gaur	751.4	706.2	NA	NA	NA
132	Gausala	3156.2	2098.9	NA	3102.2	2370.5
133	Gela	1306.5	1136.6	918.4	1047.9	898.8
134	Ghale Kharka	3353.8	4115	3602.4	4475.9	4105.3
135	Ghandruk	3990.2	3877.7	3367.5	5101.6	3822.8
136	Gharedhunga	3409.7	3104.9	2367	2870.6	NA
137	Ghatya Khola	NA	NA	751.3	707.9	731.6
138	Ghorai (Dang)	1947.1	1714.8	1214.3	1585.5	1607.3
139	Ghorepani	3076	2430.3	2079.4	2352.1	2575.3
140	Gilung	3025.7	2451.3	2622	3477.2	2862.9
141	Godavari	1967.2	1410.9	1218.8	1474.3	1334.9
142	Godavari(West)	3017.8	2143.3	2674.3	2368.9	NA
143	Goga	1295	1240.4	970.8	1090.8	977.5
144	Goganepani	3206	2911	2499.8	2755.8	2708.4
145	Gokuleshwar	2311.5	2006.5	1405.6	1802.7	1724.4
146	Gopghat (Golaghat)	1635.1	1716.5	1624.5	1439.8	1912.5
147	Gorkha	1983.4	1663.3	1150.5	1524.6	1527.4
148	Gothi	707.7	518.1	NA	NA	1366.1
149	Gulariya	NA	NA	1337	1326.5	1047.3
150	Gumthang	2012.9	1878.6	1889.6	2927.8	NA
151	Gurja Khani	NA	NA	NA	NA	NA
152	Guthi Chaur	973.4	1020.6	806.5	1139.3	1399.5
153	Gwati	2006.2	3013	2283.1	2676	2415.1
154	Hanmannagar	2189.7	1936.6	1954.3	2205.9	1573.6
155	Hanspur	3353	NA	1347.9	2155.6	1549.4
156	Haraincha	2170.3	NA	NA	NA	NA
157	Hardinath	NA	1295.5	807.8	1436.3	1205
158	Hariharpur Gadhi Valley	2336.2	2476	2241.6	2033.5	2595.1
159	Hattilung	2717.8	NA	2058.1	3315.8	2176.9
160	Hetaunda N.f.i.	2265.4	2143.5	1928.4	2083.6	2437.6
161	Himali Gaun	2323.8	1762	2411	NA	2382.9
162	Humde	NA	NA	NA	270.5	298.7
163	Ilam Tea Estate	NA	1023.9	1617.2	1591.7	1101.3
164	Jacha	1127.3	845.9	938.1	723.9	799.5
165	Jagat (Setibas)	NA	1568.5	1474.1	1699.7	1443.7
166	Jagatipur	1006.8	647.6	946.4	943.2	966.6
167	Jajarkot	1920.2	1174.6	1130	1745.3	1539.5
168	Jalkundi	NA	NA	NA	NA	1195.8
169	Jalpa	2538	1846.3	1477.1	1791.6	2105.5
170	Jamna (Dillichaur)	1117.8	551.7	647.5	1197.6	1129.6
171	Jamu (Tikuwa Kuna)	1798.9	NA	1068.6	908.2	NA
172	Janakpur Airport	1127	1524.9	851.8	NA	1466.4
173	Jhalari	1664.3	1212	1962.3	1536.2	1525.7
174	Jhingrana	3757.7	2126.9	2531.1	2925	3254.9
175	Jhuwani	1823	2286.8	1729.6	NA	NA
176	Jiri	2905.6	2439.4	1953.1	2690.3	2770.5
177	Jitpurphedhi	1970.7	1758.3	1762	1476.5	1864.2
178	Jogbugha	1711.9	1424.3	913	1530.3	987
179	Jomsom	394	348.8	408	262	275.2
180	Jumla	990.3	800.1	810.8	747.8	814
181	Jumla A/P	889.7	795.1	698.4	736	698
182	Juphal	769.5	563.5	NA	472.1	538.7
183	Jyagdi	2594.9	1798.2	1205	1997	NA
184	Jyamire	2153.7	2397.5	1652	1899.2	2398
185	Jyamirebari	NA	3110.7	2916.1	3715.7	2907.9
186	Kabre	2340.2	2399.5	1746	2496.5	1940.9
187	Kabreneta	1734.5	1019.2	1164.5	1378.5	1309.2
188	Kaigaun	2220.6	1426.4	1217	NA	NA
189	Kailasmandu	NA	1548.9	1280.9	1740.9	1902.6
190	Kakani	2482	2720.2	2358.5	2649.4	2809.3
191	Kakerpakha	1821.5	1497.3	1347.2	1524.7	1339.4

S.N.	Station	Year				
		2013	2014	2015	2016	2017
192	Kalaiya	1516.3	1502.2	1167.7	1157.7	1333.6
193	Kalidamar	1600	1754.9	1232.8	1432.4	1630
194	Kallagoth(Krishnapur)	2253.6	1044.3	1900.8	1276.1	1398.6
195	Kalukheti	2041	1531.5	1591.1	1245.4	1309.3
196	Kanyam Tea Estate	2405.9	2143	2578	NA	NA
197	Karki Neta	2799.6	2683.6	2102.8	2930.5	2070.9
198	Karmaiya	1209.3	1859.9	1579.5	NA	2214.2
199	Katai	992.4	657.4	518.8	2229.2	1912.5
200	Kathmandu Airport	1899.3	1578.6	1649.4	1482.8	1279.3
201	Katti	1730.8	2109.2	2107.9	1629.1	1937.3
202	Kechana	2650.3	2159.9	NA	NA	2688.4
203	Keur Gaun	1821.4	1399.9	1392.6	1423.5	1399.5
204	Khadbari	1648.6	1455	1646.5	2171.9	1393.6
205	Khairini Tar	2344.5	2086.2	2150.9	2099.4	NA
206	Khajura (Nepalganj)	1212.5	1465.8	1412.9	1443.8	1142.5
207	Khanchikot	2223	1848.9	1354.6	1448.9	1491
208	Khanikhola	1507.5	1276.7	1094.3	1166.4	1159.6
209	Khaptad	NA	NA	NA	NA	NA
210	Khare Lalamt	NA	NA	NA	NA	NA
211	Khokana	1319.4	1014.6	956.1	1056.1	1131
212	Khopasi(Panauti)	1124.6	1072.9	1267.4	NA	951.5
213	Khotang Bazar	1147.9	602.4	NA	1011.7	941.8
214	Khudi Bazar	2668.3	NA	2278.3	3757.1	NA
215	Khumaltar	1288	1000.9	959.7	1098.4	1053.9
216	Kirmi	916.5	526.3	541.3	516.4	712.7
217	Koilabas	1882.7	1244.2	1207.1	1194.8	1480.5
218	Kola Gaun	2259.5	1386.7	1276.7	1479.2	1343
219	Kolbhi	1317.7	1556.6	NA	1471.3	1975.6
220	Kolti	566	552.1	704	690.8	809.2
221	Kotagaun	2788.4	2885.1	2367.6	2535.9	NA
222	Kotjhari	3987.7	NA	1773.6	2155.2	1659.6
223	Kuhun	NA	446.7	427.6	917.7	844.8
224	Kumalgaun	1711	1502.4	1510.8	1262.6	1591.2
225	Kunchha	2120.3	2979.4	1970	2872.8	NA
226	Kurle Ghat	NA	NA	726.1	983.5	NA
227	Kushma	2384.4	2742.1	2389.2	2381.7	2268.3
228	Lahan	1003.7	NA	1076.3	1592.2	1332.1
229	Lalmatiya	2463.9	1569.5	1010.6	1322.3	1681.1
230	Lamachaur	3786.9	3978.9	3865.6	4504.6	4586.4
231	Lamahi	1420.1	1398.4	808.1	1010.9	1353.8
232	Laprak	NA	NA	1024	3328.9	1638.5
233	Larke Samdo	457.3	408.8	799.4	714	606.3
234	Leguwa Ghat	827.3	869.5	603.5	NA	936.4
235	Lele	1726.2	2151	1227.5	1472.3	1038.7
236	Letang	NA	2182.3	NA	NA	NA
237	Lete	1545.1	1476	1305.5	1568.2	1395.5
238	Libang Gaun	1495.9	1161.2	1302.5	1442.4	1218.2
239	Lumbini	1277.2	NA	849	1183.5	1369.5
240	Lumle	5783.8	5203	4688.5	5145.6	5030.4
241	Lumpthi	2720.8	1789.1	1743.4	NA	1916
242	Lungthung	NA	2291.9	2244.4	2501.1	NA
243	Luwamjula Bazar	NA	986.7	778.9	948.9	974
244	Machhi Khola	2232.2	1727.5	1878.7	1975.4	NA
245	Machhuwaghat	1573.8	NA	1385.5	NA	1274.7
246	Madi Kalyanpur	1576.6	NA	NA	NA	NA
247	Mahendra Nagar	1992.1	2021.6	2350	2013	1869
248	Maina Gaun (D.bas)	1633.9	1596.3	1556.1	2486.5	2527.1
249	Majhimtar	NA	NA	1424.2	3000.6	NA
250	Makwanpur Gadhi	1779	1428.1	1828.7	NA	2388
251	Malakheti	NA	1454.5	1989	1790.8	1788.4
252	Malangwa	1212	1451.3	NA	NA	1253.6
253	Malepatan (Pokhara)	3062.6	4231	4032.8	4061.7	4234.4
254	Malunga	NA	1356.4	852.1	1350.6	1611.5
255	Manang Bhot	NA	NA	417.7	100.2	NA
256	Mandan	1024.1	NA	835.3	NA	NA

S.N.	Station	Year				
		2013	2014	2015	2016	2017
257	Mane Bhanjyang	868.2	706.6	NA	NA	NA
258	Mangalsen	NA	1096.4	1381.1	1373.9	1225.9
259	Mangri	NA	1133.2	NA	986.8	833.1
260	Manma	1619.4	1512.2	1179.5	1145.7	1352.7
261	Manpur	1427.8	1518.5	1228.5	1321	1192.8
262	Manthali	928.5	701.4	695.6	592.3	677.1
263	Manusmara	1237	1347.9	916.9	1205.5	1347.4
264	Marchabar	1713.6	1517.6	1083.1	1690.1	NA
265	Markhu Gaun	1235.3	NA	895.5	NA	NA
266	Meghauli	2013.1	2129.1	NA	NA	2032.7
267	Mehalkuna	1522.2	1443.5	1273.8	1310.7	1441.6
268	Melung	450.3	NA	NA	NA	1469.3
269	Muga	NA	896.7	NA	NA	NA
270	Mul Ghat	NA	639.7	970.9	NA	NA
271	Muna	4165.1	2369.1	2427.7	2388.8	2670.1
272	Musikot	NA	2411.9	2274.2	2702.5	2912.2
273	Musikot (Rukumkot)	2752.5	2140.5	1519.3	2099.7	2254
274	Naar	413.2	NA	369.1	111.4	431.3
275	Nagarjun	1676.3	2138.6	1387	2136.3	NA
276	Nagarkot	1734	1571.7	1481.3	1363.7	1723
277	Nagdaha	1258.2	875	686.8	959.5	1057.5
278	Nagma	839.3	974.2	796.4	609.4	677.3
279	Naikap	1476.7	1054.1	966.4	1032.7	826.7
280	Namrung	NA	247.7	377.1	312.4	NA
281	Nangkhel	1360.7	1374.4	1366.5	1200.4	1130.8
282	Naubasta	1974.5	1465.7	1965.1	1421.7	1318.2
283	Nawalpur	3139.2	NA	NA	2132.7	2057.7
284	Nayabasti (Dang)	NA	2005.7	1245.8	1646.2	1831.6
285	Nepalgunj Airport	1362.5	1568.9	1408.7	1423.3	1335.8
286	Nepalgunj(Reg.off.)	1100.8	1505.7	1219.7	1378.1	1111.8
287	Nepalthok	898.8	NA	670.5	722.8	698.3
288	Nijgadh	754.5	NA	NA	NA	NA
289	Nirmal Pokhari	3578.1	4010.6	3362.2	3083.9	2977.9
290	Num	NA	NA	4614.8	NA	NA
291	Nuwakot	1235.6	1838.4	1478.5	1698.3	1728.6
292	Oirano	1122.9	1179.4	963.5	1301.1	1955.1
293	Okhaldhunga	1787.7	1624.1	1739.1	1925.5	1579.6
294	Padhampur	1957.9	1879.7	1287.1	1559.7	1636.7
295	Pakhapani	1087.7	1018.4	757.1	840.6	958.1
296	Pakhribas	1763	1483.5	NA	1575.2	1404.7
297	Pamdur	4751.7	4848.8	4505.9	4588.5	4954.9
298	Panchamul	3015.4	3618.9	3092.1	3405.8	3139
299	Panchase	3632.4	3875	3384.4	3280.2	NA
300	Panchkhal	NA	NA	699.7	856.4	NA
301	Panipokhari(Kathmandu)	1296	1748.2	1521.3	1229.1	1398.6
302	Pansayakhola	3079.8	2002.2	2450.1	2930.5	2676.7
303	Parasi	1045	1410	1097	1695.8	2005.1
304	Parsia	1911.5	1414.4	2021.8	1723.8	1412.2
305	Parwanipur	1592.7	1590.8	1175.3	1312.5	1599
306	Patan (West)	1193.6	1277	1020	1137.9	1176.6
307	Patan New	1245.5	1317.2	983.9	1124.7	1193.5
308	Pattharkot (West)	2816	2148.6	1813.3	1897.7	2021.1
309	Pattharkot(East)	1133.7	NA	1272.9	NA	1376.2
310	Pekarnas	NA	NA	1465.6	1789.6	NA
311	Phatepur	1883.8	1320.2	1499.4	2237.3	1708.5
312	Phidim (Panchther)	1073.2	951.6	NA	1217.3	1161.8
313	Phopli	3661.5	2793	1320.4	3601.4	2445.5
314	Pipalchaur	2572.2	2012.7	1869.1	2118.9	1919
315	Pipalkot	2659.7	2206.9	1955.1	2011.2	2298.1
316	Pisang Goun	NA	1055.4	853.3	588.5	NA
317	Pokhara Airport	3369.9	3970	3727.2	3517.9	3743.3
318	Pokhara Reg. Off.	3536.6	NA	NA	NA	NA
319	Pumdhi Bumdhi	4291.6	4736	4317.4	4334.9	4459
320	Pusma Camp	1814.4	1653.6	1598.4	1404.9	1554.8
321	Rainastar	NA	2261.6	1452.1	1952.9	1599.4

S.N.	Station	Year				
		2013	2014	2015	2016	2017
322	Raisalli (Daulichaur)	NA	NA	NA	2774.1	2392.1
323	Rajaiya	NA	NA	NA	NA	NA
324	Rajapur	1765.1	1699.5	1212.5	1427.5	1642.7
325	Rajbiraj	1307.4	1392.6	1230.2	1552.4	1670.4
326	Rakam	728.2	739.6	676.4	627.5	734.8
327	Rambhapur	1617.5	1901.9	1912	1683.2	1660.2
328	Ramjakot	NA	1715.7	1262.3	1512	1268.8
329	Ramoli Bairiya	1273	1638.7	955.3	1282.2	1854.4
330	Rampur	2791.1	3759.9	2674	3458.5	3320.2
331	Rampur (Beljhundi)	2115.1	1527.3	1304.2	1546.4	1443.9
332	Rangkhani	NA	1881.3	1236.9	2452.8	999.8
333	Rangsing	NA	870.5	NA	1227.1	1587.1
334	Rani Jaruwa Nursery	1988.6	1369.3	NA	1082.6	1450.1
335	Ranimatta	2012.9	2138.4	1983.5	1500.6	1750.2
336	Ranipauwa (M.nath)	391.6	364.8	253.9	NA	260.8
337	Rara	NA	NA	663.5	957.1	833.2
338	Ratamata	1771.9	NA	1339.4	1261.4	1104.2
339	Rayal	NA	NA	NA	1346.8	1376.6
340	Ridi Bazar	1645	1364.7	871.8	1115.3	1038.8
341	Rimichaur	1719.9	NA	1178.1	1255.8	1331.8
342	Rivan	4599.3	4967.5	4268.7	5108.7	3731.7
343	Rudu(Narakot)	1017	660.5	860.6	692.9	812.5
344	Rukumkot	NA	1577.1	1532.6	1784.3	1692.8
345	Rulbang (Juwang)	NA	NA	NA	NA	1450.1
346	Rupal	1855.3	1016	1621.5	1286.5	1228.7
347	Safebagar	807	1004	997.7	NA	1037
348	Sahukharka	1191.6	789.2	969.9	1960.1	1352.6
349	Sakhar	NA	1514.5	1229.3	1429.9	1517.1
350	Salleri	1643	NA	1787.2	1299.9	NA
351	Sallyan (Kaski)	3372.5	4143.2	3428.7	4046.5	3986.4
352	Salyan Bazar	1001.5	1161.4	721.4	891.1	782
353	Samar Gaun	279.1	NA	NA	99.7	128.5
354	Sanda	427.7	317.9	294.7	180.6	239.3
355	Sandepani	NA	2006.4	1968.4	2176.4	1887.4
356	Sandhikharka	NA	NA	1125.2	1222.3	1116.1
357	Sangachok	700.1	1347	1211.9	1442.4	1171.2
358	Sanischare	3183.8	1487.1	2311.4	NA	NA
359	Sankhu	1516	1513.2	NA	NA	1426.5
360	Sapta	941.3	612.3	447.5	376.1	512.9
361	Sarmathang	3857.6	4267.2	NA	3983.9	3988.7
362	Satbanjh	1408.8	1232.8	1372.2	1242.4	1502.2
363	Semari	1960	1708.6	1354	1390	2401.5
364	Seroge	NA	NA	NA	NA	765.9
365	Seulibang	NA	3002	2478.5	3246.6	2628.7
366	Shaktikhor	2450.6	2880.1	2312.5	2034	NA
367	Shera Gaun	NA	NA	1015	1089.9	1013
368	Sheri Ghat	1702.9	1626.7	1133.3	1356	1494.9
369	Shilinge	1861.1	NA	2155.2	1464.3	1871.4
370	Sidhara	2710.1	NA	NA	1263.5	1853.9
371	Siklesh	3673.6	3794.2	3371.6	3939.3	NA
372	Sikta	1485.6	1577.4	1425.8	1392.3	1916.8
373	Silgadhi Doti	NA	1108.9	1128.7	1266	1130.2
374	Simara Airport	1664.2	1604.2	1335.4	1587.5	1967.1
375	Simikot	NA	NA	NA	NA	803.4
376	Simikot Airport	NA	396.4	NA	NA	NA
377	Sindhuli Madhi	2003.2	NA	NA	2181.7	2202.3
378	Siraha	1249	1318.7	1136.9	NA	1321.2
379	Sirkon	NA	2255.5	1781.8	2129.1	1592.4
380	Sitapur	2114.6	1296.7	1422.5	1506.6	1769.4
381	Sitapur(Nepaney)	2593.3	NA	1571.5	1997.9	2115.5
382	Sugali	1899	1198.9	1715.3	1888.3	1926.3
383	Sukhabare	1557.6	1232	1085.5	993.8	1352.4
384	Sulichour(Sarichour)	NA	1276.1	1137	1676.7	1111
385	Sundarijal (Alapot)	2114.9	2046.9	1622	1956	1902.9
386	Sundarijal (Mulkharka)	2842.2	2140.3	NA	2454.1	2315.7

S.N.	Station	Year				
		2013	2014	2015	2016	2017
387	Sunkuda	NA	NA	NA	790.8	1132.9
388	Suraypura	1761.3	NA	1220.4	1682.5	1499.7
389	Surkhet (Birendra Nagar)	2113.5	1927.7	1208.5	1427.1	1357
390	Surkhet Regional Office	NA	NA	1227.3	1385.7	1409.2
391	Swargdwari	1830.3	929.7	914.8	1442.9	1117.2
392	Syamgha	NA	1867.7	2526.2	2221.7	NA
393	Syangja	2516.8	2526.9	NA	3125.4	2763.2
394	Taal	1893.9	1824.3	1230.6	1915	NA
395	Tamghas	2661.8	1884.9	1576.5	2030.4	1486.7
396	Tansen	2531.8	1431.2	1105.9	1580.9	1683.2
397	Taplejung	1943.1	1759.7	2186.8	2321.6	NA
398	Taplethok	2825	3169.5	NA	NA	2787.9
399	Tarahara	1787.4	1695.8	2031.3	2357.1	NA
400	Taratal	1646.3	1221	816	1054.2	1055.5
401	Tarke Ghyang	3601.9	3736	3090.7	NA	NA
402	Tatopani	2536.5	2303.6	2071.6	2236.1	2187.7
403	Taulihawa	2032.7	1486.9	1397.2	1170.1	1632.4
404	Terhathum	1024.8	641.8	968.7	NA	876.1
405	Thakmarpha	506.2	387.6	500.6	368.1	390.4
406	Thalara	2256.6	2278.6	1679.2	1970.2	2580.9
407	Thali	NA	NA	NA	NA	1247.3
408	Thamachit	1247.4	1156.1	759.1	1641.7	1089
409	Thankot	1450.3	1119.8	1264.5	1367	1548.9
410	Thaprek	NA	2348.8	2534.3	2638.4	NA
411	Tharmare	1428.8	1134.2	878.4	1100.6	1073.9
412	Thirpu	580.7	489.1	508.9	388.1	392.5
413	Thokarpa	1661.9	1701.6	1483	1755.6	1785.2
414	Tikapur	1958.2	1786.3	1260	2128.2	1822.6
415	Tikathali	1320.8	1218.9	1099.5	1090.2	NA
416	Timure	1008.9	985.4	816.9	1152.3	NA
417	Tribeni	1303.9	3454.5	3134.1	3811	4321
418	Tribeni (Dhankuta)	1457	NA	1395.8	2270.1	1746.1
419	Tulsi	1407.6	1691.4	NA	1703.6	NA
420	Tulsipur	NA	1973.2	1373.8	1788.2	NA
421	Tumlingtar	1162	1180.3	1259	NA	1249.8
422	Udayapur Gadhi	NA	1429.5	1470.3	NA	1627.8
423	Walling	NA	2093.4	1621.6	2250.3	1720.6
424	Yamjakot	3994.5	4029.1	3656.9	4703.5	3631.5

Source: DHM, 2018

Table 2.1.4 : Average Rainfall by Altitude

Average Annual Rainfall (mm)	Altitude (in masl)			
	Less than 1000	1000-1500	1500-2000	2000-3000
Less than 500				Jomsom, Mustang
500-1000				Jumla
1000-2000	Mahendranagar, Kanchanpur	Salyan		Chailsa
	Nepalganj Banke	Nuwakot	Okhaldhunga	
	Dhangadi, Kailali	Dhankuta	Pakhribas	
	Bhairahawa, Rupandehi	Patan, Baitadi		Daman, Makawanpur
	Janakpur, Dhanusha	Gorkha	Tamghas	
	Dipayal, Doti	Ilam	Bhojpur	
	Simara, Bara	Silgadhi, Doti	Dadeldhura	
	Biratnagar, Morang	Dailekh		
2000-3000	Butawal, Rupandehi			Musikot
	Khairenitar, Tanahu		Chatara	Kakani, Nuwakot
	Hetauda, Makawanpur			
	Syangja, Syangja		Kannyam	Jiri, Dolakha
		Taplethok		
Greater than 3000				Lete
	Pokhara, Kaski	Panchsaya Khola		
			Lumle, Kaski	
	Khudibazar, Lamjung			

Source: Department of Hydrology and Meteorology, 1994.

Table 2.1.5: Annual Relative Humidity by Stations

Station	RH at 8:45 am					RH at 5:45 pm				
	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
Anp Chour	NA	82.0	NA	83.8	NA	NA	76.9	NA	80.3	NA
Baglung	NA	NA	83.1	NA	78.6	NA	NA	78.6	NA	69.8
Bahrabise	NA	86.4	NA	87.4	NA	NA	82.2	NA	84.7	NA
Baitadi	84.0	85.5	85.3	87.3	86.9	79.9	84.6	85.9	86.6	86.5
Bajura (Martadi)	74.9	75.4	76.5	75.8	77.0	84.5	81.2	82.4	85.1	83.4
Bandipur	85.8	88.9	84.8	85.1	NA	75.2	81.8	76.3	80.7	NA
Begnas	88.2	89.3	85.2	83.6	84.9	87.1	86.5	75.5	74.1	75.0
Beni Bazar	NA	NA	86.5	NA	NA	NA	NA	83.0	NA	NA
Besishahar	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bhairahawa (Agric)	83.4	80.5	80.5	79.1	78.3	70.5	67.4	66.6	64.2	67.8
Bhairahawa Airport	NA	92.3	93.9	90.1	90.2	NA	63.6	64.0	62.6	62.9
Bhaktapur	NA	77.2	74.9	71.6	75.7	NA	77.4	81.0	76.7	67.5
Bharatpur	84.4	84.7	85.1	83.0	85.9	66.5	68.5	67.0	62.1	66.4
Bhimgithhe	NA	NA	NA	NA	76.5	NA	NA	NA	NA	77.5
Bhorletar	NA	NA	88.8	92.0	NA	NA	NA	88.0	91.8	NA
Bijuwar Tar	83.5	83.1	84.2	84.6	84.8	70.7	67.2	70.4	70.8	71.2
Biratnagar Airport	85.2	87.6	84.2	83.9	82.5	70.3	72.2	71.9	71.0	69.0
Birganj	NA	NA	NA	NA	85.2	NA	NA	NA	NA	79.3
Buddhanilakantha	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butwal	NA	70.0	73.2	73.9	73.4	NA	66.3	71.3	69.4	67.2
Chainpur (East)	84.3	84.9	85.5	83.2	83.0	74.5	73.7	75.4	72.9	73.5
Chainpur (West)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Station	RH at 8:45 am					RH at 5:45 pm				
	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
Chainpur Bajhang Aws Climate	70.7	69.0	71.2	70.4	NA	54.5	58.3	61.7	65.2	NA
Chandra Gadhi	86.7	83.2	81.0	NA	NA	81.5	79.8	78.2	NA	NA
Changu Narayan	84.5	83.9	85.6	84.7	NA	73.1	74.1	76.0	74.0	NA
Chapkot	88.3	89.2	87.7	85.4	NA	71.0	75.8	70.5	70.2	NA
Charikot	68.7	71.7	NA	NA	NA	76.3	73.9	NA	NA	NA
Chatara	NA	NA	78.8	79.9	77.9	NA	NA	74.4	74.5	73.9
Chaurjhari Tar	NA	80.3	81.1	77.1	79.1	NA	67.3	64.6	66.2	64.0
Chautara	NA	NA	NA	79.7	80.8	NA	NA	NA	69.5	72.7
Chhoser	56.6	50.3	46.0	56.7	64.1	54.4	50.6	44.3	54.7	60.3
Chisapani(Karnali)	77.3	72.5	76.3	NA	NA	73.6	69.2	72.7	NA	NA
Dadeldhura	69.7	69.9	75.6	71.7	72.4	65.3	65.3	69.2	63.8	66.2
Dailekh	82.2	76.0	84.3	77.2	NA	79.3	73.9	82.2	74.9	NA
Dainsili	NA	93.3	82.5	79.2	84.1	NA	94.1	79.4	79.5	83.7
Damak	NA	NA	77.5	78.1	NA	NA	NA	75.4	77.7	NA
Daman	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Damauli	86.0	NA	NA	81.6	NA	73.1	NA	NA	73.0	NA
Dandaswara	80.4	76.3	84.6	89.9	81.0	85.9	82.8	89.0	91.7	84.1
Darchula	92.9	94.4	94.1	90.0	88.2	87.7	92.6	87.0	71.3	67.8
Darchula New	84.9	NA	84.4	81.5	84.3	70.3	NA	72.0	63.4	70.2
Dhading	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dhangadhi(Attariya)	82.4	81.2	82.8	83.1	81.8	68.9	68.2	69.7	66.3	66.3
Dhankuta	74.5	NA	76.9	77.2	75.2	74.2	NA	78.2	82.4	77.5
Dharan Bazar	72.7	75.4	76.8	80.1	79.8	73.7	76.2	80.4	79.0	79.1
Dhulikhel	85.0	84.5	85.3	83.5	NA	70.8	70.6	72.7	71.3	NA
Dhunche	NA	NA	68.0	NA	NA	NA	NA	68.2	NA	NA
Dhunibesi	72.6	70.0	72.9	71.5	73.2	74.0	68.4	70.8	65.6	65.7
Diktel	NA	NA	80.9	80.8	81.5	NA	NA	81.7	80.8	81.0
Dipal Gaun	65.6	65.6	64.5	59.8	69.1	65.5	63.8	58.5	54.9	63.9
Dipayal (Doti)	85.1	83.6	84.0	83.2	83.8	61.2	58.7	60.5	60.3	61.8
Dumkauli	85.0	82.1	84.1	83.0	83.6	74.3	70.8	72.0	70.3	67.3
Dunai	78.6	72.8	NA	NA	77.2	78.3	76.5	NA	NA	77.3
Gaida (Kankai)	76.9	79.2	77.5	76.6	NA	70.4	72.9	74.1	78.2	NA
Gam Shree Nagar	53.1	NA	NA	60.0	65.6	50.0	NA	NA	53.1	65.3
Gaur	90.7	87.7	NA	NA	NA	91.9	88.2	NA	NA	NA
Ghale Kharka	NA	79.1	82.1	81.6	NA	NA	82.2	85.5	84.0	NA
Ghorai (Dang)	81.1	80.4	81.9	77.2	78.6	66.1	65.5	66.0	64.2	64.6
Godavari	72.5	80.2	73.1	75.3	80.9	61.5	NA	76.6	83.2	93.3
Godavari(West)	88.3	83.1	82.1	81.1	NA	87.3	79.1	75.4	73.8	NA
Gokuleshwar	89.4	NA	89.2	86.0	89.8	71.8	NA	78.1	70.9	76.9
Gorkha	89.1	NA	89.7	88.4	89.6	69.7	NA	70.7	71.2	72.5
Gulariya	NA	NA	89.8	88.0	NA	NA	NA	82.1	78.1	NA
Gurja Khani	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hardinath	NA	80.8	78.4	77.5	78.0	NA	79.6	75.4	74.1	74.5
Hetaunda N.f.i.	83.3	83.8	84.3	84.8	84.9	76.6	77.6	79.1	77.3	77.8
Humde	NA	NA	NA	71.8	60.9	NA	NA	NA	84.7	73.8
Ilam Tea Estate	NA	73.0	71.8	72.7	NA	NA	76.8	82.5	82.3	NA

Station	RH at 8:45 am					RH at 5:45 pm				
	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
Jajarkot	84.0	90.0	88.0	79.4	NA	80.1	82.7	85.9	71.4	NA
Jalesore	71.4	NA	74.9	NA	NA	73.3	NA	72.5	NA	NA
Janakpur Airport	81.5	79.5	78.5	79.5	79.9	63.1	66.0	65.8	67.0	65.3
Jhingrana	70.7	69.0	71.2	70.4	77.3	54.5	58.3	61.7	65.2	76.1
Jiri	86.0	85.5	86.9	84.7	89.3	76.8	74.4	77.4	76.5	76.3
Jomsom	71.8	61.2	60.9	69.9	63.6	76.2	71.1	68.5	77.2	72.5
Jumla	67.2	62.5	64.8	63.6	65.2	45.1	44.9	45.2	42.2	43.3
Jumla A/P	71.8	69.2	68.7	66.3	68.1	46.2	43.4	44.8	41.4	45.4
Jyamirebari	NA	76.9	78.2	76.5	75.8	NA	82.4	83.5	82.3	82.1
Kabre	74.5	72.4	72.6	72.2	75.9	77.9	75.4	76.8	74.5	81.5
Kaigaun	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Kakani	81.0	83.6	78.0	78.5	NA	86.9	89.2	86.1	86.1	NA
Kanyam Tea Estate	76.0	74.8	74.3	NA	NA	75.8	75.0	79.7	NA	NA
Karmaiya	93.3	80.0	85.8	NA	78.4	97.2	79.7	85.8	NA	76.7
Kathmandu Airport	81.3	80.9	80.8	81.6	84.2	70.4	69.7	69.2	70.2	71.9
Kechana	81.5	80.7	81.4	NA	80.2	82.0	79.3	81.0	NA	80.9
Khadbari	89.1	89.1	85.0	85.1	84.1	90.3	88.3	76.2	73.8	72.7
Khairini Tar	95.8	94.1	93.1	91.1	92.2	85.1	81.6	74.4	69.0	71.1
Khajura (Nepalganj)	83.0	83.2	83.4	82.1	NA	66.3	67.5	66.5	74.4	NA
Khanchikot	70.7	74.2	76.4	79.5	80.5	78.0	79.5	82.8	84.9	86.3
Khokana	85.2	84.6	85.9	84.4	85.7	63.5	65.8	73.5	72.6	66.3
Khudi Bazar	73.0	NA	72.6	75.4	NA	78.2	NA	78.3	77.4	NA
Khumaltar	72.4	71.5	71.7	71.3	75.0	71.5	72.6	72.5	71.8	75.7
Kushma	87.5	84.2	86.0	85.4	89.4	80.0	73.9	78.4	74.1	82.8
Lahan	76.8	NA	77.9	78.5	77.5	79.8	NA	79.1	76.8	75.6
Lete	60.3	NA	65.2	70.8	67.8	82.4	NA	82.5	81.1	81.5
Libang Gaun	NA	74.6	75.4	77.8	84.2	NA	78.5	75.8	76.9	85.2
Lumbini	NA	84.6	86.7	86.0	84.9	NA	67.5	81.9	74.5	76.3
Lumbini Mandir	85.6	84.6	86.7	86.0	NA	70.7	67.5	81.9	74.5	NA
Lumle	76.6	75.5	76.4	76.0	86.4	80.5	82.6	83.8	81.4	92.2
Mahendra Nagar	93.7	87.8	87.8	84.5	84.7	79.9	69.8	65.2	63.3	64.5
Malepatan (Pokhara)	74.0	74.3	77.3	74.8	75.1	70.8	67.4	70.3	66.0	77.2
Mandan	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mangalsen	NA	NA	88.5	81.2	86.6	NA	NA	75.9	70.4	73.4
Manma	NA	NA	89.5	78.0	75.6	NA	NA	92.0	79.3	75.6
Manthali	81.8	81.2	79.0	77.9	79.4	62.2	57.6	57.7	51.6	55.7
Manusmara	86.8	87.4	88.7	87.6	87.8	84.3	78.7	81.4	80.3	76.8
Mehalkuna	81.5	88.9	89.9	84.9	NA	74.4	83.9	82.6	72.0	NA
Musikot(Rukumkot)	NA	72.3	75.6	75.0	78.1	NA	62.9	68.3	64.6	76.8
Nagarkot	78.7	78.7	83.3	77.0	77.7	65.9	65.3	73.3	66.2	68.0
Nagma	NA	NA	72.6	63.8	68.9	NA	NA	54.6	51.1	49.7
Nepalgunj Airport	85.9	84.3	85.4	84.6	85.0	66.9	64.8	63.5	63.2	62.5
Nepalgunj(Reg.off.)	79.6	84.0	84.0	84.4	NA	66.4	74.6	78.9	81.0	NA
Num	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nuwakot	86.8	81.0	81.7	78.8	80.9	72.9	70.2	68.3	64.6	64.4
Okhaldhunga	78.4	80.8	77.1	76.7	77.8	73.6	82.6	78.0	75.3	79.6

Station	RH at 8:45 am					RH at 5:45 pm				
	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
Oli Gaun (Patkani)	NA	NA	81.0	80.3	76.3	NA	NA	81.2	77.9	77.5
Pakhribas	74.9	74.1	NA	76.3	73.8	81.0	80.8	NA	84.3	82.6
Panchase	NA	NA	85.4	82.8	NA	NA	NA	91.0	90.8	NA
Panchkhal	NA	NA	NA	85.1	NA	NA	NA	NA	61.6	NA
Panipokhari (Kathmandu)	81.7	82.4	83.4	84.5	84.9	85.3	80.5	82.4	84.1	83.9
Pansayakhola	NA	NA	NA	86.5	NA	NA	NA	NA	87.1	NA
Parasi	86.6	83.2	84.5	81.9	81.0	81.4	71.8	75.8	70.6	70.2
Parwanipur	79.9	80.0	80.5	79.6	79.9	73.3	72.7	71.9	69.6	70.5
Patan (West)	70.4	73.1	75.2	81.6	76.7	64.8	68.8	70.1	79.6	75.3
Patan New	71.6	NA	71.7	69.7	72.2	59.3	NA	56.6	58.4	61.4
Phatepur	80.9	79.3	82.0	NA	79.9	78.0	72.6	75.5	NA	74.4
Phidim (Panchther)	75.2	71.9	73.3	74.2	74.2	70.6	70.4	70.0	75.1	70.6
Pokhara Airport	81.8	80.1	81.7	79.9	81.1	67.0	65.5	69.0	63.5	66.3
Pokhara Reg. Off.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pusma Camp	NA	75.1	76.1	73.6	NA	NA	76.3	76.6	75.0	NA
Rajbiraj	80.3	82.0	81.8	83.4	81.7	73.9	74.6	75.5	76.0	74.2
Rampur	84.0	84.4	85.5	84.0	84.4	81.6	82.0	82.0	79.0	80.1
Rani Jaruwa Nursery	87.5	90.2	NA	81.8	NA	89.4	89.5	NA	77.7	NA
Rara	NA	NA	76.4	73.7	69.9	NA	NA	74.4	75.0	73.4
Salleri	77.8	NA	84.7	81.2	NA	77.3	NA	84.6	80.2	NA
Salyan Bazar	83.2	82.9	80.7	69.9	73.5	82.6	80.0	76.8	65.9	73.3
Sandhikharka	NA	NA	83.3	79.9	81.7	NA	NA	67.7	63.8	64.4
Sarmathang	NA	81.8	79.5	83.2	85.9	NA	85.6	85.7	87.6	88.1
Semari	87.8	87.9	83.0	80.8	92.2	88.4	88.9	82.5	79.3	91.0
Sikta	82.6	83.6	86.0	84.3	NA	72.3	69.4	75.5	72.4	NA
Silgadhi Doti	NA	83.8	84.6	80.9	80.5	NA	82.3	82.3	69.1	65.3
Simara Airport	81.8	80.6	82.5	81.6	82.6	77.8	65.6	65.2	70.8	75.3
Simikot	NA	NA	NA	79.5	75.1	NA	NA	NA	72.8	65.9
Sindhuli Madhi	81.5	NA	NA	83.5	NA	75.6	NA	NA	78.5	NA
Siraha	86.0	80.1	81.9	NA	80.1	84.4	75.1	75.5	NA	72.6
Surkhet (Birendra Nagar)	81.5	78.8	78.4	77.5	77.7	65.1	65.7	63.4	62.5	62.8
Syangja	86.2	84.2	88.2	88.2	87.1	75.0	80.4	83.0	83.8	83.0
Tamghas	82.0	80.5	82.4	82.3	80.9	89.8	88.9	90.5	88.0	86.3
Tansen	82.5	81.0	81.6	79.4	80.1	77.5	75.9	78.3	74.3	73.4
Taplejung	NA	77.3	77.7	78.5	80.5	NA	67.8	67.8	69.4	78.9
Tarahara	81.8	82.0	82.2	83.8	NA	70.9	70.6	72.7	73.6	NA
Taulihawa	82.1	79.4	80.3	78.2	78.8	72.5	70.2	73.9	71.1	72.2
Terhathum	83.5	81.7	83.4	81.9	80.8	71.2	70.3	74.0	73.8	72.4
Thakmarpha	65.1	67.1	66.5	68.4	65.2	65.6	62.4	66.9	69.5	64.2
Tikapur	80.7	77.0	77.0	77.7	82.0	69.9	64.9	62.2	62.6	67.8
Timure	82.5	80.5	69.7	NA	NA	86.2	82.7	70.6	NA	NA
Tulsipur	NA	86.2	84.9	82.1	NA	NA	81.2	73.6	69.9	NA
Udayapur Gadhi	NA	84.7	NA	NA	78.3	NA	91.5	NA	NA	75.8

Source: DHM, 2018

Table 2.1.6 : Average Wind Speed by Station

(km/hr)

S. N.	Station Name	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
1	Arghakhanchi (Khanchikot)	6.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	Bardia (Chishapani)	7.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3	Rupandehi,Bhairahawa Agriculture	2.7	2.7	NA	NA	NA	NA	NA	NA	0.508	0.433	NA	NA
4	Bhojpur,Bhojpur*	-	-	-	-	-	-	-	-	-	-	-	-
5	Dadeldhura,Dadeldhura	3.4	2.9	2.6	2.6	2.8	NA	2.11	NA	0.116	NA	NA	NA
6	Dhankuta,Pakhribas	1.2	1.3	N.A	0.9	N.A	NA	NA	NA	0.708	7.391	1.341	0.583
7	Dhankuta, Dhankuta	3.9	3.5	3.2	3.3	3.1	2.9	2.51	2.54	1.859	1.616	NA	NA
8	Dolakha (Jiri)	3.2	3.1	N.A	3.0	N.A	3.2	2.92	NA	3.383	2.025	1.325	1.367
9	Doti, Dipayal	1.4	2	1.9	1.5	1.6	NA	NA	NA	NA	NA	1.025	1.575
10	Ilam , Ilam Tea State	1.2	1.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
11	Jhapa, Kankai Gaida	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
12	Mustang,Jomsom	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
13	Jumla,Jumla	5.4	5.6	5.3	4.6	4.8	4.4	4.16		4.058	4.208	4.550	4.258
14	Kailai, Dhangadhi	NA	NA	1.7	1.7	1.6	NA	NA	NA	NA	0.25	0.092	NA
15	Kanchanpur,Mahendranagar	2.4	2.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
16	Kaski ,Lumle	1.3	1.3	1.4	1.2	0.8	0.7	0.76	NA	NA	4.833	NA	NA
17	Kathmandu ,Kathmandu Airport	0.8	NA	0.7	0.9	0.6	0.6		NA	0.5	0.591	0.7	NA
18	Lalitpur ,Khumaltar	3.0	3.0	3.0	3.2	3.0	3.0	2.68	NA	2.633	NA	2.558	2.483
19	Kaski, Malepatan	0.3	0.3	0.4	0.3	0.2	0.28	NA	NA	0.991	NA	1.133	0.558
20	Morang, Biratnagar Airport	1.8	NA	5.9	6.5	5.0	2.8	1.24	2.25		NA	NA	NA
21	Bhaktpur, Nagarkot	4.3	3.7	2.9	2.7	0.9	NA	NA	NA	1	0.9	0.766	0.775
22	Banke, Nepalganj	2.8	2.0	1.9	1.5	1.6	NA	NA	NA	0.875	0.833	NA	NA
23	Banke,Khajura	2.2	1.9	1.9	1.9	1.8	NA	NA	NA	NA	NA	NA	NA
24	Banke, Sikta	1.9	1.5	0.6	0.8	0.6	NA	1.49	NA	NA	NA	1.241	NA
25	Okhaldhunga,Okhaldhunga	2.7	4.3	4.3	3.8	2.0	2.3	2.03	4.76	4.008	3.15	2.983	NA
26	Parsa, Parwanipur	2.5	1.7	0.7	1.3	-0.4	0.5	NA	NA	NA	0.47	NA	NA
27	Kaski, Pokhara Airport	2.3	NA	1.9	2.1	2.3	NA	2.57	NA	NA	NA	2.275	2.817
28	Siraha, Lahan	3.9	NA	N.A	1.9	1.1	NA	NA	NA	2.741	NA	NA	NA
29	Sunsari ,Tarahara	4.5	7.0	6.4	6.2	N.A	6.3	NA	NA	4.775	4.608	4.55	4.616
30	Surkhet ,Birendranagar	1.6	1.2	1.3	1.6	1.0	NA	NA	NA	NA	5.091	NA	NA
31	Surkhet ,Pusmacamp	1.6	1.9	1.6	N.A	N.A	NA	NA	NA	NA	NA	NA	NA
32	Taplejung, Taplejung	2.5	NA	1.5	1.8	1.7	1.7	1.68	1.68	1.683	1.366	0.2583	0.300

NA= Not Available

** Station has been closed since 2004*

Source: Department of Hydrology and Meteorology.

Table 2.1.7 : Average Sunshine Duration by Station

(hr/day)

S. N.	District / Station Name	Latitude	Longitude	Elevation (masl)	2008	2009	2010	2011	2012	2013	2014	2015
1	Banke, Nepalganj	28^0 06'	81^0 40'	165	6.90	7.70	7.30	7.39	7.46	6.900	6.941	NA
2	Bara, Simara Airport	27^0 10'	84^0 59'	130	7.60	7.30	7.30	NA	7.27	7.150	5.483	6.783
3	Dadeldhura, Dadeldhura	29^0 18'	80^0 35'	1848	6.70	7.70	7.30	6.6	6.4	NA	7.216	NA
4	Dhankuta, Dhankuta	26^0 59'	87^0 21'	1210	6.70	6.90	6.70	6.38	7.33	6.341	6.391	NA
5	Doti, Dipayal	29^0 15'	80^0 57'	617	6.80	7.30	7.70	5.65	6.68	NA	5.516	6.758
6	Jumla, Jumla	29^0 17'	82^0 14'	2300	6.70	7.60	7.40	6.37	7.79	7.141	0.750	NA
7	Kaski, Pokhara Airport	28^0 13'	83^0 48'	827	6.40	NA	6.40	NA	NA	5.891	7.000	NA
8	Kathmandu Kathmandu Airport	27^0 42'	85^0 22'	1336	6.00	6.40	6.35	5.93	6.72	6.158	6.350	5.741
9	Morang, Biratnagar Airport	26^0 29'	87^0 16'	72	6.50	6.50	6.10	6.04	7.1	6.650	6.133	5.175
10	Okhaldhunga, Okhaldhunga	27^0 19'	86^0 30'	1720	6.20	6.60	6.00	6.07	6.51	6.150	6.066	5.833
11	Rupandehi, Bhairahawa Airport	27^0 31'	83^0 26'	109	NA	7.60	7.40	NA	NA	3.191	NA	NA
12	Surkhet, Birendranagar	28^0 36'	81^0 37'	720	6.80	7.40	7.20	7.4	7.73	7.100	7.708	NA
13	Taplejung,Taplejung	27^0 21'	87^0 40'	1732	6.00	6.80	6.30	5.86	6.52	6.158	6.391	6.150
14	Kailali,Dhangadhi	28^0 41'	80^0 41'	170	6.30	7.50	6.80	6.57	6.77	NA	7.016	NA
15	Lalitpur, Khumaltar	27°40’	85° 20’	1350	6.30	6.50	6.60	6.16	6.8	NA	NA	6.400

Source: Department of Hydrology and Meteorology.

Table 2.1.8 : Number of Lakes in Districts by altitude in Nepal

S.N.	District	Total Lake	<100m	100-499 m	500- 1999m	2000-2999m	3000-4999m	> 5000m
1	Taplejung	380				2	297	81
2	Panchthar	17			2	8	7	
3	Ilam	30		14	14	1	1	
4	Jhapa	136	59	78				
5	Morang	184	123	60	1			
6	Sunsari	69	41	28				
7	Dhankuta	4			4			
8	Terathum	4			2	2		
9	Sankhuwasabha	159			3	4	109	43
10	Bhojpur	7			5	1	1	
11	Solukhumbu	339			1	1	112	225
12	Okhaldhunga							
13	Khotang	10			4	5	1	
14	Udaypur	14	4	4	6			
15	Saptari	46	35	11				
16	Siraha	140	67	73				
17	Dhanusha	230	193	37				
18	Mahottari	186	173	13				
19	Sarlahi	74	47	27				
20	Sindhuli	9		4	5			
21	Ramechhap	25			1		21	3
22	Dolakha	42			3	5	23	11
23	Sindhupalchwok	75			12	5	58	
24	Kavrepalanchok	1			1			
25	Lalitpur	3			3			
26	Bhaktapur	2			2			
27	Kathmandu	1			1			
28	Nuwakot	3				1	2	
29	Rasuwa	38					34	4
30	Dhading	5					5	
31	Makwanpur	2			1	1		
32	Rautahat	85	68	17				
33	Bara	93	75	18				
34	Parsa	71	63	8				
35	Chitwan	40		40				
36	Gorkha	36		1	5	3	26	1
37	Lamjung	23			5	4	14	
38	Tanahun	2		1	1			
39	Syangja	4			1	3		
40	Kaski	29			22		7	
41	Manang	66					26	40
42	Mustang	78				2	5	71
43	Myagdi	33			5	14	13	1
44	Parbat	5			5			
45	Baglung	60			15	37	8	
46	Gulmi	11			7	4		
47	Palpa	12			12			
48	Nawalparasi	163		163				
49	Rupandehi	289	131	158				
50	Kapilvastu	351	190	161				

(contd...)

S.N.	District	Total Lake	<100m	100-499 m	500- 1999m	2000-2999m	3000-4999	≥ 5000m
51	Arghakhanchi	3			3			
52	Pyuthan	19			13	6		
53	Rolpa	16			11	1	4	
54	Rukum	70			13	14	31	12
55	Salyan	5			5			
56	Dang	38		8	30			
57	Banke	243		243				
58	Bardiya	82		82				
59	Surkhet	22		1	21			
60	Dailekh	7			5	2		
61	Jajarkot	16					16	
62	Dolpa	210					47	163
63	Jumla	99				1	97	1
64	Kalikot	1					1	
65	Mugu	125				3	93	29
66	Humla	381					147	234
67	Bajura	57				5	45	7
68	Bajhang	25				2	19	4
69	Achham	13			3	7	3	
70	Doti	19			9	4	6	
71	Kailali	114		113	1			
72	Kanchanpur	85	2	79	4			
73	Dadheldhura	2			2			
74	Baitadi	1			1			
75	Darchula	19			1		16	2
Total		**5358**	**1271**	**1442**	**271**	**148**	**1295**	**931**

Source : National Lake Conservation Development Committee (National Lake Strategic plan, 2010)
Note: Information of then 75 districts of Nepal

Table 2.1.9: Glaciers and Catchments Areas having Meteorological and Hydrological Stations

Stations	Date of Establishment	Location												
		Meteorological station			Hydrological station			Catchment area (km²)	River basin	Glacier covered area (%)	Source	Type of hydrological station	Type of meteorological station	Remarks
		Lat. (N)	Long. (E)	Altitude (m.a.s.l)	Lat. (N)	Long. (E)	Altitude (m.a.s.l)							
1. MAKALU														
Tashigaon	Nov, 1990	27° 37' 00"	87° 16' 00"	2100								Semiautomatic		
Barun Dovan	29-Mar-00				27° 44'00	87° 11' 00	2000	240	Barun		Lower Barun Glacier	Staff gauge	Raingauge	
2. KHUMBU														
Dingboche	May, 1987	27° 53' 20"	86° 49' 50"	4355	27° 53' 40"	86° 56' 40"	4375	135	Imja	27	Imja glacier	Recorder	Semiautomatic	
Pangboche	May, 1996										khumbu Glacier		raingauge	
Imja lake	April 2017	27° 59' N	86° 56 E	5000					Imja		Imja glacier	RLS (Radar Level Sensor) in lake	AWS	
Sangboche	Oct, 1994	27° 48' 53.8"	86° 42' 48"	3832									AWS	
Gokyo	Nov, 2005	27° 57' 9.4"	86° 41' 55"	4800									AWS	closed
Phanka	Nov, 2005				27° 54' 53"	86° 43' 65"	4450						RLS	closed
Thukla	2007			4600									AWS	closed
3. LANGTANG														
Kyangjing	July, 1987	28° 13' 00"	85° 37' 00"	3920	28° 12'34"	85° 32' 50"	3658	340	Langtang	38	Langtang, yala , Lirung and khimsung glacier	RLS (Radar Level Sensor)	Semiautomatic/ AWS	

4. ANNAPURNA														
Machhapuchre base camp	July, 1987	28° 32' 00"	83° 57' 00"	3750									Semiautomatic/ AWS	
Bagar	July, 1987				28° 30'30"	83° 54' 19"	3313	148	Modi	33	Annapurna glacier	RLS (Radar Level Sensor)		
5. KANJIROWA														
Hurikot	May, 1991	29° 07' 00"	82° 36' 00"	2735									Semiautomatic	
Hurikot	May, 1991				29° 05' 00"	82° 33' 00"	2600	725	Sano Bheri	NA	Kanjirowa Glacier	Staff gauge		
6. HUMLA														
Panchamukhi base camp	18-Jun-03			3825							Panchmukhi Glacier	Semiautomatic		
Daldung	18-Jun-03				30° 11' 00"	81° 32' 00"	3500		Daldung khola			Staff gauge		
7.Tsho Rolpa	2000	27° 50' 00"	86° 28' 00"	4580							Trakarding glacier	RLS (Radar Level Sensor) in lake	AWS	
Rowalling Khola Beding	2000				27° 51' 00"	86° 27' 00"	3800		Rowalling khola			Staff gauge	Semiautomatic	
8 Dharapani Manag											Thulagi Glacier			
Dona Khola	2000				28° 30' 00"	84° 21' 00"			Dona khola			staff gauge	Raingauge	out let of Thulagi glacier lake
9 Dafe lake Thali Jumla	2010 June	29° 21' 30"	82° 09' 35"	3800								Semiautomatic		

Source: Snow , Water Quality and Environment Section,DHM,2017

Table 2.1.10 : Glaciers, Glacial Lakes and Major River Basins

Basins	Glaciers		Glacial Lakes	
	Number	Area (sq. km)	Number	Area (sq. km)
Koshi	845	1,103	599	26.0
Gandaki	1,340	1,665	116	9.538
Karnali	1,459	1,023	742	29.147
Mahakali	164	112.5	9	0.137
Total	**3,808**	**3,902**	**1,466**	**64.78**

Sources of glacier:Glacier Status in Nepal and decadal change from 1980 to 2010 based on landsat data : ICIMOD
Sources of glacial lake: ICIMOD (2011) Glacial lakes and glacial lake outburst floods in Nepal. Kathmandu: ICIMOD

Table 2.1.11 : Area of Land made uncultivable due to flooding /Soil Erosion by Ecological Belt Nepal

(area in ha.)

Area	Total Area (ha)	Affected Area (ha)	Percentage of affected area	Types of Soil Degradation		
				Soil Erosion	Chemical Degradation	Physical Degradation
ECOLOGICAL BELT						
Mountain	213931.50	3512.30	1.64	1848.60	32.10	1631.60
Hill	986073.20	18764.50	1.90	11679.60	414.90	6670.00
Terai	1325634.50	34394.90	2.59	23643.40	1485.50	9266.00
Total	**2525639.20**	56671.70	2.24	**37171.60**	**1932.50**	**17567.60**

Source: Central Bureau of Statistics (National Sample Census of Agriculture, Nepal 2011/12).

Table 2.1.12 : Estimated Soil Erosion Rate at Selected Sites in Nepal

Area	Location and Characteristics	land Use	Erosion Rate (ton /sq. km/yr.)
Siwalik Range	Eastern Nepal, South aspect, sand stone foot hills	Different land use ranging from forest to grazing	780 - 3680
	Far Western Nepal, South aspect sand stone foot hills of Surkhet	a. Degraded land	2000
		b. Degraded forest,gullied land	4000
		c. Severely degraded heavily grazed forest, gullied land	20000
Mahabharat Lekh	Central Nepal, steep slope on Metamorphic and Sedimentary Rocks	a. Degraded forest and agriculture land	3150 - 14000
		b. Gullied land	6300 - 42000
Middle Mountain	Northern foot hills of Katmandu Valley	a. Degraded forest & shrub land	2700 - 4500
		b. Over grazed shrub land	4300
		c. Severely gullied land	12500 - 57000
	South of Katmandu Valley	75 percent dense forest	800
	Phewa Watershed	a. Protected pasture	920
		b. Overgrazed grass land	2200 - 34700
		c. Gullied overgrazed grass land	2900

Source: Central Bureau of Statistics (A Compendium on Envrronment Statistics 1998 Nepal)

Table 2.1.13 : Affected Land Area from Erosion

S.N.	Degradation Type	Affected Area (million ha.)	Affected Area as % of Total Land Area of Nepal
1	Water erosion	6.7	45.4
2	Wind erosion	0.6	4
3	Chemical deterioration	0.3	1.7
4	Physical deterioration	0.2	1.3

Sources: Ministry of Environment, Science and Technology, 2008.

Table 2.1.14 : Type and Color of Soil by Area of Holdings Nepal

S.N.	Type and Color of Soil	Nepal	
		Area of holding (ha)	Percent to total
Soil Type			
1	Sand	589455	25
2	Loam	884697	38
3	Silt	167822	7
4	Clay	532488	23
5	Clay Loam	145777	6
Total		**2320239**	**100**
Soil Color			
1	Black	825307	36
2	Brown	939299	40
3	Yellow	215460	9
4	Red	283687	12
5	Other	56485	2
Total		**2320239**	**100**

Source: Central Bureau of Statistics (National Sample Census of Agriculture, Nepal, 2001/02).

Table 2.1.15 : World Heritage Sites of Nepal

S. N.	World Heritage Sites	Place of Establishment	Existed Year
1	Hanumandhoka Durbar Square	Kathmandu	613 A.D.
2	Patan Darbar Square	Lalitpur	1565 A.D.
3	Bhaktapur Darbar Square	Bhaktapur	1427 A.D .
4	Pashupatinath Temple	Kathmandu	5th Century
5	Swayambhunath Stupa	Kathmandu	5th Century
6	Bouddhanath Stupa	Kathmandu	5th Century
7	Changunarayan Temple	Bhaktapur	306 A.D.
8	Chitwan National Park	Chitwan	1974 A.D.
9	Sagarmatha National Park	Solukhumbhu	1976 A.D.
10	Lumbini	Rupandehi	1997 A.D.

Source: Department of Information, Nepal, April-May, 2002.

Table 2.1.16 : Major Mountain Peaks of Nepal

S.N.	Name of Peak	Elevation (masl)	Latitude	Longitude
1	Mount Everest (Sagarmatha)	8848	27°59'17"	86°55'31"
2	Mount Kanchenjunga	8586	27°42'09"	88°09'25"
3	Mount Lhotse	8516	27°57'45"	86°56'03"
4	Mount Yalung Kang	8505	27°45'15"	88°08'25"
5	Mount Makalu	8463	27°53'23"	87°05'20"
6	Mount Cho-Oyu	8201	28°05'37"	86°39'43"
7	Mount Dhaulagiri	8167	28°41'46"	83°29'43"
8	Mount Manaslu	8163	28°32'58"	84°33'43"
9	Mount Annapurna I	8091	27°51'42"	86°51'50"

masl= metre above sea level
Source : Ministry of Culture, Tourism and Civil Aviation (Mountaineering in Nepal Facts and Figures,2007)

Table 2.2.1: Physiographic and Bioclimatic Zones of Nepal

Physiographic Zone	Area (%)	Elevation (m)	Bioclimatic Zone
High Himal	23	above 5000	Nival (Tundra and Arctic)
High Mountains	19	4,000-5,000	Alpine
		3,000-4,000	Sub-alpine
Middle Mountains	29	2,000-3,000	Montane(Temperate)
		1,000-2,000	Subtropical
Siwalik	15	500-1,000	Tropical
Terai	14	below 500	Tropical

Source: Ministry of Forest and Environment

Table 2.2.2 : Nepal's Climatic Zones

Region	Elevation	Climatic Zones	Average Annual Percipitation	Average annual Temperature
High Himal	Above 5000m	Tundra and arctic climate	150-200mm	< 3-10°C
High Mountains	3000m-50000m	Alpine and Subalpine		
Middle Mountains	1000m-3000m	Cool to warm temperature	275-2300mm	10-20°C
Siwalik	500m-1000m	Sub-tropical	1100-3000mm	20-25°C
Terai (low - laying plains)	below 500m	Tropical		

Source: MoSTE 2014

Table 2.2.3 : Land use Pattern by Type, Nepal, 1978/79-2001

(Area in ha.)

S.N.	Types of Land	1978/79*		1985/86*		2001**	
		Area	Percent	Area	Percent	Area	Percent
1	Cultivated land	2969400	20.1	3052000	20.7	3090780	21.0
2	Non Cultivated land	986900	6.7	998000	6.8	1030390	7.0
3	Forest	5612400	38.1	5518000	37.4	4268200	29.0
4	Shrub land	694000	4.7	706000	4.8	1560110	10.6
5	Grass land	1755900	11.9	1745000	11.8	1766160	12.0
6	Other land	2729800	18.5	2729000	18.5	2619800	17.8
7	Water /Lake	NA		NA		382660	2.6
Total		**14748400**	**100.0**	**14748000**	100.0	**14718100**	100.0

*Source : *Water and Energy Commission Secretariat(Energy Sector Synopsis Report 2010)*
***Department of Forest Research and Survey,2001*

Table 2.2.4. Number, area and fragmentation of holdings by district

S.No.	District	Holdings				Fragmentation						
		Number	Area (ha)			Total no. of parcels	Average no. of parcels	Number of holdings consisting of parcels				
			Wet	Dry	Total			1	2-3	4-5	6-9	10 and over
1	Taplejung	23444	6142.5	16185.0	22327.5	54133	2.3	7470	12472	2726	742	35
2	Panchthar	36664	5546.2	23179.4	28725.5	89267	2.4	11103	18628	5699	1135	99
3	Ilam	57950	14887.2	38507.1	53394.3	122410	2.1	20778	30358	6004	810	
4	Jhapa	120538	97899.7	4543.0	102442.6	194815	1.6	67461	48566	4010	501	
5	Morang	126891	105691.4	4251.6	109943.0	272395	2.1	53933	55840	11911	4280	928
6	Sunsari	86650	71301.5	3839.8	75141.3	182656	2.1	36941	38908	8151	2449	201
7	Dhankuta	31382	5364.5	20124.2	25488.7	79992	2.5	8633	16249	4914	1449	137
8	Terhathum	19608	6860.9	12241.3	19102.2	39707	2.0	7999	9647	1649	286	27
9	Sankhuwasabha	29983	12698.6	16257.0	28955.6	85321	2.8	4146	19089	5033	1620	96
10	Bhojpur	36832	11278.5	18497.3	29775.8	97237	2.6	9034	19551	6180	1843	225
11	Solukhumbu	21478	1948.7	17168.1	19116.8	75619	3.5	4477	9640	3712	2645	1004
12	Okhaldhunga	30451	5075.1	23471.8	28546.9	112240	3.7	3109	13896	8642	4139	665
13	Khotang	40358	8480.3	22869.5	31349.9	145629	3.6	5650	17715	10960	4864	1168
14	Udayapur	54919	16459.4	11702.9	28162.3	127847	2.3	17735	28609	6312	2024	240
15	Saptari	89241	70825.5	3082.3	73907.7	285235	3.2	19729	37509	20685	10056	1262
16	Siraha	88527	70901.0	7896.5	78797.5	323217	3.7	12066	36530	25045	12896	1990
17	Dhanusa	96006	67212.0	5095.2	72307.2	377099	3.9	10280	43099	22926	15528	4172
18	Mahottari	80844	59074.7	5902.5	64977.2	267742	3.3	14132	37266	18368	9815	1263
19	Sarlahi	98288	76831.6	3846.8	80678.4	234135	2.4	37037	43080	12824	4651	696
20	Sindhuli	51233	13550.8	13075.5	26626.3	123344	2.4	13297	29315	7214	1284	122
21	Ramechhap	40888	5971.3	24401.1	30372.4	128948	3.2	6942	21036	8467	3523	920
22	Dolakha	40718	7164.5	19680.1	26844.6	146599	3.6	5812	18034	10919	4931	1021
23	Sindhupalchok	58998	14010.4	20771.1	34781.5	252705	4.3	3581	23373	18472	11404	2168
24	Kavrepalanchok	68872	12155.0	27552.3	39707.3	211347	3.1	11075	36673	15476	5208	440
25	Lalitpur	33616	2663.8	6636.6	9300.3	85926	2.6	8363	18147	5739	1203	164
26	Bhaktapur	30631	3869.8	1813.0	5682.8	101288	3.3	1640	18901	7199	2474	417
27	Kathmandu	51462	5649.4	3946.2	9595.6	118045	2.3	16082	28028	5764	1587	
28	Nuwakot	53984	15782.0	17214.5	32996.5	174534	3.2	6794	27906	14166	4631	487
29	Rasuwa	8504	966.5	3591.1	4557.7	31750	3.7	1098	3595	2322	1301	189
30	Dhading	64517	13313.5	22084.5	35398.0	206909	3.2	9166	33218	15238	6268	627
31	Makwanpur	67111	8307.0	23495.8	31802.8	125147	1.9	30685	31867	4052	464	42
32	Rautahat	79233	62708.2	2126.7	64834.9	253012	3.2	11827	40302	18650	7193	1261
33	Bara	81292	52627.5	4239.2	56866.7	274157	3.4	8086	45454	17869	8119	1764
34	Parsa	59496	48549.1	349.7	48898.7	206243	3.5	3986	32830	15340	6423	918
35	Chitawan	88242	33468.1	7163.5	40631.6	167625	1.9	34488	48636	4300	774	43
36	Gorkha	57671	11717.6	19775.9	31493.5	220621	3.8	5708	24184	17288	9502	990
37	Lamjung	33041	10150.4	7115.5	17265.8	127620	3.9	3898	13390	8826	5897	1030
38	Tanahu	59233	8631.3	20391.0	29022.3	159893	2.7	13666	31722	10384	3140	321
39	Syangja	57613	9232.1	20218.5	29450.6	283081	4.9	3489	15305	20025	15012	3782
40	Kaski	53268	13215.0	10223.6	23438.6	159775	3.0	15407	22134	9436	5184	1107
41	Manang	993	2.1	471.5	473.6	5522	5.6	119	280	225	213	156
42	Mustang	2420	7.8	1367.0	1374.8	9454	3.9	121	1145	709	383	62
43	Myagdi	22480	3804.9	8553.7	12358.5	74386	3.3	3665	10524	5550	2461	279

S.No.	District	Holdings				Fragmentation						
		Number	Area (ha)			Total no. of parcels	Average no. of parcels	Number of holdings consisting of parcels				
			Wet	Dry	Total			1	2-3	4-5	6-9	10 and over
44	Parbat	28644	5625.2	6973.7	12598.9	107649	3.8	3014	12412	8631	3763	824
45	Baglung	51663	5570.4	25116.2	30686.6	197968	3.8	6169	21753	13508	8684	1550
46	Gulmi	57705	6594.3	34316.2	40910.4	212862	3.7	7624	26486	14092	7263	2240
47	Palpa	48830	8748.9	21236.4	29985.3	157252	3.2	7281	26156	9836	4886	671
48	Nawalparasi East	*46274*	16329.2	5305.8	21635.0	*99523*	*2.2*	*19626*	*21579*	*2883*	*1535*	*651*
49	Nawalparasi West	*55063*	33674.5	815.7	34490.2	*174491*	*3.2*	*11952*	*25485*	*10045*	*6371*	*1209*
50	Rupandehi	104174	69059.1	2128.9	71188.0	413320	4.0	21924	38851	19628	16297	7473
51	Kapilbastu	74770	62593.8	1984.2	64578.0	321106	4.3	11598	26830	16844	13747	5752
52	Arghakhanchi	43422	5385.7	26211.6	31597.3	132469	3.1	6488	23024	10712	2987	211
53	Pyuthan	44423	6283.5	19528.3	25811.8	129102	2.9	7957	24592	8991	2569	313
54	Rolpa	40284	2828.5	22024.8	24853.3	118390	2.9	7297	22337	7327	3085	237
55	Rukum East	*12503*	707.8	7250.9	7958.7	*53581*	*4.3*	*599*	*4667*	*4417*	*2396*	*424*
56	Rukum West	25256	1807.8	11608.8	13416.5	128301	5.1	1872	6988	7662	6788	1947
57	Salyan	42840	6514.9	20170.0	26684.8	140049	3.3	3432	24420	11634	3170	183
58	Dang	86623	35428.8	26522.7	61951.5	241639	2.8	31492	34096	11940	6931	2164
59	Banke	61433	39057.5	5062.6	44120.1	179041	2.9	15374	29210	10885	5012	953
60	Bardiya	68063	42646.7	4586.8	47233.5	149874	2.2	29364	27836	8147	2410	306
61	Surkhet	56571	11776.9	15464.4	27241.3	102647	1.8	26526	26430	3328	288	
62	Dailekh	45079	6708.8	14620.5	21329.3	124445	2.8	7998	26789	7498	2558	235
63	Jajarkot	28546	2266.3	13860.9	16127.2	139111	4.9	2013	9808	7559	6681	2484
64	Dolpa	6696	157.1	3576.3	3733.4	52446	7.8	76	790	1280	2667	1882
65	Jumla	17774	1413.3	5597.6	7010.9	166052	9.3	142	1052	2801	6342	7437
66	Kalikot	21528	3681.1	11019.5	14700.7	127721	5.9	767	5369	5857	5927	3608
67	Mugu	9174	932.2	5286.5	6218.6	46281	5.0	66	2321	3599	2865	323
68	Humla	8306	599.7	4632.4	5232.1	40420	4.9	214	3331	2163	1929	669
69	Bajura	22611	2283.7	7129.4	9413.1	200170	8.9	112	1683	4002	8435	8379
70	Bajhang	32446	4319.9	7492.3	11812.2	162040	5.0	1114	8804	11658	8832	2038
71	Achham	44986	5193.0	13295.6	18488.6	229561	5.1	2368	12117	15077	11734	3691
72	Doti	36840	6670.7	9711.8	16382.5	172046	4.7	3113	11991	10557	8878	2301
73	Kailali	111662	62809.4	3849.1	66658.5	269164	2.4	46329	44327	12417	7076	1513
74	Kanchanpur	70573	43436.0	916.9	44352.9	121212	1.7	39767	26209	3759	705	134
75	Dadeldhura	24797	3861.2	7755.7	11616.8	89926	3.6	5060	10308	4872	3492	1066
76	Baitadi	43544	4081.1	17245.6	21326.7	187921	4.3	4341	14641	13091	9267	2205
77	Darchula	22420	3164.2	14214.3	17378.5	94008	4.2	1146	9255	7310	3764	946
	NEPAL	**3831093**	**1584208.3**	**941430.9**	**2525639.2**	**12096417**	**3.2**	**904925**	**1724602**	**723389**	**379642**	**98534**

*Source : *CBS National Sample Census of Agriculture, 2011/12*

Table 2.2.5 : Land use in Nepal, 1961/62 - 2011/12

Land use	Census year					
	1961/62	1971/72	1981/82	1991/92	2001/02	2011/12
	('000 hectares)					
Agricultural land	1626.40	1592.3	2359.2	2392.9	2497.7	2363.09
Arable land	1591.90	1567.00	2287.50	2324.30	2357.00	2162.14
Land under temporary crops	1550.50	1537.10	2250.20	2284.70	2326.10	2123.17
Other arable land	41.40	29.9	37.3	39.7	30.9	38.97
Land under permanent crops	12.20	15.0	29.2	29.4	117.5	168.45
Land under permanent pasturescrops	22.30	10.30	42.50	36.90	19.80	29.30
Ponds	n.a.	n.a.	n.a.	3.9	3.5	3.20
Non-agricultural land	59.00	61.80	104.50	205.00	156.40	161.91
Woodland and forest	13.80	4.70	15.00	108.80	37.20	54.89
Other land	45.2	57.1	89.5	96.2	119.2	107.02
Total area of holding	**1685.40**	**1654.00**	**2463.70**	**2597.40**	**2654.00**	**2522.52**
	Percentage distribution					
Agricultural land	96.5	96.3	95.8	92.1	94.1	93.7
Arable land	94.5	94.7	92.8	89.5	88.8	85.7
Land under temporary crops	92.0	92.9	91.3	88.0	87.6	84.2
Other arable land	2.5	1.8	1.5	1.5	1.2	1.5
Land under permanent crops	0.7	0.9	1.2	1.1	4.4	6.7
Land under permanent pasturescrops	1.3	0.6	1.7	1.4	0.7	1.2
Ponds	n.a.	n.a.	n.a.	0.2	0.1	0.1
Non-agricultural land	3.5	3.7	4.2	7.9	5.9	6.4
Woodland and forest	0.8	0.3	0.6	4.2	1.4	2.2
Other land	2.7	3.5	3.6	3.7	4.5	4.2
Total area of holding	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Source : CBS, National Sample Census of Agriculture 2011/12

Table 2.2.6 : Estimated coverage by different types of wetlalnds in Nepal

S.N.	Wetland Types	Estimated Coverage	
		Area (ha.)	Percent (%)
1	Rivers	395000	47.77
2	Lakes	5000	0.6
3	Reservoirs	1500	1.38
4	Ponds	11396	1.4
5	Marginal swamps	12500	1.51
6	Irrigated paddy fields	398000	48.14
7	Irrigation Cannal	3160	0.38
8	Highway side ditches	262	0.03
Total		**826818**	**100**

Source : Directorate of fisheries Development (2073/74)

Table 2.2.7 : Sediment Yield in Large Watersheds

Watersheds	Watersheds Area (sq. km)	Sediment Delivery (ton/ha/yr)
Tamor	5770 5700 5900 5770	38.0 (1) 70.0 (6) 80.0 (4) 38.0 (5)
Sunkoshi	18985 19000 19000	21.0 (1) 65.0 (3) 45.0 (4)
Bagmati	585	45.0 (6)
Trisuli	4100 4110	18.0 (6) 18.5 (3)
Karnali	42890	21.0 (9)
Nagmati	1388	46.0 (3)
Ganges	1076000	13.5 (8)
Saptakosi	59280 62000 6100 59280	15.0 (1) 27.7 (8) 31.0 (7) 15.0 (5)
Arun	34525 36000 36533 34525	7.6 (1) 16.0 (7) (4) 7.6 (5)

Reference : Impat-1979; Sherchan-1991; Schaffner-1987; Upadhaya-et.al. 1991; Ries- 1994; Maskey and Joshy- 1991; Karver-1995; Erl – 1988; HPC-1989.
Source : Water and Energy Commission Secretariat/ CIDA.(Himalayan Sediment, Issue and Guidelines, 2003).

Table 2.2.8 : Sediment Yield in Small Watersheds

Watersheds	Watersheds Area (sq. km)	Sediment Delivery (ton/Ha/yr)
Lahore River	63	6.8 (1)
Bamti Khola	8	13.3 (2)
Chhukarpo Khola (up)	23.5	29.8 (2)
Chhukarpo Khola (down)	369	3.7 (2)
Surma Khola	570	2.1 (2)
Harpan Khola (Phewa Tal)	12000	8.9 (9)
Kukhuri khola	75	17.0 (11)
Anderi Khola	540	15.0 (11)
Jhinkhu	11141	11.0 (11)
Sunsdarizal	1553	12.9 (3)
Godavari	1231	3.3 (3)
Bishnumati	614	10.7 (3)
Mahabharat 1 Check dams	19	29.0 (4)
Kulekhani (re - 1993)	12500	20.45 (10)

Reference : Impat-1979; Sherchan-1991; Schaffner-1987; Upadhaya-et.al. 1991; Laban-1978; Mulder- 1978; Carson- 1985.
Source : Water and Energy Commission Secretariat/CIDA (Himalayan Sediment, Issue and Guidelines 2003).

Table 2.2.9 : Area of Land made uncultivabe due to flooding /Soil Erosion by Ecological Belt Nepal,2001/02

(area in Ha.)

Geographical Area	Total Area of Holding	Land made uncultivable due to flooding /soil erosion	
		Affected Area	% of affected area to total area
Nepal	**2654037**	**30845.3**	1.2
Ecological Belt			
Mountain	218706.6	**1495.0**	0.7
Hill	1038615	**6220.3**	0.6
Tarai	1396716	**23130.0**	1.7

Source: CBS (National Sample Census of Agriculture, Nepal 2001/02).

Table 2.2.10 : Numbers of Threatened Species by Major Groups of Organisms on the Red List, 1996- 2017

S.N.	Major Group of Species	Estimated Number of described species	Number of species evaluated by 2013	Number of threatened species											Species evaluted in 2017,as % of species described
				2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	
Vertebrates															
1	Mammals	5,506	5,506	1,094	1,141	1,142	1,131	1,138	1,139	1,143	1,199	1,197	1,194	1,204	100%
2	Birds	10,065	10,065	1,217	1,222	1,223	1,240	1,253	1,313	1,308	1,373	1,375	1,460	1,469	100%
3	Reptiles	9,831	4204	422	423	469	594	772	807	879	927	944	1079	1215	60%
4	Amphibians	7,044	6,409	1,808	1,905	1,895	1,898	1,917	1,933	1,950	1,957	1,994	2,068	2,100	86%
5	Fishes	32,700	11,172	1201	1275	1414	1851	2028	2058	2110	2,222	2,271	2359	2386	49%
	Sub total	**65,146**	**37,356**	**5,742**	**5,966**	**6,143**	**6,714**	**7,108**	**7,250**	**7,390**	7,678	7,781	**8,160**	**8,374**	**67%**
Invertebrates															
6	Insects	1,000,000	4610	623	626	711	733	741	829	896	993	1,046	1,268	1,414	0.8%
7	Molluscs	85,000	6,809	978	978	1036	1288	1673	1857	1898	1,950	1,950	1,984	2,187	10%
8	Crustaceans	47,000	3163	460	606	606	596	596	596	723	1,950	1,950	732	732	7%
9	Corals	2,175	856	4	235	235	235	235	236	235	235	237	237	237	40%
10	Arachnids	102,248	35	11	18	18	19	19	20	21	163	164	166	170	0.24%
11	Velvet Worms	165	11	9	9	9	9	9	9	9	9	9	9	9	7%
12	Horseshoe Crabs	4	4	0	0	0	0	0	0	0	0	0	1	1	100%
13	Others	68,658	423	24	24	24	24	24	23	40	65	67	73	143	1.13%
	Sub total	**1,305,250**	**15,911**	**2,109**	**2,496**	**2,639**	**2,904**	**3,297**	**3,570**	**3,822**	4,140	4,201	**4,470**	**4,893**	**2%**
Plants															
14	Mosses	16,236	102	80	82	82	80	80	76	76	76	76	76	76	0.6%
15	Ferns and Allies	12,000	342	139	139	139	148	163	167	187	194	197	217	246	4%
16	Gymnosperms	1052	1010	321	323	322	371	377	374	399	400	400	400	401	96%
17	Flowiering Plants	268,000	16,766	7,899	7,904	7,948	8,116	8,527	8,764	9,394	9,905	10,551	10,941	11,773	8%
18	Green Algae	4,242	13	0	0	0	0	0	0	0	0	0	0	0	0.2%
19	Red Algae	6,144	58	9	9	9	9	9	9	9	9	9	9	9	0.8%
	Sub total	**307,674**	**18,291**	**8,448**	**8,457**	**8,500**	**8,724**	**9,156**	**9,390**	**10,065**	10,584	11,233	**11,643**	**12,505**	**8%**
Fungi and Protists															
20	Lichens	17,000	2	2	2	2	2	2	2	2	4	7	7	10	0.08%
21	Mushrooms	31,496	1	1	1	1	1	1	1	1	1	22	21	33	0.137%
22	Brown Algae	3,127	15	6	6	6	6	6	6	6	6	6	6	6	0.4%
	Sub total	**51,623**	**18**	**9**	**9**	**9**	**9**	**9**	**9**	**9**	11	35	**34**	**49**	**0.14%**
Total		**1,729,693**	**71,576**	**16,308**	**16,928**	**17,291**	**18,351**	**19,570**	**20,219**	**21,286**	**22,413**	**23,250**	**24,307**	**25,821**	**5%**

source: IUCN Red list version 2017-3: Table 1

Table 2.2.11: Change in numbers of species in the threatened categories for the major taxonomic groups on the Red list ,1996-2017

Critically Endangered (CR)

Group	1996/98	2000	2002	2003	2004	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	Year																
Mammals	169	180	181	184	162	162	163	188	188	188	194	196	196	213	209	204	202
Birds	168	182	182	182	179	181	189	190	192	190	189	197	198	213	218	225	222
Reptiles	41	56	55	57	64	73	79	86	93	106	137	144	164	174	180	237	266
Amphibians	18	25	30	30	413	442	441	475	484	486	498	509	520	518	528	546	552
Fishes	157	156	157	162	171	253	254	289	306	376	414	415	413	443	446	461	468
Insects	44	45	46	46	47	68	69	70	89	89	91	119	125	168	176	226	273
Molluscs	257	222	222	250	265	265	268	268	291	373	487	549	553	576	576	586	625
Other Invertebrates	57	59	59	61	61	84	86	99	99	132	132	132	154	205	209	211	243
Plants	909	1,014	1,046	1,276	1,490	1,541	1,569	1,575	1,577	1,619	1,731	1,821	1,957	2,119	2,347	2,506	2,722
Fungi & Protists	0	0	0	1	1	2	2	2	2	2	2	2	2	2	5	8	10

Endangered (EN)

Group	1996/98	2000	2002	2003	2004	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Mammals	315	340	339	337	352	348	349	448	449	450	447	446	447	477	481	464	476
Birds	235	321	326	331	345	351	356	361	362	372	382	389	397	419	416	448	461
Reptiles	59	74	79	78	79	101	139	134	150	200	284	296	329	356	361	421	484
Amphibians	31	38	37	37	729	738	737	755	754	758	764	767	783	789	810	852	869
Fishes	134	144	143	144	160	237	254	269	298	400	477	494	530	587	614	660	676
Insects	116	118	118	118	120	129	129	132	151	166	169	207	247	270	305	408	461
Molluscs	212	237	236	243	221	222	224	224	245	328	417	480	486	501	503	513	547
Other Invertebrates	76	76	77	76	82	96	96	165	164	183	183	183	224	307	311	312	340
Plants	1,197	1,266	1,291	1,634	2,239	2,258	2,278	2,280	2,316	2,397	2,564	2,655	3,009	3,231	3,510	3,691	4,123
Fungi & Protists	0	0	0	1	1	1	1	1	1	1	1	1	1	1	11	12	18

Vulnerable (VU)

Group	1996/98	2000	2002	2003	2004	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Mammals	612	610	617	609	587	583	582	505	505	493	497	497	500	509	507	526	526
Birds	704	680	684	681	688	674	672	671	669	678	682	727	713	741	741	787	786
Reptiles	153	161	159	158	161	167	204	203	226	288	351	367	386	397	403	421	465
Amphibians	75	83	90	90	628	631	630	675	657	654	655	657	647	650	656	670	679
Fishes	443	452	442	444	470	681	693	717	810	1,075	1,137	1,149	1,167	1,192	1,211	1,238	1,242
Insects	377	392	393	389	392	426	425	424	471	478	481	503	524	555	565	634	680
Molluscs	451	479	481	474	488	488	486	486	500	587	769	828	859	873	871	885	1,015
Other Invertebrates	300	300	300	302	316	323	325	628	629	568	568	569	650	685	685	695	709
Plants	3,222	3,331	3,377	3,864	4,592	4,591	4,600	4,602	4,607	4,708	4,861	4,914	5,099	5,234	5,376	5,446	5,660
Fungi & Protists	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	14	21

source: IUCN Red list version 2017-3: Table 2

Table2.2.12: Number of Plant and Animal Species in Nepal

S.N.	Group	Number of Known Species	Percent of Known Species in the World
A	Flora		
1	Angiosperms	6973.00	3.20
2	Gymnosperms	26.00	5.10
3	Pteridophytes	534.00	5.10
4	Bryophytes	1150.00	8.20
5	Lichens	465.00	2.30
6	Fungi	1822.00	2.60
7	Algae	1001.00	2.50
	Flora Total	**11971.00**	**32.00**
B	Funa		
1	Mammals	208	5.2
2	Birds[2]	867	9.5
3	Reptiles	123	1.9
4	Amphibians	117	2.5
5	Fishes	**230**	**1.9**
6	Mollusks	192	N/A
7	Moths	3958	3.6
8	Butterflies	651	3.7
9	Spiders	175	0.4
10	Rotifers	61	N/A
11	Crustaceans	59	N/A
12	Other Insects	5052	0.7
13	Platyhelminthes	168	1.4
Fauna Total		**11861**	**11**

Source: Ministry of Forest and Soil Conservation(National Biodiversity Strategy and Action Plan 2014-2020

Table 2.2.13 : Number of Wildlife Species in Nepal

S.N.	Species	Year	Area/place	Number
1	Arna	2016	Koshi Tappu Wildlife Reserve	432
2	Blackbuck	2017	Krishnasar Conservation Area	290
3	Blue sheep	2016	Dhorpatan Hunting Reserve	2202
4	Blue sheep	2015	Kanchenjungha Conservation Area	1613
5	Gaur	2016	Chitwan National Park	368
6	Gaur	2016	Parsa National Park	105
7	Gharial	2013	Babai River	14
8	Gharial	2013	Karnali River	2
9	Gharial	2011	Koshi River	0
10	Gharial	2013	Narayani River	63
11	Gharial	2013	Rapti River	45
12	Rhino	2015	Bardia National Park	29
13	Rhino	2015	Chitwan National Park	605
14	Rhino	2015	Suklaphanta Wildlife Reserve	8
15	Rhino	2015	Parsa National Park	3
16	Swamp deer	2014	Suklaphanta Wildlife Reserve	2301
17	Swamp deer	2012	Bardia National Park	105
18	Tiger	2013	Bardia National Park	50
19	Tiger	2013	Chitwan National Park	120
20	Tiger	2013	Suklaphanta Wildlife Reserve	17
21	Tiger	2013	Banke National Park	4
22	Tiger	2013	Parsa National Park	7
23	Snow Leopard	2012	Mountain Protected Areas	301-400

Source : Department of National Park and Wildlife Conservation(Annual Progress Report 2073/74

Table 2.2.14 : Number of Cultivated and Wild Food Plant Species

Groups	Food Plant Species			Cultivated Plants (%)	Wild Food Plant(%)
	Total	Cultivated	Wild +		
Dicots					
Families	120	50	70	42	58
Genera	180	120	60	67	33
Species*	395	175	190	44	48
Sub-species	25	25	0	100	0
Monocot					
Families	17	10	7	59	41
Genera	50	35	15	70	30
Species*	83	50	20	60	24
Sub-species	10	7	3	70	30
Pteridophyte					
Families	3		3		100
Genera	7		7		100
Species	11		11		100
Thallophytic					
Families	30		30		100
Genera	57		57		100
Species	108		108		100
Gymnosperms					
Families	2		2		100
Genera	2		2		100
Species	2		2		100

** Imported food plants are excluded, +National Seed Committee.*

Source: Ministry of Forests and Soil Conservation (Nepal Biodiversity Strategy, 2002).

Table 2.2.15 : Endemic Fishes of Nepal

S.N.	Scientific Name	Local Name
1	Cyprinus carpio	Common carp
2	Hypophthalmichthys molitrix	Sliver carp
3	Aristichthys nobilis	Bighead carp
4	Ctenopharyngodon iddllus	Grass carp
5	Labeo rohita	Rohu
6	Cirrhinus mrigala	Naini (Mrigal)
7	Catla catla	Bhakue (Catla)
8	Oncorhynchus mykiss	Rainbow trout

Source : Directorate of Fisheries Development, 2016

Table 2.2.16 : Number and Status of Nepal's Fauna

Groups of Organisms	Species Number		Reference	Nepal Representation (%)
	Globally	Nepal		
Bacteria	3000-4000	NA		
Lichens	20000	465	Sharma 1995	2.3
Fungi	69000	1822	Adhikari 1999	2.4
Algae	26000-40000	687	Baral 1995	2.6
Bryophytes	16600	853	Compiled from Kattel and Adhikari,1992, Mizutani et al.,1995,.Furuki and higuchi 1995	5.1
Pteridophytes	11300	534	DPR 2002	4.7
Gymnosperms	529	27	Koba et al.1994	5.1
Angiosperms	220000	5856	Press et al. 2000	2.7
Platyhelminthes	12200	168	Gupta 1997	
Spider	73400	144	Thapa1995	1.4
Insects	751000	5052	Thapa1997	0.2
Butterflies and Moths	112000	640 2253	Smith 1994;Bhuju et al.2007	0.7
Fishes	18150	182	Shrestha 2001	2.6
Amphibians	4184	77	Shah 1995	1
Reptiles	6300	118	Shah and Tiwari 2004	1.87
Birds	9040	863	Baral and Inskipp 2009	9.53
Mammals	4000	181	Suwal and verheugt 1995	4.52

Sources: Nepal Fourth National Report to the Convention on Biological Diversity, MOFSC, 2009

Table 2.2.17 : Protected Faunal Species included in the National Parks and Wildlife Conservation Act,1973

S.N.	Scientific Name	Local Name	English Name	Status	
	Mammals			IUCN	CITES Appendix
1	Sus salvanius	Sano bandel	Pigmy hog	Ex	I
2	Ailurus cervicapra	Habrey	Red panda		I
3	Antilope cervicapra	Krishnasar	Black buck	V	III Nep
4	Bos gaurus	Gauri gai	Gaur bison	V	I
5	Bos mutus	Yak nak	Wild yak	E	I
6	Bubalus arnee	Arna	Wild water buffalo	E	III Nep
7	Canis lupus	Bwanso	Gray wolf	V	I
8	Caprotgus hispidus	Hispid Kharayo	Hispid hare	E	I
9	Cervus duvauceli	Barasinghe	Swamp deer	E	I
10	Elephas maximus	Hatti	Asiatic elephant	E	I
11	Felis lynx	Banbiralo	Lynx	E	II
12	Hyanena hyaena	Hundar	Striped hyena	E	
13	Macaca assamensis	Asamese rato bander	Asamese monkey		II
14	Manis crassicaudata	Salak	Indian pangolin		II
15	Manis pentadactyla	Salak	Chinese pangolin		II
16	Moschus chrysogaster	Kasturi mriga	Himalayan forest, musk deer	E	I
17	Ovis ammon	Nayan	Great Tibetan sheep	I	I
18	Panthera tigris	Bagh	Bengal tiger	E	I
19	Panthera uncia	Hiunchituwa	Snow leopard	E	I
20	Pontholops hodgsoni	Chiru	Tibetan antelope		I
21	Neofelis nebulosa	Dwanshe chituwa	Clouded leopard	V	I
22	Platanista gangetica	Souns	Geanetic dolphin	V	I
23	Prionailurus bengolensis	Chari bagh	Leopard cat		II
24	Prionodon pardicolor	Silu	Spotted ling sang		I
25	Rhinoceros unicarnis	Gainda	One horned rhinoceros	E	I
26	Tetrocerus quadricornis	Chauk	Four-horned antelope		III Nep
27	Ursus arctos	Himali rato bhalu	Brown bear		I

S.N.	Scientific Name	Local Name	English Name	Status	
				IUCN	CITES Appendix
	Birds				
1	Buceros bicornis	Thulo dhanes	Great- pied hornbill		I
2	Catreus wallichii	Cheer	Cheer pheasant	E	I
3	Ciconia ciconia	Seto stork (saras)	White stork		II
4	Ciconia nigra	Kalo stork	Black stork		II
5	Grus grus	Saras	Souse crane		
6	Eupodotisbengalensis	Khar major	Bengal florican	E	I
7	Lophophorus impejanus	Danfe	Impedance pheasant		I
8	Sypheotides indica	Sano khar major	Lesser florican		III
9	Tragopan satyra	Munal	Crimson-horned pheasant		III Nep
	Reptiles				
1	Gavialis gangeticus	Ghadial gohi	Gharial	E	I
2	Python molurus	Azingar	Asiatic rock python	V	I
3	Varanus flavescens	Sun gohori	Golden monitor lizard	I	I

Note: Common name pangolin refers for two main species, as suggested by Bio-diversity Profile Project, 1995.
I = Indeterminate, E = endangered, V = vulnerable, Ex= extinct
Source: Ministry of Environment (State of the Environment, Nepal, 2001) and Department of National park and Wildlife Conservation ,2001/02

Table 2.2.18 : Threatened Species in the SAARC Member Countries (Taxonomic Group)

Species	Afghanistan	Bangladesh	Bhutan	India	Maldives	Nepal	Pakistan	Sri Lanka
Mammals	11	37	25	94	2	29	26	31
Birds	16	35	19	89	0	36	32	16
Reptiles	1	23	3	54	3	9	12	12
Amphibians	1	1	1	75	0	3	0	56
Fishes	5	29	3	228	24	7	45	57
Molluscs	0	0	0	7	0	1	0	0
Other Invertibrates	2	7	1	128	46	2	18	130
Plants	5	22	43	392	0	17	12	294
Total	**41**	**154**	**95**	**1067**	**75**	**104**	**145**	**596**

Source : IUCN Red List version 2018

Table 2.2.19 : Vegetation Area by Type and Household Involvement in Community Forest of Nepal

Vegetation Type	CF Area (ha.)	% of CF Area	No. of HHs	% of No. of HHs
Forest	1259625.77	71.16	1559346	65.03
Forest/Grass	47760.95	2.70	34432	1.44
Forest/Plantation	73891.57	4.17	143874	6.00
Forest/Plantation/Grass	2835.23	0.16	4016	0.17
Forest/Shrub	139110.52	7.86	142881	5.96
Forest/Shrub/Grass	12538.86	0.71	11156	0.47
Forest/Shrub/Plantation	11119.91	0.63	17005	0.71
Forest/Shrub/Plantation/Grass	6418.23	0.36	8046	0.34
Grass	3899.54	0.22	13289	0.55
Plantation	40979.13	2.32	171324	7.15
Plantation/Grass	3569.04	0.20	8842	0.37
Shrub	126287.50	7.13	193790	8.08
Shrub/Grass	5471.82	0.31	8666	0.36
Shrub/Plantation	32293.31	1.82	75669	3.16
Shrub/Plantation/Grass	4248.80	0.24	5372	0.22
TOTAL	1770050.16	100.00	2397708	100.00

Community Forestry Division, Department of Forest, Kathmandu, Nepal, 2016

Table 2.2.20 : Protected Floral Species in Nepal

S.N.	Scientific Name	English Name	Local Name	Potential Use
I. Banned for collection, transportation and trade				
1	Dactylorhiza hatagirca	Orchid	Panchaunle	Tonic
2	Bark of Juglans regia Linn.	Walnut	Okharko bokra	Medicine
II. Banned for export outside the country without processing				
1	Abies spectabilis		Talispatra	Medicine
2	Cinnamomum glaucescens		Sugandakokila	
3	Lichens	Lichen	Jhyaau	
4	Nardostachys grandiflora	Spikenard	Jatamansi	Medicine
5	Rauvolfia serpentina	Rauwolf	Sarpagandha	Medicine
6	Taxus baccata subsp	Himalayan yew	Lauth salla	Medicine
7	Valeriana jatamansi	Valerian	Sugandhawal	Medicine
8	Rock exudate		Silajit	Medicine
III. Banned for felling, transportation and export				
1	Dalbergia Latifolia Roxb	Cutch tree	khayar	Medicine
2	Juglans regia Linn	Red Cotton tree	Simal	Medicine
3	Pterocarpus marsupium	Indian Kino tree	Bijayasal	Timber
4	Shorea robusta	Common sal	Saal	Timber
IV. Banned for Export without identification and certificateion				
1	Neopicrorhizia scrophulariiflora(Pennell)		kutaki	

*Note: * Recently the ban has been lifted for products legally harvested from sustainably managed forests.*
Source: Department of Plant Resources,2012

Table 2.2.21 : Threatened Medicinal and Aromatic plants in Nepal

S.N.	Plant Species	Nepali Name	Threat Category	
			CAMP	IUCN
1	Acacia catechu (L.f.) Wild	Khayar		T
2	Aconitum balangrense Lauener	Bikh	EN	
3	Aconitum bisma (Buch.-Ham.) Rapaics	Bikh	DD	
4	Aconitum ferox Wall.ex Seringe	Seto bikh	DD	T
5	Aconitum gammiei Stapf	Bikh		T
6	Aconitum heterophyllum Wall.	Atis	V	R
7	Aconitum laciniatum (Bruhl) Stapf	Bikh		T
8	Aconitum spicatum (Bruhl)Stapf	Bikh	V	T
9	Allium hypsistum Stearn	Jimbu	V	
10	Allium przerwalskianum Regel	Jimbu		V
11	Alstonia neruufolia D.Don		EN	R
12	Alstonia scholaris (L.) R.Br.	Chhatiwan	V	R
13	Arisaema costatum (Wall.) Mart.ex.Schott	Sarpako makai	LC	
14	Arnebia benthamii (Wall.ex G.Don) I.M Johnston	Mahaarangi	V	
15	Asparagus racemosus Willd.	Sataawari	V	
16	Bergenia ciliata (Haw.) Sternb.	Paakhandbed		T
17	Butea monosperma (Lam.) Kuntze	Palas	V	EN
18	Corydalis megacalyx Loudlow		EN	
19	Crateva unilocularis Buch.-Ham.	Siplikaan	EN	R
20	Curculigo orchioides Gaertn.	Kalo Musali	V	
21	Dactylorhiza hatagirea (D.Don)Soo	Paanchaunle	EN	
22	Dalbergia latifolia Roxb.	Satisaal		V
23	Delphinium himalayai Munz	Atis	V	
24	Dioscorea deltoidea Wall.	Bhyaakur	EN	T
25	Elaeocarpus sphaericus (Gaertn.) K.Schum.	Rudrakshya		V
26	Ephedra intermedia Schrenk and Meyer	Somlataa	EN	
27	Ephemerantha macraei (Lindl.) P.F. Hunt and Summerh.	Jiwanti	V	
28	Fritillaria cirrhosa D.Don	Kaakoli	V	
29	Gloriosa superba Linn.		EN	
30	Heracleum lallii C. Norman		EN	
31	Jurinea dolomiaea Boiss.	Dhupjadi	NT	

S.N.	Plant Species	Nepali Name	Threat Category	
			CAMP	IUCN
32	Lilium nepalense D.Don	Khiraule	DD	
33	Maharanga bicolor (Wall.ex G.Don)A.DC.	Mahaarangi	DD	
34	Maharanga emodi (Wall.)A.DC.	Mahaarangi	DD	K
35	Meconopsis dhwojii G.Taylor ex Hay		NT	
36	Michelia champaca Linn.	Chaamp	CR	EN
37	Nardostachys grandiflora DC.	Jataamansi	V	V
38	Neopicrorhiza scrophulariifolia (Pennell) Hong	Kutaki	V	
39	Operculina turpethum (L.)S.Manso	Nisoth	EN	
40	Oroxylum indicum(L.)Kurz	Tatelo	EN	
41	Otochilus porrectus Lindl.		EN	
42	Paeonia emodi Wall.	Chandra		V
43	Panax psedo-ginseng Wall.	Mangan	V	
44	Paris polyphylla Smith	Satuwaa	V	V
45	Piper longum Linn.	Pipalaa	V	
46	Pistacia chinensis Bunge subsp. integerrima(J.L.Stewart) Rech.f.	Kaakarsingi		R
47	Podophyllum hexandrum Royle	Laghupatra	V	V
48	Pongamia pinnata (L.)Pierre	Karengi	DD	K
49	Pterocapus marsupium Roxb.	Bijayasaal	CR	
50	Rauvolfia serpentina (L.)Benth.ex Kurz	Sarpagandhaa	CR	EN
51	Rheum australe D.Don	Padamchal	V	V
52	Rheum moorcroftianum Royle	Padamchaal	NT	
53	Rheum nobile Hook.f. and Thoms.	Amalbetas	V	R
54	Rubia manjith Roxb.ex Fleming	Majitho	V	
55	Swertia angustifolia Buch.-Ham. ex D.Don	Bhaale chiraaito	EN	
56	Swertia chirayita (Roxb.ex Fleming) Karstrn	Chiraaito	V	V
57	Swertia multicaulis D.Don	Sarmaaguru	DD	
58	Taxus baccata Linn.	Lauth Salla	EN	
59	Tinospora sinensis (Lour.) Merr.	Gurjo	V	
60	Valeriana jatamansi Jones	Sugandhawaal	V	

Note: CR = Critically endangered, DD= Data deficient, EN= Endangered, K= Insufficiently Known, NT= Nearly threatened, V= Vulnerable, R= Rare and T= Threatened.
Source: Department of Plant Resources,Plants of Nepal : Fact Sheet, 2012

Table 2.2.22 : Ecosystems and Protected Areas in Nepal

Physiographic Zone	No. of Total Ecosystems	Types	Number of Ecosystems in Protected Areas
High Himal and High Mountain	38	37 Forest and 1 Glacier/ Snow/ Rock	30
Middle Mountain	53	52 Forest and 1 Cultivated	33
Siwalik	14	13 Forest and 1 Cultivated	5
Terai	12	10 Forest and 2 Cultivated	11
Others	1	Water bodies found in all zones except Siwalik	1
Total	**118**		**80**

Source: Ministry of Forest and Soil Conservation (National Biodiversity Strategy and Action Plan 2014-2020)

Table 2.2.23 : National Parks, Wildlife Reserves and Conservation Area of Nepal

S.N.	Protected Area	Year of Declaration	Area (sq. km)	Physiographic Zone	Conservation Focus
National Parks					
1	Chitwan National Park	1973	952.63	Tarai / Siwalik	Rhino , elephant, tiger , bison etc
2	Langtang National Park	1976	1710	High Mountain	Musk, deer, and red panda
3	Rara National Park	1976	106	High Mountain	Musk, deer, red panda and high altitude lake
4	Sagarmatha National Park	1976	1148	High Mountain	Musk, deer, red panda, beer and snow leopard
5	She-Phoksundo National Park	1984	3555	High Mountain	Wild goat, blue sheep, musk deer, lake
6	Khaptad National Park	1984	225	Middle Mountain	Wild goat, blue sheep, spiritual site
7	Bardia National Park	1984	968	Tarai	Rhino, elephant, tiger, etc
8	Makalu Barun National Park	1991	1500	High Mountain	High altitude, endangered plants
9	Shivapuri Nagarjun National Park	2002	159	Mid hills	Conservation of capital city
10	Banke National Park	2010	550	Tarai	Tiger, elephant etc
11	Shuklaphanta National Park	1976	305	Tarai	elephant,tiger , deer,
12	Parsa National Park	1984	627.39		
Total			**11806.02**		
Wildlife Reserves					
1	Koshi Tappu Wildlife Reserve	1976	175	Tarai	Wild buffalo and migratory birds
Total			**979**		
Hunting Reserve					
1	Dhorpatan Hunting Reserve	1987	1325	Middle Mountain	Blue sheep
Total			**1325**		
Conservation Area					
1	Annapurna Conservation Area	1992	7629	Middle Mountain	endemic plants and mountain
2	Kanchanjunga Conservation Area	1997	2035	Middle Mountain	endemic plants and mountain
3	Manasalu Conservation Area	1998	1663	High Mountain	endemic plants and mountain
4	krishnasar Conservation Area	2009	16.95	Tarai	blackbuck
5	Gaurisankar Conservation Area	2010	2179	High Mountain	Musk, deer, and red panda etc.
6	Api Nampa Conservation Area	2010	1903	High Mountain	Musk, deer, and red panda etc.
Total			**15425.95**		
Grand Total			**29535.97**		

Source : Department of National Parks and Wildfile Conservation, Annual Report,2017/18

Table 2.2.24 : Number of Districts with Buffer Zone of Nepal

S.N.	Buffer zones	Declared Year	Area (sq. km)	District
1	Chitwan National Park	1996	729.37	4
2	Bardia National Park	1996	507	2
3	Langtang National Park	1998	420	3
4	Shey Phoksundo National Park	1998	1349	2
5	Makalu Barun National Park	1999	830	2
6	Sagarmatha National Park	2002	275	1
7	Koshi Tappu Wildlife Reserve	2004	173	3
8	Shuklaphanta National Park	2004	243.5	1
9	Parsa National Park	2005	285.3	3
10	Rara National Park	2006	198	2
11	Khaptad National Park	2006	225	4
12	Banke National Park	2010	343	4
13	Shivapuri Nagarjun National Park	2016	118.61	4
Total			**5696.78**	**31**

Source : Department of National Park and Wildlife Conservation

Table 2.2.25: Changes in status of community forestry in between 2008 and 2018

Categories	2008	2013 (June)	2018 (June)
User Groups	14431	18133	22266
Households	1660000	2237195	2907871
Forest Area (ha.)	1230000	1700048	2237670.5

Source : Ministry of Forest and Environment

Table 2.2.26 : Major Botanical Garden of Nepal

S.N.	Name of Garden	Location and District	Area (ha.)	Elevation (masl)	Established Year
1	National botanical garden	Godawari,Lalitpur	82	1515	1962
2	Maipokhari botanical garden	Maipokhari,Ilam	1.5	2200	1962
3	Dhanush botanical garden	Dhanushadham, Dhanusha	17.23	NA	1998
4	Vrindaban botanical garden	Hetauda, Makawanpur	96	500	1962
5	Daman botanical garden	Daman, Makawanpur	15	2320	1962
6	Tistung botanical garden	Tistung, Makawanpur	15	1900	1962
7	Dhakeri botanical garden	Dhakeri,Banke	5	130	1990
8	Mulpani botanical garden	Kapurkot,Salyan	5.5	2000	1990
9	Dhitalchor botanical garden	Jumla	4	2498	1990
10	Deoria botanical garden	Dhangadhi, Kailali	149.5	170	1998
11	World Peace Biodiversity Garden	Pokhara , Kaski	147.48	775-1078	2013

Source: Department of Plant Resource

Table 2.2.27 : Central Zoo (Sadar Chidiya Khana) of Nepal

Location : Jawalakhel, Lalitpur
Area: 118 Ropani
Established Year : 1932 A.D.

Year	Mammals		Birds		Reptiles		Fishes		Total	
	Species	Number	Species	Number	Species	Number	Species	Number	Species	Number
2008/09	31	212	52	270	10	23	17	364	110	869
2009/10	33	221	51	232	10	24	14	418	108	895
2010/11	34	197	58	434	10	24	14	199	116	854
2011/12	35	207	57	359	11	27	16	281	119	874
2012/13	36	196	53	330	11	26	16	345	116	897
2013/14	36	214	52	385	11	34	17	439	116	1072
2014/15	35	218	52	383	10	36	17	313	114	950
2015/16	34	253	48	462	10	32	13	222	105	969
2016/17	33	287	56	365	11	35	13	220	113	907

Source: Central Zoo

Table 2.2.28: Snow leopard potential habitat in protected areas, blocks and landscapes

Protected Area	Core Area (km^2)	Buffer Zone (km^2)	Total Area (km^2)	Potential Habitat (km^2)	Three landscapes with estimated potential habitats (km^2)**
Kangchenjunga Conservation Area	2035	-	2035	698 (B1)	Eastern - 2900
Makalu-Barun National Park	1500	830	2330	1073 (B2)	
Sagarmatha National Park	1148	275	1423		
Gaurishankar Conservation Area	2179	-	2179	1129 (B3)	
Langtang National Park	1710	420	2130		
Manaslu Conservation Area (MCA)	1663	-	1663	5470 (B4)	Central (MCA to western part of ACA) - 5470
Annapurna Conservation Area (ACA)	7629	-	7629		
Dhorpatan Hunting Reserve	1325	-	1325	4445 (B5)	
Shey-Phoksundo National Park	3555	1349	4904		Western (Tschharka Pass in the east to ANCA in the west) - 4445
Rara National Park	106	198	304		
Khaptad National Park	225	216	461		
Api-Nampa Conservation Area (ANCA)	1903	-	1903		
Total	24978	3288	28266	12815	12815

Source : Revised SLCAP, 2012, Department of National Parks and Wildlife Conservation

Table 2.2.29: Estimated snow leopard populations in three landscapes in Nepal

Landscapes	Protected Areas	Density/100 (km2)	Lower Limits	Upper Limits
Eastern	KCA	2.6	13	21
	SNP	1.8	2	5
Central	ACA & MCA	1.5	6	24
Western	SPNP & ANCA	3.2	280	349
		Total	301	400

Source: WWF Nepal, 2009 in revised SLCAP (2005-2015), 2012,Department of National Parks and Wildlife Conservation

Table 2.2.30: Potential habitat and population estimation of red panda in Nepal

S.N.	Sub Populations	Area (Km^2)		Populations	
		Confirmed	Possible	Confirmed	Possible
1	Annapurna-Manaslu	4.18	84.23	2	34
2	Darchula	-	-	-	-
3	Dhorpatan	89.05	434.92	36	174
4	Gauri Shankar	45.17	114.15	18	46
5	Kanchenjunga	111.91	160.76	45	64
6	Khaptad	3.57	211.22	1	84
7	Langtang	47.83	125.7	19	50
8	Rara	55.63	1,099.16	22	440
9	Sagarmatha	73.71	150.96	29	60
10	Sankhuwasabha East	101.88	119.01	41	41
11	Sankhuwasabha West	59.46	152.02	24	48
Total		592.39	2,652.13	237	1,061

Source :Red Panda Field Survey and Protocal for Community Based Monitoring,Ministry of Forest and Soil Conservation

Table 2.2.31: Forest resources and forest areas of Nepal

Forest area and resources	Statistics
Shrub area	59.26 lakh hectares (40.4 percent)
Total stem volume	982 million 332 thausand m^3
Sal species among total stem volume	19 percent
Total Biomass	11597 lakh tons
Average stem volume	165 cubic meters per hectare
Average number of trees	430 per hectare
Number of community forests	19916
Handover area of community forest transfer(Hactare)	1879998
Numbe of households involved in community forest	2546760
Number of leasehold forest (poverty)	7509
Area of leasehold Forest(Hectare)	43293
Household number attached to the forest	72198
Number of protected forest	10
Area of protected forest(Hectare)	190809
Number of Partnership forest	30
Area of Partnership forest (Hectare)	73364
Number of households benefited from partnership	827225
Beneficiaries population from partnership forest	4262516
Number of religius forests	36
Area of religious forests(Hectare)	2056
Number of private forest	2458
Area of Private Forest(Hectare)	2360

Source :Forest department/Forest research and survey department,Fiscal year 2017/18

Table 2.2.32 : Ramsar Site of Nepal

S.N.	Sites	Zone	Province	Altitude (m)	Date		
					Area (ha)	Designation	Ratification
1	Koshi Tappu	Terai, lowland	2	90	17,500	12/17/1987	8/13/2003
2	Ghodaghodi Lake Area	Terai, lowland	7	205	2,563	8/13/2003	8/13/2003
3	Jagadishpur Reservoir	Terai, lowland	4	195	225	8/13/2003	8/13/2003
4	Beeshazari and Associated Lakes	Terai, lowland	3	285	3,200	8/13/2003	8/13/2003
5	Rara Lake	Himalayas	6	2990	1,583	9/23/2007	9/23/2007
6	Phoksundo Lake	Himalayas	6	3610	494	9/23/2007	9/23/2007
7	Gosaikunda and Associated Lakes	Himalayas	3	4700	1,030	9/23/2007	9/23/2007
8	Gokyo and Associated Lakes	Himalayas	3	5000	7,770	9/23/2007	9/23/2007
9	Mai Pokhari	Midhills	1	2100	90	10/20/2008	10/20/2008
10	Lake Cluster of Pokhara Valley	Midhills	4	827	26,106	2/2/2016	2/2/2016

Source : Ramsar Information Sheet 2017, MoFE

Table 2.2.33 : Distribution of community forests among the physiographic zones (as of June 2018)

Physiographic zone	Number of Districts	User Groups		Households		Coverage	
		Number	%	Number	%	Area (ha.)	%
Total	74	19916.0	100.0	2546760.0	100.0	1879999.0	100.0
High Mountains	15	3156	15.85	330476	12.98	298470	15.88
Middle Hills	39	14196	71.28	1557932	61.17	1206952	64.20
Terai	20	2564	12.87	658352	25.85	374577	19.92

Source : Ministry of Forest and Environment

Table 2.3.1 (a) :Monthly Average $PM_{2.5}$ in 2017 at different stations.

Stations	Month	Jan.	Feb.	Mar.	Apr.	May	Jun.	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Ratnapark	Monthly Average PM 2.5 (µg/m3)	80.86	79.8	45.12	67.16	42.35	29.08	18.5	15.91	24.67	25.01	30.22	41.2	
	Total days with valid data	24	25	19	26	28	30	31	31	30	31	16	27	318
	No of days exceeding National Standard	24	25	11	24	17	4	0	0	0	1	1	12	119
Pulchowak	Monthly AveragePM 2.5(µg/m3)	69.61	68.4	50.49	45.64	30.07	16.63	6.07	6.74	7.73	12.04	17.67	24.58	
	Total days with valid data	27	28	29	30	30	28	30	23	5	21	22	26	299
	No of days exceeding National Standard	27	28	26	14	4	0	0	0	0	0	0	0	99
Dulikhel	Monthly AveragePM 2.5 (µg/m3)	31.8	55.81	43.58	41.52	24.87	16.3	7.04	-	-	25.83	30.78	31.54	
	Total days with valid data	22	20	20	26	19	20	17	-	-	27	11	28	210
	No of days exceeding National Standard	8	18	14	8	1	0	0	-	-	6	1	5	61
Lumbini	Monthly AveragePM 2.5(µg/m3)	108.43	91.53	49.06	44.34	29.5	20.85	10.3	13.86	19.33	55.47	84.99	94.31	
	Total days with valid data	30	28	31	27	29	30	31	31	8	15	19	31	310
	No of days exceeding National Standard	29	28	23	11	6	0	0	0	0	12	18	31	158
Birendra school Bhaktapur	Monthly AveragePM 2.5(µg/m3)	-	-	-	-	-	-	-	16.01	29	37.86	75.46	86.85	
	Total days with valid data	-	-	-	-	-	-	-	12	23	31	18	31	115
	No of days exceeding National Standard	-	-	-	-	-	-	-	0	2	14	18	31	65
Sauraha	Monthly AveragePM 2.5(µg/m3)	77.1	79.54	64.21	123.95	19.61		8.3	8.29	-	-	-	-	
	Total days with valid data	22	27	31	22	7	1	9	11	-	-	-	-	130
	No of days exceeding National Standard	21	27	26	22	0	1	0	0		-	-	-	97
Bhaisepati	Monthly AveragePM 2.5(µg/m3)	-	-	-	-	-	-	-	-	40.72	37.4	47.85	59.93	
	Total days with valid data	-	-	-	-	-	-	-	-	30	31	29	31	121
	No of days exceeding National Standard	-	-	-	-	-	-	-	-	13	10	18	31	72
Shankhapark	Monthly AveragePM 2.5(µg/m3)	-	-	-	-	-	-	-	21.28	49.86	41.38	57.01	66.6	
	Total days with valid data	-	-	-	-	-	-	-	13	30	31	30	31	135
	No of days exceeding National Standard	-	-	-	-	-	-	-	0	24	15	30	31	100
DHM Pokhara	Monthly AveragePM 2.5(µg/m3)	-	-	-	-	-	-	-	10.39	15.47	25.25	39.7	49.91	
	Total days with valid data	-	-	-	-	-	-	-	10	29	31	30	31	131
	No of days exceeding National Standard	-	-	-	-	-	-	-	0	0	6	13	28	47
Pokhara University	Monthly AveragePM 2.5(µg/m3)	-	-	-	-	-	-	-	8.92	15.16	24.91	38.27	46.93	
	Total days with valid data	-	-	-	-	-	-	-	16	30	31	30	31	138
	No of days exceeding National Standard	-	-	-	-	-	-	-	0	0	5	10	27	42
Gandaki Boarding	Monthly AveragePM 2.5(µg/m3)	-	-	-	-	-	-	-	6.99	11.5	17.1	24.46	30.63	
	Total days with valid data	-	-	-	-	-	-	-	8	25	31	30	30	124
	No of days exceeding National Standard	-	-	-	-	-	-	-	0	0	0	2	2	4

Source : Department of Environment

Table 2.3.1 (b) : Monthly Average PM_{10} in 2017 at different stations

Stations	Month	Jan	Feb	Mar	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.	Total
Ratnapark	Monthly Average PM 10(µg/m3)	108.1	112.4	87.08	270.52	120.59	98.59	59.7	41.48	64.22	50.62	48.21	46.83	-
	Total days with valid data	24	25	19	26	28	30	31	31	30	31	16	27	318
	No of days exceeding National Standard	6	9	7	23	15	8	0	0	0	0	0	0	68
Pulchowak	Monthly Average PM 10(µg/m3)	82.09	82.65	64.1	58.1	38.63	19.83	6.73	7.24	8.07	12.38	18.22	25.52	-
	Total days with valid data	27	28	29	30	30	28	30	23	5	21	22	26	299
	No of days exceeding National Standard	0	0	0	0	0	0	0	0	0	0	0	0	-
Dulikhel	Monthly Average PM 10(µg/m3)	48.35	94.97	78.26	77.45	40.66	32.88	10.5	-	-	44.98	61.16	63.52	-
	Total days with valid data	22	20	21	26	19	20	17	-	-	27	11	27	210
	No of days exceeding National Standard	0	4	1	4	0	0	0	-	-	0	0	0	9
Lumbini	Monthly Average PM 10(µg/m3)	124.57	106.1	63.6	111.96	66.3	37.11	14.9	17.96	25.48	71.99	107.85	100.1	-
	Total days with valid data	30	28	31	27	29	30	31	31	8	15	19	31	310
	No of days exceeding National Standard	18	5	1	10	1	0	0	0	0	0	8	4	47
Birendra school Bhaktapur	Monthly Average PM 10(µg/m3)	-	-	-	-	-	-	-	30.75	57.17	72.45	159.01	187.11	-
	Total days with valid data	-	-	-	-	-	-	-	12	23	31	18	31	115
	No of days exceeding National Standard	-	-	-	-	-	-	-	0	0	4	16	29	49
Sauraha	Monthly Average PM 10(µg/m3)	92.84	95.16	87.91	186.43	39.1	23.15	12.4	11.47	-	-	-	-	-
	Total days with valid data	22	27	31	22	7	1	9	11	-	-	-	-	130
	No of days exceeding National Standard	5	1	8	16	0	0	0	0	-	-	-	-	30
Bhaisepati	Monthly Average PM 10(µg/m3)	-	-	-	-	-	-	-	-	59.18	69.93	91.1	111.5	-
	Total days with valid data	-	-	-	-	-	-	-	-	30	31	29	31	121
	No of days exceeding National Standard	-	-	-	-	-	-	-	-	0	0	1	10	11
Shankhapark	Monthly Average PM 10(µg/m3)	-	-	-	-	-	-	-	44.26	79.4	81.79	117.09	98.97	-
	Total days with valid data	-	-	-	-	-	-	-	13	30	31	30	31	135
	No of days exceeding National Standard	-	-	-	-	-	-	-	0	1	4	15	5	25
DHM Pokhara	Monthly Average PM 10(µg/m3)	-	-	-	-	-	-	-	16.55	23.92	37.68	61.51	77.71	-
	Total days with valid data	-	-	-	-	-	-	-	10	29	31	30	31	131
	No of days exceeding National Standard	-	-	-	-	-	-	-	0	0	0	0	0	-
Pokhara University	Monthly Average PM 10(µg/m3)	-	-	-	-	-	-	-	14.39	24.31	38.59	60.11	73.35	-
	Total days with valid data	-	-	-	-	-	-	-	16	30	31	30	31	138
	No of days exceeding National Standard	-	-	-	-	-	-	-	0	0	0	0	0	-
Gandaki Boarding	Monthly Average PM 10(µg/m3)	-	-	-	-	-	-	-	8.33	12.56	17.96	25.47	31.6	-
	Total days with valid data	-	-	-	-	-	-	-	8	25	31	30	30	124
	No of days exceeding National Standard	-	-	-	-	-	-	-	0	0	0	0	0	-

Source : Department of Environment

Table 2.3.1 (c) :Monthly Average Total Suspended Particulate Matter (TSPM) in 2017 at Different Stations

Stations	Month	Jan	Feb	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Ratnapark	Monthly Average TSPM (µg/m3)	136.37	141.2	200.78	714.89	350.75	306.9	209	142.14	202.37	134.39	106.7	53.36	-
	Total days with valid data	24	25	19	26	28	30	31	31	30	31	16	27	318
	No of days exceeding National Standard	0	1	9	24	23	24	8	2	11	0	0	0	102
Pulchowak	Monthly Average TSPM (µg/m3)	100.1	96.99	74.01	69.06	43.68	21.05	7.27	7.53	9.09	13.03	18.67	26.28	-
	Total days with valid data	27	28	29	30	30	28	30	23	5	21	22	26	299
	No of days exceeding National Standard	0	0	0	0	0	0	0	0	0	0	0	0	-
Dulikhel	Monthly Average TSPM (µg/m3)	106.17	251.8	199.21	188.58	75.82	68.69	19.5	-	-	93.99	143.98	147.59	-
	Total days with valid data	22	20	21	26	19	20	17	-	-	27	11	27	210
	No of days exceeding National Standard	0	9	6	8	0	1	0	-	-	0	0	3	27
Lumbini	Monthly Average TSPM (µg/m3)	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total days with valid data	-	-	-	-	-	-	-	-	-	-	-	-	-
	No of days exceeding National Standard	-	-	-	-	-	-	-	-	-	-	-	-	-
Birendra school Bhaktapur	Monthly Average TSPM (µg/m3)	-	-	-	-	-	-		69.29	134.78	158.88	362.41	398.18	-
	Total days with valid data	-	-	-	-	-	-	-	12	23	31	18	31	115
	No of days exceeding National Standard	-	-	-	-	-	-	-	0	1	7	17	29	54
Sauraha	Monthly Average TSPM (µg/m3)	-	-	108.85	201.15	74.35	40.77	20.3	17.13	-	-	-	-	-
	Total days with valid data	-	-	9	22	9	1	9	11	-	-	-	-	61
	No of days exceeding National Standard	-	-	0	8	0	0	0	0	-	-	-	-	8
Bhaisepati	Monthly Average TSPM (µg/m3)	-	-	-	-	-	-	-	-	144.37	219.24	249.98	272.75	-
	Total days with valid data	-	-	-	-	-	-	-	-	30	31	29	31	121
	No of days exceeding National Standard	-	-	-	-	-	-	-	-	2	15	20	27	64
Shankhapark	Monthly Average TSPM (µg/m3)	-	-	-	-	-	-	-	119.8	192.72	255.22	364.49	249.47	
	Total days with valid data	-	-	-	-	-	-	-	13	30	31	30	31	135
	No of days exceeding National Standard	-	-	-	-	-	-	-	0	9	18	29	16	72
DHM Pokhara	Monthly Average TSPM (µg/m3)	-	-	-	-	-	-	-	26.96	36.16	55.66	96.74	122.13	-
	Total days with valid data	-	-	-	-	-	-	-	10	29	31	30	31	131
	No of days exceeding National Standard	-	-	-	-	-	-	-	0	0	0	0	0	-
Pokhara University	Monthly Average TSPM (µg/m3)	-	-	-	-	-	-	-	26.03	40.44	64.04	106.38	122.26	-
	Total days with valid data	-	-	-	-	-	-	-	16	30	31	30	31	138
	No of days exceeding National Standard	-	-	-	-	-	-	-	0	0	0	0	0	-
Gandaki Boarding	Monthly Average TSPM (µg/m3)	-	-	-	-	-	-	-	8.69	12.87	18.18	25.98	32.58	-
	Total days with valid data	-	-	-	-	-	-	-	8	25	31	30	30	124
	No of days exceeding National Standard	-	-	-	-	-	-	-	0	0	0	0	0	-

Source : Department of Environment

Table 2.3.2 : PM_{10}, TSP, SO_2, NO_2, Co and pb Measurements

(Average Time 8 hrs.)

Major city (Site)	Altitude (masl)	Date	Time	Parameters				
				PM_{10}	TSP	NO_2	Co	pb
				(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)
Pokhara	827	26/11/2000	10:00-18:00	90.2	118.5	9.1	NA	0.11
Birganj	91	30/11/2000	10:00-18:00	482.9	567.8	23	378	0.27
Biratnagar	125	4/12/2000	08:00-16:00	961.4	1024.3	24.5	1145.48	0.24
Janakpur	90	7/11/2000	11:00-19:00	1820.9	2019.5	20.7	859.11	0.53
Narayanghat	256	10/12/2000	08:00-16:00	196.3	260.3	14.8	NA	0.04
Butawal	205	19/12/2000	07:00-15:00	1076.6	1150.2	21.38	229.09	0.09
Bhairahawa	110	22/12/2000	07:00-15:00	864.8	926.41	23.28	1145.48	0.13
Nepalganj	144	26/12/2000	07:00-15:00	2104.8	2222.5	17.78	1445.48	0.23
Mahendranagar	176	29/12/2000	08:00-16:00	355.05	378.54	17.14	NA	0.04

Note : Data were collected using high volume air sampler.
Source: Nepal Health Research Council and Nepal Environmental and Scientific Services (P) Ltd., (Transport Sector Air Pollution Survey, at Nine Major Urban Cities of Nepal, the World Conservation Union, Sept, 2001).

Table 2.3.3 : Mineral Contaminants of Drinking Water, 2016/17

Parameters	Unit	Maximum	Minimum	Mean
pH(25°C)	-	8.25	5.7	6.73
Total dissolved solid (25°C)	ppm			
Ammonia(Qlt- test)	-			
Sulphate (Qlt- test)	-	-	-	-
Hardness as CaCO3	ppm	63.4	4.0	26.52
Alkalinity as HCO3	ppm	1684.34	23.91	63.53
Iron	ppm	< 0.2	< 0.2	< 0.2
Chloride	ppm	35.36	2.9	5.77
Calcium	ppm		-	-
Magnesium	ppm	-	-	-
Zinc (mg/l)	ppb	-	-	-
Lead (mg/l)	ppb	-	-	-
Cadmium	ppb			
Arsenic	ppb			
Microbiological Analysis of Water				
Micro-organisms				
Total Mesophilic Count	per ml	2920	Absent	73
Coliform group count	per 100 ml	>1600	Absent	5
Faecal Coliform	per 100 ml	Absent	Absent	Absent
E. Coli	per 100 ml	Absent	Absent	Absent
Bacillus	per ml	-	-	-
Yeast and Mold	per ml	Absent	Absent	Absent
Salmonella spp	per 25 ml	Absent	Absent	Absent
Physical Appearance				

ND : Not defined.,ppb:parts per billion,ppm:parts per million,Qlt=Qualitative test

Source : Department of Food Technology and Quality Control -2016/17.

Table 2.3.4 : Ground Water Quality of (Shallow Tube) Aquifers in the East Tarai

Site (District)	Chloride (mg/l)	Ammonia (mg/l)	Nitrate (mg/l)	Iron (mg/l)	Manganese (mg/l)	Coliform (cfu/100 ml)
Panchgachhi (Jhapa)	15.4	0.7	0.2	6	0.8	1.1
Baijanathpur (Morang)	16.6	0.5	0.2	4.5	0.5	15.9
Bayarban (Morang)	17.6	0.5	2.4	6	0.6	0.5
Takuwa (Morang)	21	1	1	10.4	0.4	45.9
Shreepur Jabdi (Sunsari)	37.2	0.9	0.2	8	0.6	25.5
Bandipur (Sunsari)	195.6	0.7	3.5	0.4	0.4	1
Naktiraipur (Saptari)	45.6	1.2	0.3	12	1.3	16
WHO Guideline	**250**	**1.24**	**10**	**3**	**0.5**	**nil**

Source: Environment and Public Health Organization 1999 and United Nations Environment Program, 2000.

Table 2.3.5 : Water Quality of Major Rivers During Dry Season

Location / River	pH	TDS (mg/l)	DO (mg/l)	B0D (mg/l)
Mechi	8.3	30	8.9	1.8
Kankai	7.7	60	8.7	2
Arun	6.2	200	9.1	2.1
East Rapti at Sauraha	7.8	213	8.7	2.5
Seti at Ramghat	8.2	222	9.3	2
Bheri at Chatagaon	7.8	208	9.3	1.1
Karnali at Chisapani	7.8	264	10.5	1.5
Mahakali at Pancheswor	8.8	110	5	2
WHO Guideline	**6.5-8.5**	**100**	**>5.0**	**3**

Source: Department of Hydrology and Meteorology,2018

Table 2.3.6 : Summary of Known Arsenic Occurrence in Tarai Districts, FY 2010/11

S.N.	District	Tube wells by arsenic concentration levels							
		0-10ppb		11-50ppb		>50ppb		Total	
		Number	%	Number	%	Number	%	Number	%
1	Banke	23796	97.01	568	2.32	166	0.68	24530	2.26
2	Bara	34444	89.26	2689	6.97	1456	3.77	38589	3.56
3	Bardiya	38243	89.15	2484	5.79	2170	5.06	42897	3.96
4	Chitwan	57232	99.74	104	0.18	46	0.08	57382	5.29
5	Dang	26040	99.26	153	0.58	41	0.16	26234	2.42
6	Dhanusa	54388	96.21	1724	3.05	419	0.74	56531	5.22
7	Jhapa	113077	99.34	699	0.61	53	0.05	113829	10.50
8	Kailali	74357	88.30	7009	8.32	2839	3.37	84205	7.77
9	Kanchanpur	47633	88.90	4365	8.15	1580	2.95	53578	4.94
10	Kapilbastu	36031	90.76	2508	6.32	1160	2.92	39699	3.66
11	Mahottari	33546	98.91	341	1.01	29	0.09	33916	3.13
12	Morang	109653	98.12	1950	1.74	155	0.14	111758	10.31
13	Nawalparasi	24136	76.20	3836	12.11	3704	11.69	31676	2.92
14	Parsa	26550	92.13	1598	5.54	671	2.33	28819	2.66
15	Rautahat	39351	80.74	8305	17.04	1084	2.22	48740	4.50
16	Rupandehi	69950	96.21	2283	3.14	470	0.65	72703	6.71
17	Saptari	53070	94.65	2445	4.36	557	0.99	56072	5.17
18	Sarlahi	42905	85.02	6952	13.78	609	1.21	50466	4.66
19	Siraha	38608	84.66	5823	12.77	1172	2.57	45603	4.21
20	Sunsari	63903	95.86	2343	3.51	418	0.63	66664	6.15
Total		**1006913**	**92.90**	**58179**	**5.37**	**18799**	**1.73**	**1083891**	**100.00**

Source: Department of Water Supply and Sewerage.

Table 2.3.7 : Noise Level at Different Areas

(dBA)

Traffic Area	Day Hour			Night Hour	
	Nepal Observed	WHO Guideline	Indian Guideline	Nepal Observed	Indian Guideline
High Traffic Area		70			
Kalanki, Kathmandu	74			70	
Shahidgate, Kathmandu	67			69	
Putalisadak, Kathmandu	75			69	
Maitighar, Kathmandu	71			70	
TU Gate, Kirtipur, Kathmandu	58			58	
Lagankhel, Lalitpur	70			70	
Satdobato, Lalitput	70			71	
Kupandol, Lalitpur	77			75	
Suryabinayak, Bhaktapur	71			81	
Thimi Bus Stop, Bhaktapur	65			53	
Ramananda Chowk, Janakpur	68			62	
Commercial Cum Residence Area			64		55
Asan Chowk , Kathmandu	74			67	
Naya Bazar, Kirtipu, Kathmandu	64			62	
Manbhawan, Lalitpur	71			67	
Bhanu Chowk, Janakpur	70			67	
Commercial Cum Tourist Area			65		55
Thamel Chowk, Kathmandu	75			61	
Darbar Squar, Bhaktapur	59			50	
Mangal Bazar, Lalitpur	69			59	
Janaki Mandir, Janakpur	73			70	
Old Residence Area					45
Lagan, Kathmandu	68			67	
Panga, Kirtipur, Kathmandu	60			57	
Bhatkepati, Kirtipur, Kathmandu	52			60	
Pimbhal, Lalitpur	57			51	
Katunje, Bhaktapur	52			65	
Bhairab Mandir, Bhaktapur	67			51	
Maharaj Sagar, Janakpur	58			61	
New Residence Area			55		45
Samakhushi, Kathmandu	55			60	
Sano Thimi, Bhaktapur	62			62	
Sanitar, Bhaktapur	60			53	
Sainbu, Lalitpur	45			42	
Khumaltar, Lalitpur	53			54	
Industrial Area		70	75		70
Balaju Yantra Shala, BID	78			70	
Chirag Foam Ind. Pvt. Ltd., BID	63			54	
Balaju Industrial Gate, BID	74			68	
Supreme Textile,PID	61			58	
Himal Tents Pvt. Ltd., PID	61			56	
Patan Industrial Gate, PID	70			70	

Source: Nepal Health Research Council and World Health Organization, Assessment of Noise Pollution and Development of Criteria for its Prevention and Control, June 2003.

CHAPTER III

Environmental Resources and Their Use

Table 3.1.1. : Mineral Distribution in Province no. 1

Metallic Minerals

Arsenic (As)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Mewa Khola	Taplejung	27.383	87.650	Showing
Bering Khola	Ilam	26.822	88.046	Occurrence
Yamphodin	Taplejung	27.446	87.900	Showing
Kholakhani (khokling)	Taplejung	27.400	87.650	Occurrence
Kurule	Udayapur	27.083	86.433	Showing

BISMUTH (Bi)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Bering Khola	Ilam	26.822	88.046	Showing
Waspa	Solukhumbu	27.529	86.742	Showing
Kurule	Udayapur	27.080	86.433	Showing

COPPER (Cu)-I

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Jantrekhani	Okhaldhunga	27.400	86.500	Occurrence, old working
Ringmo	Solukhumbu	27.583	86.602	Occurrence
Wapsa	Solukhumbu	27.529	86.741	Sub-economic, old working
Chhirling Khola	Bhojpur	26.950	87.100	Occurrence, old working
Balukhop	Taplejung	27.345	87.866	Occurrence, old working
Siddhikhani	Ilam	26.850	88.097	Occurrence, old working
Bering Khola	Ilam	26.821	88.046	Occurrence
Kurule	Udaypur	27.080	86.433	Sub-economic

COPPER (Cu) - II

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Lodimkhani	Solukhumbu	27.533	86.566	Showing
Kakha khola	Sunsari/Dhankuta	26.866	87.216	Showing
Kokling	Taplejung	27.366	87.600	Showing
Gidar Khola	Sankhuwasabha	27.433	87.417	Showing
Mewa Khola	Taplejung	27.383	87.650	Showing

GOLD (Au)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Bering Khola-Sunmai	Ilam	26.822	88.046	Primary, occurrence

IRON (Fe)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Sibchung Khani	Taplejung	27.475	87.675	Showing
Piputhap	Taplejung	27.495	87.758	Showing
Yamphodin Khani	Taplejung	27.445	87.900	Showing

LEAD (Pb)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Sisa Dhovan	Solukhumbu	27.450	86.517	Occurrence
Pangum	Solukhumbu	27.585	86.752	Occurrence
Kholakhani	Taplejung	27.400	87.650	Occurrence, old working
Banketar	Taplejung	27.375	87.892	Showing

Phakuwa	Sankhuwasabha	27.400	87.417	Occurrence
Khaikhola	Solukhumbu	27.500	86.733	Showing
Ringmo	Solukhumbu	27.588	86.603	Occurrence

MOLYBDENUM (Mo)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Khani Khola	Solukhumbu	27.594	86.746	Occurrence

NICKEL (Ni)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Bering Khola	Ilam	26.822	88.046	Occurrence

SILVER (Ag)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Bering Khola	Ilam	26.822	88.046	Occurrence

TANTALUM - NOIBIUM

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Dobala Pokhari	Taplejung	27.438	87.983	showing
Hyakule	Sankhuwasabha	27.475	87.375	showing
Phakuwa	Sankhuwasabha	27.400	87.417	showing

TUNGSTEN (W)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Bering Khola	Ilam	26.822	88.046	Showing
Hyakule	Sankhuwasabha	27.479	87.383	Showing
Sikri Khola	Dolkha	27.600	86.233	Showing

ZINC (Zn)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Pangum	Solukhumbu	27.585	86.752	Occurrence
Phakuwa	Sankhuwasabha	27.400	87.433	Occurrence
Bering Khola	Ilam	26.822	88.039	Occurrence

NON METALLIC MINERALS
(Chemicals, fertilizers, insulators, ceramics, refractories & abrasive)

BARITE

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Phakuwa	Sankhuwasabha	27.446	87.407	Showing

CLAY

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Beltar (Deuri and Anpsota)	Udayapur	26.783	86.891	Red clay (Economic), mining
Salghari	Dhankuta	27.138	87.291	Red clay (Economic)
Mauna Budhak	Dhankuta	26.900	87.433	Red clay (Economic)

FUEL MINERALS AND THERMAL SPRINGS

COAL

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Doijhava Khola	Jhapa	26.708	87.933	Occurrence
Sanka Maka Khola	Jhapa	26.683	87.950	Occurrence
Barahakshetra	Udayapur	26.800	87.033	Occurrence

NON METALLIC MINERALS

(Construction materials)

GRANITE

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Udaipur	Udayapur	27.067	86.600	Large deposit
Makalu	Sankhuwasabha/ Solukhumbhu	27.867	87.000	Large deposit
Taplejung	Taplejung	27.833	87.867	Large deposit

LIMESTONE

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Nigale	Dhankuta	27.100	87.350	Economic
Sindhali	Udayapur	26.900	86.683	Economic, mining
Katari	Udayapur	27.017	86.450	Economic
Chuladhunga	Udayapur	26.958	86.525	Economic
Ghhyampethumka	Udayapur	26.950	86.542	Economic
Halesi	Khotang	27.175	86.625	Occurrence
Mauwa Khola	Dhankuta	26.921	87.344	Occurrence
Tamor River	Dhankuta	26.925	87.344	Occurrence
Tankuwa Khola	Dhankuta	26.984	87.383	Occurrence
Dhankuta	Dhankuta	26.992	87.341	Occurrence
Khalung Khola	Sankhuwasabha	27.825	87.491	Occurrence

MARBLE

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Pakharibas	Dhankuta	27.075	87.300	Occurrence
Nigale	Dhankuta	27.100	87.350	Economic
Mawa Khola	Dhankuta	26.921	87.344	Occurrence
Satuwa	Taplejung	27.467	87.717	Occurrence

QUARTZITE

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Sanghuri	Dhankuta	26.875	87.300	Occurrence

NON METALLIC MINERALS

(Gem Minerals)

AQUAMARINE/BERYL

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Ikhu Khola	Bhojpur	26.967	87.025	Occurrence
Phakuwa	Sankhuwasabha	27.417	87.433	Sub-economic
Ikabu	Taplejung	27.448	87.746	Showing
Sansabu	Taplejung	27.468	87.683	Showing
Ckokle	Sankhuwasabha	27.343	87.429	Showing
Lodantar	Taplejung	27.600	87.683	Showing
Mangsima	Sankhuwasabha	27.553	87.000	Showing
Rangmale	Taplejung	27.600	87.733	Showing
Gorujudhe	Sankhuwasabha	27.488	87.390	Showing

KYANITE

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Ranidhu	Sankhuwasabha	27.517	87.333	Showing

QUARTZ

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Khejemi	Taplejung	27.497	87.708	Economic, mining
Gorujudhe	Sankhuwasabha	27.489	87.390	Showing
Kalipokhari	Taplejung	27.650	87.700	Showing

TOURMALINE

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Hyakule	Sankhuwasabha	27.450	87.417	Sub-economic, mining postponed
Phakuwa	Sankhuwasabha	27.417	87.433	Sub-economic
Chokte	Sankhuwasabha	27.343	87.417	Showing
Thorbu	Sankhuwasabha	27.496	87.350	Showing
Mangsima	Sankhuwasabha	27.533	87.333	Showing
Ikhabu	Taplejung	27.488	87.746	Showing
Namjaling	Ilam	26.911	87.983	Showing
Maipokhari	Ilam	27.006	87.933	Showing
Rakse	Dhankuta	27.017	87.350	Showing
Dharma dhuri	Dhankuta	27.017	87.333	Showing
Chaimata	Dhankuta	27.017	87.283	Showing
Hile-tintale	Ilam	27.064	87.983	Showing
Chilindin	Panchthar/Ilam	27.033	87.792	Showing
Sabhapatal	Taplejung	27.481	87.491	Showing
Tinjore	Sankhuwasabha	27.466	87.408	Showing

NON METALLIC MINERALS

(Chemicals, fertilizers, insulators, ceramics, refractories & abrasive)

FELDSPAR

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Hyakule	Sankhuwasabha	27.450	87.417	Occurrence
Phakuwa	Sankhuwasabha	27.417	87.433	Occurrence

GARNET

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Sankhuwasabha	Sankhuwasabha	27.433	87.367	Occurrence
Chainkhuwa	Sankhuwasabha	27.346	87.285	Showing
Hanglalung	Sankhuwasabha	27.391	87.306	Showing
Swachi (Budekhami)	Sankhuwasabha	27.408	87.331	Showing
Bansthala	Sankhuwasabha	27.391	87.325	Showing
Sunuala	Sankhuwasabha	27.450	87.391	Showing
Kusuwa Khola	Sankhuwasabha	27.388	87.339	Showing
Sinchuwa	Sankhuwasabha	27.386	87.296	Showing
Khiling	Sankhuwasabha	27.446	87.308	Showing
Pawa	Sankhuwasabha	27.446	87.317	Showing
Yaksuwa	Sankhuwasabha	27.438	87.304	Showing
Rupatar	Taplejung	27.783	87.942	Showing
Dalaicha	Sankhuwasabha	27.508	87.133	Showing
Imakhola	Taplejung	27.467	87.672	Showing
Khanigaon	Taplejung	27.428	87.717	Showing
Mamangkhe	Taplejung	27.467	87.683	Showing
Sibuk	Taplejung	27.467	87.650	Showing
Luwafu	Panchthar	27.183	87.867	Showing

GRAPHITE

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Sweng	Ilam	26.823	88.017	Showing
Khanibhanjyang	Ilam	26.788	87.957	Showing
Pandum	Ilam	26.917	87.950	Showing
Baidi	Sankhuwasabha	27.596	87.350	Showing, old working
Yamphudin	Taplejung	27.446	87.900	Showing, old working

FUEL MINERALS AND THERMAL SPRINGS

OIL AND GAS

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Kechhagbadh	Jhapa	26.483	88.083	occurrence

NON METALLIC MINERALS

(Chemicals, fertilizers, insulators, ceramics, refractories & abrasive)

CORUNDUM

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Ekabu	Taplejung	27.488	87.746	Occurrence
Alubar	Ilam	27.044	87.908	Showing

DOLOMITE

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Udayapur (Sindhali)	Udaypur	26.900	86.683	Economic

Table 3.1.2. : Mineral Distribution in Province no. 2

NON METALLIC MINERALS
(Chemicals, fertilizers, insulators, ceramics, refractories & abrasive)

CLAY

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Parbanipur	Parsa	27.083	84.917	Bentonite (Occurrence)

FUEL MINERALS AND THERMAL SPRINGS

COAL

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Uja	Bara	27.292	85.042	Occurrence
Bijauri	Bara	27.258	85.108	Occurrence
Barahakshetra	Sunsari	26.833	87.167	Occurrence
Kokaha Khola	Sunsari	26.833	87.283	Occurrence
Daran Bazar	Sunsari	26.817	87.283	Occurrence
Hariharpur V.D.C.	Dhanusha	27.000	86.000	Showing
Shakti Khola	Bara	27.250	85.100	Showing

GEOTHERMAL HOT SPRINGS

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Janakpur	Dhanusha	26.717	85.933	Occurrence

Table 3.1.3 : Mineral Distribution in Province no. 3

Metallic Minerals

ANTIMONY (Sb)				
Ganesh Himal	Rasuwa/Dhading	28.231	85.188	Showing
Damar	Makawanpur	27.526	85.171	Occurrence
Barghare	Makawanpur	27.517	85.171	Showing

ARSENIC (As)				
Ganesh Himal	Rasuwa/Dhading	28.231	85.188	Occurrence
Likche	Ramechhap	27.572	85.922	Showing
Barghare	Makawanpur	27.517	85.191	Showing
Saje Khola	Makawanpur	27.510	85.025	Showing
Damar	Makawanpur	27.526	85.172	Showing
Mul Khola	Ramechhap	27.425	86.000	Showing

BISMUTH (Bi)				
Ganesh Himal	Rasuwa/Dhading	28.231	85.188	Showing
Barghare	Makawanpur	27.517	85.192	Occurrence
Thosne	Lalitpur	27.517	85.325	Showing

CADMIUM (Cd)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Ganesh Himal	Rasuwa/Dhading	28.231	85.188	Showing

CHROMIUM (Cr)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Those	Ramecchap	27.567	86.279	Showing

COBALT (Co)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Lamadanda	Dhading	27.733	85.100	Showing
Nangre	Kabhre	27.617	85.850	Occurrence
Bhorle	Ramecchap	27.600	85.875	Occurrence, old working
Ganesh Himal	Rasuwa/Dhading	28.231	85.188	Showing

COPPER (Cu)-I

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Kitini (Lagonbas)	Makawanpur	27.579	85.162	Occurrence, old working
Kule Khani	Makawanpur	27.588	85.156	Occurrence, old working
Deurali	Dhading/Nuwakot	27.883	84.983	Occurrence, old working
Ipa	Makawanpur	27.511	85.225	Occurrence, old working
Arkhule	Makawanpur	27.516	85.211	Occurrence, old working
Kholakhani	Chitwan/Tanahu	27.800	84.525	Occurrence, old working
Dhusa	Dhading	27.733	84.816	Sub-economic, old working
Agra Khola	Makawanpur	27.650	85.030	Occurrence
Kalitar	Makawanpur	27.366	85.060	Sub-economic
Bhorle	Ramechhap	27.516	85.883	Occurrence, old working
Ningre	Ramechhap	27.483	85.900	Occurrence, old working

COPPER (Cu) - II

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Sano Todke	Makawanpur	27.616	84.833	Showing
Manhari	Makawanpur	27.566	84.879	Showing
Kawalpur (Kalphu)	Dhading	27.766	85.080	Showing
Chobhar	Lalitpur	27.666	85.366	Showing
Markhu	Makawanpur	27.616	85.150	Showing
Solabhanjayang	Makawanpur	27.541	85.150	Showing
Madhawtar	Ramechhap	27.433	85.879	Showing
Khanigaon	Sindhupalchowk	27.700	85.716	Showing
Dhansa pakha	Sindhupalchowk	27.766	85.716	Showing, old working
Kilpu	Ramechhap	27.538	85.858	Showing
Dorkhani	Ramechhap	27.572	85.866	Showing
Sipasorkhani	Dolakha	27.783	86.300	Showing
Syaulegaon	Sindhupalchowk	27.783	85.716	Showing
Kriti Khola	Makawanpur	27.594	84.983	Showing

GOLD (Au)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Marodi Khola	Chitwan	27.467	84.250	Placer, showing
Holchok	Kathmandu	27.775	85.292	Primary, showing
Trisuli River	Dhading/Nuwakot	27.783	85.100	Placer, showing
Arughat (Buri Gandaki)	Dhading	27.994	84.800	Placer, occurrence
Darbung (Buri Gandaki)	Dhading	27.800	84.717	Placer, occurrence
Benighat	Dhading	27.750	84.767	Placer, showing

IRON (Fe)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Barpu	Dhading	27.783	84.720	Showing
Gothbhanjyang	Dhading	27.754	84.725	Showing
Jirbang	Dhading	27.750	84.733	Occurrence
Shambrang	Dhading	27.733	84.733	Showing
Hugpung (Langin)	Chitwan	27.700	84.733	Showing
Hathi khola	Makawanpur	27.500	84.863	Showing
Manhari	Makawanpur	27.567	84.879	Showing
Likche	Makawanpur	27.572	84.921	Showing
Thuldi	Dhading	27.766	85.133	Showing
Phulchoki	Lalitpur	27.583	85.383	Economic/Sub-economic
Shyalegaon	Sindhupalchowk	27.811	85.708	Showing, old working
Khanidanda	Kabhre	27.375	85.633	Showing
Those	Ramechhap	27.566	86.279	Sub-economic, old working

LEAD (Pb)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Thulo Todke	Makawanpur	27.617	84.817	Showing
Dhunga Khurka	Kabhre	27.530	85.517	Showing, old working
Ganesh Himal	Rasuwa/Dhading	28.231	85.186	Economic, mining postponed
Manjit Khola	Dhading	28.200	85.008	Occurrence, old working
Tipling	Dhading	28.183	85.167	Occurrence, old working
Barghare	Makawanpur	27.517	85.192	Occurrence, old working
Phulchowki	Lalitpur	27.572	85.400	Occurrence

Bhaluchapra	Kabhre	27.496	85.449	Showing
Chyalti	Kabhre	27.508	85.521	Showing
Sollendanda	Sindhuli	27.333	85.467	Occurrence
Kirulebhanjyang (north)	Kabhre	27.450	85.467	Showing
Kirulebhanjyang (south)	Makawanpur/Kabhre	27.400	85.450	Showing
Damar	Makawanpur	27.526	85.171	Occurrence
Labang-khairang	Makawanpur	27.700	84.867	Sub-economic
Rossi	Kabhre	27.415	85.550	Showing

LITHIUM (Li)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Ganesh Himal	Rasuwa	28.242	85.228	showing

MERCURY (Hg)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Ganesh Himal	Rasuwa/Dhading	28.231	85.188	Showing
Tirche Pani	Makawanpur	27.550	85.000	Showing

MOLYBDENUM (Mo)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Chaukhola	Makawanpur	27.568	85.025	Showing
Katwan	Lalitpur	27.504	85.308	Showing

NICKEL (Ni)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Nangre	Kabhre	27.450	85.750	Showing
Khopre Khani	Sindhuli	27.300	85.750	Showing
Those	Ramechhap	27.567	86.279	Occurrence

SILVER (Ag)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Ganesh Himal	Rasuwa/Dhading	28.231	85.188	Occurrence
Manjit Khola	Dhading	28.200	85.083	Showing
Barghare	Makawampur	27.517	85.192	Occurrence
Thosne Khola	Lalitpur	27.517	85.327	Showing

TANTALUM - NOIBIUM

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Palung Granite	Makawanpur	27.600	85.000	showing

TIN (Sn)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Exo-cont. of Palung Granite	Makawanpur	27.500	84.933	Showing
"	Makawanpur	27.500	84.967	Showing
"	Makawanpur	27.483	84.992	Showing
"	Makawanpur	27.500	85.117	Occurrence

Exo-cont. of Ipa Granite	Makawanpur	27.500	85.250	Showing
Chaukhola	Makawanpur	27.568	85.025	Showing
Ipa	Makawanpur	27.467	85.267	Showing
Durlung	Lalitpur/Kavre	27.458	85.417	Showing

TITANIUM

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Those	Ramechhap	27.567	86.279	Showing

TUNGSTEN (W)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Exo-cont. of Palung Granite	Makawanpur	27.500	84.933	Showing
"	Makawanpur	27.500	84.967	Showing
"	Makawanpur	27.483	84.992	Showing
"	Makawanpur	27.500	85.117	Occurrence
Exo-cont. of Ipa Granite	Makawanpur	27.500	85.250	Showing
Sikri Khola	Dolkha	27.600	86.233	Showing

URANIUM (U)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Thinbhangale	Makawanpur	27.271	85.296	Sub-economic
Chandi Khola	Makawanpur	27.254	85.346	Showing
Chiruwa Khola	Makawanpur	27.225	85.475	Showing
Panpa Khola	Chitwan	27.625	84.633	Showing
Mardar Khola	Chitwan	27.633	84.667	Showing
Buka Khola	Sindhuli	27.191	85.967	Showing
Jagat	Kathmandu	27.800	85.323	Showing

ZINC (Zn)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Ganesh Himal	Rasuwa/Dhading	28.231	85.186	Economic, mining postponed
Manjit Khola	Dhading	28.200	85.083	Occurrence
Tipling	Dhading	28.183	85.167	Occurrence
Phulchowki	Lalitpur	27.572	85.400	Occurrence
Bhaluchapra	Lalitpur/Kabhre	27.496	85.449	Showing
Chyalti	Kabhre	27.508	85.521	Showing
Sollendanda	Sindhuli	27.333	85.467	Occurrence
Kirulebhanjyang (north)	Kabhre	27.450	85.467	Showing
Kirulebhanjyang (south)	Kabhre	27.400	85.450	Showing
Damar	Makawanpur	27.526	85.172	Occurrence
Labang-khairang	Dhading	27.700	84.867	Sub-economic
Rossi	Kabhre	27.415	85.550	Showing

NON METALLIC MINERALS

(Chemicals, fertilizers, insulators, ceramics, refractories & abrasive)

BARITE

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Phulchoki	Lalitpur	27.583	85.383	Showing
Barghare	Makawanpur	27.517	85.191	Showing

CALCITE

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Nibuwa	Makawanpur	27.508	85.058	Occurrence

CLAY

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Kathmandu valley	Lalitpur	27.633	85.367	Pottary Clay (Occurrence)
Thimi	Bhaktapur	27.682	85.389	Diatomite (Occurrence)
Chobhar	Kathmandu	27.657	85.292	Diatomite (Occurrence)
Panchmane (Jitpur, Dalcap)	Kathmandu	27.783	85.283	Kaolin (Occurrence)
Palung (Naliban, Kharka)	Makawanpur	27.517	85.100	Kaolin (Sub-economic)
Panchkhal	Kabhre	27.651	85.638	Red clay (Economic), mining postponed
Lamsure	Makawanpur	27.411	85.008	Red clay (Economic) mining

FUEL MINERALS AND THERMAL SPRINGS

COAL

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Chandi Khola	Makawanpur/Rautahat	27.217	85.350	Occurrence
Dharmasthali	Kathmandu	27.775	85.300	Occurrence
Tupek (Gokarna)	Kathmandu	27.750	85.367	Occurrence

NON METALLIC MINERALS

(Construction materials)

BASIC ROCK

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Malekhu	Dhading	27.800	84.833	Occurrence
Dhusa Khola	Dhading	27.771	84.758	Occurrence
Manahari Khola	Makawanpur	27.563	84.867	Occurrence

GRANITE

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Palung	Makawanpur	27.600	85.000	Large deposit
Agrakhola	Makawanpur/ Dhading	27.700	84.933	Large deposit
Ipa	Makwanpur/ Lalitpur	27.517	85.250	Large deposit
Narayanthan	Kabhre	27.475	85.500	Large deposit
Langdi	Sindhuli	27.250	85.883	Large deposit
Sindhuli	Sindhuli	27.117	86.250	Large deposit

LIMESTONE

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Chobhar	kathmandu	27.663	85.299	Economic, mining postponed
Bhainse	Makawanpur	27.508	85.058	Economic, mining

Okhare	Makawanpur	27.492	85.117	Economic, mining
Rossi	Kabhre	27.556	85.538	Economic
Jogimara	Dhading	27.800	84.683	Economic, mining
Kakaru	Sindhuli	27.050	86.350	Economic, mining
Bhardeo	Lalitpur	27.575	85.333	Sub-economic
Majuwa	Makawanpur	27.458	85.092	Economic, mining

MARBLE

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Godawari	Lalitpur	27.600	85.367	Economic, mining
Anekot (Timilsingaon)	Kabhre	27.683	85.617	Economic, mining
Bhainsedovan	Makawanpur	27.508	85.058	Economic
Bhimsen	Makawanpur	27.500	85.083	Economic
Budichaur	Makawanpur	27.500	85.175	Economic
Paudol	Lalitpur/Kabhre	27.593	85.417	Occurrence

QUARTZITE

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
NE of Kharidhunga	Dolkha	27.683	85.992	Occurrence
Rashimadi	Makwanpur	27.467	84.983	Occurrence
Lakuri (Ahale)	Dolkha	27.683	86.000	Occurrence
Daglam (Kodari)	Sindhupalchowk	27.925	85.933	Occurrence

SLATE

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Gaighat	Chitwan/Tanahu	27.783	84.450	Occurrence
Benighat	Dhading	27.808	84.791	Occurrence
Agrakhola	Makawanpur	27.700	85.033	Occurrence
Palung	Makawanpur	27.667	85.075	Occurrence
Belkot	Nuwakot	27.867	85.167	Occurrence
Lachang	Rasuwa	28.200	85.333	Occurrence
Selang	Sindhupalchowk	27.850	85.750	Occurrence
Melamchi	Sindhupalchowk	28.008	85.525	Occurrence
Sikharpur	Sindhupalchowk	27.833	85.591	Occurrence
Golche	Sindhupalchowk	27.883	85.741	Occurrence
Fulping	Sindhupalchowk	27.767	85.767	Occurrence
Listi	Dhading	27.917	85.883	Occurrence
Barhabise	Sindhupalchowk	27.775	85.917	Occurrence
Bigu	Dolkha	27.841	86.083	Occurrence
Those (Dande bigu)	Ramechhap	27.550	86.258	Occurrence
Ghatte khola	Kabhre	27.633	85.733	Occurrence
Jhillu khola-Morang Khola	Sindhupalchowk/ Dolkha	27.667	85.917	Occurrence
Jambu (Phalesangu)	Sindhupalchowk	27.933	85.900	Occurrence
ranipauwa	Sindhupalchowk	27.833	85.667	Occurrence
Gajuri	Dhading	27.791	84.917	Occurrence

NON METALLIC MINERALS
(Gem Minerals)
AQUAMARINE/BERYL

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Jyamire	Sindhupalchowk	27.833	85.613	Occurrence
Jagat	Kathmandu	27.805	85.321	Showing
Baguwa	Sindhupalchowk	27.783	85.615	Showing
Tarkeghyang	Sindhupalchowk	28.000	85.558	Showing
Yangridanda	Sindhupalchowk	27.917	85.567	Showing
Jalkani	Kathmandu	27.700	85.267	Showing
Panchmane	Kathmandu	27.808	85.300	Showing
Kagatigaon	Kathmandu	27.779	85.258	Showing
Sangla Khola	Kathmandu	27.791	85.314	Showing

QUARTZ

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Raluka	Nuwakot	27.947	85.329	Economic, mining

RUBY-SAPPHIRE

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Ganesh Himal	Rasuwa	28.217	85.217	Sub-economic
Ganesh Himal	Dhading	28.217	85.167	Sub-economic
Chumar	Dhading	28.222	84.981	Showing
Ruyal	Dhading	28.251	85.035	Showing

TOURMALINE

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Jagat	Kathmandu	27.805	85.321	Showing
Langtang valley	Rasuwa	28.217	85.517	Showing

NON METALLIC MINERALS
(Chemicals, fertilizers, insulators, ceramics, refractories & abrasive)
FELDSPAR

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS

GRAPHITE

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Kharentar	Nuwakot	27.917	85.308	Showing
Marthum pass	Nuwakot	27.950	85.283	Showing
Patibhanjyang	Nuwakot	27.842	85.291	Showing, old working
Yaijo	Nuwakot	27.967	85.275	Showing

GEOTHERMAL HOT SPRINGS

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Kodari	Sindhupalchowk	27.943	85.950	Occurrence
Thumman (Chileme)	Rasuwa	28.211	85.302	Occurrence

Lande khola	Rasuwa	28.164	85.331	Occurrence
Parang	Rasuwa	28.217	85.283	Occurrence
Marsyangdi	Lamjung	28.150	84.373	Occurrence

OIL AND GAS

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Kathmandu	Kathamndu	27.708	85.317	Economic

COMMON SALT BRINE SEEPS

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS

CORUNDUM

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Lapa	Dhading	28.175	85.025	Occurrence

DOLOMITE

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Bhatpolebesi	Kabhre	27.675	85.642	Occurrence

Table 3.1.4. : Mineral Distribution in Gandaki Province

Metallic Minerals

Bismuth (Bi)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Sandi Khola	Gorkha	28.119	84.652	Showing

COPPER (Cu)-I

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Rumakhani	Myagdi	28.400	83.333	Occurrence, old working
Gyazi	Gorkha	28.104	84.688	Occurrence, old working
Bhutkhola/Labdikhola	Tahanu	27.833	84.433	Sub-economic, old working
Minamkot	Syangja/Tanahu	27.983	83.917	Occurrence, old working
Kottham	Nawalparasi	27.816	84.250	Occurrence
Chandauli	Nawalparasi	27.783	84.283	Occurrence
Gaighat	Nawalparasi	27.716	84.366	Occurrence
Banspani (Okharbot)	Myagdi/Baglung	28.400	83.316	Occurrence, old working
Kholakhani	Chitwan/Tanahu	27.800	84.525	Occurrence, old working

COPPER (Cu) - II

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Machhim	Myagdi	28.483	83.350	Showing
Dandakhani	Myagdi	28.366	83.508	Showing

Kapurdikhani	Syangja	27.983	83.650	Showing
Kanhun	Tanahu	27.900	84.258	Showing
Tilahar	Parbat	28.275	83.744	Showing, old working
Phalam Khani	Parbat	28.116	83.700	Showing
Kuenekhani	Myagdi	28.500	83.450	Showing

GOLD (Au)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Mayagadi River	Myagdi	28.337	83.550	Placer, occurrence
Jyamirghat (Kali Gandaki)	Parbat	28.100	83.633	Placer, occurrence
Modi Khola	Parbat	28.208	83.681	Placer, showing
Madi Khola	Tanahu	28.080	84.250	Placer, showing
Bunkot Ghat (Buri Gandaki)	Gorkha	27.883	84.743	Placer, occurrence

RON (Fe)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Kueinekhani	Myagdi	28.500	83.450	Showing
Khanigaon	Parbat	28.116	83.700	Showing
Hulangdi khola	Palpa	27.808	83.516	Showing, old working
Dhole	Tanahu	28.033	84.025	Showing
LabdiKhola/Bhutkhola	Tanahu	27.841	84.458	Sub-economic, old working

LEAD (Pb)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Labdi Khola	Baglung	28.241	83.279	Showing
Shisakhani	Baglung	28.222	83.317	Showing, old working
Shisa	Baglung	28.214	83.362	Showing
Gijang Ghose Danda	Tanahu	27.917	84.450	Showing, old working
Mapes Khola	Baglung	28.331	83.367	Showing
Kolchibang	Gulmi	28.133	83.217	Occurrence
Dhuwakot	Parbat	28.133	83.700	Occurrence, old working

SILVER (Ag)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS

TANTALUM - NOIBIUM

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Sandi Khola	Gorkha	28.072	84.568	showing

ZINC (Zn)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Gijang Ghose Danda	Tanahu	27.917	84.450	Showing
Mapes Khola	Baglung	28.331	83.367	Showing
Barchyang	Tanahu	27.917	84.183	Occurrence

FUEL MINERALS AND THERMAL SPRINGS

COAL

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Kagbeni (Chanche)	Mustang	28.842	83.758	Occurrence

NON METALLIC MINERALS

(Construction materials)

GRANITE

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Manaslu	Gorkha/Manang	28.667	84.583	Large deposit
Mustang	Mustang/Dolpa	29.050	83.750	Large deposit
Mugu	Mugu/Humla	29.800	82.533	Large deposit

GYPSUM

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Mustang	Mustang	28.913	83.879	Occurrence

LIMESTONE

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Waling	Syangja	28.083	83.867	Occurrence

QUARTZITE

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Naudanda (Syangja)	Syangja	28.150	83.880	Occurrence
Deurali	Parbat/Syangja	28.117	83.708	Occurrence

SLATE

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Gaighat	Chitwan/Tanahu	27.783	84.450	Occurrence
Bandipur	Tanahu	27.933	84.433	Occurrence
Sinchyang	Tanahu	27.833	84.433	Occurrence
Mele-Phaperkhet	Baglung	28.275	83.483	Occurrence
Ruma	Myagdi	28.391	83.341	Occurrence
Keladighat	Palpa/Syangja	27.891	83.933	Occurrence
Tukuche	Mustang	28.725	83.650	Occurrence

SYENITE

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Ampipal	Gorkha	28.067	84.550	Economic

NON METALLIC MINERALS

(Gem Minerals)

AQUAMARINE/BERYL

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Naje	Manang	28.504	84.363	Showing

TOURMALINE

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Naje	Manang/Lamjung	28.450	84.367	Sub-economic

NON METALLIC MINERALS

(Chemicals, fertilizers, insulators, ceramics, refractories & abrasive)

FELDSPAR

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Ampipal	Gorkha	28.067	84.550	Economic

FUEL MINERALS AND THERMAL SPRINGS

GEOTHERMAL HOT SPRINGS

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Mayangdi	Myagdi	28.369	83.509	Occurrence
Kali Gandaki	Myagdi	28.497	83.658	Occurrence
Sekeharku	Myagdi	28.457	83.626	Occurrence
Seti Khola	Kaski	28.419	83.995	Occurrence
Nayagaon	Kaski	28.360	83.962	Occurrence
Chitepani-1	Kaski	28.290	83.954	Occurrence
Marsyangdi	Lamjung	28.150	84.373	Occurrence
Chiteopani-2	Kaski	28.226	84.072	Occurrence

OIL AND GAS

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Muktinath	Mustang	28.808	83.889	occurrence

NON METALLIC MINERALS

(Chemicals, fertilizers, insulators, ceramics, refractories & abrasive)

COMMON SALT BRINE SEEPS

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Narsingh Khola	Mustang	28.913	83.880	Occurrence, mining
Chelegaon	Mustang	28.921	83.829	Showing
Chhirdi Khola	Mustang	29.175	84.100	Occurrence
Lamjung	Langtang	28.204	84.373	Showing
Tetang	Mustang	28.913	83.879	Showing
Kusum Khola	Mustang	29.175	84.100	Showing
Bhulbhule	Lamjung	28.289	84.404	Showing
Darimbot	Lamjung	28.238	84.450	Showing
Nandiswara	Lamjung	28.267	84.391	Showing
Chipling	Lamjung	28.408	84.415	Showing
Kahulepatal	Lamjung	28.258	84.383	Showing
Tatopani-Bahundanda	Lamjung	28.341	84.408	Showing
Thar Khola	Lamjung	28.333	84.333	Showing
Pani Nunkhani	Lamjung	28.364	84.408	Showing
Jagat	Lamjung	28.422	84.408	Showing

Table 3.1.5 : Mineral Distribution in Province no. 5

Metallic Minerals

ARSENIC (As)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Khalero Khola	Rolpa	28.338	82.908	Showing
Bharepa Khola	Rolpa	28.341	82.908	Showing
Bhitriban Khola	Rolpa	28.375	82.917	Showing

COBALT (Co)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Netadurling	Gulmi	28.250	83.183	Showing, old working
Samarbhamar	Argha.	28.083	83.100	Occurrence, old working
Tamghas	Gulmi	28.067	83.250	Occurrence, old working

COPPER (Cu)-I

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Rukumkot	Rukum	28.600	82.666	Occurrence, old working
Purtighat	Gulmi	28.050	83.558	Occurrence, old working
Pandav Khani	Baglung	28.216	83.316	Occurrence, old working
Kottham	Nawalparasi	27.816	84.250	Occurrence
Chandauli	Nawalparasi	27.783	84.283	Occurrence
Gaighat	Nawalparasi	27.716	84.366	Occurrence

Banspani (Okharbot)	Myagdi/Baglung	28.400	83.316	Occurrence, old working
Khanigaon	Arghakhanchi	27.950	83.125	Occurrence
Mulkhani-Jokhimkhnai	Gulmi	28.058	83.558	Occurrence, old working

COPPER (Cu) - II

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Durbing	Rolpa	28.166	82.466	Showing
Kulandi	Palpa	27.816	83.525	Showing, old working
Khanigaon	Arghakhanchi	27.916	83.125	Showing
Tosh	Dang	28.116	82.450	Showing
Kolchebang	Gulmi	28.133	83.166	Showing
Kandebas	Gulmi	28.166	83.300	Showing
Damphutar	Rolpa	28.404	82.758	Showing
Dhokadunga	Rolpa	28.383	82.796	Showing
Phuliban	Rolpa	28.386	82.803	Showing
Serma	Rolpa	28.397	82.818	Showing

GOLD (Au)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Lungri Khola	Rolpa	28.300	82.767	Placer, occurrence
Phagam Khola	Rolpa	28.304	82.750	Placer, occurrence
Gam Khola	Rolpa	28.358	82.856	Placer, occurrence
Damphutar	Rolpa	28.404	82.763	Primary, occurrence
Dokadhunga	Rolpa	28.383	82.796	Primary, occurrence
Phuliban	Rolpa	28.386	82.803	Primary, occurrence
Sherma	Rolpa	28.397	82.818	Primary, occurrence
Bargo	Rukum	28.543	82.829	Primary, occurrence
Khaleroo	Rolpa	28.342	82.917	Primary, occurrence

IRON (Fe)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Benighat	Nawalparasi	27.750	84.000	Showing
Hulangdi khola	Palpa	27.808	83.516	Showing, old working
Jaljala	Rolpa	28.316	82.737	Showing
Sulibang	Pyuthan	28.312	82.950	Occurrence
Jalbang	Rolpa	28.375	82.737	Occurrence, old working
Rulbang	Rolpa	28.370	82.754	Occurrence

LEAD (Pb)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Bhaleneta	Dang	28.189	82.214	Occurrence
Tosh	Dang	28.117	82.483	Showing
Ghartiyodip	Gulmi	28.197	83.292	Showing
Khulaule	Argakhanchi	27.908	83.271	Showing, old working

Khanidanda	Pyuthan	28.058	82.917	Showing
Kolchibang	Gulmi	28.133	83.217	Occurrence
During Khola	Argakhanchi	28.050	83.016	Showing
Chorbang	Argakhanchi	27.901	83.117	Showing
Sabdu	Arghakhanchi	27.992	83.125	Showing

MOLYBDENUM (Mo)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Samarbhamar	Arghakhanchi	28.083	83.100	Showing
Lungri Khola	Rolpa	28.267	82.750	Showing

SILVER (Ag)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Tamghas	Gulmi	28.067	83.250	Occurrence
Samarbhamar	Arghakhanchi	28.083	83.100	Occurrence
Netadurling	Gulmi	28.250	83.183	Occurrence
Khanidanda	Pyuthan	28.058	82.917	Showing
During Khola	Arghakhanchi	28.050	83.017	Showing
Hundi Khola-Andhi Khola	Palpa	27.917	83.675	Showing

ZINC (Zn)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Kolchibang	Gulmi	28.133	83.217	Occurrence
During Khola	Arghakhanchi	28.050	83.016	Showing

NON METALLIC MINERALS

(Chemicals, fertilizers, insulators, ceramics, refractories & abrasive)

BARITE

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Chorbang	Arghakhanchi	27.908	83.125	Occurrence
Khanidanda	Pyuthan	28.058	82.917	Occurrence
During Khola	Arghakhanchi	28.050	83.017	Showing
Damphutar	Rolpa	28.404	82.736	Showing
Dhokadhunga	Rolpa	28.393	82.796	Showing
Sabdu	Arghakhanchi	27.992	83.125	Showing

CLAY

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Dang	Dang	27.975	82.717	Fire Clay (Occurrence)
Chidika	Arghakhanchi	27.960	83.283	Red clay (Economic)

FUEL MINERALS AND THERMAL SPRINGS

COAL

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Tosh	Dang	28.004	82.517	Economic, mining
Koilabas	Dang	27.700	82.517	Occurrence
Sisneri	Dang	28.083	82.606	Occurrence
Madday Khajuri	Dang	28.033	82.608	Occurrence
Siuja	Dang	28.067	82.604	Economic, mining
Chhap	Dang	28.075	82.600	Economic, mining
Khara	Rolpa	28.142	82.492	Economic, mining
Dubring	Rolpa	28.171	82.475	Economic, mining
Sarpani	Rolpa	28.246	82.400	Economic, mining
Naulo Khola	Dang	28.210	82.275	Economic, mining
Ajimara	Dang	28.200	82.267	Economic, mining
Boksi Khola	Dang	28.217	82.225	Economic, mining
Loharpani	Dang	27.998	82.717	Economic, mining
Murkuti	Dang	28.000	82.704	Economic, mining
Phalide	Dang	28.050	82.583	Economic, mining
Chhipan	Dang	28.054	82.600	Economic, mining
Jumlipani	Dang	28.017	82.617	Economic, mining
Dabang	Dang	28.008	82.650	Economic, mining
Sibang	Dang	28.225	82.375	Economic, mining
Pakhapani	Dang	28.227	82.342	Economic, mining
Asarkot Danda	Dang	28.200	82.292	Occurrence
Mettaura Goan	Rolpa	28.200	82.433	Occurrence
Simaldi	Palpa	27.817	83.714	Economic
Chirtung Danda	Palpa	27.802	83.714	Occurrence
Purwa Khola	Palpa	27.819	83.731	Occurrence
Agha Khola	Palpa	27.838	83.689	Occurrence
East of Tansen	Palpa	27.864	83.556	Occurrence
Sisne Khola	Palpa	27.858	83.564	Occurrence
Ripdikot Danda	Palpa	27.835	83.425	Occurrence
Phek	Palpa	27.814	83.417	Occurrence
Lummas	Palpa	27.832	83.400	Occurrence
Ghat Khola	Palpa	27.846	83.408	Occurrence

GYPSUM

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Kapurikot	Rolpa	28.242	82.428	Occurrence
Mustang	Mustang	28.913	83.879	Occurrence

LIMESTONE

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Narpani	Arghakhanchi	27.917	83.167	Economic
Gandari	Dang	28.054	82.617	Economic

Kajeri (Halchaur)	Salyan	28.408	82.175	Economic
Sarada	Dang/Salyan	28.250	82.250	Occurrence
Supa	Arghakhanchi	27.900	83.150	Economic
Kurichaur	Salyan	28.425	82.000	Occurrence
Badhare Khola	Arghakhanchi	27.917	83.000	Occurrence
Kerabari	Palpa	27.792	83.550	Occurrence
Neupane	Pyuthan	27.966	82.879	Occurrence
Salendanda	Pyuthan	27.964	82.941	Occurrence

SLATE

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Keladighat	Palpa/Syangja	27.891	83.933	Occurrence
Jubhung	Gulmi	28.100	83.367	Occurrence

DOLOMITE

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Arghakhanchi	Arghakhanchi	27.900	83.150	Occurrence
Sajbutta	Palpa	27.904	83.292	Occurrence
Dewalchaur	Arghakhanchi	27.917	83.303	Occurrence
Jukhauli Khola	Arghakhanchi	27.894	83.211	Occurrence
Pairochaur Khola	Arghakhanchi	27.875	83.208	Occurrence
Pali Danda	Arghakhanchi	27.929	83.267	Occurrence

FUEL MINERALS AND THERMAL SPRINGS

GEOTHERMAL HOT SPRINGS

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Rear	Dang	27.917	82.333	Occurrence

OIL AND GAS

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Rear	Dang	27.917	82.333	occurrence

Table 3.1.6 : Mineral Distribution in Karnali Province

Metallic Minerals

COPPER (Cu) - II

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Gumi	Surkhet	28.500	81.825	Showing, old working
Surkhet	Surkhet	28.416	81.866	Showing
Mugu Karnali	Mugu	29.533	82.080	Showing

GOLD (Au)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Bheri river	Surkhet	28.467	81.683	Placer, occurrence

IRON (Fe)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Pharsa	Surkhet	28.500	81.825	Showing
Salimar valley	Mugu/Humla	29.616	81.833	Showing

LEAD (Pb)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Salimar Valley	Humla/Mugu	29.666	81.833	Occurrence

ZINC (Zn)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Salimar Valley	Mugu/Humla	29.666	81.833	Occurrence

NON METALLIC MINERALS

(Chemicals, fertilizers, insulators, ceramics, refractories & abrasive)

CLAY

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Guttu	Surkhet	28.841	81.321	Red clay (Economic)
Golchekhola	Surkhet	28.417	81.833	Red clay (Economic)

NON METALLIC MINERALS

(Construction materials)

BASIC ROCK

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Rakma	Dailekh	29.051	81.458	Occurrence

Ranimatta	Surkhet	28.658	81.646	Occurrence
Sinja Khola	Jumla	29.400	81.958	Occurrence

GRANITE

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Mustang	Mustang/Dolpa	29.050	83.750	Large deposit
Mugu	Mugu/Humla	29.800	82.533	Large deposit
Saipal	Humla	30.083	81.333	Large deposit
Dailekh	Dailekh	28.867	81.833	Large deposit

LIMESTONE

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Surkhet (Chaukune)	Surkhet	28.867	81.283	Economic
Lakharpata	Surkhet	28.750	81.500	Economic

SLATE

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Khutilekh	Dailekh	28.950	81.750	Occurrence

DOLOMITE

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Sattal	Surkhet	28.442	81.900	Occurrence
Kot	Surkhet	28.383	81.942	Occurrence

NON METALLIC MINERALS

(Gem Minerals)

AQUAMARINE/BERYL

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Lekh Patan	Jajarkot	28.817	82.100	Sub-economic

KYANITE

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Daha	Jajarkot	28.875	82.083	Economic, mining (Kyanite + Tourmaline)

TOURMALINE

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Tikachaur	Jajarkot	28.800	82.050	Occurrence

FUEL MINERALS AND THERMAL SPRINGS

GEOTHERMAL HOT SPRINGS

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Jumla	Jumla	29.271	82.142	Occurrence

OIL AND GAS

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Padukasthan	Dailekh	28.900	81.554	occurrence
Sirsasthan	Dailekh	28.842	81.680	occurrence
Nabhisthan	Dailekh	28.850	81.671	occurrence

NON METALLIC MINERALS

(Chemicals, fertilizers, insulators, ceramics, refractories & abrasive)

COMMON SALT BRINE SEEPS

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Chharkabhot	Dolpa	29.089	83.362	Occurrence
Jima	Mugu	29.617	81.975	Showing
Namda	Dolpa	29.467	83.083	Showing

Table 3.1.7 : Mineral Distribution in Sudurpaschim Province

Metallic Minerals

ANTIMONY (Sb)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Bauli Gad	Bajhang	29.708	81.129	Showing

ARSENIC (As)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Bamangaon	Dadeldhura	29.292	80.678	Showing
Bauli Gad	Bajhang	29.708	81.129	Showing
Meddi	Dadeldhura	29.267	80.700	Showing

BISMUTH (Bi)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Bamangaon	Dadeldhura	29.292	80.678	Showing
Bauli Gad	Bajhang	29.708	81.129	Occurrence

CHROMIUM (Cr)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Bauligad	Bajhang	29.708	81.129	Showing

COBALT (Co)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Bauli Gad	Bajhang	29.708	81.129	Showing

COPPER (Cu)-I

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Judia (Marma)	Darchula	29.816	80.866	Occurrence, old working
Bamangaon	Dadeldhura	29.291	80.678	Sub-economic
Khandelshwari	Darchula	29.792	80.895	Occurrence, old working
Danfechuli	Darchula	29.842	80.862	Occurrence, old working
Arkhar (Ghusa)	Darchula	29.844	80.891	Occurrence, old working
Bauli Gad (upper part)	Bajhang	29.708	81.129	Occurrence
Neti Khola	Bajura	29.648	81.688	Occurrence
Lali Gad	Darchula	29.680	80.433	Occurrence
Dhalaun	Bajhang	29.693	81.363	Occurrence
Khatiyaro Khola	Bajhang	29.533	81.047	Occurrence
Sheri	Bajhang	29.600	81.030	Occurrence, old working
Baikatya	Bajhang	29.529	81.016	Occurrence
Bauli Gad	Bajhang	29.693	81.152	Occurrence
Manakot	Bajura	29.479	81.386	Occurrence
Dangri Khola	Bajhang	29.517	81.250	Occurrence

COPPER (Cu) - II

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Trib. of Seti	Doti	29.008	81.116	Showing
Banku Gad	Darchula	29.694	80.400	Showing
Thini Khola	Bajura	29.450	81.704	Showing
Tusari gad	Bajura	29.508	81.433	Showing
Matailoko Khola	Baitadi	29.391	80.300	Showing
Ganera	Dadeldhura	29.267	80.725	Showing
Thulo Khola	Dadeldhura	29.350	80.483	Showing
Ritthe Khola	Dadeldhura	29.291	80.691	Showing
Gal	Dadeldhura	29.341	80.433	Showing
Batmunidhari	Darchula	29.867	80.598	Showing
Kaligad	Darchula	29.900	80.617	Showing
Rheti	Darchula	29.883	80.567	Showing
Kaude Khola	Dadeldhura	29.279	80.711	Showing
Sirsegad	Dadeldhura	29.183	80.383	Showing
Nagra-chhidikhola	Doti	29.317	81.067	Showing
Melmura	Dadeldhura	29.283	80.665	Showing
Ghattegad	Doti	29.283	80.797	Showing
Dulanikaya Gad	Dadeldhura	29.283	80.634	Showing

GOLD (Au)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Naridang (Seti River)	Doti	29.183	81.025	Placer, occurrence
Bangabagar	Baitadi	29.655	80.526	Primary, occurrence

Gorang	Baitadi	29.604	80.583	Primary, occurrence
Sunigad	Bajhang	29.600	81.215	Placer, occurrence
Bauli Gad	Bajhang	29.563	81.183	Placer, showing
Taru Gad	Bajhang	29.500	81.054	Placer, showing
DhauliGad	Bajhang	29.597	81.033	Placer, showing
Seti River	Bajhang	29.600	80.775	Placer, occurrence
Jamari Gad	Baitadi	29.640	80.517	Placer, showing
Panjunaya (Chamaliya R.)	Baitadi	29.629	80.500	Placer, occurrence
Raktadi (Chamaliya R.)	Baitadi	29.615	80.421	Placer, occurrence
Mahakali River	Baitadi	29.542	80.342	Placer, occurrence
Lali Gad	Darchula	29.667	80.417	Placer, showing
Bamangaon	Dadeldhura	29.292	80.678	Primary, occurrence
Karnali River	Kailali	28.675	81.250	Placer, occurrence
Lachhi Gad (trib of Seti R.)	Bajhang	29.548	81.256	Placer, showing
Bithar Gad (trib. of Kalanga R.)	Doti	29.330	80.804	Placer, showing
Kalanga Gad	Bajhang	29.483	80.900	Placer, showing
Rakma (Karnali R.)	Achham	29.054	81.450	Placer, showing
Gothi (Karnali R.)	Bajura	29.483	81.721	Placer, showing

IRON (Fe)

LOCATION	DISTRICT	LATITUDE	LONGITUDE	STATUS
Khatauda	Baitadi	29.483	80.633	Showing
Baitadi	Baitadi	29.441	80.583	Showing
Ekghar	Bajhang	29.645	80.975	Occurrence, old working
Kachali	Bajhang	29.512	80.895	Occurrence, old working
Patturi	Bajhang	29.608	81.129	Occurrence, old working
Bhatgaon	Bajhang	29.604	81.245	Occurrence, old working
Lali Gad	Darchula	29.676	80.429	Occurrence

LEAD (Pb)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Dil Gad	Bajhang	29.517	81.176	Showing
Matailo Khola	Baitadi	29.391	80.300	Showing
Chaki (Sirsegad)	Dadeldhura	29.191	80.308	Showing
Thulo Khola	Dadeldhura	29.350	80.483	Showing
Melmura (Lula Khola)	Dadeldhura	29.283	80.665	Showing
Chairo Khola	Achham	29.108	81.283	Showing
Manakot-tanakot	Bajura	29.479	81.386	Showing

LITHIUM (Li)

LOCATION	DISTRICT	LATITUDE	LONGITUDE	STATUS
Khaptad	Doti/Bajhang	29.389	81.150	showing

MOLYBDENUM (Mo)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Bamangaon	Dadeldhura	29.292	80.678	Showing
Bauli Gad	Bajhang	29.700	81.150	Showing
Melmura	Dadeldhura	29.283	80.665	Showing
Dulanikayagad	Dadeldhura	29.283	80.635	Showing

NICKEL (Ni)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Bamangaon	Dadeldhura	29.292	80.678	Occurrence
Bauli Gad	Bajhang	29.708	81.129	Showing

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Bamangaon	Dadeldhura	29.292	80.678	Occurrence
Thulo Khola	Dadeldhura	29.291	80.683	Showing

TIN (Sn)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Melmura	Dadeldhura	29.283	80.665	Occurrence
Meddi	Dadeldhura	29.275	80.708	Occurrence
Jainaule	Dadeldhura	29.267	80.717	Showing
Sumailo Khola	Dadeldhura	29.308	80.458	Showing
Basani Gad	Dadeldhura	29.333	80.567	Showing
Dudola Khola (Jijora)	Dadeldhura	29.317	80.567	Showing
Ganera	Dadeldhura	29.267	80.725	Showing
Ghattegad	Doti	29.271	80.775	Showing
Bauli Gad	Bajhang	29.708	81.129	Showing

TUNGSTEN (W)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Bamangaon	Dadeldhura	29.283	80.678	Occurrence
Melmura	Dadeldhura	29.283	80.665	Showing
Satigaon	Dadeldhura	29.317	80.400	Showing
Jaikhola	Dadeldhura	29.208	80.391	Showing
Poknagad	Dadeldhura	29.200	80.400	Showing
Sumailo Khola	Dadeldhura	29.308	80.458	Showing
Gangat Khola	Dadeldhura	29.163	80.508	Showing
Dudola Khola (Jijora)	Dadeldhura	29.317	80.567	Showing
Kaluwa Gad	Dadeldhura	29.158	80.533	Showing

URANIUM (U)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Bangabagar-Baggot	Baitadi	29.655	80.526	Occurrence
Gorang (east)	Baitadi	29.608	80.592	Occurrence
Gorang (West)	Baitadi	29.604	80.583	Occurrence
Jamari	Baitadi	29.640	80.517	Occurrence
Sani Gad	Baitadi	29.629	80.533	Showing
Chaupata	Darchula	29.679	80.464	Showing
Pautali (Laili Gad)	Darchula	29.694	80.447	Showing
Banku	Darchula	29.700	80.383	Showing
Uku Gad	Darchula	29.729	80.383	Occurrence

Bage Gad (west)	Baitadi	29.604	80.722	Occurrence
Bage Gad (east)	Baitadi	29.610	80.754	Occurrence
Devlek (Ghatti Gad)	Bajhang	29.523	80.824	Occurrence
Nimli Gad (upper part)	Bajhang	29.596	80.791	Occurrence
Buriganga	Achham	29.130	81.172	Showing
Sain Gad	Bajhang	29.537	81.038	Occurrence
Lumthi	Darchula	29.796	80.837	Showing
Kodari Gad	Bajura	29.400	81.454	Showing

ZINC (Zn)

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Dil Gad	Bajhang	29.517	81.176	Showing
Matailo Khola	Baitadi	29.391	80.300	Showing
Chaki (Sirsegad)	Dadeldhura	29.191	80.308	Showing
Thulo Khola	Dadeldhura	29.350	80.483	Showing

FUEL MINERALS AND THERMAL SPRINGS

COAL

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Nigale (Kankari)	Doti	29.233	80.800	Showing

NON METALLIC MINERALS
(Construction materials)
BASIC ROCK

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Darchula road	Baitadi	29.656	80.531	Occurrence
(South of Gokule)				
Sani Gad	Baitadi	29.633	80.535	Occurrence
Ghorari	Baitadi	29.625	80.547	Occurrence
Kholi	Baitadi	29.617	80.561	Occurrence
Jamari Gad	Baitadi	29.638	80.539	Occurrence
Wari Gorang	Baitadi	29.614	80.583	Occurrence
Pari Gorang	Baitadi	29.622	80.592	Occurrence
Kerda	Baitadi	29.621	80.564	Occurrence
Bohara Gad	Darchula	29.661	80.517	Occurrence
Lali Gad	Darchula	29.681	80.442	Occurrence
Banku	Darchula	29.692	80.389	Occurrence
Maubhari Gad	Baitadi	29.610	80.617	Occurrence
Ghatte Gad	Baitadi	29.614	80.650	Occurrence
Patthar Gad	Baitadi	29.625	80.646	Occurrence
Mar Gad	Baitadi	29.621	80.677	Occurrence
Hat	Baitadi	29.604	80.708	Occurrence
Bage Gad	Baitadi	29.625	80.771	Occurrence
Loli Gad	Baitadi	29.629	80.721	Occurrence
Khatera Khola	Bajhang	29.558	81.029	Occurrence
Khatiyaro Khola	Bajhang	29.549	81.053	Occurrence
Dsheri	Bajhang	29.600	81.033	Occurrence
Lachhi Gad	Bajhang	29.525	81.304	Occurrence
Dwari Gad	Bajhang	29.563	81.332	Occurrence
Badigaon	Bajhang	29.597	81.354	Occurrence

Gothaman Goth	Bajhang	29.650	81.324	Occurrence
Lisni Gad	Bajhang	29.671	81.340	Occurrence
Ganai Gad	Bajhang	29.692	81.358	Occurrence
Ghat Gad	Bajhang	29.721	81.346	Occurrence
Tusari Gad	Bajuara	29.508	81.431	Occurrence
Gandi Gad	Doti	29.213	81.033	Occurrence
Seti River	Doti	29.192	81.021	Occurrence
Sherali Khola	Doti	29.150	81.042	Occurrence
Kachali Khola	Doti	29.125	81.053	Occurrence
Patal Gad	Achham	29.189	81.267	Occurrence
Semrial Gad	Achham	29.175	81.300	Occurrence
Buriganga River	Achham	29.165	81.217	Occurrence
Kailash Khola	Achham	29.329	81.250	Occurrence
Shameziro Khola	Achham	29.039	81.275	Occurrence
Dungala	Achham	29.071	81.321	Occurrence
Kalapani (Bari Gad)	Bajuara	29.513	81.629	Occurrence
Bandu	Bajuara	29.479	81.717	Occurrence
Kodari Gad	Bajuara	29.413	81.438	Occurrence

GRANITE

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Doti	Doti	29.167	80.667	Large deposit
Khaptad (Gr-gneiss)	Doti/Bajhang	29.350	81.117	Large deposit
Dadeldhura	Dadeldhura	29.150	80.583	Large deposit

LIMESTONE

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Diyari Gad	Baitadi	29.550	80.533	Economic
Bhumeshwar	Baitadi	29.488	80.533	Economic
Chauraha	Baitadi	29.525	80.504	Economic

DOLOMITE

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Diyari Gad	Baitadi	29.550	80.533	Occurrence
Osil Gad	Darchula	29.717	80.822	Occurrence

QUARTZITE

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Dhaulkana	Bajhang	29.633	80.788	Occurrence
Panju Naya	Darchula	29.638	80.504	Occurrence
(Rt. Bank of chamaliya R.)				

SLATE

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Regmi Gad	Bajhang/Doti	29.431	80.946	Occurrence
Bedupani Khola	Dadeldhura	29.350	80.691	Occurrence

NON METALLIC MINERALS

(Gem Minerals)

AQUAMARINE/BERYL

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Khaptad	Doti/Bajhang	29.392	81.150	Occurrence

KYANITE

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Bhasuba	Achham	29.283	81.125	Showing
Burkot	Achham	29.279	81.200	Showing

FUEL MINERALS AND THERMAL SPRINGS

GEOTHERMAL HOT SPRINGS

LOCATION	DISTRICT	LATITUDE (Degree)	LONGITUDE (Degree)	STATUS
Sirbari	Darchula	29.867	80.550	Occurrence
Sina	Darchula	29.883	80.683	Occurrence
Joeligad	Bajhang	29.633	81.083	Occurrence
Chainpur	Bajhang	29.596	81.243	Occurrence
Barpata	Darchula	29.733	80.783	Occurrence
Bauligad	Bajhang	29.575	81.167	Occurrence

Source: Department of Mines & Geology

Table 3.1.8 : Primary Production and Import of Coal in Nepal

(Unit in 000 tons)

Year	Primary Production	Import	Total	Change in %
1998/99	10.95	104.22	115.17	
1999/00	17.53	400.62	418.15	263.07
2000/01	16.59	279.84	296.43	-29.11
2001/02	9.61	248.39	258.00	-12.96
2002/03	11.85	215.91	227.76	-11.72
2003/04	10.46	279.84	290.30	27.46
2004/05	9.29	247.88	257.17	-11.41
2005/06	11.96	400.62	412.58	60.43
2006/07	19.58	239.48	259.06	-37.21
2007/08	14.02	314.12	328.14	26.67
2008/09	14.82	293.76	308.58	-5.96
2009/10	11.8	473.15	484.95	57.15
2010/11	13.16	476.25	489.41	0.92
2011/12	9.41	355.77	365.18	-25.38
2012/13	14.08	443.32	457.40	25.25
2013/14	8.2	459.00	467.20	2.14
2014/15	6.8	794.00	800.80	71.40
2015/16	1.7	762.00	763.70	-4.63
2016/17	8.2	992.00	1000.20	30.97
2017/18	11.8	1302.00	1313.80	31.35

Source: Department of Mines & Department of Customs

Table 3.2.1 : Energy Consumption by sector in '000 ToE

Item	2014/15(2071-72)	2015/16(72-73)	2016/17(73-74)	2017/18(2074-75)*
Traditional	**9104.27**	**9227.18**	**9319.45**	**6212.97**
Firewood	8264.08	8375.64	8459.40	5639.60
Agricultural residues	408.44	413.95	418.09	278.73
Cow dung	431.75	437.58	441.96	294.64
Commercial	**2331.44**	**2248.20**	**3252.59**	**2513.11**
Coal	465.00	536.25	663.97	465.58
Petroleum Products	1469.16	1275.39	2088.00	1686.82
Electricity	397.28	436.56	500.62	360.71
Renewable	**292.12**	**292.49**	294.00	**293.29**
Total	**11727.83**	**11767.87**	**12866.04**	**9019.36**

**Last 8 months*
Source : WECS 2018

Table 3.2.2 : District Wise RETs Installed under Alternative Energy Promotion Centre

SN	District	No. of system installed(2013/14)(2070/2071)											
		Biogas (Nos.)		Solar (Nos.)	Improved Cookstove (Nos.)					IWM (Nos.)	M/PHPs (kW)	Wind (kW)	MSMEs (Nos.)
		Domestic	Large	SHS & SSHS	ISPS	PVPS	Dryer	Mud	Metallic				
1	Achham	7	-	3,521	-	-	-	-	-	10	118		11
2	Arghakhanchi	40	-	1,005	1	-	-	808	-	-	-		-
3	Baglung	77	-	27	-	1	-	670	41	-	200		11
4	Baitadi	6	-	3,699	3	1	-	-	-	35	-		2
5	Bajhang	-	-	3,050	2	-	1	-	-	20	233		18
6	Bajura	-	-	1,286	1	-	4	-	43	29	364		16
7	Banke	781	-	1,360	-	-	1	326	-	-	-		-
8	Bara	747	-	81	-	-	-	2,029	-	-	-		-
9	Bardiya	1,750	-	445	-	-	-	-	-	-	-		-
10	Bhaktapur	29	-	-	-	-	6	-	103	-	-		-
11	Bhojpur	1	-	1,847	-	-	-	2,676	80	-	78		-
12	Chitwan	1,243	-	1,269	3	-	1	138	-	-	10		-
13	Dadeldhura	5	-	184	-	-	-	-	-	10	-		-
14	Dailekh	3	-	5,016	4	1	-	-	-	-	11		-
15	Dang	1,108	-	1,329	-	-	-	775	-	-	-		-
16	Darchula	23	-	1,489	2	-	-	-	147	70	120		-
17	Dhading	1,407	-	1,083	1	1	-	2,261	-	14	73		1
18	Dhankuta	103	-	40	-	-	1	4,672	19	3	-		2
19	Dhanusa	90	-	27	-	-	-	4,872	-	-	-		-
20	Dolakha	285	-	135	2	2	1	229	362	14	4		10
21	Dolpa	-	-	274	-	-	1	-	-	-	40		-
22	Doti	7	-	2,236	-	1	-	-	-	31	-		2
23	Gorkha	1,053	-	408	-	-	-	1,034	330	4	66		10
24	Gulmi	62	-	1,905	1	-	-	2,473	-	-	123		2
25	Humla	-	-	416	-	-	23	-	59	-	120		-
26	Ilam	1,309	-	453	-	1	-	3,823	202	11	54		10
27	Jajarkot	6	-	2,888	6	-	-	1,368	122	39	229		11

SN	District	No. of system installed(2013/14)(2070/2071)											
		Biogas (Nos.)		Solar (Nos.)	Improved Cookstove (Nos.)					IWM (Nos.)	M/PHPs (kW)	Wind (kW)	MSMEs (Nos.)
		Domestic	Large	SHS & SSHS	ISPS	PVPS	Dryer	Mud	Metallic				
28	Jhapa	1,822	-	120	-	-	-	4,531	-	-	-		-
29	Jumla	-	-	1,369	2	-	10	-	175	-	252		5
30	Kailali	5,377	-	3,685	3	-	-	5,304	-	50	-		-
31	Kalikot	56	-	2,607	2	-	-	-	141	66	126		-
32	Kanchanpur	2,513	-	184	-	-	-	2,247	-	-	-		-
33	Kapilbastu	332	-	53	-	-	-	6,615	-	-	-		-
34	Kaski	648	-	185	-	-	-	74	61	55	30		11
35	Kathmandu	48	-	-	-	-	108	447	5	-	-		-
36	Kavre	1,058	-	187	3	-	4	1,011	50	13	87		21
37	Khotang	18	-	2,831	2	-	-	583	123	10	217		13
38	Lalitpur	170	-	238	-	-	24	9	-	-	7		-
39	Lamjung	579	-	393	6	-	-	600	155	12	114		7
40	Mahottari	371	-	177	-	-	-	11,290	-	-	-		-
41	Makawanpur	2,477	-	898	2	1	-	125	90	25	45		-
42	Manang	-	-	-	-	-	-	-	64	5	-		-
43	Morang	917	-	669	1	-	2	2,685	-	-	-		-
44	Mugu	-	-	741	2	-	-	-	742	-	-		-
45	Mustang	-	-	66	-	-	-	-	2	-	-		-
46	Myagdi	26	-	159	-	-	-	247	140	-	40		13
47	Nawalparasi	702	-	968	-	-	-	261	-	-	65	10	8
48	Nuwakot	898	-	69	-	-	-	702	139	20	19		-
49	Okhaldhunga	94	-	2,002	4	3	-	327	28	39	203		18
50	Palpa	815	-	1,323	3	1	-	523	-	-	17		3
51	Panchthar	178	-	826	4	-	-	345	120	1	157		15
52	Parbat	31	-	408	-	-	-	10	207	-	-		-
53	Parsa	205	-	157	-	-	1	2,282	-	-	-		-
54	Pyuthan	180	-	2,209	-	-	-	-	-	-	17		-
55	Ramechhap	129	-	684	2	1	-	314	17	-	66		-
56	Rasuwa	205	-	29	-	-	-	158	129	15	-		-
57	Rautahat	552	-	829	-	-	-	26,272	-	-	-		-
58	Rolpa	42	-	4,416	7	1	-	489	48	-	295		11
59	Rukum	-	-	3,856	15	2	-	414	55	36	397		5
60	Rupandehi	365	-	-	-	-	1	5,411	-	-	-		-
61	Salyan	34	-	5,565	1	-	-	285	-	34	-		-
62	Sankhuwasabha	58	-	480	1	-	1	4,520	211	5	5		-
63	Saptari	115	-	153	-	-	-	2,353	-	-	-		-
64	Sarlahi	619	-	2,030	-	-	-	13,340	1	-	40		-
65	Sindhuli	2,470	-	2,681	6	-	-	-	-	25	91		1
66	Sindhupalchowk	575	-	58	3	-	3	256	509	38	5		-
67	Siraha	41	-	237	-	-	-	3,813	-	-	-		-
68	Solukhumbu	5	-	347	-	-	-	441	193	31	63		8
69	Sunsari	228	-	198	-	-	-	3,350	-	-	-		-
70	Surkhet	297	-	4,543	5	2	1	322	-	15	68		17
71	Syangja	716	-	126	-	1	10	328	-	-	-		4
72	Tanahu	643	-	1,741	1	1	1	1,031	-	-	-		-
73	Taplejung	31	-	493	1	-	-	514	126	-	135		14
74	Terhathum	34	-	212	3	-	4	3,772	21	-	5		10
75	Udayapur	1,188	-	4,920	1	4	3	56	-	-	258		9
Total		**38,004**	-	**91,595**	**106**	**25**	212	135,811	5,060	785	4,659	10	299

No. of system installed(2014/15)(2071/2072)													
S.N.	District	Biogas (Nos.)	Solar (Nos.)		Improved Cookstove (Nos.)					IWM (Nos.)	M/PHPs (kW)	Wind (kW)	MSMEs (Nos.)
		Domestic	Large	SHS & SSHS	ISPS	PVPS	Dryer	Mud	Metallic				
1	Achham	3		783	20	2	0	7,358	91	58	216		20
2	Arghakhanchi	35		1,324	1	1	0	4,379	-	0	-		-
3	Baglung	33		725	1	0	0	917	97	3	120		108
4	Baitadi	0		825	18	0	0	4,746	14	79	55		122
5	Bajhang	0		636	41	1	0	3,437	32	17	180		72
6	Bajura	3		333	8	0	0	928	224	16	200		49
7	Banke	672		3,773	13	0	0	755	-	0	-		-
8	Bara	495		205	0	0	0	6,938	-	0	-		-
9	Bardiya	1337		671	0	0	0	386	-	0	-		-
10	Bhaktapur	17		434	0	0	0	167	1	0	-		-
11	Bhojpur	4		662	5	0	0	5,400	44	0	63		10
12	Chitwan	829	3	2,122	6	0	0	200	-	0	-		-
13	Dadeldhura	2		1,795	0	1	0	3,561	-	10	-	-	-
14	Dailekh	3		2,697	10	3	0	1,762	10	18	-		39
15	Dang	669		497	6	1	0	973	-	0	-		-
16	Darchula	75		260	4	0	0	877	10	30	22		14
17	Dhading	461		50	4	0	0	1,550	8	0	-		38
18	Dhankuta	54		842	0	0	0	8,588	165	0	-		-
19	Dhanusa	101		2,820	0	0	0	9,854	-	0	-		-
20	Dolakha	177		39	6	0	0	1,472	225	11	-		25
21	Dolpa	0		35	1	0	0	-	-	9	18		-
22	Doti	6		3,466	6	0	0	3,134	11	43	88		64
23	Gorkha	316		248	7	0	0	1,666	127	0	-		29
24	Gulmi	29		394	11	0	0	14,663	23	0	-		34
25	Humla	0		-	6	0	8	-	355	6	50		13
26	Ilam	610		636	12	2	0	4,180	398	0	11		8
27	Jajarkot	40		-	15	0	0	1,995	45	80	109		21
28	Jhapa	1121		43	0	0	1	9,633	-	0	-		-
29	Jumla	0		205	5	0	0	-	441	0	-	15	32
30	Kailali	4198	1	1,493	9	0	0	12,612	-	54	-		-
31	Kalikot	71		906	16	0	0	-	41	22	-		-
32	Kanchanpur	2256		1,705	0	0	0	5,702	-	0	-		-
33	Kapilbastu	297		372	0	0	0	19,653	-	0	-		-
34	Kaski	792		17	0	0	0	534	56	0	-		4
35	Kathmandu	18		1,960	0	0	1	485	24	0	-		-
36	Kavre	305	3	163	1	0	0	2,332	51	2	6		22
37	Khotang	3		190	3	0	0	1,516	14	3	88		31
38	Lalitpur	30		718	1	0	0	216	-	0	-		-
39	Lamjung	653		-	2	0	0	935	121	0	-		6
40	Mahottari	366		111	0	0	0	20,340	-	0	-		-
41	Makawanpur	1126	2	59	10	0	0	482	57	47	-	10	-
42	Manang	0		990	0	0	0	16	3	0	-		21
43	Morang	606	4	1,054	4	0	1	5,165	-	0	-		-
44	Mugu	0		-	8	0	4	-	643	0	12		-
45	Mustang	0		1,489	0	0	0	-	-	5	-		-

No. of system installed(2014/15)(2071/2072)													
S.N.	District	Biogas (Nos.)	Solar (Nos.)		Improved Cookstove (Nos.)					IWM (Nos.)	M/PHPs (kW)	Wind (kW)	MSMEs (Nos.)
		Domestic	Large	SHS & SSHS	ISPS	PVPS	Dryer	Mud	Metallic				
46	Myagdi	58		21	2	0	0	684	529	5	-		2
47	Nawalparasi	387		501	3	0	0	281	11	0	38		133
48	Nuwakot	198	1	154	0	0	0	629	60	0	-		-
49	Okhaldhunga	44		491	6	0	0	966	778	6	131		17
50	Palpa	516		266	7	0	0	1,031	13	1	98		50
51	Panchthar	59		2	4	4	0	3,144	107	0	126		41
52	Parbat	37		3,217	0	0	0	543	129	5	-		-
53	Parsa	232		3,728	0	0	0	4,958	-	0	-		-
54	Pyuthan	200		5,212	0	0	0	1,377	-	0	40		-
55	Ramechhap	117		3,131	16	1	1	3,461	38	8	38		-
56	Rasuwa	20		5,359	0	0	0	225	24	6	-		-
57	Rautahat	292		2,391	0	0	0	28,969	-	0	-		-
58	Rolpa	41		1,828	21	3	0	1,691	290	24	61		12
59	Rukum	0		1,219	14	0	0	850	14	19	337		34
60	Rupandehi	236	2	3,463	0	0	0	-	-	0	-		-
61	Salyan	7		4,205	7	0	0	949	4	38	-		206
62	Sankhuwasabha	70		215	1	0	0	8,766	427	0	-		16
63	Saptari	163		1,563	0	0	0	2	4,171	0	-		-
64	Sarlahi	475		2,701	0	0	2	33,778	-	0	-		-
65	Sindhuli	1557	1	1,109	3	2	0	-	25	23	36		202
66	Sindhupalchowk	202		1,117	1	0	0	744	718	16	-		-
67	Siraha	133	1	1,585	1	0	0	7,776	-	0	-		-
68	Solukhumbu	0		2,927	4	0	8	927	135	0	231		26
69	Sunsari	144	3	3,308	0	0	0	6,122	-	0	-		-
70	Surkhet	206	1	2,127	25	2	0	1,135	13	0	-		78
71	Syangja	555		2,548	0	2	0	1,323	15	1	-		48
72	Tanahu	554		1,275	1	3	0	1,239	4	0	-		31
73	Taplejung	23		3,815	0	0	0	1,390	721	0	150		50
74	Terhathum	103		850	0	0	0	6,407	52	0	-		11
75	Udayapur	651		539	4	0	0	2,529	54	5	-		7
	Total	**25,093**	**22**	**98614**	**380**	**28**	**26**	**29,1403**	**11663**	**670**	**2521**	**25**	**1746**

		No. of system installed(2015/16)(2072/2073)											
S.N.	District	Biogas (Nos.)		Solar (Nos.)	Improved Cookstove (Nos.)					IWM (Nos.)	M/PHPs (kW)	Wind (kW)	MSMEs (Nos.)
		Domestic	Large	SHS & SSHS	ISPS	PVPS	Dryer	Mud	Metallic				
1	Achham	0		678				518	1	-	-	20	4
2	Arghakhanchi	27		643		2		2,948	-	-	-		-
3	Baglung	24		376				726	-	-	-		18
4	Baitadi	12		61				904	-	-	90		-
5	Bajhang	1		354		1		1,415	-	-	-		14
6	Bajura	0		148				926	1	-	66		15
7	Banke	417	1	1,146				198	1	-	-		-
8	Bara	220	1	14				236	-	-	-		-
9	Bardiya	493		135				826	-	-	-		-
10	Bhaktapur	2		70				48	1,560	-	-		-

S.N.	District	No. of system installed(2015/16)(2072/2073)										
		Biogas (Nos.)		Solar (Nos.)	Improved Cookstove (Nos.)					IWM (Nos.)	M/PHPs (kW)	Wind (kW)	MSMEs (Nos.)
		Domestic	Large	SHS & SSHS	ISPS	PVPS	Dryer	Mud	Metallic				
11	Bhojpur	0		180				1,639	18	-	4		5
12	Chitwan	463	1	806				-	-	-	-		-
13	Dadeldhura	4		1,056				706	-	-	-		-
14	Dailekh	5		1,374				404	-	-	32		7
15	Dang	329		197				828	-	-	-		-
16	Darchula	18		84				105	-	-	-		6
17	Dhading	207		31	14			614	3,000	-	-		-
18	Dhankuta	27		291				1,781	10	-	40		-
19	Dhanusa	167		1,363				1,835	-	-	-		-
20	Dolakha	14		19	28			545	1,534	3	5		-
21	Dolpa	0		6				-	-	-	78		-
22	Doti	8		1,523				514	-	-	-		4
23	Gorkha	72		35	11			886	2,258	-	5		-
24	Gulmi	21		81		1		2,659	-	-	-		13
25	Humla	0		-				-	9	-	20		2
26	Ilam	119		69		2		2,297	55	-	15		6
27	Jajarkot	17		-				591	1	-	50		-
28	Jhapa	697		9				1,917	-	-	-		-
29	Jumla	0		111				-	81	-	-		1
30	Kailali	2653		554				415	1	-	5		-
31	Kalikot	0		215				-	1	44	-		-
32	Kanchanpur	1845		564				76	-	-	-		-
33	Kapilbastu	182		133				3,870	-	-	-		-
34	Kaski	136		4				493	1	-	-		-
35	Kathmandu	5		684				799	600	-	-		-
36	Kavre	231		197	22			1,426	4,080	-	15		2
37	Khotang	1		106				1,770	3	-	5		13
38	Lalitpur	3	1	596				24	1,320	-	-		-
39	Lamjung	239		-				595	56	-	66		-
40	Mahottari	127		38				165	-	-	-		-
41	Makawanpur	412		48	3			253	480	-	7		-
42	Manang	0		921				-	-	-	11		4
43	Morang	400	2	526				873	8	-	-		-
44	Mugu	0		-				-	219	-	15		-
45	Mustang	0		633				-	-	-	-		-
46	Myagdi	12		-				315	402	-	54		-
47	Nawalparasi	241		468				-	-	-	32		3
48	Nuwakot	47		75	8			331	3,600	-	-		-
49	Okhaldhunga	3		144	5			1,043	1,564	-	4		-
50	Palpa	219		276		2		922	-	-	-		-
51	Panchthar	4		4		2		3,512	18	-	5		18
52	Parbat	6	1	632				344	-	-	-		-
53	Parsa	68		1,468				-	-	-	-		-
54	Pyuthan	117	1	1,957				2,143	-	-	-		-
55	Ramechhap	9		992	4			621	2,160	-	11		-

S.N.	District	No. of system installed(2015/16)(2072/2073)											
		Biogas (Nos.)		Solar (Nos.)	Improved Cookstove (Nos.)					IWM (Nos.)	M/PHPs (kW)	Wind (kW)	MSMEs (Nos.)
		Domestic	Large	SHS & SSHS	ISPS	PVPS	Dryer	Mud	Metallic				
56	Rasuwa	24		1,956	10			147	1,200	8	-		-
57	Rautahat	56		1,357				605	-	-	-		-
58	Rolpa	59		722				344	-	26	86		18
59	Rukum	0		868				414	-	-	209		9
60	Rupandehi	117	1	2,324				4,056	-	-	-		-
61	Salyan	0		2,538				1,918	-	-	-		-
62	Sankhuwasabha	35		108				2,299	150	-	-		6
63	Saptari	101		510				1,526	-	-	-		-
64	Sarlahi	269		1,663				1,156	-	7	-		-
65	Sindhuli	430	1	491	5			704	480	-	10		3
66	Sindhupalchowk	14		239	27			50	7,214	-	-		-
67	Siraha	114	1	434				859	-	-	-		-
68	Solukhumbu	10		1,692				313	-	-	181		9
69	Sunsari	87		1,789				1,407	-	-	-		-
70	Surkhet	261		1,135				1,262	-	-	15	5	1
71	Syangja	113		1,050		2		1,248	-	-	-		-
72	Tanahu	209		381				1,227	-	-	-		-
73	Taplejung	17		1,774				1,777	38	-	85		16
74	Terhathum	0		505				1,458	7	-	-		7
75	Udayapur	176		266				4,335	4	-	-		7
Total		**12416**	**11**	**43,897**	**137**	**12**	**-**	**73161**	**32135**	**88**	**1,219**	**25**	**211**

S.N.	District	No. of system installed(2016/17)(2073/2074)												
		Biogas (Nos.)	Solar (Nos.)					Improved Cookstove (Nos.)			IWM (Nos.)	M/PHPs (kW)	Wind (kW)	MSMEs (Nos.)
		Domestic	Large	SHS & SSHS	ISPS	PVPS	Irrigation	Mud	Metallic	IICS				
1	Achham	0		52	0	0		0	0		0	43		
2	Arghakhanchi	23		116	0	0		233	0		0	0		
3	Baglung	53	2	1386	0	0		0	0		0	0		
4	Baitadi	8		0	0	0		0	0		40	0		
5	Bajhang	15		52	0	0		0	0		0	0	15	
6	Bajura	0		4	0	0		0	0		0	200		
7	Banke	243	1	147	0	0	11	50	0		0	0		
8	Bara	166		10	0	2		0	0		0	0		
9	Bardiya	559		0	0	0		130	0		0	0		
10	Bhaktapur	6	2	4263	0	0	2	569	500	2	0	0		
11	Bhojpur	0		127	0	0		0	0		0	26		
12	Chitwan	213	4	177	0	26		0	0	3	0	0		
13	Dadeldhura	10		305	0	0		0	0		0	0		
14	Dailekh	3		158	0	0		268	0		44	0		
15	Dang	479		861	0	0	4	139	0		0	0		
16	Darchula	54		0	0	0		0	0		0	0		
17	Dhading	382		21831	14	0	3	2864	4318	2	0	166		
18	Dhankuta	13		46	0	0		0	0		0	0		

No. of system installed(2016/17)(2073/2074)														
S.N.	District	Biogas (Nos.)	Solar (Nos.)					Improved Cookstove (Nos.)			IWM (Nos.)	M/PHPs (kW)	Wind (kW)	MSMEs (Nos.)
		Domestic	Large	SHS & SSHS	ISPS	PVPS	Irrigation	Mud	Metallic	IICS				
19	Dhanusa	142		322	0	0		0	0		0	0		
20	Dolakha	133		18000	42	0		3327	3998	5	0	0		
21	Dolpa	0		0	0	0		0	0		0	180		
22	Doti	6		1	0	0		0	0		0	0		
23	Gorkha	432		18000	26	0		1831	7830	3	0	0		
24	Gulmi	14		97	0	0		1804	0		0	0		
25	Humla	0		0	0	0		0	8		7	70		
26	Ilam	164		19	0	2	4	0	0		0	0		
27	Jajarkot	0		0	0	0		648	0		39	78.5		
28	Jhapa	491	11	0	2	0		0	0		0	0		
29	Jumla	0		6	0	0		0	0		0	0		
30	Kailali	1150		117	0	0	15	424	66		0	0		
31	Kalikot	10		49	0	0		0	0		37	70		
32	Kanchanpur	871		26	0	0	2	270	0		0	0		
33	Kapilbastu	185		0	0	0		0	0		0	0		
34	Kaski	615	5	0	0	0		0	0		0	0		
35	Kathmandu	15	4	464	0	0		829	500	3	0	0		
36	Kavre	252	2	14400	4	1		2845	1800	1	0	0		
37	Khotang	7		54	0	1		0	0	3	5	100		
38	Lalitpur	85	2	2402	0	0		819	500	2	0	0		
39	Lamjung	420	1	0	0	0		0	25	3	0	0		
40	Mahottari	47		0	0	0		683	0		0	0		
41	Makawanpur	678	2	6007	6	0		562	3018		0	0		
42	Manang	0		436	0	0		0	0		0	0		
43	Morang	439	8	199	2	0	3	0	0		0	0		
44	Mugu	0		0	0	0		0	125		0	0		
45	Mustang	0		26	0	0		0	0		0	0		
46	Myagdi	3		0	0	0		0	243		0	20		
47	Nawalparasi	289		150	0	0	8	0	336		0	28		
48	Nuwakot	125		20400	1	0		2649	5587	3	0	0		
49	Okhaldhunga	16		4803	10	0		0	795	2	0	16		
50	Palpa	251	2	0	0	2		0	0		0	0		
51	Panchthar	7		0	0	2		0	0		0	35		
52	Parbat	20	1	214	0	0		0	0		0	0		
53	Parsa	59		517	0	0		0	0		0	0		
54	Pyuthan	44	1	1247	0	0	2	10511	0		0	0		
55	Ramechhap	72		7425	16	4		1739	1083	1	6	0		
56	Rasuwa	10		4666	0	0		1177	4070	3	0	0		
57	Rautahat	121		515	0	0		0	1		0	0		
58	Rolpa	37		391	0	0	2	91	0		4	109		
59	Rukum	0		66	0	2		47	7		25	72		
60	Rupandehi	153	2	371	0	0	3	0	1		0	0		
61	Salyan	33		310	0	0		5	0		0	0		
62	Sankhuwasabha	20		29	0	0		0	0		0	0		

S.N.	District	No. of system installed(2016/17)(2073/2074)												
		Biogas (Nos.)	Solar (Nos.)					Improved Cookstove (Nos.)			IWM (Nos.)	M/PHPs (kW)	Wind (kW)	MSMEs (Nos.)
		Domestic	Large	SHS & SSHS	ISPS	PVPS	Irrigation	Mud	Metallic	IICS				
63	Saptari	134	3	82	0	0	25	0	0		0	0		
64	Sarlahi	183	3	126	0	0		0	0		0	0		
65	Sindhuli	357		4831	6	3		0	1494	3	16	15	20	
66	Sindhupalchowk	34		24000	71	0		0	8500	13	29	0		
67	Siraha	100		20	0	0		0	0		0	0		
68	Solukhumbu	3		215	2	0		0	0	3	0	205		
69	Sunsari	115	6	297	0	0	1	0	0		0	0		
70	Surkhet	392		39	0	0		474	19		0	0		
71	Syangja	383		81	0	0		0	0		0	0		
72	Tanahu	407	3	260	0	4		0	778	4	0	0		
73	Taplejung	65		130	0	0		0	0		0	76.5		
74	Terhathum	1		7	0	0		0	0		0	0		
75	Udayapur	208		14	0	3		0	0		1	0		
	Total	**12,025**	**65**	**161366**	**202**	**52**	**85**	**34988**	**45602**	**59**	**253**	**1,510**	**35**	**-**

S.N.	District	No. of system installed(2017/18)(2074/2075)												
		Biogas (Nos.)	Solar (Nos.)						Improved Cookstove (Nos.)			IWM (Nos.)	M/ PHPs (kW)	Wind (kW)	MSMEs (Nos.)
		Domestic	Large	SHS & SSHS	ISPS	PVPS	Irrigation	Dryer	Mud	Metallic	IICS				
1	Achham	0		304	7	3				3	4	0	0		6
2	Arghakhanchi	33		347	9		1	1	525	137		0	0		
3	Baglung	6		44	12					364	2	0	0		2
4	Baitadi	3		8	7	1				0	2	0	0		2
5	Bajhang	0		234	5					610	3	0	121.5		2
6	Bajura	0		77	1					1091	8	0	145		
7	Banke	91	2	993	2		55			800		0	0		
8	Bara	147	1	1	0		1			800	1	0	0		
9	Bardiya	263	1	0	2		11			672		0	0		
10	Bhaktapur	5	5	458	11	0	4	12		0	4	0	0		
11	Bhojpur	0		130	1					0	1	0	40		7
12	Chitwan	87		429	6		1	15		0	1	0	0		
13	Dadeldhura	51		678	5					0		0	0		
14	Dailekh	1		356	8	1				716	1	0	0		
15	Dang	208	1	804	7		7			601		0	0		
16	Darchula	4		927	0					304		0	0		
17	Dhading	311		51	2			1	119	26		9	0		
18	Dhankuta	10	2	1624	1					125		0	0		
19	Dhanusa	93		2906	2					800		0	0		
20	Dolakha	102	1	2	57	0			730	1163	23	0	30		8
21	Dolpa	0		11	0					18		0	50		

S.N.	District	No. of system installed(2017/18)(2074/2075)													
		Biogas (Nos.)		Solar (Nos.)					Improved Cookstove (Nos.)			IWM (Nos.)	M/ PHPs (kW)	Wind (kW)	MSMEs (Nos.)
		Domestic	Large	SHS & SSHS	ISPS	PVPS	Irrigation	Dryer	Mud	Metallic	IICS				
22	Doti	0		186	9					3		0	90		
23	Gorkha	541	1	126	42	0				871	2	0	0		
24	Gulmi	5		1089	8		18			1754	7	0	0		
25	Humla	0		0	0					422	31	7	60		1
26	Ilam	93		1	1	3				0		0	0		2
27	Jajarkot	0		0	36					1326	8	2	48		
28	Jhapa	248	23	0	1		5			801	2	0	0		
29	Jumla	0		91	21			1		22	2	0	0	30	
30	Kailali	424	1	400	5	1	10			11		0	0		
31	Kalikot	21		307	12					1271		23	35		
32	Kanchanpur	255		874	2					429		0	0		
33	Kapilbastu	133		1848	2		3			1	2	0	0		
34	Kaski	346	10	0	12					1171	1	0	0		
35	Kathmandu	18	11	352	7	0		4		0	10	0	0		
36	Kavre	236		124	47	0				240	25	0	0		3
37	Khotang	1	3	8	7					0	1	0	0		
38	Lalitpur	4	1	124	0			1		0	1	3	0		
39	Lamjung	339	11	1	1				105	1084	2	0	0		
40	Mahottari	82		0	3		1			620		0	0		
41	Makawanpur	459		29	4	1				3	1	24	16.5		
42	Manang	0		148	0					1		0	0		
43	Morang	327	15	295	28		13			1519		0	0		8
44	Mugu	0		1	0		5			643	18	0	65		
45	Mustang	0		118	0					1		0	0		8
46	Myagdi	5	1	0	0			42		142	1	0	0		
47	Nawalparasi	121	2	108	10		26	1		132	2	0	0		
48	Nuwakot	147		126	42	0	1			222	2	0	0		
49	Okhaldhunga	106		277	7	0	6			288	3	0	0		
50	Palpa	110		1	4	6				25		0	0	15	6
51	Panchthar	30	2	2	3	2				0	4	0	40		10
52	Parbat	15		508	0			1		35	1	0	0		
53	Parsa	6		2412	0		7			800		0	0		
54	Pyuthan	19		3266	11		16		4824	48	2	0	0		4
55	Ramechhap	136		566	43	1				886	3	0	0		
56	Rasuwa	13		3433	10	0				39	1	0	0		
57	Rautahat	85		2170	3					3255		0	0		
58	Rolpa	49		1268	5	7	10			177	2	0	141.5		8
59	Rukum	0		440	21	5				245	3	0	199.5		14
60	Rupandehi	32		1564	1		7			499		0	0		
61	Salyan	45		1350	18	2				213		0	0		
62	Sankhuwasabha	0		198	0					213	2	0	20		
63	Saptari	77		508	0		9			1884		0	0		
64	Sarlahi	98		1523	2					2326		0	0		
65	Sindhuli	307		358	49	2		13		1656		0	18		
66	Sindhupalchowk	64		156	81	1		5	77	171	4	11	0		

S.N.	District	No. of system installed(2017/18)(2074/2075)													
		Biogas (Nos.)		Solar (Nos.)					Improved Cookstove (Nos.)			IWM (Nos.)	M/ PHPs (kW)	Wind (kW)	MSMEs (Nos.)
		Domestic	Large	SHS & SSHS	ISPS	PVPS	Irrigation	Dryer	Mud	Metallic	IICS				
67	Siraha	13		153	4					865		0	0		
68	Solukhumbu	50		1055	1					494	6	0	15		
69	Sunsari	37	16	2674	5					796		0	0		
70	Surkhet	244	1	623	10	7	2	1		39	1	16	0		8
71	Syangja	254	2	760	17		1			561		0	0		
72	Tanahu	316	7	1053	0					2164	6	0	0		
73	Taplejung	0	1	2879	2					0	5	0	62		8
74	Terhathum	1		394	2					0		0	0		1
75	Udayapur	116	1	22	10		1	2		1506	11	0	15		
Total		**7,443**	**122**	**46,353**	**754**	**43**	**221**	**100**	**6380**	**40104**	**222**	**95**	**1,212**	**45**	**108**

S.N.	District	Cumulative Dissemination Data Since the establishment of AEPC													
		Biogas (Nos.)		Solar (Nos.)						Improved Cookstove (Nos.)			IWM (Nos.)	M/PHPs (kW)	Wind (kW)	MSMEs (Nos.)
		Domestic	Large	SHS & SSHS	ISPS	PVPS	Irrigation	Solar Mini Grid (kW)	Dryer & Cooker	Mud	Metallic	IICS				
1	Achham	30	-	7757	80	5	-	11	-	11,120	123	4	118	1129	20	
2	Arghakhanchi	935	-	9634	11	3	1		1	33,221	137	-	0	10	-	
3	Baglung	1,060	2	6085	13	1	-		-	30,207	956	2	40	3236	-	
4	Baitadi	70	-	1446	67	10	-	(30)	-	14,432	-	2	512	520	-	
5	Bajhang	290	-	9333	106	2	-	7	1	5,775	619	3	137	1406	15	
6	Bajura	8	-	2082	55	4	-		4	4,392	1,381	8	68	1466	-	
7	Banke	7,835	4	14888	15	-	66		1	1,299	800	-	0	0	-	
8	Bara	6,745	2	1980	-	2	1		-	11,888	800	1	0	0	-	
9	Bardiya	15,697	1	2798	2	-	11		-	3,744	672	-	0	0	-	
10	Bhaktapur	937	7	6514	11	-	6		182	972	2,165	6	0	0	-	
11	Bhojpur	296	-	4517	6	-	-		-	19,569	246	1	0	508	-	
12	Chitwan	22,006	8	14474	15	26	1		59	338	-	4	18	32	-	
13	Dadeldhura	202	-	12164	5	1	-		-	10,014	-	-	255	123	-	
14	Dailekh	116	-	23268	22	5	-		-	23,669	767	1	195	278	-	
15	Dang	15,128	1	3347	13	1	11		11	21,267	603	-	0	0	-	
16	Darchula	513	-	2090	57	4	-	(34)	-	4,042	472	-	192	530	-	
17	Dhading	10,417	-	28517	50	1	3	8	26	28,139	11,257	2	524	842	-	2

S.N.	District	Cumulative Dissemination Data Since the establishment of AEPC														
		Biogas (Nos.)		Solar (Nos.)						Improved Cookstove (Nos.)			IWM (Nos.)	M/PHPs (kW)	Wind (kW)	MSMEs (Nos.)
		Domestic	Large	SHS & SSHS	ISPS	PVPS	Irrigation	Solar Mini Grid (kW)	Dryer & Cooker	Mud	Metallic	IICS				
18	Dhankuta	3,863	2	12601	1	-	-		28	33,266	364	-	3	163	-	
19	Dhanusa	1,257	-	26817	2	-	-		-	21,556	800	-	0	0	-	
20	Dolakha	2,545	1	26228	176	2	-		38	17,864	8,635	28	613	796	-	
21	Dolpa	4	-	1346	37	-	-		51	-	18	-	27	396	-	
22	Doti	132	-	11255	51	2	-		-	18,093	3	-	184	437	-	
23	Gorkha	9,185	1	27397	118	3	-		18	10,436	12,231	5	33	1016	-	
24	Gulmi	1,774	-	4388	20	1	18		-	43,603	1,767	7	0	399	-	
25	Humla	2	-	0	51	-	-		31	-	1,300	31	20	518	-	
26	Ilam	7,882	-	1458	13	10	4		52	29,802	837	-	69	497	-	
27	Jajarkot	112	-	3	57	-	-		7	14,897	1,884	8	237	801	-	
28	Jhapa	28,292	34	1106	3	-	5		1	25,710	801	2	0	0	-	
29	Jumla	6	-	2513	83	-	-	61	18	-	1,734	2	191	650	45	
30	Kailali	37,936	2	12274	17	1	25	(75)	2	34,882	78	-	120	9	-	
31	Kalikot	323	-	4746	30	-	-		-	2,890	1,595	-	558	267	-	
32	Kanchanpur	22,266	-	13046	2	-	2		-	11,623	429	-	0	0	-	
33	Kapilbastu	6,217	-	3725	2	-	3		-	39,668	1	2	0	0	-	
34	Kaski	19,065	15	1017	12	-	-		-	4,954	1,817	1	55	248	-	
35	Kathmandu	1,458	15	14060	7	-	-		702	2,755	1,292	13	0	0	-	
36	Kavre	11,678	5	27900	77	1	-		81	23,650	6,448	26	790	960	-	
37	Khotang	232	3	5424	12	1	-	38	-	15,248	138	4	18	892	-	
38	Lalitpur	1,930	4	14027	1	-	-		214	1,654	1,960	3	307	45	-	
39	Lamjung	12,515	12	135	9	-	-		-	7,487	2,225	5	12	439	-	
40	Mahottari	3,367	-	1815	3	-	1		-	41,929	620	-	0	0	-	
41	Makawanpur	28,726	4	11062	25	2	-	15	15	19,211	3,910	1	1189	182	10	
42	Manang		-	9186	-	-	-		98	-	155	-	5	249	-	
43	Morang	14,882	29	9935	35	-	16	30	3	8,857	1,527	-	0	0	-	8
44	Mugu	8	-	63	44	-	5		4	-	3,509	18	11	165	-	-
45	Mustang	14	-	13667	28	-	-		197	-	279	-	5	0	-	8
46	Myagdi	1,091	1	283	32	1	-		43	13,157	2,546	1	23	269	-	15
47	Nawalparasi	12,814	2	9478	13	-	34	2	16	6,416	468	2	0	302	10	144
48	Nuwakot	6,166	1	30586	51	-	1		26	22,060	13,852	5	1115	86	-	-
49	Okhaldhunga	936	-	10321	93	3	6	31 + (50)	-	14,676	4,032	5	147	1152	-	35
50	Palpa	9,206	2	4596	14	11	-	10	47	26,451	25	-	1	313	15	59

S.N.	District	Cumulative Dissemination Data Since the establishment of AEPC														
		Biogas (Nos.)		Solar (Nos.)						Improved Cookstove (Nos.)			IWM (Nos.)	M/PHPs (kW)	Wind (kW)	MSMEs (Nos.)
		Domestic	Large	SHS & SSHS	ISPS	PVPS	Irrigation	Solar Mini Grid (kW)	Dryer & Cooker	Mud	Metallic	IICS				
51	Panchthar	1,197	2	4303	81	12	-	75	-	19,763	522	4	15	897	20	84
52	Parbat	1,013	2	11281		-	-		1	19,506	382	1	5	194	-	-
53	Parsa	2,314	-	37408	-	-	7		1	10,456	800	-	0	0	-	-
54	Pyuthan	2,081	2	47800	11	-	18		-	19,599	48	2	78	187	-	4
55	Ramechhap	3,005	-	23243	154	7	-		155	21,363	4,682	4	426	838	-	-
56	Rasuwa	1,204	-	38822	20	-	-		26	3,121	5,925	4	137	64	-	-
57	Rautahat	4,900	-	25100	3	-	-		1	78,714	3,261	-	0	0	-	-
58	Rolpa	339	-	10839	33	11	12		-	15,588	568	2	95	939	-	49
59	Rukum	39	-	5192	50	9	-		7	10,028	792	3	129	2467	-	62
60	Rupandehi	8,664	5	27060	1	-	10		1	31,685	500	-	0	0	-	-
61	Salyan	309	-	36522	68	9	-		-	25,939	229	-	148	13	-	206
62	Sankhuwasabha	745	-	4440	50	-	-		5	23,436	927	2	5	247	-	22
63	Saptari	1,182	3	12899	-	-	34		-	8,166	1,884	-	0	0	-	-
64	Sarlahi	7,007	3	16961	2	-	-		2	52,012	2,333	-	7	0	-	-
65	Sindhuli	14,239	2	15236	69	7	-	15	13	13,208	3,639	3	410	411	20	206
66	Sindhupalchowk	3,292	-	40217	183	1	-		33	19,669	19,467	17	635	417	-	-
67	Siraha	1,185	2	8342	5	-	-		-	19,341	865	-	0	0	-	-
68	Solukhumbu	118	-	20862	7	-	-		9	5,709	1,085	9	31	1482	-	43
69	Sunsari	5,397	25	23829	5	-	1		78	18,159	796	-	0	0	-	-
70	Surkhet	4,738	2	12638	40	11	2	5 + (100)	2	21,485	58	1	466	79	5	104
71	Syangja	10,244	2	22436	17	5	1		10	22,699	675	-	1	157	-	52
72	Tanahu	19,651	10	15926	2	8	-	18	49	16,827	2,993	10	1	273	-	31
73	Taplejung	301	1	21684	44	-	-		7	18,069	985	5	2	1436	-	88
74	Terhathum	1,963	-	4295	5	-	-		4	22,595	257	-	0	468	-	29
75	Udayapur	8,333	1	2216	15	7	1		5	27,017	1,566	11	13	182	-	23
Total		**431629**	**220**	**952903**	**2512**	**190**	**306**	**318 + (289)**	**2386**	**1281037**	**153517**	**581**	**10396**	**32074**	**160**	**1274**

Source: Alternative Energy Promotion centre
Note: Paranthesis () figures are in under construction
Labels: SHS=Solar Home Systems; SSHS = Small Solar Home Systems; ISPS= Institutional Solar Photovoltaic Systems; PVPS = Photo Voltaic Pumping Systems; IWM=Improved Water Mills; M/PHPs= Micro/Pico Hydro Plants; MSMEs=Micro, Small and Medium Enterprises; IICS=Institutional Improved Cooking Systems

 # Information of then 75 districts of Nepal

Table 3.2.3 : Consumption of Petroleum Products in Nepal, 2000/01-2017/18

Year	Petrol (kl)	High Speed Diesel(kl)	Kerosene Oil (kl)	Light Diesel Oil (kl)	Furnace Oil (kl)	Aircraft Turbine Oil (kl)	L.P. Gas (mt)
2000/01	59245	326060	316381	3416	20934	63131	40102
2001/02	63271	286233	386592	2413	18255	47453	48757
2002/03	67457	299973	348620	610	14496	52839	56079
2003/04	67586	299730	310826	577	12653	64041	66142
2004/05	75989	315368	239328	88	2696	66825	77594
2005/06	80989	294329	226637	290	3695	64335	81005
2006/07	101912	306687	197850	179	4558	63778	93562
2007/08	100842	302706	155216	306	2919	68938	96837
2008/09	124169	446468	70089	377	2171	68935	115813
2009/10	162275	612505	55788	238	2589	82631	141171
2010/11	187641	655128	49495	227	1415	101314	159286
2011/12	199749	648513	41808	0	435	109808	181411
2012/13	221676	716747	24721	258	2450	115786	207038
2013/14	251451	811100	19064	NA	2172	123527	232660
2014/15	283567	901393	18628	NA	883	139404	258299
2015/16	238578	782658	14870	NA	77	80119	214263
2016/17	402,278	1,297,066	19,459	NA	36	164,299	312,928
2017/18	484,781	1,597,551	22,311	NA	NA	194,358	370,560

Source : Nepal Oil Corporation

Table 3.2.4: Energy Consumption by Sector in '000 GJ

Item	2014/15(2071-72)	2015/16(72-73)	2016/17(73-74)	2017/18(2074-75)*
Traditional	**388039.49**	**393278.02**	**397210.80**	**264807.20**
Firewood	352229.10	356984.19	360554.03	240369.35
Agricultural residues	17408.43	17643.44	17819.88	11879.92
Cow dung	18401.96	18650.39	18836.89	12557.93
Commercial	**99370.11**	**95822.06**	**138630.92**	**107112.94**
Coal	19819.09	22855.89	28299.53	19843.73
Petroleum Products	62618.27	54359.25	88994.11	71895.14
Electricity	16932.75	18606.93	21337.28	15374.07
Renewable	**12430.26**	**12466.42**	**12530.78**	**12500.52**
Total	**499839.86**	**501566.50**	**548372.49**	**384420.65**

**Last 8 months*
Source : WECS 2018

Table 3.2.5: Material intensity by sector, 1996/97 – 2011/12

Sector	Description	Material Intensity in Percent 1996	Material Intensity in Percent 2002	Material Intensity in percent 2007	Material Intensity in percent 2012
15	Food and beverages	62.35	65.6	71.39	71.55
16	Tobacco products	27.56	17.68	17.01	23.8
17	Textiles	50.71	54.97	66.33	67.92
18	Wearing apparel, fur	62.24	55.54	60.16	65.98
19	Leather, leather products and footwear	61.51	63.03	71.44	69.31
20	Wood products (excl. furniture)	56.04	66.35	66.23	64.83
21	Paper and paper products	51.02	56.38	40.01	62.87
22	Printing and publishing	46.81	52.65	53.9	56.98
23	Coke, refined petroleum products, nuclear fuel	74.36	75.42	39.02	67.5
24	Chemicals and chemical products	61.88	58.14	52.16	52.75
25	Rubber and plastics products	59.02	64.36	72.26	69.09
26	Non-metallic mineral products	14.43	23.56	49.96	48.17
27	Basic metals	74.66	79.57	74.78	80.04
28	Fabricated metal products	67.13	76.55	78.16	76.81
29	Machinery and equipment n.e.c.	58.35	55.91	68.85	66.81
31	Electrical machinery and apparatus	70.31	75.53	82.18	71.48
32	Radio, television and communication equipment	55.49	74.35	66.37	64.97
34	Motor vehicles, trailers, semi-trailers	64.43	59.07	67.31	64.12
36	Furniture; manufacturing n.e.c.	53.38	58.02	54.9	58.92
	NEPAL	**55.12**	**60.02**	**64.32**	**66.05**

Source:- Development of Manufacturing Industries in Nepal, Current State and Future Challenges, CBS, 2014

Table 3.2.6 : Energy consumed in Mega Joules (MJ) per Rs 1000 value of produced goods

ISIC rev.3	Description	1996/97	2001/02	2006/07	2011/12
15	Food and beverages	63.4	51.1	29.3	19.1
16	Tobacco products	18.9	19.1	7.1	5.6
17	Textiles	63	89.3	64.4	54.5
18	Wearing apparel, fur	22	23.4	12.9	34.1
19	Leather, leather products and footwear	63.7	69.1	30.6	34.3
20	Wood products (excl. furniture)	72.2	64.1	38.7	33.3
21	Paper and paper products	278.6	224.8	90	61.5
22	Printing and publishing	50	19.8	17.6	21
23	Coke, refined petroleum products, nuclear fuel	26.8	14.4	2.5	4.6
24	Chemicals and chemical products	57	43	29.5	29.3
25	Rubber and plastic products	128.2	93.6	41.8	48.8
26	Non-metallic mineral products	639.2	378.4	153.7	178.7
27	Basic metals	120.7	73.1	30	34.7
28	Fabricated metal products	72.3	67.5	36.9	38
29	Machinery and equipment n.e.c.	82.7	58.5	41.6	49.2
31	Electrical machinery and apparatus	34.7	48.4	18.4	22.2
32	Radio, television and communication equipment	19.7	6.7	5.4	4
34	Motor vehicles, trailers, semi-trailers	138.8	75	13.8	16.9
36	Furniture; manufacturing n.e.c.	56.5	43.8	23.1	17.4
	NEPAL	**95.8**	**73.4**	**43.5**	**47.2**

Source:- Development of Manufacturing Industries in Nepal, Current State and Future Challenges, CBS, 2014

Table 3.2.7: Energy Intensity per 100 Rs value of produced goods (1996/97 -2011/12)

ISIC rev.3 code in 2 digit	Description	1996/97	2001/02	2006/07	2011/12
15	Food and beverages	3.03	3.63	3.42	2.09
16	Tobacco products	0.9	1.35	0.82	0.61
17	Textiles	3.01	6.34	7.5	5.97
18	Wearing apparel, fur	1.05	1.66	1.5	3.73
19	Leather, leather products and footwear	3.04	4.91	3.57	3.75
20	Wood products (excl. furniture)	3.45	4.55	4.51	3.64
21	Paper and paper products	13.31	15.97	10.48	6.74
22	Printing and publishing	2.39	1.41	2.05	2.31
23	Coke, refined petroleum products, nuclear fuel	1.28	1.02	0.3	0.51
24	Chemicals and chemical products	2.72	3.05	3.43	3.21
25	Rubber and plastic products	6.13	6.65	4.86	5.34
26	Non-metallic mineral products	30.54	26.88	17.9	19.57
27	Basic metals	5.77	5.2	3.49	3.8
28	Fabricated metal products	3.45	4.8	4.3	4.17
29	Machinery and equipment n.e.c.	3.95	4.16	4.84	5.39
31	Electrical machinery and apparatus	1.66	3.44	2.14	2.43
32	Radio, television and communication equipment	0.94	0.47	0.63	0.44
34	Motor vehicles, trailers, semi-trailers	6.63	5.33	1.61	1.85
36	Furniture; manufacturing n.e.c.	2.7	3.11	2.69	1.9
	NEPAL	**4.58**	**5.22**	**5.07**	**7.67**

Source:- Development of Manufacturing Industries in Nepal, Current State and Future Challenges, CBS, 2014

Table 3.3.1: Land cover change matrix (hectares) 2000 to 2010

Class_Name	Forest	Shrubland	Grassland	Agriculture area	Barren area	Water body	Snow/glacier	Built-up area	Total (2010)
Forest	5917531	37673	45184	194603	6856	2163	168	0	6204178
Shrubland	25426	251789	38734	23637	2032	463	1032	0	343113
Grassland	29225	30934	1257540	93470	55968	3226	71113	0	1541476
Agriculture area	167982	22758	71629	3705072	57300	13875	14	22	4038651
Barren area	6761	2608	109096	65108	977602	10005	88887	0	1260067
Water body	2580	1106	4472	12944	13877	42703	1062	0	78744
Snow/glacier	174	364	147703	13	294435	1132	814462	0	1258284
Built-up area	570	58	1047	10020	334	51	2	42285	54365
Total (2000)	6150247	347290	1675405	4104867	1408404	73617	976741	42307	14778878

Source: ICIMOD

Table 3.3.2: Land cover change matrix (hectares) 1990 to 2000

Class_Name	Forest	Shrubland	Grassland	Agriculture area	Barren area	Water body	Snow/glacier	Built-up area	Total (2000)
Forest	6100036	5064	7166	36601	757	345	257	22	6150247
Shrubland	76379	211282	25702	32025	757	523	615	6	347290
Grassland	91566	56954	1047509	79443	108105	4926	286872	30	1675405
Agriculture area	381959	51588	80734	3539307	31447	19296	31	504	4104867
Barren area	14242	2501	308015	49354	749801	17948	266519	25	1408404
Water body	5268	412	6332	11146	11917	38389	139	15	73617
Snow/glacier	501	662	253116	113	104929	184	617236	0	976741
Built-up area	137	39	677	9007	40	86	0	32320	42307
Total (1990)	6670087	328503	1729251	3756995	1007752	81699	1171668	32923	14778878

Source: ICIMOD

Table 3.3.3: Number, area, number of holdings reporting and area irrigated by source of irrigation by total area of holding,2011/12

Province	Total		Source of irrigation													
	No. of holdings	Area (ha)	No. of holdings reporting	Area (ha)	River/lake/pond				Dam/reservoir		Tube well/boring		Others		Mixed	
					By gravity		Pumping									
					No. of holdings	Area (ha)	No. of holdings	Area (ha)	No. of holdings	Area (ha)	No. of holdings	Area (ha)	No. of holdings	Area (ha)	No. of holdings	Area (ha)
Province 1	717148	602472.5	420679	295653.5	253048	155164.4	14003	10246.8	30590	29027.1	116973	81532.9	34584	14804.8	8689	4877.6
Province 2	672927	541268.4	525961	414221.7	123824	81259.5	98723	57544.8	99615	66302.5	284034	180995.8	24826	10124.0	27742	17995.2
Province 3	658776	328297.4	378413	113973.7	250230	71628.1	20674	4047.0	54985	20811.9	42837	9278.8	36635	6821.2	4257	1386.8
Gandaki	413300	209798.2	251555	77359.4	180029	53385.1	5736	1537.8	29301	8807.9	5860	2021.5	44127	10251.8	5223	1355.2
Province 5	697293	484678.0	435746	247713.8	138952	53948.9	64533	33438.9	99201	66515.2	153796	82366.7	32290	7937.7	8517	3506.4
Karnali	261770	141694.9	150036	37212.4	134086	32577.5	805	200.7	5955	1541.0	1088	52.6	11728	2765.2	238	75.4
Sudur-paschim	409879	217429.7	309905	127271.9	201387	66115.9	13823	5949.7	32302	15130.9	66089	35597.7	19008	2982.5	3440	1495.2
NEPAL	**3831093**	**2525639.2**	**2472296**	**1313406.3**	**1281556**	**514079.4**	**218297**	**112965.5**	**351949**	**208136.4**	**670677**	**391846.0**	**203197**	**55687.3**	**58105**	**30691.8**

Source : Central Bureau of Statistics (National Sample Censuses of Agriculture, Nepal, 2011/12).

Table 3.4.1 : Supply of Forest Products

Forest Production	Unit	Year												
		2002/03	2003/04	2004/05	2005/06	2007/08	2008/09	2009/10	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
Herbal	kg	NA	NA	4575579	4575579	3380857	NA	2171522	2546155	1164316	4833949	3079023.37	3291492.40	0.00
Timber	ft^3	890189	973043	926310	924843	1271515	NA	1225713	675561	795748.9	724105.5	324315.65	840737.57	560250.91
Fuel wood	Chatta	1160.32	829.87	NA	NA	1713	NA	1351.97	437	661.32	1140.41	351.78	1238.70	79138.00
Lauth Salla	kg	NA	NA	7535	7535	13353	NA	5000	750	0	32349	0	4600.00	16.50
Khair	ft^3	5112785	500106	16210	16210	587661	32057	258445	18413	76610.27	105609.2	10333.39	49877.83	4793.86
Argeli	kg	NA	NA	13999	13999	20128	26656	6760	99062	2500	38554	31510	151132.00	31895.00
Khoto	kg	NA	5803	4091748	4091747	8009249	3276906	3105607	2704157	3256812	11141217	10912908.50	14111458.14	1563545.00
Lokta	kg	NA	NA	109953	109953	70000	64616	13233	NA	13493	38919	8238	23030.00	10100.15
Other forest products	kg	NA	NA	NA	NA	41199470	NA	30331799	NA	5674805	4962797	3062109.46	1218072.79	42696.00

Source : Department of Forests (Community Forest Division)

Table 3.4.2 : Area under Permanent Crops

Permanent Crop	Compact area ('000 in ha.)				
	1981/82	1991/92	2001/02	2011/12	% Increase 2001-2011
Orange	0.60	2.40	3.20	5.96	86.3
Lemon	0.40	0.40	0.62	0.39	-37.0
Lime	0.40	0.20	0.29	0.21	-29.8
Junar	-	-	-	0.20	na
Sweet Oranges	0.10	-	0.23	0.11	-51.2
Other Citrus fruit	0.20	0.40	0.34	0.40	17.3
Mangoes	5.20	15.20	18.48	17.95	-2.9
Bananas	4.00	2.10	3.14	4.90	56.1
Guavas	1.10	0.40	0.48	0.39	-18.8
Jackfruit	1.80	0.60	0.68	0.43	-35.9
Pineapples	0.40	0.20	0.23	0.28	21.6
Lychees	0.10	0.30	0.78	1.38	77.7
Pears	0.20	0.10	0.35	0.25	-29.1
Apples	NA	0.60	1.38	1.71	24.0
Plums / Peach	NA	0.10	0.45	0.15	-65.7
Papayas	0.70	0.10	0.30	0.19	-38.2
Pomegranate	-	0.10	0.09	0.04	-50.2
Coconut	-	-	-	0.09	na
Walnut	-	-	-	0.18	na
Betel Nut	-	-	-	1.78	na
Other fruit	14.00	2.70	1.70	0.67	-60.7
Tea	NA	3.50	6.20	5.19	-16.3
Coffee	-	-	-	0.41	na
Black Caramon	-	-	-	14.28	na
Thatch	NA	66.40	67.60	78.99	16.8
Fodder Tree	NA	2.50	7.30	9.35	28.1
Bamboo	NA	6.00	6.30	7.23	14.8
Multi year grass crops	-	-	-	2.49	na
Broom Grass (Amrisho)	-	-	-	12.86	na

NA = Not Available, na = not applicable

Source : Central Bureau of Statistics (National Sample Censuses of Agriculture, Nepal, 2011/12).

Table 3.4.3 : Area Under Selected Temporary Crops

S.N.	Selected Crops	Crop Area ('000 Ha)			
		1981/82	1991/92	2001/02	2011/12
1	Paddy	1394	3252	3423	1456
2	Wheat	389	633	794	749
3	Maize	523	769	769	674
4	Millet	154	302	251	201
5	Barley	28	46	39	26
6	Buckwheat	11	16	21	13
7	Other Cereals	NA	5	5	4
8	Legumes	335	340	379	298
9	Tubers	86	79	93	111
10	Cash Crops	86	63	61	68
11	Oilseeds	224	260	214	186
12	Spices	58	29	41	44
13	Vegetables	17	40	60	84
14	Temp. Grass Crops	NA	NA	NA	9

Source: Central Bureau of Statistics (National Sample Censuses of Agriculture, Nepal)

Table 3.4.4 : Production of Agricultural Commodities

(unit in '000 mt)

	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
Food grains	**6465**	**6985**	**7172**	**7248**	**7361**	**7745**	**7767**	**7656**	**7329**	**8069**	**8115**	**7763**	**8615**	**12293**	**11330**	**9562**	**9266**	**8615**	**9759**
Paddy	3710	4030	4216	4165	4133	4456	4290	4209	3681	4299	4524	4023	4460	5072	4505	5047	4789	4299	5230
Maize	1346	1445	1484	1511	1569	1590	1716	1734	1820	1879	1931	1855	2067	2179	1999	2283	2145	2232	2300
Wheat	1086	1184	1158	1258	1344	1387	1442	1394	1515	1572	1344	1557	1746	1846	1727	1883	1976	1737	1879
Millet (Kodo)	291	295	283	283	283	283	290	291	285	291	293	300	303	3151	3055	304	308	302	307
Barley	32	31	30	31	32	28	29	28	28	28	23	28	30	35	34	35	37	33	31
Buckwheat	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9	10	10	10	11	12	12
Cash Crops	**3202**	**3428**	**3678**	**3876**	**4020**	**4102**	**4276**	**4597**	**4698**	**4694**	**4933**	**5183**	**5719**	**5710**	**5817**	**6330**	**5874.2**	**7373.6**	**-**
Sugarcane	1972	2103	2212	2248	2343	2305	2376	2463	2600	2485	2354	2495	2932	2930	2930	3316	3063	4347	3220
Oilseeds	120	123	132	135	125	133	142	139	136	134	135	155	175	179	179	182	210	208	214
Tobacco	4	4	4	4	3	3	3	3	3	3	2	2	2	3	2	1	2.2	0.6	NA
Jute	15	15	16	16	17	17	16	17	17	17	18	13	13	14	16	13	13	12	NA
Potato	1091	1183	1314	1473	1531	1643	1739	1975	1943	2055	2424	2518	2597	2584	2690	2818	2586	2806	2592
Other Crops	**2029**	**2175**	**2383**	**2463**	**2585**	**2679**	**2903**	**2992**	**3164**	**3457**	**3713**	**3993**	**4336**	**4672**	**4623**	**4778**	**4933**	**5306**	**-**
Pulses	229	237	243	250	257	265	271	267	274	270	255	262	318	320	357	352	354	364	NA
Fruits	456	447	487	474	519	511	553	535	575	631	686	707	794	1030	939	980	993	976	NA
Vegetables	1343	1490	1653	1738	1800	1890	2065	2190	2299	2539	2754	3004	3204	3299	3302	3421	3580	3929	NA
Tea	4	5	6	7	8	12	13	13	15	16	16	17	17	19	21	21	NA	24	24
Coffee	0.05	0.07	0.09	0.14	0.19	0.22	0.25	0.30	0.46	0.28	0.27	0.31	0.40	0.4	0.4	0.4	0.4	0.5	0.5
Cotton	0.68	0.74	0.46	0.15	0.06	0.01	0.01	0.06	0.05	0.07	0.06	0.11	0.11	0.13	0.15	0.13	0.13	0.12	0.5
Honey	0.139	0.15	0.16	0.53	0.53	0.58	0.6	0.65	0.65	1	0.85	1	1.2	1.5	1.6	1.6	3	3.5	4
Cocoon	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.03	NA	0.03	0.04	0.04	0.04	0.05	0.06
Mushroom	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1	1.1	1.3	1.5	1.7	1.9	2.7	9.3	11
Spice Crops	**108.16**	**110.45**	**124.27**	**132.38**	**201.06**	**219.86**	**223.26**	**226.91**	**238.64**	**243.1**	**276**	**321.23**	**357.21**	**364.3**	**345.1**	**429.4**	**404.9**	**433.4**	NA
Cardamom	4.33	6.53	6.08	6.18	5.68	5.98	6.07	6.65	6.79	7.1	7	5.23	5.21	6	5.8	5.2	5.1	6.4	NA
Turmeric	8.43	10.59	13.06	15.17	21.59	23.03	23.23	23.57	25.4	25	32	38	41	35.3	35.7	67.6	72	64	NA
Ginger	81.80	74.99	84.37	87.91	140.06	150.59	152.7	154.20	160.58	161	179	211	240	255	235	276	243	272	NA
Chilies	4.82	6.36	6.53	7.08	10.87	11.97	12.62	13.78	15.57	19	24	28	27	27	27.9	35.6	40.1	41	NA
Garlic	8.78	11.97	14.23	16.03	22.67	28.28	28.61	28.72	30.31	31	34	39	44	41	40.7	45	44.7	50	NA

Source : Ministry of Agriculture Development (Agri-Business Promotion and Statistics Division).

Table 3.4.5 : Annual Production of Improved Seeds

(mt.)

Seeds	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
Paddy	353	493.51	559.95	643.78	661.17	885.95	931.15	950.97	1209.1	1200.46	774	9537.00	9621.00	9472.21	10297.00
Wheat	1680	1666.76	2237.33	2859.24	2450.7	2878.54	2989.79	3554.58	2982.6	2180.93	2877.23	10216.00	12258.90	12529.82	13983.00
Maize	20	17.34	1.54	10.69	5.8	0.64	4	0.05	0.84	0	0.34	2330.00	2294.22	2407.27	2989.00
Vegetable	2.3	0.35	2.35	2.77	8.38	16	5.1	6.75	0.75	2.92	0.12	6.45	7.70	8.16	7.35
Lentil	17	12.64	15.08	21.9	26.01	4.96	11.53	6.25	12.73	8.58	17	280.00	351.69	368.05	398.00
Jute	4	1.21	6.08	5.25	1.59	1.48	2.75	1.12	0	0	0	0.00	0.00	0.00	0.00
Mustard	0.9	0.04	1.03	5.88	4.34	1.02	1.55	1.54	3.02	1.76	2	12.70	12.00	13.30	15.70
Others	0	0.432	1.6	1.64	0	0.4	0	0.51	2.02	0.2	0.22	1.30	1.90	1.98	2.37
Total	2077.2	2192.3	2825	3551.2	3158	3789	3945.9	4521.8	4211	3394.85	3670.9	22383.45	24547.41	24800.8	27692.42

Source: Seed quality control center

Table 3.4.6 : Crop Species Registered in Nepal

Crops Species	Number of Species Registered														
	1997*	2002+	2003+	2004	2005	2006	2007	2008	2009	2010	2013	2014	2015	2016	2017
Cereal crops															
Paddy		48	48	49	49	55	44	44	44	48	74	5	15	2	8
Maize		17	15	17	17	19	12	14	16	16	51	5	3	14	2
Wheat		28	28	29	29	30	17	17	19	20	22	-	2	2	-
Barley		6	6	6	6	6	6	6	6	6	6	-	-	-	-
Millet		3	3	3	3	3	3	3	3	3	3	-	2	-	-
Total	**92**	**102**	**100**	**104**	**104**	**113**	**82**	**84**	**88**	**93**	**156**	**10**	**22**	**18**	**10**
Leguminous															
Leguminous and Pulse	17	25	25	28	27	31	22	22	33	33	35	-	**1**	-	**1**
Vegetables	22	44	44	46	46	44	44	44	46	46	333	**6**	**2**	-	-
Oil Crops	10	12	12	16	16	16	15	15	15	15	17	**1**	-	-	-
Total	**49**	**81**	**81**	**90**	**89**	**91**	**81**	**81**	**94**	**94**	**385**	**7**	**3**	**0**	**1**
Others(Jhuse Til)											1	-	-	-	-
Grass crops										2	5	-	**4**	-	**8**
Total										**2**	**6**	**0**	**4**	**0**	**8**
Industrial/Cash Crops															
Jute		2	2	2	2	2	2	2	2	2	2	-	-	-	-
Ginger		1	1	1	1	1	1	1	1	1	1	-	-	1	-
Sugarcane	2	2	2	4	4	4	4	4	4	4	4	-	-	-	-
Tobacco	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-
Cotton/Fiber Crops	-	1	1	1	1	1	1	1	1	1	1	-	-	-	-
Total	**3**	**7**	**7**	**9**	**9**	**9**	**9**	**9**	**9**	**9**	**9**	**0**	**0**	**1**	**0**
Grand Total	153	190	188	203	209	220	179	93	97	198	556	**17**	**29**	**19**	**19**

Source: Seed quality control center

Table 3.4.7 : Production of Livestock

Products	Unit	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
Milk Production	**(000 mt)**	**1124**	**1159**	**1196**	**1232**	**1274**	**1312**	**1352**	**1389**	**1445**	**1496**	1557	**1623**	**1681**	**1700**	**1756**	**1854**	**1911**
Cow Milk		343	352	362	369	380	385	293	401	414	429	442	469	492	532	588	644	665
Buff Milk		781	807	834	863	895	927	959	988	1032	1067	1115	1154	1188	1168	1168	1210	1246
Meat Production	**(000 mt)**	**194**	**199**	**204**	**208**	**215**	**219**	**227**	**234**	**242**	**249**	**277**	**288**	**295**	**298**	**303**	**323**	**333**
Buffalo		125	128	131	134	139	142	147	151	157	162	168	172	175	174	174	175	180
Mutton (Sheep)		3	3	3	3	3	2	3	2	3	3	3	3	3	3	3	3	3
Goat		38	39	40	41	42	43	45	46	48	50	52	54	56	59	61	66	68
Pig		15	16	16	15	16	16	16	16	17	17	18	18	19	19	20	24	25
Chicken		13	14	15	16	16	16	16	16	17	17	36	40	43	43	45	55	57
Duck		0	0	0	0	0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Egg Production	**No (000)**	**50732**	**53842**	**55736**	**57557**	**59013**	**600800**	**614848**	**631253**	**629940**	**643203**	**704000**	**801370**	**887240**	**872918**	**879501**	**1308072**	**1352296**
Hen Egg		49157	52276	54173	56003	57652	587219	600966	617455	616312	629793	690628	788310	874194	859515	865947	1294166	1338312
Duck Egg		1576	1566	1564	1553	1361	13581	13882	13798	13628	13410	13490	13060	13046	13403	13554	13906	13984
Wool Production	**(000 kg)**	**614**	**609**	**601**	**598**	**590**	**587**	**588**	**585**	**584**	**580**	**587**	**587**	**588**	587	587	588	594
Fish Production	**(000 mt)**	**33**	**35**	**37**	**40**	**42**	**45**	47	**48**	**48**	**50**	**52**	**56**	**58**				

Source : Ministry of Agriculture Development, Agri-Business Promotion and Statistics Division.

Table 3.4.8 : Number of Livestock by Type in Nepal,1981/82-2011/12

S.N.	Livestock type	Number of Livestock (in 'ooo)				Percentage change		
		1981/82	1991/92	2001/02	2011/12	1991/1981	2001/1991	2011/2001
1	Cattle	6501.6	7359.3	7215.2	6430.4	13.2	-2.0	-10.9
2	Chaunri	55.5	58.6	95.4	48.9	5.6	62.8	-48.8
3	Buffaloes	2379.7	3116.3	3477.7	3174.4	31.0	11.6	-8.7
4	Goats	3643.7	5515.5	6932.9	10990.1	51.4	25.7	58.5
5	Sheep	677.1	602.8	471.2	608.1	-11.0	-21.8	29.0
6	Pigs	433.6	495.8	632.6	818.5	14.3	27.6	29.4
7	Horses	NA	14.3	20.1	17.9	0.0	40.6	-11.1
8	Mules and asses	27.5	5.3	6	5.5	-80.7	13.2	-9.0
9	Rabbits	NA	NA	10.1	24.2	0.0	0.0	140.0
10	Other animals	36.8	7.3	5.9	17.1	-80.2	-19.2	189.6
11	Chickens	7368.6	12333.1	17631.3	26267.8	67.4	43.0	49.0
12	Ducks	142.3	280.3	393.1	429.9	97.0	40.2	9.4
13	Pigeons	830.7	1419.9	1845.2	1498.9	70.9	30.0	-18.8
14	Other poultry	20.4	9.2	57.3	52.1	-54.9	522.8	-9.1
	Total	22117.5	31217.7	38794	50383.8	41.1	24.3	29.9

Source: Central Bureau of Statistics (Monograph Agriculture Census Nepal,2001/02) , National Report Of National sample census of Agriculture 2011/12

Table 3.4.9 : Livestock and Poultry Population in Arid and Semi-Arid Land

Year	Cattle		Buffaloes		Sheep		Goats		Pigs		Fowls		Ducks	
	Population	p/land*	Population	p/land*	Population	p/land*	Population	p/land*	Population	p/land*	Population	p/land*	Population	p/land*
1994/95	6837913	116	3278255	56	918885	16	5649056	96	636024	11	14063581	239	403705	10
1995/96	7008420	119	3302200	56	859000	15	5783140	98	670340	11	14521100	247	416100	11
1996/97	7024775	119	3362435	57	869582	15	5921956	101	723613	12	15576525	265	415758	11
1997/98	7048660	120	3419150	58	869142	15	6080060	103	765718	13	16664730	283	416943	11
1998/99	7030698	119	3470600	59	855159	15	6204616	105	825132	14	17796826	302	421423	11
1999/00	7023166	119	3525952	60	851913	14	6325144	107	877681	15	18619636	316	425160	11
2000/01	6982660	119	3624020	62	850170	14	6478380	110	912530	15	19790060	336	411410	11
2001/02	6978690	119	3700864	63	840141	14	6606858	112	934461	16	21370420	363	408584	11
2002/03	6953584	118	3840013	65	828286	14	6791861	115	932192	16	22260700	378	408311	11
2003/04	6966436	118	3952654	67	824187	14	6979875	119	935076	16	23023979	391	405217	10
2004/05	6994463	119	4081463	69	816727	14	7153527	122	947711	16	22790224	387	391855	10
2005/06	7002916	119	4204886	71	812085	14	7421624	126	960827	16	23221439	394	392895	10
2006/07	7044279	120	4366813	74	813621	14	7847624	133	989429	17	23924630	406	394798	10
2007/08	7090714	120	4496507	76	809480	14	8135880	138	1013359	17	24665820	419	390748	10
2008/09	7175198	122	4680486	80	802993	14	8473082	144	1044498	18	24481286	416	383123	10
2009/10	7199260	122	4836984	82	801371	14	8844172	150	1064858	18	25760373	438	379753	10
2010/11	7226050	123	4995650	85	805070	14	9186440	156	1093610	19	40000000	679	378050	10
2011/12	7244944	123	5133139	87	807267	14	9512958	162	1137489	19	45171185	767	376916	10
2012/13	7274022	124	5241873	89	809536	14	9786354	166	1160035	20	47959239	815	375975	10
2013/14	7243916	123	5178612	88	789216	13	10177531	173	1190138	20	48079406	817	390209	10
2014/15	7241743	123	5167737	88	789292	13	10251569	174	1203230	20	50195285	853	390287	10
2015/16	7302808	124	5168809	88	800658	14	10986114	187	1291308	22	68630638	1166	392255	10

** Arid land /semi arid land= Cultivated land, Non cultivated land and Grass land/Pasture estimated area 58873.3 sq. km.*

NA : Not Available

Source: Ministry of Agriculture Developments

Table 3.4.10 : Summary of Fish Production in Nepal, 2015/16

S.N.	Particulars	No. of Pond	Area (ha.)	Production (kg.)	Yield (kg./ha.)
Fish Production from Aquaculture Practices					
1	Pond Fish Culture				
	Mountain	154	11	28000	2545.45
	Hill	4203	435	1205000	2770.11
	Tarai	34951	9488	47310000	4986.30
	Total	**39308**	**9934**	**48543000**	**4886.551**
2	Other area (ghols)		3300		
3	Paddycum fish culture(ha)		100		
4	Cage fish culture(m3)		70000		
5	Enclosure fish culture(ha)		100		
6	Trout Fish Culture in Raceway(m3)		3		
7	Fish Production in Public Sector			22000	
Fish Production from Capture Fisheries					
8	Rivers		395000	7110000	18
9	Lakes		5000	850000	170
10	Reservoirs		1500	385000	257
11	Marginal/ Swamps / Ghols etc.		11100	5990000	540
12	Irrigated Paddy Fields		398000	7165000	18
Total Fish Production					**70065000**

Source : Directorate of Fisheries Development

Table 3.4.11 : Chemical Fertilizer Use in Nepal,1990/00 to 2015/16

Year	Government Sector				Private Sector	Total Fertilizer	Nutrient mt / Cultivated Land ha*100
	Urea	DAP	Potash	Complex			
1999/00	43508	26154	308		76727	146697	4.75
2000/01	29528	15633	58		101145	146364	4.74
2001/02	17697	20645	1016		101140	140498	4.55
2002/03	34449	33331	2966		103636	174382	5.64
2003/04	7428	11377	1688		118265	138758	4.49
2004/05	10043	19436	2332		90895	122706	3.97
2005/06	1960	10857	478		78258	91553	2.96
2006/07	14985	7437	NA		65679	88101	2.85
1999/00	43508	26154	308		76727	146697	4.75
2000/01	29528	15633	58		101145	146364	4.74
2001/02	17697	20645	1016		101140	140498	4.55
2002/03	34449	33331	2966		103636	174382	5.64
2003/04	7428	11377	1688		118265	138758	4.49
2004/05	10043	19436	2332		90895	122706	3.97
2005/06	1960	10857	478		78258	91553	2.96
2006/07	14985	7437	–	2747	65679	90848	2.94
2007/08	2500	1990	–	2156	47107	53753	1.74
2008/09	5935	–	–	1198	5677	12810	0.41
2009/10	5049	2523	236	2521	NA	–	–
2010/11	85190	22001	2821	–	NA	–	–
2011/12	97957	43146	3711	–	NA	–	–
2012/13	108553	65722	2688	–	NA	–	–
2013/14	145622	82520	5046	–	NA	–	–
2014/15	190163	101797	6716	–	NA	–	–
2015/16	164952	87532	6577	–	NA	–	–

Note : The Cultivated land (3090780 ha) based on Department of Forest Research and Survey, 2001.

Source: Ministry of Agriculture and Cooperatives and Agriculture Inputs Company Ltd.

Table 3.4.12 : Pesticide Imported and Formulated in Nepal,2012/13-2016/17

Year	Pesticides	liquid	liquid a.i.(kg)	Solid	Solid a.i.(kg)
2012/13	Insecticide	255342.4	99607.42	919691.3	39154.24
	Fungicide	5575	319.6	223942	163571.2
	Herbicides	195757	97025.02	13271	3808.26
2013/14	Insecticide	329027.2	123799.24	809785.7	38526.76
	Fungicide	20171	7290.63	256788.5	184913
	Herbicides	159313	76355.65	33387.6	13771.34
2014/15	Insecticide	280642	117314.52	783428.54	38727.41
	Fungicide	11675	782.52	350860.9	250025.32
	Herbicides	247090.4	118391.43	38022	15465.95
2015/16	Insecticide	311222	140277.18	644243.25	40993.69
	Fungicide	10977	727.92	347631	246747.35
	Herbicides	241993.2	113598.03	51218.8	20634.34
2016/17	Insecticide	274245.8	122713.17	832360.46	46646.83
	Fungicide	19122.5	1651.25	471203.45	346055.97
	Herbicides	158311	70357.13	53848.6	35088.31

Table 3.4.13: Most Reported Disease in Crops by Climatic Zone in Last 25 Years (Local Name)

Ranking	Tropical	Sub-tropical	Temperate	Sub-alpine
1	Leaf sit blight/blight	Leaf sit blight / blight	Leaf sit blight / blight	Leaf sit blight / blight
2	Dadhuwa	Gobre/gabaro	Sindure rog	
3	Gobre/gabaro	Dadhuwa	Dadhuwa	
4	Wilting	Root rot/Saduwa	Wilting	
5	Khaire rog	Pahele rog	Gobre/gabaro	
6	Root rot/Saduwa	Sindure rog	Root rot/Saduwa	
7	Pahele rog	Wilting	Pahele rog	
8	Raate	Beruwa	Maruwa	
9	Kalo poke	Kalo poke	Marne rog	
10	Sete / sata	Maruwa	Blast	
11	Bali sukne/ bot sukne	Marne rog	Kirako prakop	
12	Kaal /Kalaya	Kirako prakop	Khumre	
13	Dadelo rog	Khumre	Dadelo rog	
14	Blast	Raate	Kalo poke	
15	Laai	Madhuwa	Laai	

Source: NCCIS 2016

Table 3.4.14 : Food Consumption Pattern (NLSS Food Basket Composition)

(per capita/g/d)

S. N.	Food Items	1995/96	2003/04	2010/11
1	Fine rice	26.15	26.4	39.41
2	Coarse rice	217.3	219.35	288.64
3	Beaten rice, flattened rice	3.47	3.50	9.16
4	Maize	58.55	59.1	31.61
5	Maize flour	40.07	40.45	48.13
6	Wheat flour	91.77	92.64	82.25
7	Millet	35.57	35.91	17.97
8	Black Gram *(Mas)*	1.9	1.92	3.47
9	Lentil *(Musuro)*	8.17	8.25	8.63
10	Rahar	1.02	1.03	
11	Red Gram	0.72	0.73	1.48
12	Horse Gram *(Chana)*			2.53
13	Beans			2.34
14	Eggs	0.49	0.49	2.27
15	Milk	30.7	31.06	63.43
16	Baby milk/ power milk	0.01	0.01	0.09
17	Curd/ whey	1.21	1.22	34.37
18	Ghee	1.17	1.19	1.49
19	Vegetable oil	0.22	0.22	0.73
20	Mustard oil	7.35	7.42	12.77
21	Potatoes	28.88	29.15	64.07
22	Colocassia			14.32
23	Onions	5.84	5.90	16.19
24	Cauliflower/ cabbage	4.06	4.10	10.73
25	Tomatoes	2.41	2.43	4.08
26	Pointed gourd			4.52
27	Bitter gourd			4.21
28	Bananas	3.70	3.74	10.39
29	Citrus fruit	0.85	0.85	7.69
30	Mangoes	4.99	5.04	5.12
31	Apples	0.37	0.38	2.26
32	Pineapple	0.10	0.10	0.33
33	Papaya	1.70	1.71	3.29
34	Fish	1.72	1.73	5.39
35	Mutton	1.64	1.66	3.45
36	Buffalo meat	1.79	1.81	4.71
37	Chicken	1.08	1.09	6.15
38	Salt	13.31	13.44	13.18
39	Sugar	3.55	3.58	10.22
40	Gur (sakhar)	0.77	0.78	0.9
41	Sweets (mithai)	1.91	1.93	0.55
42	Tea	0.25	0.26	

Note : Food consumption of the NLSS-III poverty basket is obtained by adjusting the NLSS-II basket for the change in the demographic composition of an average Nepali household.

Source : Central Bureau of Statistics.

Table 3.4.15: Households Facing Food Scarcity in Last Five Years

Disasters	Households Facing Food Scarcity (%)			Total
	Yes	No	Not applicable	
Drought	32.86	65.99	1.15	100
Fire (forest)	2.27	95.61	2.12	100
Fire (settlement)	14.86	84.72	0.42	100
Flood	15.5	83.58	0.92	100
Inundation	14.71	84.9	0.39	100
Windstorm	10.1	89.04	0.86	100
Thunderstorm	0.89	96.73	2.39	100
Hailstorm	26.15	72.77	1.08	100
Heavy rain	4.2	95.56	0.24	100
Sporadic rain	20.78	76.49	2.72	100
Soil erosion	15.03	84.56	0.41	100
Landslide	12.21	87.04	0.75	100
Snowstorm	0	100	0	100
Avalanche	0	100	0	100
Heat wave	0	100	0	100
Cold wave	5.92	93.9	0.18	100
Diseases/insect	21.69	77.99	0.32	100

Source: NCCIS 2016, CBS

Table 3.5.1 : Supply of Drinking Water by Agency

Year	Unit	Water Supply				
		DWSS		NWSC	KUKL	Total
		Total	Urban Area Only			
1993/94	Th. L/d	46948	1736	16000		64684
1994/95	Th. L/d	54471	4608	3300		62379
1995/96	Th. L/d	54067	3880	5500		63447
1996/97	Th. L/d	34650		5500		40150
1997/98	Th. L/d	31815		300		32115
1998/99	Th. L/d	20011		7000		27011
1999/00	Th. L/d	28271		3000		31271
2000/01	Th. L/d	25164		1480		26644
2001/02	Th. L/d	2876		7000		9876
2002/03	Th. L/d	5552		5000		10552
2003/04	Th. L/d	8550		3000		11550
2004/05	Th. L/d	5580		4000		9580
2005/06	Th. L/d	7200	1000	18100		26300
2006/07	Th. L/d	22500	8000	3000		33500
2007/08	Th. L/d	19545	28600	7500	101900*	55645
2008/09	Th. L/d	15615	21120	125000		
2009/10	Th. L/d	16605	1040	129440	119160	
2010/11	Th. L/d			135033	118880	
2011/12	Th. L/d			168305	117300	
2012/13	Th. L/d			155125		
2013/14	Th. L/d	18045	1035	148000	115729	282809
2014/15	Th. L/d	35280	17640	131450	116265	300635
2015/16	Th. L/d			135000	114000	249000
2016/17	Th. L/d			135000	134660	269660
2017/18	Th. L/d				142320	

Th. L/d = Thousand litre per day

** Water supply in dry season, + KUKL*

Source: Department of Water Supply and Sewerage (DWSS), Nepal Water Supply Corporation (NWSC) and Kathmandu Upatyaka Khanepani Ltd .(KUKL).

Table 3.5.2: River Water Runoff from Nepal

S.N.	River	Length (km)	Drainage Area (sq.km)		Estimated Runoff (m^3/sec)	
			Total	Nepal	From all Basins	From Nepal
1	Mahakali	223	15260	5410	698	247
2	Karnali	507	44000	41890	1441	1371
3	Babai	190	3400	3400	103	103
4	West Rapti	257	6500	6500	224	224
5	Narayani	332	34960	28090	1753	1409
6	Bagmati	163	3700	3700	178	178
7	Sapta Koshi	513	60400	31940	1658	878
8	Kankai	108	1330	1330	68	68
9	Other River		24921	24921	1001	1001
Total			194471	147181	7124	5479

Source : Water and Energy Commission Secretariat (Water Resources of Nepal in the context of Climate Change,2011)

Table 3.5.3: Reasons of Changes in Water Sources

Analytical Domain	Reasons of change (HH, %)[1]												
	Insufficient rainfall	Sufficient rainfall	Temperature increase	Temperature decrease	Road construction	Road construction	Landslide /soil erosion	Deforestation	Heavy use of underground water	Mining	Population increase	Earthquake	Others
Urban/Rural													
Urban	81.8	0.7	43	0.1	9.9	2.8	24.8	39	13.9	2	27.1	8.8	3.9
Rural	92.1	0.4	44.6	0.5	9.8	4.4	5.3	37	5.4	1	18.4	16	3.1
Ecological Belt													
Mountain	76.9	1.7	37.6	0.9	9.9	4.1	3.7	41	0	0	20.5	28	4.6
Hill	89.5	0.5	45.7	0.4	16	7	13.6	26	4.7	1	21.8	21	2.3
Terai	91.1	0.3	43.5	0.3	2.8	0.3	9.9	50	13.4	2	20.3	3	4.2
Kathmandu Valley	64.3	0	21.7	0	3.4	0	63.4	21	35	1	51.4	6.5	2.3
NAPA Combined Vulnerability Index													
Very High	82.2	0.4	38.3	0.6	8.5	0.2	19.4	29	14.5	1	22.1	14	2.7
High	96.5	0.6	49.7	0.1	12.6	6.2	5.2	37	0.7	2	16.2	20	3.5
Moderate	89.8	0.6	51.4	0.5	11.2	3.7	2.2	33	1.7	1	12.9	18	3.8
Low	87.1	0.6	39.4	0.3	9.7	7.7	14.6	47	7.5	1	29.7	5.7	4.7
Very Low	89.3	0.1	40	0.4	3.6	0.3	14.5	58	23.5	5	29.8	5	0.9
Bio-climate Zones													
Tropical	90.3	0.3	42.3	0.4	7.6	2	9.2	44	9.9	2	19.7	11	4.2
Sub-tropical	87.5	0.8	48	0.4	13.2	6.7	15.3	28	5.9	1	23.1	18	1.9
Temperate	85.2	0.7	35.8	0.5	11.7	6.1	3	37	0	0	22.4	15	3
Sub-alpine	94.7	0	31.6	5.3	0	10.5	0	0	0	0	0	5.3	37
Overall	89	0.5	44.1	0.4	9.8	3.9	11.1	38	8	1	21.1	14	3.3

Source: NCCIS 2016, CBS

CHAPTER IV
Residuals

Table 4.1.1: GHG emission by different end-use sectors in 1990/91

S.N.	GHG Source and Sink Categories	CO_2		CH_4	N_2O
		Emision(Gg)	Removal(Gg)	(Gg)	(Gg)
1	Fuel combustion	912.96			
2	Agriculture			920.82	0.803
3	Biomass burning			85	0.59
	Net emission	912.96		1005.82	1.393

Source : Ministry of science,technology and environment (SNC Report)

Table 4.1.2: GHG emission by different end-use sectors in 1994/95

S.N.	GHG Source and Sink Categories	CO_2		CH_4	N_2O
		Emision(Gg)	Removal(Gg)	(Gg)	(Gg)
1	Energy	1465		71	1
2	Industrial Processes	165			
3	Agriculture			867	29
4	Land use change and forstry	22895	-14778		
5	Waste			10	1
Total emission and removals		24525	-14778	948	31
Net emission		9747		948	31

Source : Ministry of science, technology and environment (SNC Report)

Table 4.1.3 : Trend of GHG emission from energy sector (in Gg)

Emission	1995/ 96	1996/ 97	1997/ 98	1998/ 99	1999/ 00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/ 06	2006/07	2007/08	2008/09
CO_2(Gg)	1732	1804	2013	2143	2989	2763	2770	2679	2754	2558	2862	2531	2548	2871
CH_4(Gg)	148	151	154	157	161	164	171	174	178	182	185	189	193	198
N_2O (Gg)	2	2	2	2	2	2	2	2	2	2	3	3	3	3
CO_2eq.(Gg)	5460	5595	5867	6060	6990	6827	6990	6953	7112	7000	7677	7430	7537	7959

Source : Ministry of science,technology and environment (SNC Report)

Table 4.1.4: Sector emission trend and compounded annual growth rate since 1994

S.N.	Sectors	1994 (CO_2e Gg)		2000(CO_2 e Gg)		CAGR*% (1994-2000)	2008 (CO2e Gg)	
		Total Emission	% of Total	Total Emission	% of Total		Total Emission	% of Total
1	Energy	1465	5	6827	27.8	29.24	7959	26.5
2	Industrial processes	165	0.6	131	0.5	-3.77	632	2.1
3	Agriculture	27197	92.6	16916	68.9	-7.58	20662	68.8
4	Waste	520	1.8	667	2.7	4.23	758	2.5
Total (without LULCF)		29347	100	24541	100	-2.92	30011	100

Source : Ministry of science,technology and environment(SNC Report)

Table 4.1.5 : GHG emission and removal by different end-use sectors in base year 2000/01

S.N.	Categories	CO2 emission (Gg)	CO2 removal (Gg)	CH4 (Gg)	N2O (Gg)
Total national emission and removal		2894.24	-12776.38	667.53	30.55
1	Energy	2763.28	-	163.96	2.22
2	Industrial processes	130.96	-	-	-
3	Agriculture	- -	-	470.08	27.14
4	LULUCF	-	-12776.38	16.75	-
5	Waste	-	-	16.74	1.19

Source : Ministry of science,technology and environment(SNC Report)

Table 4.1.6 : Direct and Indirect GHG emission and removal by different end-use sectors in 2000

GREENHOUSE GAS SOURCE AND SINK	CO2 (Gg)	CO2 (Gg)	CH4 (Gg)	N2O	CO2-eq (Gg)
CATEGORIES	Emissions	Removals			
Total National Emissions and Removals	2,894	-12775	668	30	13447
1 Energy	2,763		164	2	6827
					-27.80%
Energy Industries	821				821
Transport	818				818
Other Sectors	1,124		164	2	5188
2 Industrial Processes	131				131
					-0.50%
A. Mineral Products	131				131
3 Agriculture			470	27	18240
					-68.90%
A. Enteric Fermentation			430		9030
B. Manure Management			38	8	3278
C. Rice Cultivation			2		42
D. Agricultural Soils				19	5890
4 Land-Use Change & Forestry		-12775	17		-12418
A. Changes in Forest and Other Woody Biomass Stocks		-29562			
B. Forest and Grassland Conversion	12,561		17		
C.Abandonment of Managed Lands		-122			-122
D. CO2 Emissions and Removals from Soil	4348				4348

GREENHOUSE GAS SOURCE AND SINK	CO2 (Gg)	CO2 (Gg)	CH4 (Gg)	N2O	CO2-eq (Gg)
5 Waste			17	1	667(2.7%)
A Solid Waste Disposal on Land			12		252
B Wastewater Handling			5	1	415
6 Memo items					
International Bunkers	162				
Aviation	162				
CO2 emission from Biomass	30,294				

Source : Ministry of science,technology and environment(SNC Report)

Table 4.1.7: Emission reduction accounts

SN	Renewable Energy Technologies	ER Calculation (tCO2eq)*					Emission reduction per year (tCO2eq) of total installation until 2017/18
		2070/71 (2013/14)	2071/72 (2014/15)	2072/73 (2015/16)	2073/74 (2016/17)	2074/75 (2017/18)	
1	Mini/Micro/Pico Hydro Power	10,716	16,514	19,318	22,791	25,578	73,770
2	Improved Water Mill	2,865	5,311	5,632	6,555	6,902	37,945
3	(Small) Solar PV Home Systems	9,160	19,021	23,411	39,547	44,183	95,290
4	Institutional Solar PV Systems	178	816	1,047	1,386	2,653	4,220
5	Solar Drinking Water/Irrigation Pumping Systems	22	47	57	178	410	436
6	Solar Dryer	1,327	1,490	1,490	1,490	2,116	14,936
7	Mud ICS	209,149	657,910	770,578	824,474	834,300	1,972,797
8	Metallic ICS+Institutional	7,792	25,753	75,241	145,468	207,520	236,416
9	Domestic Biogas Plants	114,012	189,291	226,539	262,614	284,943	1,294,887
10	Institutional/community/Commercial Biogas Plants and Waste to Energy Projects	-	112	168	498	1,118	1,118
11	Wind Energy	23	81	138	219	322	1,099
	Total	**355,244**	**916,345**	**1,123,617**	**1,305,220**	**1,410,043**	**3,732,916**

Source: Alternative Energy Promotion center

**The emission reduction accounts for the emission reduction for all installed systems and all are not readable Certified Emission Reduction generated by Carbon projects*

Table 4.1.8 : $PM_{2.5}$ scenario of Kathmandu valley (for all three stations): Assessment of seasonal variation

Season	Mean	N	SD	CV
Spring/Pre-monsoon	70	20513	56.4	80.6
Summer/Monsoon	23.8	22235	28.6	120.1
Autumn/Post-monsoon	23.7	22030	27.1	114.4
Winter	82	21116	58.7	71.7
Total	49.1	85894	52.1	106

Source: Situation analysis of Ambient Air Pollution and Respiratory Health Effects in Kathmandu Valley,2015,NHRC

Table 4.1.9: CO scenario of Kathmandu valley (for all three stations): Assessment of seasonal variation

Season	Mean	N	SD	CV
Spring	447.3	348518	1541.9	344.7
Summer	502.7	345159	4937.17	982.1
Autumn	298.4	397446	1180.25	395.5
Winter	517.3	380150	1116.11	215.8
Total	438.2	1471273	2643.43	603.3

Source: Situation analysis of Ambient Air Pollution and Respiratory Health Effects in Kathmandu Valley,2015,NHRC

Table 4.1.10: NO_2 scenario of Kathmandu valley (for all three stations): Assessment of seasonal variation

Season	Mean	N	SD	CV
Spring	267	374746	1075.1	402.6
Summer	97.3	396223	337.9	347.2
Autumn	47.1	420320	101	214.3
Winter	314.7	368603	266.3	84.6
Total	175.9	1559892	582	330.9

Stations :- Putalisadak in Kathmandu, Mahalaxmithan in Lalitpur and Bhimsensthan - Jagati in Bhaktapur

Source: Situation analysis of Ambient Air Pollution and Respiratory Health Effects in Kathmandu Valley,2015,NHRC

Table 4.1.11: Carbon dioxide emission by industrial sectors in percentage (1996/97-2011/12)

NSIC code3	NSIC Name	Tons CO2 emissions 1996/97	Tons CO2 emissions 2001/02	Tons CO2 emissions 2006/07	Tons CO2 emissions 2011/12
15	Food and beverages	8.59	11.51	9.96	37.06
16	Tobacco products	0.52	0.58	0.25	0.18
17	Textiles	4.46	3.06	1.67	0.92
18	Wearing apparel, fur	0.28	0.53	0.11	0.04
19	Leather, leather products and footwear	0.17	0.3	0.05	0.11
20	Wood products (excl. furniture)	0.97	0.73	0.2	1.17
21	Paper and paper products	0.2	1.02	0.48	0.11
22	Printing and publishing	0.15	0.08	0.06	0.04
23	Coke, refined petroleum products, nuclear fuel	0.03	0.01	0.01	0.01
24	Chemicals and chemical products	2.61	4.36	2.86	1.57
25	Rubber and plastic products	1.29	0.8	0.76	1.03
26	Non-metallic mineral products	76.94	71.3	72.32	49.4
27	Basic metals	0.52	2.96	2.57	1.66
28	Fabricated metal products	2.49	2.22	8.28	6.5
29	Machinery and equipment n.e.c.	0.08	0.08	0.15	0.03
31	Electrical machinery and apparatus	0.18	0.22	0.16	0.09
32	Radio, television and communication equipment	0.01	0	0.01	0.01
33	Medical Precision, and optical Instruments			0.001	
34	Motor vehicles, trailers, semi-trailers	0.03	0	0	0
35	Other transport equipment			0.002	
36	Furniture; manufacturing n.e.c.	0.48	0.22	0.1	0.07
	NEPAL	**100**	**100**	**100**	**100**

Source: Department of Manufacturing Industries in Nepal, Current State and Future Challenges, CBS, 2014

Table 4.2.1: Solid Waste Generation and Disposal Cost by Municipalities

District	Municipality	Quantity (mt.) per day							Cost (Rs per day)*														
		2006/ 07	2007/ 08	2008/ 09	2009/ 10	2010/ 11	2011/ 12	2012/ 13	2013/ 14	2014/ 15	2015/ 16	2016/ 17	2006/ 07	2007/ 08	2008/ 09	2009/ 10	2010/ 11	2011/ 12	2012/ 13	2013/ 14	2014/ 15	2015/ 16	2016/ 17
Dadeldhura	Amargadhi	0.7	1.3	NA	1.3	2.0	0.5	NA	0.0	NA			NA	1370	1370	713	750	2055	NA	4784	5967	NA	NA
Baglung	Baglung	4.0	4	4.0	16.0	16.0	NA	0.7	0.1	NA	0.67	13.24	2262	2735	3779	4500	4500	NA	12337	18359	NA	11841	13633
Kavre	Banepa	4.5	4.5	4.5	0.9	6.5	6.5	1.6	6.6	7.0	6.3	NA	4521	11206	12296	7718	5100	13973	NA	20548	68261	14987	NA
Jhapa	Bhadrapur	2.5	1.0	1.0	0.9	5.0	5.0	5.0	NA	4.0	11.5	14.0	3000	2953	2491	4205	1696	4276	4928	NA	6751	12883	11518
Bhaktapur	Bhaktapur	2.0	2.2	4.8	23.7	26.0	30.0	24.2	25.0	28.4	25.0	27.4	18748	44000	57195	73705	19250	NA	136654	273638	160080	NA	225781
Chitwan	Bharatpur	1.2	1.0	NA	20.0	20.2	22.0	25.0	30.0	35.0	NA	1.97	10444	6780	6780	7582	12500	32140	120342	52414	71232	NA	71233
Kanchanpur	Bhimdatta	9.0	3.5	3.2	2.1	5.1	4.0	11.9	24.7	4.3	NA	NA	12	2142	5479	3700	6049	6300	20816	1187865	11440	22798	NA
Dolakha	Bhimeswor	3.0	1.5	NA	3.0	3.0	4.9	4.9	4.9	1.65	4.9	NA	800	379	959	6575	6600	1080	6243	3542	6597	6531	NA
Nuwakot	Bidur	4.0	5.0	4.0	5.0	9.2	NA	10.0	NA	9.6	10.0	9.64	1000	1740	3248	2410	2546	NA	21202	NA	11806	12912	16849
Morang	Biratnagar	39.6	21.0	NA	5.2	116.0	70.0	2.3	NA	157.8	70.0	80.0	2739	27789	17984	8400	9100	24657	NA	NA	24658	39488	32658
Surkhet	Birendranagar	1.2	1.5	0.5	5.0	5.0	4.0	1.5	5.0	NA	4.93	4.9	2191	560	3702	2899	6115	8918	12219	40000	16808	19521	30132
Parsa	Birganj	35.0	35.0	41.1	52.0	30.0	63.0	11.3	61.2	25.0	60.0	NA	73150	1000	1000	8400	55873	183000	65418	238930	181797	NA	NA
Rupandehi	Butwal	18.0	NA	12.5	0.6	44.4	45.0	47.0	45.0	22.6	53.0	NA	15068	21918	21918	1274	20018	45008	41095	79044	136986	82282	NA
Tanahu	Byas	4.8	7.0	6.0	10.0	11.0	0.1	8.0	9.0	NA	9.0	9.81	1760	2460	4280	2142	2803	7942	12857	23282	NA	13759	14934
Jhapa	Damak	5.0	4.3	4.0	0.5	7.0	10.0	9.9	NA	15.0	12.5	10.6	1918	1643	1924	838	2155	6849	12630	NA	2740	22408	19090
Baitadi	Dasharathchanda	2.0	1.0	NA	1.4	NA	NA	NA	0.1	0.0	1.75	NA	2200	548	585	275	569	NA	NA	2603	2329	4222	NA
Kailali	Dhangadhi	1.6	1.1	NA	1.5	1.6	3.0	30.0	NA	9.9	NA	NA	690	6000	7123	2324	2545	43000	19372	99173	30070	NA	NA
Dhankuta	Dhankuta	0.7	NA	NA	10.0	0.8	NA	5.8	1.6	7.2	0.071	NA	1470	1470	1470	5000	4700	NA	18630	12329	16986	21299	NA
Sunsari	Dharan	7.0	3.0	4.7	0.0	48.0	37.9	50.2	NA	3.5	NA	51.2	4000	10958	10370	2740	8727	33356	34345	NA	45584	NA	6849
Kavre	Dhulikhel	3.0	5.0	1.8	0.3	0.4	0.4	NA	0.1	0.5	7.3	NA	1644	1849	1353	986	2147	41918	NA	NA	45587	37808	NA
Doti	Dipayal Silgadhi	NA	NA	1.0	0.6	1.0	1.0	0.1	NA	NA	NA	NA	438	443	443	502	420	NA	2339	NA	45587	NA	NA
Rutahat	Gaur	1.5	7.0	0.4	1.7	1.4	2.2	3.9	3.0	1.7	16.64	NA	2824	2000	4110	2500	3662	2014	NA	NA	NA	31682	NA
Dang	Ghorahi	6.0	1.6	0.8	0.7	12.1	12.0	14.0	14.0	14.0	6.9	1.6	3780	5931	7684	1750	7645	19000	24241	21918	31774	24461	7912
Gorkha	Gorkha	2.5	2.0	0.4	1.4	12.6	1.3	10.0	12.61	12.6	12.6	0.3	930	1200	613	578	655	2000	NA	2466	3737	2773	3175
Bardiya	Guleriya	6.0	3.0	1.6	0.1	0.1	NA	4.5	4.0	4.0	3.45	4.0	700	1500	1323	647	700	NA	4852	5506	5071	6534	19101
Makawanpur	Hetauda	10.0	NA	NA	12.7	15.1	0.6	15.1	NA	NA	39.2	NA	1095	1095	1095	7638	9858	4900	NA	NA	NA	50000	NA
Ilam	Ilam	2.0	6.0	NA	0.9	0.9	0.9	0.9	1.0	6.9	0.023	NA	40720	500	500	2219	2929	11000	7205	9912	10886	1918	9589
Sunsari	Inaruwa	0.2	0.2	2.0	1.7	1.7	11.4	1.4	NA	3.4	NA	8.35	9040	1600	1384	4658	1169	1000	5627	NA	6677	NA	NA
Sunsari	Itahari	16.8	9.0	22.5	2.7	11.0	28.8	15.0	NA	25.9	NA	27.7	NA	30137	4658	1132	2700	22000	18715	NA	41852	NA	19397
Mahottari	Jaleshwor	3.0	5.0	NA	2.2	5.9	NA	NA	NA	NA	0.27	NA	2909	3512	3512	2218	2218	NA	NA	NA	NA	18082	NA
Dhanusa	Janakpur	5.0	1.5	11.2	5.9	6.1	6.0	6.0	6.0	5.9	29.0	NA	11501	11501	15213	4335	NA	37000	36758	39126	49487	49152	NA
Bara	Kalaiya	NA	1.5	1.2	11.0	5.0	52.1	52.1	60.2	0.1	5.9	NA	4730	4667	548	4000	6000	18000	NA	27132	NA	NA	NA
Sindhuli	Kamalamai	5.0	3.5	2.0	5.0	5.0	3.4	3.5	5.0	5.0	9.9	NA	505	821	610	400	517	7000	2882	2959	4585	12685	NA
Kapilbastu	Kapilbastu	4.0	NA	2.0	NA	3.0	0.1	1.1	0.0	0.3	3.0	0.4	1726	1726	2740	NA	1507	5000	5863	6370	7534	11580	13425
Kathmandu	Kathmandu	29.9	30.6	30.6	318.4	435.0	449.0	457.0	484.0	281.0	418.0	189.0	16838	16938	16938	17654	195410	NA	NA	1885553	439367	NA	399830
Sankhuwasabha	Khandbari	NA	NA	NA	NA	0.1	NA	NA	0.0	NA	0.25	NA	1000	100	NA	100	250	NA	NA	68	151	904	NA
Kathmandu	Kirtipur	1.2	1.2	1.2	10.3	8.8	12.1	31.0	16.25	31.2	11.2	17.77	9377	257	257	95410	2000	NA	99015	NA	6849	NA	9589
Siraha	Lahan	0.4	0.4	0.1	0.6	0.6	0.7	1.1	1.1	29.6	NA	NA	2269	6690	4110	699	669	1000	1290	1345	21936	NA	NA
Lalitpur	Lalitpur	15.0	15.0	7.5	65.0	65.0	65.0	65.0	66.43	64.9	70.0	70.0	15635	68493	82192	68325	68325	86000	140367	218570	67123	263288	277260
Kaski	Lekhnath	NA	NA	NA	NA	NA	NA	6.7	2.5	NA	NA	NA	NA	100	100	NA	25	NA	2191	NA	NA	NA	NA
Bhaktapur	Madhyapur Thimi	14.0	9.0	NA	16.0	16.0	17.0	NA	19.0	17.0	10.2	23.0	1507	3192	4110	1436	3680	5000	NA	143414	6185	5690	6078
Sarlahi	Malangawa	1.0	2.0	1.7	2.0	5.0	NA	5.5	NA	NA	0.14	NA	2100	1616	1616	1780	2889	NA	5479	NA	NA	10153	NA
Jhapa	Mechinagar	4.5	6.0	4.5	0.3	9.4	5.5	2.7	NA	5.6	3.0	3.0	2055	1863	1365	4973	1600	10553	15586	NA	10959	10959	10959
Daikekh	Narayan	0.3	NA	0.5	1.5	0.3	0.4	1.0	0.5	NA	0.63	0.4	300	986	986	700	1256	2000	NA	5302	8208	4271	411
Banke	Nepalgunj	15.9	18.0	4.6	38.4	28.5	28.0	3.7	28.0	28.0	28.0	31.30	16358	20821	8481	34663	15398	50000	36942	29571	78797	79452	84967
Kavre	Panauti	1.0	1.0	0.1	21.0	NA	0.1	0.8	0.0	0.0	2.0	NA	1500	1750	1145	1748	3374	4000	NA	NA	7137	6781	NA

District	Municipality	Quantity (mt.) per day							Cost (Rs per day)*														
		2006/ 07	2007/ 08	2008/ 09	2009/ 10	2010/ 11	2011/ 12	2012/ 13	2013/ 14	2014/ 15	2015/ 16	2016/ 17	2006/ 07	2007/ 08	2008/ 09	2009/ 10	2010/ 11	2011/ 12	2012/ 13	2013/ 14	2014/ 15	2015/ 16	2016/ 17
Kaski	Pokhara lekhnath	25.0	47.0	47.4	80.0	84.0	84.0	83.0	40.2		86.0	84.0	NA	40066	36156	18493	25151	82000	92362	106069	NA	96660	82192
Syanja	Putalibazar	0.4	0.1	1.2	1.1	1.8	2.0	4.0	4.0	4.0	4.0	5.75	1125	1500	2192	364	1338	7000	986	6348	4836	2755	6849
Saptari	Rajbiraj	0.4	0.2	1.0	0.8	0.2	14.4	1.9	NA	11.62	NA	12.5	300	3100	1644	7756	2527	14753	10416	NA	3288	NA	19178
Nawalparasi paschim	Ramgram	2.0	NA	1.5	0.1	0.1	NA	0.4	3.0	1.0	NA	2.5	766	1212	1212	500	650	NA	2191	1949	31671	NA	2192
Chitwan	Ratnanagar	5.0	NA	4.0	5.0	5.1	9.0	10.0	11.0	13.5	NA	17.75	1247	2411	2411	1031	3900	14000	NA	18964	8745	NA	11370
Rupandehi	Siddharthanagar	5.0	NA	14.0	0.6	20.7	30.0	29.6	30.0	35.0	35.0	NA	800	800	9121	11301	5348	24000	20569	26366	24824	24582	32024
Siraha	Siraha	0.1	0.1	0.1	1.0	1.0	1.1	1.1	1.1	1.3	26.25	1.73	684	1457	1457	4125	4240	4000	1071	1112	1096	42027	5374
Palpa	Tansen	8.0	9.5	2.6	1.6	14.4	5.9	6.9	1.65	0.1	6.5	NA	4500	5480	5205	8321	3500	12329	13287	1644	18039	23019	NA
Kailali	Tikapur	4.0	0.5	0.5	0.7	12.0	0.1	7.7	7.5	1.72	NA	NA	338	1100	345	235	1126	7000	9315	1562	22521	13151	NA
Udayapur	Triyuga	NA	NA	0.1	0.8	0.2	6.0	0.1	NA	9.9	NA	NA	450	450	753	1000	981	4485	4224	NA	4167	NA	NA
Dang	Tulsipur	4.4	0.6	0.2	0.2	6.0	6.0	6.0	0.0	8.0	7.9	0.9	2024	2502	3014	545	3000	6938	11279	263975	31649	17251	14246
Syanja	Waling	1.0	0.7	0.99	NA	NA	1.1	0.20	2	0.90	4.97	7	421	700	669	301	636	1844	2950	1685	27679	9864	12329
Jajarkot	Bheri malika									NA	NA	0.027									NA	74	3016
Jajarkot	Chheragad									NA	NA	0.004									NA	NA	233
Kalikot	Khandachakra									NA	NA	NA									NA	NA	411
Ramechhap	Manthali									5.90	1.97	NA									3879	1973	NA
Ramechhap	Ramechhap									NA	NA	NA									NA	274	NA
Bhojpur	Bhojpur									NA	2	NA									74	2466	NA
Nawalparasi purba	Gaidakot									0.82	NA	1.13									1095	NA	4801
Nawalparasi purba	Kawasoti									5	NA	0.46									1369	NA	3014
Nawalparasi purba	Devchuli									NA	NA	1.24									NA	NA	4027
Nawalparasi purba	Madhyabindu									NA	NA	0.40									NA	NA	614
Chitwan	Rapti									NA	NA	0.44									NA	NA	274
Chitwan	Khairahani									NA	NA	1									NA	NA	5753
Nawalparasi paschim	Sunawal									0.28	NA	1									19978	NA	2959
Nawalparasi paschim	Bardaghat									1.20	NA	1.70									2466	NA	3342
Rukum paschim	Musikot									0.33	0.43	0.23									3507	7397	5479
Rukum paschim	Chaurjahari									NA	NA	0.02									NA	NA	2740
Rukum paschim	Aathbiskot									NA	NA	0.058									NA	NA	342
Banke	Kohalpur									0.13	0.55	0.15									1348	13503	14633
Bardiya	Sanoshree Raratal									NA	0.13	NA									8356	822	NA
Bardiya	Bansgadhi									0.02	0.032	0.05									8671	2740	8910
Bardiya	Rajapur									NA	0.07	0.05									9669	2466	1578
Bardiya	Madhuban									NA	NA	0.066									NA	NA	770
Bardiya	Barbadiya									NA	NA	0									NA	NA	470
Saptari	Saptakoshi									NA	NA	NA									NA	NA	2055
Saptari	Shambhunath									NA	NA	5.00									NA	NA	1918
Saptari	Kanchanrup									NA	NA	6.34									NA	NA	2877

District	Municipality	Quantity (mt.) per day							Cost (Rs per day)*												
		2006/ 07	2007/ 08	2008/ 09	2009/ 10	2010/ 11	2011/ 12	2012/ 13	2013/ 14	2014/ 15	2015/ 16	2016/ 17	2006/ 07	2007/ 08	2008/ 09	2009/ 10	2010/ 11	2011/ 12	2012/ 13	2013/ 14	2014/ 15	2015/ 16	2016/ 17
Pyuthan	Pyuthan								NA	3.56	NA	NA								NA	4274	497	NA
Okhaldhunga	Siddhicharan								0.45	0.40	0.14	0.20								1304	1154	1211	2822
Gulmi	Resunga (Tamghas)								NA	0.03	0.012	NA								NA	3649	1129	NA
Baitadi	Patan								NA	0.02	1.52	NA								NA	44	1159	NA
Dang	Lamahi								NA	1.82	4.93	0.80								NA	2271	2616	1781
Dang	Tripur								NA	0.05	1.32	NA								NA	411	589	NA
Salyan	Sharada								NA	1.18	0.38	0.53								NA	1027	685	1822
Salyan	Bagachaur								NA	NA	NA	0.26								NA	NA	NA	315
Salyan	Bangad kubinde								NA	NA	NA	NA								NA	NA	NA	NA
Jhapa	Birtamod								NA	5	1.50	1.50								NA	10959	10959	10959
Jhapa	Kankai								NA	1.56	0.91	1.0								NA	1370	3553	3616
Jhapa	Gauradaha								NA	NA	NA	NA								NA	NA	806	270
Jhapa	Shivasatasi								NA	NA	NA	NA								NA	NA	NA	137
Jhapa	Arjundhara								NA	NA	NA	NA								NA	NA	NA	2740
Bajura	Badimalika								NA	0.00	NA	NA								NA	NA	NA	NA
Sunsari	Ramdhuni								NA	9.50	NA	8.43								NA	3025	NA	8767
Sunsari	Duhabi								NA	2.65	NA	4.52								NA	4247	NA	5342
Doti	Dipayal Silgadhi								NA	2.00	NA	NA								NA	NA	NA	27397
Achham	Mangalsen								NA	NA	0.0	0.86								NA	NA	688	10548
Achham	Safebagar								NA	NA	0.13	NA								NA	NA	NA	NA
Achham	Kamal bazar								NA	NA	NA	0.00								NA	NA	NA	27397
Parbat	Kusma								3.60	3.25	2	NA								2315	2136	2416	NA
Udayapur	Katari								NA	5.99	NA	NA								NA	2411	NA	NA
Udayapur	Chaudandi								NA	NA	NA	2.10								NA	NA	NA	1389
Myagdi	Beni								NA	NA	0.37	2.89								2683	2413	4074	19200
Arghakhachi	Sandhikharka								NA	0.15	6	0.50								NA	1644	669	7671
Kathmandu	Chandragiri								NA	NA	8.95	NA								NA	NA	NA	NA
Kathmandu	Nagarjun								NA	NA	32.54	11.84								NA	NA	97644	176898
Kathmandu	Budhanilkantha								NA	NA	0.00	NA								NA	NA	NA	6573
Kathmandu	Tokha								NA	NA	NA	NA								NA	NA	NA	NA
Kathmandu	Gokarneshor								NA	NA	NA	NA								NA	NA	NA	1799
Kathmandu	Sankharapur								NA	NA	NA	NA								NA	NA	NA	NA
Kathmandu	Kageshori manohara								NA	NA	NA	NA								NA	NA	NA	NA
Kathmandu	Tarkeshor								NA	NA	3	NA								NA	NA	NA	NA
Kathmandu	Dakchhinkali								NA	NA	NA	NA								NA	NA	NA	NA
Bhaktapur	Suryabinayek								NA	NA	NA	NA								NA	NA	NA	NA
Dolakha	Jiri								NA	NA	3.84	NA								NA	NA	2082	NA

District	Municipality	Quantity (mt.) per day											Cost (Rs per day)*										
		2006/ 07	2007/ 08	2008/ 09	2009/ 10	2010/ 11	2011/ 12	2012/ 13	2013/ 14	2014/ 15	2015/ 16	2016/ 17	2006/ 07	2007/ 08	2008/ 09	2009/ 10	2010/ 11	2011/ 12	2012/ 13	2013/ 14	2014/ 15	2015/ 16	2016/ 17
Lamjung	Sundarbazar									NA	0.07	0.16									NA	5192	8729
Bajhang	Jayaprithibi									4	1	NA									NA	1370	NA
Dadeldhura	Parasuram									NA	0.12	NA									NA	1096	NA
Solukhumbu	Dudhakunda									NA	NA	NA									NA	NA	NA
Morang	Letang									0.14	0.14	0.25									274	1918	4110
Morang	Pathari Sanishchare									12	0.28	0.32									3014	3477	4205
Morang	Belbari									0.1	3	2.74									44	4384	4110
Morang	Rangeli									NA	0.15	0.002									52	2093	3890
Morang	Urlabari									1.23	5	9.60									1726	4271	8116
Morang	Ratuwamai									NA	NA	NA									NA	NA	NA
Morang	Sundarharicha									NA	3.58	6									NA	822	1367
Kavre	Panchkhal									NA	NA	NA									NA	NA	NA
Gorkha	Palungtar									NA	NA	NA									NA	NA	NA
Sindhuli	Dudhauli									NA	NA	NA									NA	NA	NA
Lalitpur	Mahalaxmi									NA	NA	3.00									NA	NA	91960
Lalitpur	Godawori									NA	NA	70									NA	NA	277260
Siraha	Sukhipur									NA	NA	0.19									NA	NA	NA
Siraha	Mirchaiya									NA	0.16	0.16									NA	6756	1205
Siraha	Goalbazar									NA	150	NA									NA	4110	NA
Siraha	Dhangadhimai									NA	NA	NA									NA	NA	NA
Dhanusa	Sabaila									NA	NA	NA									NA	2955	NA
Rasuwa	Gosaikunda									NA	NA	0.0051									NA	NA	395
Ilam	Suryodaya									NA	0.053	NA									NA	1479	NA
Sarlahi	Lalbandi									NA	0.19	NA									NA	10674	NA
Sarlahi	Ishworpur									NA	0.21	NA									NA	2367	NA
Sarlahi	Hariwan									NA	0.22	NA									NA	13890	NA
Sarlahi	Barhathawa									NA	0.19	NA									NA	14356	NA
Mahottari	Bardibas									NA	0.27	NA									NA	12986	NA
Dhankuta	Pakhribas									NA	0.05	NA									NA	3288	NA
Palpa	Rampur									NA	5.82	NA									NA	NA	NA
Jumla	Khalanga									NA	NA	NA									NA	3907	NA
Mugu	Chhayanath									NA	0.18	NA									NA	411	NA
Makawanpur	Thaha									NA	0.082	NA									NA	1370	NA
Mustang	Gharpajhong									NA	NA	NA									NA	260	NA

**cost is estimated on the annual budget of waste management of municipalities.*
Source: Municipalities.

Table 4.2.2 : Daily Solid Waste Generation in Kathmandu Metropolitan City

Waste Generation	Unit	Year									
		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Sources											
Household Waste	ton/day	200	246	248	253	261	269	300	330	339	362
Commercial Waste	ton/day	30	30	30	30	31	32	45	50	51	54
Institutional Waste	ton/day	30	0	0	0	0	0	0	0	0	0
Street Waste	ton/day	30	30	30	30	31	32	45	50	51	54
Waste from VDCs	ton/day	30	30	30	30	31	32	45	50	51	54
Total	**ton/day**	**320**	**336**	**338**	**343**	**354**	**365**	**435**	**480**	**492**	**524**
Waste Collection System											
Roadside Collection	ton/day	168	175	175	171	195	192	274	358	360	
Door to door Collection	ton/day	110	110	110	110	110	110	110	43	43	
Container Collection	ton/day	21	21	21	21	21	21	21	60	60	
Total	**ton/day**	**299**	**306**	**306**	**302**	**326**	**323**	**405**	**461**	**463**	**516**
Un-collected Waste	ton/day	21	30	32	41	28	42	30	18	28	8
Waste Generation rate	**kg/day/p**	**0.25**	**0.30**	**0.30**	**0.30**	**0.30**	**0.30**	**0.30**	**0.3**	**0.3**	**0.3**

Source: Kathmandu Metropolitan City Office (Solid Waste Management Section).

Table 4.2.3 : Daily Solid Waste Generation in Municipalities of Kathmandu Valley by type of Waste

(in %)

Waste Material	Kirtipur Kathmandu												Lalitpur						Bhaktapur						Madhyapur Thimi				
	2000	2005	2006	2009	2011	2012	2001	2005	2006	2009	2011	2012	2004	2005	2006	2009	2011	2012	2003	2005	2006	2009	2011	2012	2003	2005	2006	2009	2011
Organic	74.0	75.0	74.2	74.2	74.3	74.2	69.0	70.9	69.0	63.2	63.20	63.2	67.5	67.5	67.5	60.6	71.6	67.5	70.2	75.0	75.0	71.0	70.7	70.7	70.1	75.0	75.0	75.0	75.0
Paper	3.0		5.7	5.6	5.7	5.7	9.0	8.5	9.0	9.0	9.02	9.0	8.8		8.8	13.2	9.4	8.8	2.4		3.3	2.8	3.5	3.5	4.9		6.0	6.0	6.0
Rubber	1.0		0.1	0.9	0.1	0.1	1.0	0.5	1.0	1.2	1.20	1.2	0.3		0.2	1.7	0.6	0.7	0.1			0.3	0.3	0.3	0.6		1.0	2.0	1.0
Laether	2.0		0.9	0.9	0.9	0.9	0.0	0.1			na	na			0.2	0.0	0.6	0.8					na				1.0		1
Wood	0.0		0.1	0.1	1.1	1.1	0.0					na	0.6		0.6	1.0	na	0.7				0.2	0.2	0.2					na
Plastic	9.0	9.0	8.8	8.8	8.8	8.8	9.0	9.2	9.0	10.8	10.80	10.8	11.4	15.4	11.4	10.0	12.1	11.4	3.2	6.4	3.4	6.5	7.0	7.0	8.3	20.0	5.0	5.0	5.0
Textile /Cloth	6.0		1.9	1.9	0.9	0.9	0.0	3.0	3.0	2.3	2.30	2.3	3.6		3.6	5.1	4.0	3.7	1.7	3.0	3.0	3.4	3.2	3.2	2.3		1.0		na
Metal			1.9	1.9	2.0	2.0	1.0	0.9	1.0	0.4	0.40	0.4	0.9		0.9	1.7			0.1		0.3	0.4	0.4	0.4	0.3			3.0	
Inert							0.0	4.3								0.0			21.1						12.0				
Glass	1.0		2.9	2.9	2.9	2.9	3.0	2.5	3.0	5.4	5.40	5.4	1.6		1.3	2.8	1.7	0.9	1.3		1.5	2.1	2.3		1.3		2.0	2.0	2.0
Medical waste											4.00							2.3							0.2				
Construction material							2.0	0.0	2.0	4.5	4.50	4.5				2.5					11.1	12.1	11.1							10
Others	4.0	16.0	3.4	2.8	3.4	3.4	3.0	0.0	3.0	3.1		3.1	5.3	17.1	5.6	2.0		2.3	0.1	18.6	2.5	1.1			0.2	5.0	9.0	7.0	
Average Collection (%)								**90.0**	**91.0**										**51.3**						**47.2**				

Source: Municipalities

Table 4.2.4 : Estimation of waste generation, based on waste categories

S.No.	Waste type	Kg/day/patient
1	General	1.6
2	Recyclable	0.41
3	Infectious	0.47
4	Pharamaceutial	0.2
5	Sharp waste	0.18
6	Chemical	0.1
7	Radioactive waste	0.02
Total		**3.0**

Total waste production in healthcare institutions was 3.0 kg/day /patient out of which health care risk waste= 1.0 kg/day/patient and health care non risk waste = 2.0 kg/day/patient

Source: Nepal Health Research Council(Assesing the Biomedical Waste management Practice Among the Health Care Institution of Nepal 2013)

Table 4.2.5 : Seggregation of wastes on Private Hospitals

Area	Does the hospital seggregate wastes?		Total
	Yes	No	
Nepal	**294**	**7**	**301**
Ecological Belt			
Mountain	9	0	9
Hill	147	1	148
Terai	138	6	144
In and Out of Valley			
Kathmandu Valley	67	0	67
Out of Kathmandu Valley	227	7	234

Source: Census of Private Hospitals in Nepal 2013,CBS

Table 4.2.6 : Place of Private Hospital Waste Segregation

Place of Hospital Waste Segregation	Responses percent
Operation Room	23.0%
Ward room	28.4%
Laboratory	26.9%
kitchen	9.8%
Other	11.8%
Total	**100.0%**

Source: Census of Private Hospitals in Nepal 2013,CBS

Table 4.2.7 : Categories of hospital wastes segregated

Type of Wastes segregated	Response Percent
Sharp waste	20.1
Pathological waste	18
Infectious waste	18.1
Radioactive waste	7.2
Chemical waste	12.5
Medicinal waste	18.5
Other waste	5.5
Total	100

Source: Census of Private Hospitals in Nepal 2013,CBS

Table 4.2.8: Final disposal locations/places of hospital waste products

Final Disposal Location	Responses Percent
Municipality/VDC Collection Centers	30.1
Lansfill Site	9.1
Hospital Compound	16.8
Burning in Incineration	23.2
Burining Open	13.3
Other kind of Disposal	7.5
TOTAL	100

Source: Census of Private Hospitals in Nepal 2013,CBS

Table 4.2.9 : Number of Staff for Hospital Waste Product Management

Area	No of Staff
Nepal	1004
Hospital Type	
Private	701
Community	172
Other	131
Bed Category	
Upto 15 Beds	202
16 to 50 Beds	210
51 to 100 Beds	344
100 Beds and Above	248

Source: Census of Private Hospitals in Nepal 2013,CBS

Table 4.3.1 : Maximum Residual Limits (MRL) of Pesticides in Foodstuffs

Pesticides	Max. Residual Limit (MRL)	Pesticides	Max. Residual Limit (MRL)
Aldrin, Dieldrin	0.01 mg/kg	DDT	Absent
Chlordane	0.02 mg/kg	Dichlorvos	1 mg/kg
Diazinon	0.05 mg/kg	Fenitrothion	0.02mg/kg
Hydrogen Cyanide	37.05 mg/kg	Hydrogen Phosphide	.02 mg/kg
	0.01 mg/kg	Inorganic Bromide	25 mg/kg
Malathion	4.00 mg/kg	Lindane	.01 mg/kg
	0.01 mg/kg	Phosphamidon	.05 mg/kg
Fenithion	0.10 mg/kg	Carbofuran	.10 mg/kg
Phenthoate	0.05 mg/kg	Dithiocarbamates	.20 mg/kg
Carbendazim	0.50 mg/kg	Phorate	.05 mg/kg
Oxydemeton methyl	0.02 mg/kg	Trichlorfon	.05mg/ kg
Paraquat dichloride	0.025 mg/kg	Decmethrin/ Deltamethrin	.50mg/kg
Chlorphyrifos	0.05 mg/kg	Monocrothphos	.025 mg/kg
Chlorfenvinphos	0.025 mg/kg	Prethrins	Absent
Carbaryl	1.5mg/kg		

Source : Nepal Gazette 5 Feb 2001

Table 4.3.2: Carbon dioxide emission by industrial sectors in tons CO_2 (1996/97 to 2011/12)

NSIC code 3	NSIC Name	Tons CO_2 emissions 1996/97	Tons CO_2 emissions 2001/02	Tons CO_2 emissions 2006/07	Tons CO_2 emissions 2011/12
15	Food and beverages	44,477	73,601	76,761	635,478
16	Tobacco products	2,706	3,696	1,920	3,158
17	Textiles	23,062	19,560	12,887	15,803
18	Wearing apparel, fur	1,443	3,383	869	711
19	Leather, leather products and footwear	870	1,896	392	1,963
20	Wood products (excl. furniture)	5,026	4,696	1,545	20,123
21	Paper and paper products	1,060	6,519	3,677	1,897
22	Printing and publishing	781	528	463	610
23	Coke, refined petroleum products, nuclear fuel	143	85	102	144

NSIC code 3	NSIC Name	Tons CO_2 emissions 1996/97	Tons CO_2 emissions 2001/02	Tons CO_2 emissions 2006/07	Tons CO_2 emissions 2011/12
24	Chemicals and chemical products	13,516	27,896	22,032	26,896
25	Rubber and plastic products	6,661	5,148	5,838	17,603
26	Non-metallic mineral products	398,216	456,036	557,544	847,090
27	Basic metals	2,670	18,954	19,849	28,497
28	Fabricated metal products	12,894	14,180	63,804	111,406
29	Machinery and equipment n.e.c.	391	539	1,157	470
31	Electrical machinery and apparatus	933	1,403	1,209	1,586
32	Radio, television and communication equipment	48	28	64	109
33	Medical Precision, and optical Instruments			7	
34	Motor vehicles, trailers, semi-trailers	170	27	20	84
35	Other transport equipment			19	
36	Furniture; manufacturing n.e.c.	2,471	1,395	792	1,203
	NEPAL	**517,539**	**639,570**	**770,951**	**1,714,832**

Source:- Development of Manufacturing Industries in Nepal, Current State and Future Challenges, CBS, 2014

Table 4.3.3 : Status of manufacturing establishments having pollution control machine installed

ISIC rev 3 Codes	Description	Having any pollution control machine			Percent having pollution control machine/tools installed
		Yes	No	Total	
15	Food and beverages	166	899	1065	15.6
16	Tobacco products	3	27	30	10
17	Textiles	20	268	288	6.9
18	Wearing apparel, fur	6	65	71	8.5
19	Leather, leather products and footwear	9	41	50	18
20	Wood products (excl. furniture)	14	305	319	4.4
21	Paper and paper products	11	81	92	12
22	Printing and publishing	5	89	94	5.3
23	Coke, refined petroleum products, nuclear fuel	2	4	6	33.3
24	Chemicals and chemical products	30	102	132	22.7
25	Rubber and plastics products	31	206	237	13.1
26	Non-metallic mineral products	253	681	934	27.1
27	Basic metals	10	31	41	24.4
28	Fabricated metal products	16	217	233	6.9
29	Machinery and equipment n.e.c.	1	25	26	3.8
31	Electrical machinery and apparatus	6	27	33	18.2
32	Radio, television and communication equipment	0	5	5	0
34	Motor vehicles, trailers, semi-trailers	1	13	14	7.1
36	Furniture; manufacturing n.e.c.	11	395	406	2.7
	NEPAL	**595**	**3481**	**4076**	**14.6**

Source:- Development of Manufacturing Industries in Nepal, Current State and Future Challenges, CBS, 2014

Table 4.3.4: Status of Reuse or recycle the metal or non-metal scraps produced by Industry by ISIC rev.3 2 digit

ISIC Rev.3 code	Description	Reuse or recycle the metal or non-metal scraps			% of Reuse or recycle
		Yes	No	Total	
15	Food and beverages	9	1056	1065	0.8
16	Tobacco products	0	30	30	0
17	Textiles	3	285	288	1
18	Wearing apparel, fur	2	69	71	2.8
19	Leather, leather products and footwear	6	44	50	12
20	Wood products (excl. furniture)	1	318	319	0.3
21	Paper and paper products	5	87	92	5.4
22	Printing and publishing	2	92	94	2.1
23	Coke, refined petroleum products, nuclear fuel	0	6	6	0
24	Chemicals and chemical products	1	131	132	0.8
25	Rubber and plastic products	58	179	237	24.5
26	Non-metallic mineral products	6	928	934	0.6
27	Basic metals	3	38	41	7.3
28	Fabricated metal products	7	226	233	3
29	Machinery and equipment n.e.c.	2	24	26	7.7
31	Electrical machinery and apparatus	1	32	33	3
32	Radio, television and communication equipment	0	5	5	0
34	Motor vehicles, trailers, semi-trailers	0	14	14	0
36	Furniture; manufacturing n.e.c.	8	398	406	2
	NEPAL	**114**	**3962**	**4076**	**2.8**
	NEPAL (%)	**2.8**	**97.2**	**100**	
	NEPAL (%)	**2.8**	**97.2**	**100**	

Source:- Development of Manufacturing Industries in Nepal, Current State and Future Challenges, CBS, 2014

Table 4.3.5: Status of polluted air, gas control machine installation

ISIC rev3 code	Description	Installation Status			Percent
		Yes	No	Total	
15	Food and beverages	23	1042	1065	2.2
16	Tobacco products	1	29	30	3.3
17	Textiles	3	285	288	1
18	Wearing apparel, fur	3	68	71	4.2
19	Leather, leather products and footwear	0	50	50	0
20	Wood products (excl. furniture)	1	318	319	0.3
21	Paper and paper products	0	92	92	0
22	Printing and publishing	0	94	94	0
23	Coke, refined petroleum products, nuclear fuel	1	5	6	16.7
24	Chemicals and chemical products	11	121	132	8.3
25	Rubber and plastics products	11	226	237	4.6
26	Non-metallic mineral products	13	921	934	1.4

ISIC rev3 code	Description	Installation Status			Percent
		Yes	No	Total	
27	Basic metals	5	36	41	12.2
28	Fabricated metal products	1	232	233	0.4
29	Machinery and equipment n.e.c.	1	25	26	3.8
31	Electrical machinery and apparatus	5	28	33	15.2
32	Radio, television and communication equipment	0	5	5	0
34	Motor vehicles, trailers, semi-trailers	0	14	14	0
36	Furniture; manufacturing n.e.c.	4	402	406	1
	NEPAL	**83**	**3993**	**4076**	**2**
	NEPAL (%)	**2**	**98**		

Source:- Development of Manufacturing Industries in Nepal, Current State and Future Challenges, CBS, 2014

Table 4.3.6: Status of smoke and dust control machine installation

ISIC rev3 code	Description	Installation status			Percent
		Yes	No	Total	
15	Food and beverages	97	968	1065	9.1
16	Tobacco products	1	29	30	3.3
17	Textiles	11	277	288	3.8
18	Wearing apparel, fur	2	69	71	2.8
19	Leather, leather products and footwear	0	50	50	0
20	Wood products (excl. furniture)	6	313	319	1.9
21	Paper and paper products	5	87	92	5.4
22	Printing and publishing	1	93	94	1.1
23	Coke, refined petroleum products, nuclear fuel	2	4	6	33.3
24	Chemicals and chemical products	17	115	132	12.9
25	Rubber and plastic products	16	221	237	6.8
26	Non-metallic mineral products	105	829	934	11.2
27	Basic metals	5	36	41	12.2
28	Fabricated metal products	6	227	233	2.6
29	Machinery and equipment n.e.c.	1	25	26	3.8
31	Electrical machinery and apparatus	4	29	33	12.1
32	Radio, television and communication equipment	1	4	5	20
34	Motor vehicles, trailers, semi-trailers	0	14	14	0
35	Other transport equipment	0	0	0	0
36	Furniture; manufacturing n.e.c.	3	403	406	6.9
	NEPAL	**283**	**3793**	**4076**	**6.9**
	NEPAL (%)	**6.9**	**93.1**		

Source:- Development of Manufacturing Industries in Nepal, Current State and Future Challenges, CBS, 2014

Table 4.3.7: Status of sound pollution control machine installation

ISIC rev3 code	Description	Installation status			Percent
		Yes	No	Total	
15	Food and beverages	22	1043	1065	2.1
16	Tobacco products	1	29	30	3.3
17	Textiles	2	286	288	0.7
18	Wearing apparel, fur	2	69	71	2.8
19	Leather, leather products and footwear	0	50	50	0
20	Wood products (excl. furniture)	2	317	319	0.6
21	Paper and paper products	3	89	92	3.3
22	Printing and publishing	4	90	94	4.3
23	Coke, refined petroleum products, nuclear fuel	0	6	6	0
24	Chemicals and chemical products	5	127	132	3.8
25	Rubber and plastic products	6	231	237	2.5
26	Non-metallic mineral products	11	923	934	1.2
27	Basic metals	2	39	41	4.9
28	Fabricated metal products	1	232	233	0.4
29	Machinery and equipment n.e.c.	0	26	26	0
31	Electrical machinery and apparatus	0	33	33	0
32	Radio, television and communication equipment	1	4	5	20
35	Other transport equipment	0	0	0	0
36	Furniture; manufacturing n.e.c.	2	404	406	1.6
	NEPAL	**64**	**4012**	**4076**	**1.6**
	NEPAL (%)	**1.6**	**98.4**		

Source:- Development of Manufacturing Industries in Nepal, Current State and Future Challenges, CBS, 2014

Table 4.3.8: Status of radiation control machine installation

ISIC rev3 code	Description	Installation status			Percent
		Yes	No	Total	
15	Food and beverages	8	1057	1065	0.8
16	Tobacco products	0	30	30	0
17	Textiles	2	286	288	0.7
18	Wearing apparel, fur	1	70	71	1.4
19	Leather, leather products and footwear	0	50	50	0
20	Wood products (excl. furniture)	0	319	319	0
21	Paper and paper products	0	92	92	0
22	Printing and publishing	0	94	94	0
23	Coke, refined petroleum products, nuclear fuel	0	6	6	0
24	Chemicals and chemical products	3	129	132	2.3
25	Rubber and plastics products	1	236	237	0.4
26	Non-metallic mineral products	3	931	934	0.3
27	Basic metals	1	40	41	2.4
28	Fabricated metal products	1	232	233	0.4
29	Machinery and equipment n.e.c.	0	26	26	0
31	Electrical machinery and apparatus	0	33	33	0

ISIC rev3 code	Description	Installation status			Percent
		Yes	No	Total	
32	Radio, television and communication equipment	0	5	5	0
34	Motor vehicles, trailers, semi-trailers	0	14	14	0
36	Furniture; manufacturing n.e.c.	0	406	406	0
	NEPAL	**20**	**4056**	**4076**	**0.5**
	NEPAL (%)	**0.5**	**99.5**		

Source:- Development of Manufacturing Industries in Nepal, Current State and Future Challenges, CBS, 2014

Table 4.3.9: Status of sewerage system or sublimating residuals pond management

ISIC rev3 code	Description	Installation status			Percent
		Yes	No	Total	
15	Food and beverages	84	981	1065	7.9
16	Tobacco products	2	28	30	6.7
17	Textiles	23	265	288	8
18	Wearing apparel, fur	9	62	71	12.7
19	Leather, leather products and footwear	9	41	50	18
20	Wood products (excl. furniture)	10	309	319	3.1
21	Paper and paper products	9	83	92	9.8
22	Printing and publishing	3	91	94	3.2
23	Coke, refined petroleum products, nuclear fuel	1	5	6	16.7
24	Chemicals and chemical products	27	105	132	20.5
25	Rubber and plastic products	37	200	237	15.6
26	Non-metallic mineral products	35	899	934	3.7
27	Basic metals	6	35	41	14.6
28	Fabricated metal products	18	215	233	7.7
29	Machinery and equipment n.e.c.	3	23	26	11.5
31	Electrical machinery and apparatus	5	28	33	15.2
32	Radio, television and communication equipment	0	5	5	0
34	Motor vehicles, trailers, semi-trailers	0	14	14	0
35	Other transport equipment	0	0	0	0
36	Furniture; manufacturing n.e.c.	4	402	406	1
	NEPAL	**285**	**3791**	**4076**	**7**
	NEPAL (%)	**7**	**93**		

Source:- Development of Manufacturing Industries in Nepal, Current State and Future Challenges, CBS, 2014

Table 4.3.10: Status of solid wastes management

ISIC rev3 code	Description	Management status			Percent having management
		Yes	No	Total	
15	Food and beverages	135	930	1065	12.7
16	Tobacco products	3	27	30	10
17	Textiles	38	250	288	13.2
18	Wearing apparel, fur	14	57	71	19.7
19	Leather, leather products and footwear	9	41	50	18
20	Wood products (excl. furniture)	16	303	319	5
21	Paper and paper products	10	82	92	10.9
22	Printing and publishing	24	70	94	25.5
23	Coke, refined petroleum products, nuclear fuel	2	4	6	33.3
24	Chemicals and chemical products	25	107	132	18.9
25	Rubber and plastics products	47	190	237	19.8
26	Non-metallic mineral products	47	887	934	5
27	Basic metals	9	32	41	22
28	Fabricated metal products	20	213	233	8.6
29	Machinery and equipment n.e.c.	3	23	26	11.5
31	Electrical machinery and apparatus	6	27	33	18.2
32	Radio, television and communication equipment	1	4	5	20
34	Motor vehicles, trailers, semi-trailers	0	14	14	0
35	Other transport equipment	0	0	0	0
36	Furniture; manufacturing n.e.c.	26	380	406	6.4
	NEPAL	**435**	**3641**	**4076**	**10.7**
	NEPAL (%)	**10.7**	**89.3**		

Source:- Development of Manufacturing Industries in Nepal, Current State and Future Challenges, CBS, 2014

Table 4.3.11: Status of Reuse or recycle the metal or non-metal scraps produced by Industry by ISIC rev.3 2 digit

ISIC Rev.3 code	Description	Reuse or recycle the metal or non-metal scraps			Percent of reuse or recycle
		Yes	No	Total	
15	Food and beverages	9	1056	1065	0.8
16	Tobacco products	0	30	30	0
17	Textiles	3	285	288	1
18	Wearing apparel, fur	2	69	71	2.8
19	Leather, leather products and footwear	6	44	50	12
20	Wood products (excl. furniture)	1	318	319	0.3
21	Paper and paper products	5	87	92	5.4
22	Printing and publishing	2	92	94	2.1
23	Coke, refined petroleum products, nuclear fuel	0	6	6	0
24	Chemicals and chemical products	1	131	132	0.8
25	Rubber and plastic products	58	179	237	24.5
26	Non-metallic mineral products	6	928	934	0.6

ISIC Rev.3 code	Description	Reuse or recycle the metal or non-metal scraps			Percent of reuse or recycle
		Yes	No	Total	
27	Basic metals	3	38	41	7.3
28	Fabricated metal products	7	226	233	3
29	Machinery and equipment n.e.c.	2	24	26	7.7
31	Electrical machinery and apparatus	1	32	33	3
32	Radio, television and communication equipment	0	5	5	0
34	Motor vehicles, trailers, semi-trailers	0	14	14	0
35	Other transport equipment				0
36	Furniture; manufacturing n.e.c.	8	398	406	2
	NEPAL	114	3962	4076	2.8
	NEPAL (%)	2.8	97.2	100	

Source:- Development of Manufacturing Industries in Nepal, Current State and Future Challenges, CBS, 2014

Table 4.3.12: Status of Having Pollution Control Certificate by ISIC rev.3

ISIC rev 3 code	Description	Pollution control certificate			
		Yes	No	Total	Percent
15	Food and beverages	36	1029	1065	22.64
16	Tobacco products	0	30	30	0
17	Textiles	0	288	288	0
18	Wearing apparel, fur	2	69	71	1.26
19	Leather, leather products and footwear	3	47	50	1.89
20	Wood products (excl. furniture)	4	315	319	2.52
21	Paper and paper products	6	86	92	3.77
22	Printing and publishing	2	92	94	1.26
23	Coke, refined petroleum products, nuclear fuel	1	5	6	0.63
24	Chemicals and chemical products	14	118	132	8.81
25	Rubber and plastic products	12	225	237	7.55
26	Non-metallic mineral products	66	868	934	41.51
27	Basic metals	4	37	41	2.52
28	Fabricated metal products	6	227	233	3.77
29	Machinery and equipment n.e.c.	0	26	26	0
31	Electrical machinery and apparatus	1	32	33	0.63
32	Radio, television and communication equipment	0	5	5	0
34	Motor vehicles, trailers, semi-trailers	0	14	14	0
35	Other transport equipment				0
36	Furniture; manufacturing n.e.c.	2	404	406	1.26
	NEPAL	**159**	**3917**	**4076**	**100**
	NEPAL (%)	**3.9**	**96.1**	**100**	

Source:- Development of Manufacturing Industries in Nepal, Current State and Future Challenges, CBS, 2014

Table 4.3.13: Total environment expenditures by ISIC rev 3 classification, 2012

ISICrev.3 Code	Description	Expenditure to control polluted air, gas	Expenditure to control smoke and dust	Expenditure to control sound pollution	Expenditure to control industrial radiation	Expenditure for sewerage management or sublimating residuals	Expenditure for managing solid wastes	Expenditure on environment protection	Expenditure for recycling wastes	Total expenditure in Rs 000	Per cent
15	Food and beverages	2,425	2,033	2,729	5,520	2,046	10,147	74,795	767	170,462	11.11
16	Tobacco products	28	59	4		58	-	4		153	0.01
17	Textiles	11	565	-	-	553	753	100,300	502	102,684	6.69
18	Wearing apparel, fur	200	140	100	-	133	182	225,052	80	225,887	14.72
19	Leather, leather products and footwear		100			91	338	1,565	120	2,214	0.14
20	Wood products (excl. furniture)	-	632	120		628	718	660	-	2,758	0.18
21	Paper and paper products		179	1,200		175	11,614	21,758	15,155	50,081	3.26
22	Printing and publishing		187	37		185	1,358	18,064	-	19,831	1.29
23	Coke, refined petroleum products, nuclear fuel	-	10			11	-	25		46	0
24	Chemicals and chemical products	530	247	830	-	237	2,908	8,068	-	12,820	0.84
25	Rubber and plastic products	780	458	1,890	-	437	9,557	2,630	44,392	60,144	3.92
26	Non-metallic mineral products	4,268	1,763	1,625	1,050	1,833	14,268	777,843	25,853	828,503	53.99
27	Basic metals	15	77	100	-	76	2,746	21,000	50	24,064	1.57
28	Fabricated metal products	5,556	460	-	-	448	749	273	21,592	29,078	1.89
29	Machinery and equipment n.e.c.	30	51			49	50	135	102	417	0.03
31	Electrical machinery and apparatus	1,925	62			61	109	247	150	2,554	0.17
32	Radio, television and communication equipment		9	-		10	3	-		22	0
34	Motor vehicles, trailers, semi-trailers		28			28		-		56	0
35	Other transport equipment										0
36	Furniture; manufacturing n.e.c.	135	809	30		808	531	316	70	2,699	0.18
	NEPAL	**15,903**	**7,869**	**8,665**	**76,570**	**7,867**		**1,252,735**	**108,833**	**1,534,473**	**100**
	NEPAL (%)	**1.04**	**0.51**	**0.56**	**4.99**	**0.51**	**3.65**	**81.64**	**7.09**	**100**	

Source:- Development of Manufacturing Industries in Nepal, Current State and Future Challenges, CBS, 2014

Table 4.3.14: Impact by Environment Act on manufacturing establishments

ISIC rev 3 code	Description	Impact by Environment Act on manufacturing establishments						
		Very positive	Positive	No effect	Negatve	Very negative	Not reported	Total
15	Food and beverages	8	396	577	33	5	46	1065
16	Tobacco products	2	14	12	1	0	1	30
17	Textiles	2	66	189	14	3	14	288
18	Wearing apparel, fur	0	21	44	1	0	5	71
19	Leather, leather products and footwear	0	15	28	4	0	3	50
20	Wood products (excl. furniture)	2	92	204	12	3	6	319
21	Paper and paper products	0	31	47	7	2	5	92
22	Printing and publishing	0	30	53	5	0	6	94
23	Coke, refined petroleum products, nuclear fuel	1	0	5	0	0	0	6
24	Chemicals and chemical products	4	61	54	3	5	5	132
25	Rubber and plastic products	4	81	121	13	6	12	237
26	Non-metallic mineral products	19	384	456	57	6	12	934
27	Basic metals	0	16	24	1	0	0	41
28	Fabricated metal products	1	67	147	8	4	6	233
29	Machinery and equipment n.e.c.	1	7	14	2	1	1	26
31	Electrical machinery and apparatus	0	13	17	2	0	1	33
32	Radio, television and communication equipment	0	4	1	0	0	0	5
34	Motor vehicles, trailers, semi-trailers	0	3	9	0	0	2	14
35	Other transport equipment							
36	Furniture; manufacturing n.e.c.	6	88	279	17	5	11	406
	NEPAL	**50**	**1389**	**2281**	**180**	**40**	**136**	**4076**
	NEPAL (%)	**1.2**	**34.1**	**56**	**4.4**	**1**	**3.3**	**100**

Source:- Development of Manufacturing Industries in Nepal, Current State and Future Challenges, CBS, 2014

CHAPTER V

Extreme Events and Disasters

Table 5.1.1 : Potentially Dangerous Glacial Lakes in Nepal

S.N.	Glacier Lake	Location /District	Altitude (m.)	Area (sq.m.)
1	Lower Barun	Sankhuwasabha	4550	NA
2	Lumding Tsho	Solukhumbu	4846	104943
3	Dig Tsho		4364	143249
4	Imja Tsho		5023	48811
5	Tam Pokhari		4431	138846
6	Dudh Pokhari		4760	274296
7	Unnamed 1		5266	133752
8	Unnamed 2		5056	112398
9	Hungu		5181	198905
10	East Hungu 1		5379	78760
11	East Hungu 2		5483	211877
12	Unnamed 3		5205	349396
13	West Chamjang		4983	6446
14	Tsho Rolpa	Dolakha	4556	231693
15	Unnamed 4	Taplejung	4876	179820
16	Nagma Pokhari		4907	18971
17	Unnamed 5	Gorkha	3590	81520
18	Unnamed 6	Mustang	5419	149544
19	Unnamed 7		5452	1015173
20	Thulagi		3825	223385

NA : Not Available

Source : Ministry of Environment, (NAPA, 2010)

Table 5.1.2: Earthquake by Epicentre and Magnitude, 2008- June 28, 2018

Date	Latitude	Longitude	Magnitude (ml)	Epicentre
15-Jan-08	27.37	86.53	4.1	Okhaldhunga
14-Feb-08	27.8	86.53	4.1	Taplejung
16-Feb-08	26.8	86.25	4.2	Siraha
02-Mar-08	29.69	81.76	4.4	Humla
17-Mar-08	29.76	81.53	4.6	Bajhang-Bajura border
08-May-08	27.5	87.52	4.2	Taplejung
20-May-08	28.33	83.33	4.3	Baglung
02-Jun-08	27.8	85.91	4.1	Sindhupalchowk
15-Jun-08	29.73	80.96	5.0	Darchula
20-Jun-08	27.98	85.73	4.8	Sindhupalchowk
02-Aug-08	28.18	85.29	4.4	Bajura
10-Sep-08	28.4	83.01	4.1	Baglung
07-Oct-08	27.47	87.71	4.5	Taplejung
01-Dec-08	28.18	85.29	4.8	Rasuwa
02-Dec-08	27.32	87.99	5.4	Taplejung
02-Dec-08	27.3	87.99	4.0	Taplejung
02-Dec-08	27.29	87.92	4.3	Taplejung
02-Dec-08	27.34	87.92	4.1	Taplejung
02-Dec-08	27.3	88.03	4.0	Taplejung
08-Dec-08	30.15	81.86	6.0	Humla
19-Dec-08	30.10	81.91	4.4	Humla
23-Dec-08	28.19	84.39	4.4	Lamjung
26-Dec-08	30.09	81.9	4.5	Humla
29-Dec-08	30.13	82.03	4.0	Humla
10-Jan-09	27.9	88.04	4.2	Taplejung

Date	Latitude	Longitude	Magnitude (ml)	Epicentre
23-Jan-09	29.05	81.4	4.2	Achham
08-Mar-09	27.41	87.8	4.5	Taplejung
12-Mar-09	28.43	84.42	4.1	Lamjung
13-Apr-09	28.25	84.54	4.3	Lamjung
13-Apr-09	28.3	84.55	4.0	Lamjung
14-May-09	27.43	87.35	4.2	Sankhuwasava
14-May-09	27.48	87.36	4.6	Sankhuwasava
12-Jul-09	27.71	86.36	4.3	Dolakha
02-Aug-09	28.12	85.18	4.0	Rasuwa
26-Sep-09	29.81	82.05	4.3	Humla
29-Oct-09	28.73	83.11	4.1	Rukum
01-Nov-09	30.1	81.81	4.5	Humla
02-Nov-09	27.87	87.94	4.0	Taplejung
08-Nov-09	30.11	81.91	4.3	Humla
22-Nov-09	29.02	82.15	4.5	Jajarkot
15-Dec-09	28.28	84.4	4.1	Lamjung
16-Dec-09	29.6	81.51	4.6	Bajura
18-Jan-10	28.37	83.97	4.1	Kaski
17-Feb-10	26.79	86.08	4.1	Dhanusa
25-Feb-10	29.78	81.52	4.6	Bajhang
28-Feb-10	28.4	81.52	4.1	Baglung
01-Mar-10	29.76	83.11	4.3	Bajura
13-Apr-10	29.37	81.34	4.5	Bajura
14-Apr-10	28.31	83.09	4.2	Baglung
30-Apr-10	27.75	86.36	4.0	Dolakha
13-May-10	28.3	84.51	4.2	Lamjung
13-Jun-10	29.4	81.38	4.5	Bajura
13-Jun-10	29.6	81.65	4.8	Bajura
13-Jun-10	28.01	86.77	4.0	Solukhumbu
01-Sep-10	28.23	84.37	4.0	Lamjung
17-Oct-10	28.64	85.71	5.0	Tibet
25-Nov-10	28.38	82.32	4.5	Salyan
25-Nov-10	28.44	83.17	4.7	Baglung
30-Nov-10	26.93	85.79	4.4	Mahottari
05-Dec-10	29.57	81.699	4.2	Bajura
18-Dec-10	28.18	84.79	4.1	Gorkha
18-Jan-11	30.03	81.97	4.1	Humla
18-Jan-11	27.8	85.94	4.3	Sindhupalchowk
13-Feb-11	27.47	87.01	4.7	Bhojpur-Sankhuwasabha border
22-Feb-11	27.57	87.01	4.2	Sankhuwasabha
10-Mar-11	28.02	85.24	4.3	Rasuwa
11-Mar-11	28.31	83.8	4.3	Kaski
12-Mar-11	28.31	83.78	4.4	Kaski
22-Mar-11	28.35	83.96	4.0	Kaski
22-Mar-11	28.11	82.74	4.2	Pyuthan
04-Apr-11	30	80.81	4.1	Darchula
04-Apr-11	29.92	80.54	5.7	Darchula
05-Apr-11	29.74	80.37	4.1	Darchula
07-Apr-11	27.93	85.61	4.1	Sindhupalchowk
03-Jun-11	27.6	88.03	5.2	Taplejung
11-Jun-11	28.4	82.55	4.1	Rolpa
11-Jun-11	28.41	82.66	4.2	Rolpa
17-Jun-11	30.24	81.48	4.2	Humla
18-Jun-11	27.83	87.35	4.3	Sankhuwasabha
15-Jul-11	27.28	87.3	4.5	Sankhuwasabha
29-Jul-11	27.19	86.76	4.2	Khotang
02-Aug-11	27.35	86.35	4.0	Khotang
09-Aug-11	29.9	81.31	4.3	Bajhang
15-Aug-11	27.44	86.27	5.0	Ramechhap
18-Aug-11	28.21	84.31	4.0	Lamjung
19-Aug-11	29.7	81.34	4.9	Bajhang
22-Aug-11	28.29	83.96	4.0	Kaski
25-Aug-11	28.15	82.53	4.4	Rolpa
27-Aug-11	26.94	86.6	5.0	Udayapur
18-Sep-11	27.78	88.32	6.8	Taplejung-Sikkim Border
01-Oct-11	30.16	81.81	4.7	Humla
02-Oct-11	29.55	81.68	4.2	Bajura
04-Nov-11	28.34	83.66	4.0	Parbat

Date	Latitude	Longitude	Magnitude (ml)	Epicentre
08-Nov-11	27.94	85.55	4.1	Sindhupalchowk
13-Nov-11	28.2	84.93	5.0	Gorkha
19-Nov-11	27.7	86.1	4.1	Dolakha
23-Nov-11	28.91	81.68	4.2	Dailekh
02-Dec-11	28.05	85.34	4.2	Rasuwa
08-Dec-11	27.97	82.86	4.0	Pyuthan
09-Dec-11	27.83	88.13	4.2	Taplejung
14-Dec-11	27.72	88.09	4.9	Taplejung
18-Dec-11	27.73	88.16	4.6	Taplejung
30-Dec-11	29.62	81.53	4	Bajura
11-Jan-12	28.89	81.89	4.2	Dailekh
18-Jan-12	26.63	86.4	4.5	Siraha
19-Jan-12	29.73	81.91	4.6	Humla
24-Jan-12	26.84	86.43	4	Siraha
05-Feb-12	27.25	88.07	4	Panchthar
14-Feb-12	27.33	88.03	4.4	Taplejung
14-Feb-12	27.38	88.11	4.5	Taplejung-Sikkim Border
26-Feb-12	29.86	81.05	4.9	Bajhang-Darchula border
26-Feb-12	29.71	81.02	4.4	Bajhang-Darchula border
19-Mar-12	28.7	82.02	4.7	Karkigaun-Jajarkot
27-Mar-12	26.12	87.87	5.2	Jhapa-India Border Region
11-Apr-12	29.55	81.24	4.3	Bajhang
17-Apr-12	28.5	82.06	4.2	Salyan
30-May-12	27.31	87.88	4.2	Taplejung
09-Jun-12	28.32	84.17	5.1	Kaski
11-Jun-12	27.25	88	4.5	Panchthar - Sikkim border
15-Jun-12	28.99	81.58	4.2	Dailekh
01-Jul-12	27.27	88.05	4	Panchthar - Sikkim border
11-Jul-12	29.43	81.03	4.9	Southern Bajhang
28-Jul-12	30.12	80.54	5	India (close to Darchula)
31-Jul-12	28.55	82.37	4.2	Southern Rukum
31-Jul-12	28.53	82.42	4.8	Southern Rukum
31-Jul-12	28.58	82.48	5	Southern Rukum
06-Aug-12	27.77	88.13	4.2	Northern Taplejung
23-Aug-12	28.39	82.73	4.4	Rolpa
23-Aug-12	28.38	82.84	5.6	Rolpa - Rukum border region
24-Aug-12	28.42	82.75	5.2	Rolpa-Rukum border region
24-Aug-12	28.38	82.66	4.4	Rolpa
28-Aug-12	28.73	81.81	4.4	Southeastern Dailekh
29-Aug-12	28.4	82.79	4.3	Northern Rolpa
30-Aug-12	28.61	82.43	4.5	Southern Rukum
17-Sep-12	28.59	82.41	4.4	Southern Rukum
22-Oct-12	27.95	87.86	4.5	Around Kanchanjunga
11-Nov-12	29.51	81.13	5.6	Southern Bajhang
12-Nov-12	29.55	81.31	4.5	Bajhang
04-Dec-12	28.88	82.34	4	North East Jajarkot
22-Dec-12	28.27	82.84	4.5	Rolpa and Pyuthan border
02-Jan-13	29.41	81	4.7	Bajhang and Doti border
09-Jan-13	29.82	81.7	5.5	Northern part of Bajura
13-Jan-13	26.84	86.22	4	Siraha
18-Jan-13	29.48	81.26	4.5	Bajhang
07-Feb-13	29.42	81.05	4	Bajhang
22-Feb-13	28.39	83.18	4.1	Baglung
06-Mar-13	28.57	82.27	5.4	Rukum
17-Mar-13	26.74	86.08	4.2	Dhanusha
28-Apr-13	29.87	81.26	4.9	Northern Bajhang
14-May-13	29.65	81.98	4.5	Western Mugu
14-May-13	29.68	82	4.4	Mugu

Date	Latitude	Longitude	Magnitude (ml)	Epicentre
14-May-13	29.56	82	4.3	Mugu
26-May-13	27.72	85.91	4.2	Sindhupalchok
31-May-13	29.74	81.6	4.5	Northern Bajura
09-Jun-13	27.31	86.7	4.2	Northern Khotang
26-Jun-13	26.85	85.96	4.4	Dhanusha
27-Jun-13	30.05	80.8	4.4	Darchula
28-Jun-13	28.76	82.4	5.5	Rukum
30-Aug-13	28.43	86.03	6	Tibet
12-Sep-13	26.96	87.34	4.5	Dhankuta
22-Sep-13	30.25	81.55	4.4	Humla
03-Oct-13	27.14	88.51	5.7	Sikkim
13-Oct-13	30.08	81.74	4.5	Humla
28-Oct-13	27.36	87.37	4.3	Sankhuwasava
03-Nov-13	29.56	81.68	4.3	Bajura
03-Aug-14	29.45	85.64	5.9	Tibet
18-Dec-14	27.73	86.52	5.9	Solukhumbu
31-Jan-15	28.29	83.73	5.5	Kaski
21-Apr-15	28.85	82.18	5.1	Jajarkot
25-Apr-15	28.34	85.91	5.6	Tibet
25-Apr-15	27.99	85.71	5.1	Tibet
25-Apr-15	28.41	85.8	5.5	Tibet
25-Apr-15	27.92	85.64	5.3	Sindhupalchok
25-Apr-15	27.73	85.9	5	Sindhupalchok
25-Apr-15	28.16	84.71	5.5	Gorkha
25-Apr-15	28	85.6	5.5	Sindhupalchok
25-Apr-15	27.65	85.63	5.7	Kavre
25-Apr-15	28.24	84.75	7.6	Gorkha
25-Apr-15	28.28	84.72	6.6	Gorkha
25-Apr-15	28.13	85.65	5.7	Rasuwa
25-Apr-15	28.2	85.75	5.3	Rasuwa
25-Apr-15	27.78	85.84	5.2	Sindhupalchok
25-Apr-15	27.9	84.86	5.1	Dhading
25-Apr-15	28.18	84.95	5.2	Gorkha
26-Apr-15	27.95	85.87	5.3	Sindhupalchok
26-Apr-15	27.89	85.6	5	Sindhupalchok
26-Apr-15	27.94	86.05	5	Tibet
26-Apr-15	27.75	85.94	5.3	Sindhupalchok
26-Apr-15	27.84	86.05	6.9	Dolakha
26-Apr-15	27.64	85.63	5	Kabre
26-Apr-15	27.8	85.16	5.1	Nuwakot
26-Apr-15	27.99	85.02	5.5	Nuwakot
02-May-15	28.24	84.76	5.1	Gorkha
08-May-15	27.69	86.04	5	Dolakha
12-May-15	27.82	86.12	6.8	Dolakha
12-May-15	27.79	86.11	5	Dolakha
12-May-15	27.66	86.17	5.2	Dolakha
12-May-15	27.8	85.94	5.1	Sindhupalchok
12-May-15	27.69	86.24	5	Dolakha
12-May-15	27.84	86.17	5.8	Dolakha
12-May-15	27.76	86.31	5.3	Dolakha
12-May-15	27.8	85.83	5.3	Sindhupalchok
12-May-15	27.73	86.21	6.2	Dolakha
12-May-15	27.73	86.11	5	Dolakha
13-May-15	27.91	84.82	5.9	Dhading
13-May-15	27.68	86.17	5.1	Dolakha
14-May-15	27.67	86.08	5	Dolakha
15-May-15	27.93	84.84	5.5	Dhading
16-May-15	27.6	86.26	5.5	Dolakha
25-May-15	28.01	84.68	5	Gorkha

Date	Latitude	Longitude	Magnitude (ml)	Epicentre
26-May-15	28.02	85.26	5	Rasuwa
29-May-15	28	84.98	5.2	Dhading
11-Jun-15	27.96	85.73	5.3	Sindhupalchok
13-Jun-15	27.73	86.16	5.2	Dolakha
17-Jun-15	28.27	85.94	5.1	Tibet
17-Jun-15	27.91	85.59	5.2	Sindhupalchok
20-Jun-15	28.65	82.76	5.4	Rukum
29-Jun-15	27.35	86.2	5	Ramechhap
02-Jul-15	27.97	85.62	5	Sindhupalchok
23-Aug-15	27.87	86.17	5.1	Dolakha
30-Aug-15	27.72	85.75	5	Sindhupalchok
19-Nov-15	27.89	85.75	5.3	Sindhupalchok
18-Dec-15	29.44	81.69	5.5	Bajura
05-Feb-16	27.95	85.52	5.5	Sindhupalchok
21-Feb-16	28.08	84.76	5.5	Gorkha
24-Feb-16	27.8	85.74	5.4	Sindhupalchok
29-Jun-16	29.63	81.28	5	Bajhang
28-Nov-16	27.79	86.58	5.6	Ramechhap/sidhupalchok
02-Jul-17	27.34	86.49	5.1	Okhaldhunga
08-Dec-17	27.63	86.19	5.2	Dolakha
28-Jun-18	27.87	84.91	5	Dhading

Note:- magnitute of 5 and above is coverd after 03 Nov 2013.

Source: Seismological center, DMG

Table 5.1.3 : Pre-and post-earthquake situation of landslides in the affected districts of Nepal

S.N.	District	Pre Earthquake Landslides*			Earthquake Induced Landslides**		
		Total Number of Landslides	Total Area m²	Total Volume of Debris m³	Total Number of Landslides	Total Area m²	Total Volume of Debris m³
1	Gorkha	62	1,796,607	898,303.50	107	1,993,838	996,919
2	Dhading	76	2,577,996	1,288,998	275	3,162,267	1,581,134
3	Rasuwa	70	3,243,149	1,621,575	127	5,828,329	2,914,165
4	Nuwakot	38	118,887	59,443.50	66	1,242,119	621,059.50
5	Sindhupalchowk	87	3,623,521	1,811,761	1278	18,667,721	9,333,861
6	Dolkha	29	259,475	129,737.50	153	3,080,708	1,540,354
7	Ramechap	101	1,714,325	857,162.50	253	764,032	382,016
8	Kathmandu	NA	NA	NA	44	328,797	164,398.50
9	Bhaktapur	NA	NA	NA	NA	NA	NA
10	Lalitpur	NA	NA	NA	65	85,025	42,512.50
11	Makwanpur	87	1,046,123	5,230,61.5	156	204,060	102,030
12	Kavre	52	2,968,952	1,484,476	176	1,129,346	564,673
13	Sindhuli	171	2,448,103	1,224,052	59	1,361,619	680,809.50
14	Okhaldhunga	80	3,158,977	1,579,489	23	389,215	194,607.50
Total		**853**	**22,956,115**	**11,478,058**	**2782**	**38,237,076**	**19,118,538**

** Source: TU-CDES (2015)*

*** Source: ICIMOD (2015) (Makwanpur data obtained from DSCWM3) NA: Data not available*

Source : Nepal Earthquak 2015,Rapid Environmental Assessment,Ministry of Science,Technology and Environment

Table 5.1.4 : Loss of Lives, Livestock and Other Effects by Type of Disaster,1983-2017

(Disasters: Flood, Cold, Landslide, Avalanches, Earthquake, Fire, Epidemic, Windstorm, Hailstone & Thunderbolt)

Year	Number of People		Number of Livestock Loss	Number of House Destroyed	Number of Affected Family	Land Affected (Ha.)	Public Infrastructure	Estimated Loss (Million NRs.)
	Dead	Injured						
1983	579	NA	248	12	NA	NA	NA	240
1984	941	NA	3547	10597	NA	1242	869	49
1985	1387	NA	3399	7166	NA	1355	436	23
1986	1512	NA	6566	3370	NA	1315	436	23
1987	881	162	1852	36220	97036	18858	421	2005
1988	1584	12538	2788	108801	70197	NA	4365	6099
1989	1716	3014	4240	7648	NA	NA	NA	4172
1990	913	196	867	6352	8462	1132	NA	139
1991	971	43	642	5510	6426	283	39	43
1992	1318	17	1586	13997	11535	135	66	52
1993	1524	246	NA	21911	90911	NA	NA	5189
1994	765	155	1329	3234	11701	392	NA	184
1995	873	1937	2053	10275	134216	41867.26	NA	1933
1996	895	1527	2480	30014	58329	6063.4	NA	1579
1997	1160	1120	1191	4825	46054	6063.4	NA	410
1998	1190	117	1179	15082	36987	326.89	NA	1230
1999	1466	146	650	4304	17842	182.4	NA	509
2000	377	162	1017	6886	24900	889	NA	1141.5
2001	415	132	665	6103	15908	NA	NA	526.65
2002	458	287	2126	19856	40935	10078	NA	525.56
2003	310	160	1125	6819	11730	2360	NA	989.93
2004	192	220	888	4818	16997	0	NA	341.09
2005	242	153	955	3169	4315	0	NA	387.21
2006	132	88	10098	3765	19023	3396.84	NA	392.31
2007	274	144	21861	37984	117203	513.65	NA	1928.55
2008	171	55	7066	13864	21600	21315	NA	1633.28
2009	641	117	228	1050	3028	NA	4.88	420.25
2010	448	261	1526	23370	19026	200 no	2.85	1398.19
2011	507	666	864	11348	12135	NA	NA	7051.62
2012	385	384	1181	4235	3645	NA	NA	1293.96
2013	460	494	1536	2510	2710	NA	NA	3425.59
2014	503	479	0	34721	39812	NA	NA	1681.00
2015	9248	22633	1974	1079778	828	NA	NA	944.00
2016	450	764	8162	4655	13241	NA	NA	2812.00
2017	490	737	3291	1433352	19073	NA	NA	2495.00

Source: Department of Water Induced Disaster Prevention & MOHA

Table 5.1.5 :Major disasters in Nepal and the damage and loss, 1971-2015

Disaster type	No. of death	No. of persons missing	No. of persons injured	No. of houses damaged or destroyed	No of affected families	No. of incidents
Epidemic	16,564	0	43076	0	512970	3448
Earthquake	9,771	0	29142	982855	890995	175
Landslide	4,832	165	1727	32819	556774	3012
Flood	4,344	6	527	215427	3702942	3720
Fire	1,541	0	1379	83527	256445	7187
Thunderbolt	1,502	129	2444	952	6880	1505
Cold wave	515	0	83	0	2393	390
Snow storm	87	7	0	0	0	5
Avalanche	16	3	7	0	0	2
Wind storm	0	0	2	0	0	16
Hailstones	0	0	0	6	2608	17
Heavy rainfall	0	0	0	4	5	3
Other*	1,092	0	0	15323	0	2892
Total	40,264	310	78,387	1,330,913	5,932,012	22,372

*Note: * The category 'other' represents unidentified events and was recorded till 2013 Source: MoHA*

Table 5.1.6 : Human casualties due to major disasters in Nepal, 1983-2017

Year	Flood & Landslides	Earthquake	Windstorms, Hailstorm & Thunderbolt	Avalanche	Fire	Epidemic	Boat Capsize,Cold wave &Drowning	Stampede	Other	Total
1983	293	0	NA	0	69	217		0		579
1984	363	0	NA	0	57	521		0		941
1985	420	0	NA	0	52	915		0		1387
1986	315	0	NA	0	96	1101		0		1512
1987	391	0	2	0	62	426		0		881
1988	328	721	NA	14	23	427		71		1584
1989	680	0	28	20	109	879		0		1716
1990	307	0	57	0	46	503		0		913
1991	93	0	63	0	90	725		0		971
1992	71	2	20	0	97	128		0		318
1993	1336	0	45	0	43	100		0		1524
1994	49	0	47	0	43	626		0		765
1995	203	0	34	43	73	520		0		873
1996	258	3	75	4	61	494		0		895
1997	83	0	49	12	65	951		0		1160
1998	273	0	23	0	54	840		0		1190
1999	193	0	22	5	39	1207		0		1466
2000	173	0	26	0	37	141		0		377
2001	196	1	38	0	26	154		0		415
2002	441	0	6	0	11	0		0		458
2003	232	0	62	0	16	0		0		310
2004	131	0	10	0	10	41		0		192
2005	141	0	18	21	28	34		0		242
2006	114	0	15	0	3	0		NA		132
2007	216	0	40	6	9	3		NA		274
2008	134	0	16	0	11	10		0		171
2009	135	0	7	2	35	462		0		641
2010	240	0	70	0	69	36		NA		415
2011	252	6	114	0	46	9	80	NA		507
2012	112	1	148	9	77	33	5	NA		385
2013	219	0	154	8	59	4	16	NA		460
2014	248	0	135	13	83	12	10	NA		501
2015	124	8962	93	1	57	3	0	NA	8	9248
2016	256	0	108	0	41	19	20	NA	6	450
2017	249	0	90	1	63	10	18	NA	59	490

Source: MOHA & Department of Water Induced Disaster Prevention

Table 5.1.7: Main Climate Induced Disasters

Analytical Domain	Climate Induced Disasters since last 25 years (%)[1]																	
	Drought	Forest Fire	Fire (settlement)	Flood	Inundation	Windstorm	Thunderstorm	Hailstorm	Heavy rain	Sporadic rain	Soil erosion	Land slide	Avalanche	GLOF	Hot wave	Cold wave	Diseases/insect	Others
Urban/Rural																		
Urban	85.5	14.3	11.1	25.9	14.7	23.9	25.7	27.1	9.7	24.9	4.3	11.6	0	0	6.9	25	41.2	1.9
Rural	86.3	21	16.9	29.1	8.3	27.9	22.1	34.8	4.2	16.2	7.1	16.3	0.2	0	3.1	25.4	44.3	0.9
Ecological Belt																		
Mountain	82.1	27.6	4.6	6.1		17.1	19.1	46.9	4.7	24.5	4.7	28	2.1	0.2	0	9.6	47.1	1
Hill	78.9	29.4	4	8.9		16.2	24.3	29.4	6.1	22.9	11.5	27.5	0	0	0.1	1	34.3	1.5
Terai	93.5	7.9	27.5	49.8	21.4	38.1	22.8	33.1	5.8	14	1.7	0.9	0	0	8.8	50.7	51.3	0.9
Kathmandu valley	93.4	0.7	3.1	8.9	0	14.7	20.2	23.9	6.5	66.8	0	0	0	0	0	0	17	5.7
Overall	86.1	19	15.2	28.1	10.2	26.7	23.2	32.5	5.8	18.8	6.3	14.9	0.2	0	4.2	25.3	43.4	1.2

Source: NCCIS 2016, CBS

Table 5.1.8: Extent of Impact of Climate Induced Disaster in Last 25 Years

Disasters	Magnitude of Impact (%)					Total	Average Impact (on scale 1 to 5)
	Extremely low (1)	Low (2)	Moderate (3)	High (4)	Extremely high (5)		
1. Drought	17.59	19.36	30.19	24.99	7.87	100	2.9
2. Fire (forest)	39.76	28.94	27.34	3.75	0.22	100	2
3. Fire (settlement)	47.66	23.25	19.59	5.04	4.46	100	2
4. Flood	30.13	18.9	19.4	13.33	18.24	100	2.7
5. Inundation	37.36	21.05	20.42	5.36	15.81	100	2.4
6. Windstorm	44.46	17.08	25.83	7.36	5.26	100	2.1
7. Thunderstorm	52.41	20.72	22.05	4.58	0.23	100	1.8
8. Hailstorm	41.04	21.38	25.15	8.93	3.49	100	2.1
9. Heavy rain	30.83	19.54	25.11	21.22	3.3	100	2.5
10. Sporadic rain	31.83	28.58	29.04	9.83	0.72	100	2.2
11. Soil erosion	26.46	30.33	30.94	11.58	0.69	100	2.3
12. Landslide	28.45	22.67	36.92	10.66	1.3	100	2.3
13. Snowstorm	62.71	29.35	3.53	4.11	0.3	100	1.5
14. Avalanche	96.14	3.86	0	0	0	100	1
15. GLOF	62.76	37.24	0	0	0	100	1.4
16. Heat wave	18.92	42.54	34.24	3.97	0.33	100	2.2
17. Cold wave	29.19	23.72	23.81	9.13	14.15	100	2.6
18. Diseases/insect	16.51	20.21	32.07	22.9	8.3	100	2.9

Source: NCCIS 2016, CBS

Table 5.1.9 : Households Affected by Climate Induced Disasters in Last 5 Years

Disasters	Impact			Total
	Affected (%)	Observed but not affected (%)	No disaster (%)	
Drought	65.73	24.33	9.94	100
Fire (forest)	12.7	17.52	69.77	100
Fire (settlement)	3.42	23.88	72.7	100
Flood	12.12	24.65	63.23	100
Inundation	4.97	9.15	85.88	100
Windstorm	16.35	22.03	61.62	100
Thunderstorm	13.58	30.58	55.84	100
Hailstorm	25.06	29.66	45.28	100
Heavy rain	6.61	18.06	75.33	100
Sporadic rain	14.36	27.47	58.18	100
Soil erosion	4.62	11.65	83.73	100
Landslide	10.45	12.63	76.92	100
Snowstorm	0.16	0.57	99.26	100
Avalanche	0	0.05	99.94	100
GLOF	0	0.03	99.97	100
Heat wave	0.79	8.72	90.49	100
Cold wave	14.13	25.48	60.4	100
Diseases/insect	45.12	28.61	26.26	100

Source: NCCIS 2016, CBS

Table 5.1.10: Economic Loss of Households Due to Climate Induced Disasters in Last 5 Years

Analytical Domain	Household (%)						Total
	No loss	Below NPR 15,000	NPR 15,001-30,000	NPR 30,001-45,000	NPR 45,001-60,000	More than NPR 60,000	
Urban/Rural							
Urban	1	29.7	18.5	9.6	8.6	33	100
Rural	0	25	20.2	11.6	10.6	32.3	100
Ecological Belt							
Mountain	0	11.7	14.5	10.5	11	52.3	100
Hill	0	32.4	21.7	12	9.3	24.7	100
Terai	1	23.4	19.4	10.6	10.9	35.1	100
Kathmandu valley	0	30	25.6	0	0	44.5	100
Combined Vulnerability							
Very High	1	20.2	14.7	8.5	13.7	41.6	100
High	0	21.3	23.5	11.9	9.5	33.8	100
Moderate	0	31.3	19.7	12	8.5	28.6	100
Low	0	26	18.9	11.7	10.3	32.8	100
Very Low	0	43.3	24.6	10.8	9.9	11.4	100
Bio-climatic Zone							
Tropical	1	23.9	20.6	11.8	10.4	32.7	100
Sub-tropical	0	30	18.8	10.4	9.2	31.6	100
Temperate	0	23.1	18	8.6	14.5	35.8	100
Sub-alpine	0	68.8	0	6.3	0	25	100
Overall	0	26	19.9	11.2	10.2	32.5	100

Source: NCCIS 2016, CBS

CHAPTER VI

Human Settlements and Environmental Health

Table 6.1.1 : Population Size, Growth Rate and Doubling Time, 1911 – 2011

Census year	Total Population	Population Change	Annual Growth Rate (Exponential)	Doubling Time
1911	5,638,749		-	-
1920	5,573,788	-64,961	-0.13	-
1930	5,532,574	41,214	-0.07	-
1941	6,283,649	7,51,075	1.16	60
1952-54	8,256,625	19,72,976	2.27	31
1961	9,412,996	11,56,371	1.64	42
1971	11,555,983	21,42,987	2.05	34
1981	15,022,839	34,66,856	2.62	26
1991	18,491,097	34,68,258	2.08	33
2001	23,151,423	46,60,326	2.25	31
2011	26,494,504	3,343,081	1.35	52

Source :Central Bureau of Statistics

Table 6.1.2 : Areas, Population and Sex Ratio in province level, Nepal

Name of province	Area (%)	Number of District	Population 2011			Total household	Average hhld size	Sex Ratio (males per 100 females)	Population Density (persons / sq. km.)
			Total	Male	Female				
Nepal	**147181.0**	**77**	**26,494,504**	**12,849,041**	**13,645,463**	**5,427,302**	**4.88**	**94.16**	180
Province 1	25905	14	4,534,943	2,166,536	2,368,407	992,445	4.57	91.48	175
Province 2	9661.0	8	5,404,145	2,717,938	2,686,207	932,308	5.80	101.18	559
Province 3	20300.0	13	5,529,452	2,747,633	2,781,819	1,270,797	4.35	98.77	272
Gandaki	21504.0	11	2,403,757	1,090,808	1,312,949	578,219	4.16	83.08	112
Province 5	22288.0	12	4,499,272	2,140,316	2,358,956	885,203	5.08	90.73	202
Karnali	27984.0	10	1,570,418	767,923	802,495	298,359	5.26	95.69	56
Sudurpaschim	19539.0	9	2,552,517	1,217,887	1,334,630	469,971	5.43	91.25	131

Source :Central Bureau of Statistics

Table 6.1.3 : Population Growth Rates by Ecological Belt, Nepal, 1961-2011

	Average Annual Growth Rate of Population 1961-2011			
	Mountain	Hill	Terai	Total
1961-1971	-	-	2.39	2.05
1971-1981	1.35	1.65	4.11	2.62
1981-1991	1.02	1.61	2.75	2.08
1991-2001	1.57	1.97	2.62	2.25
2001-2011	0.54	1.06	1.72	1.35

Source : Central Bureau of Statistics

Table 6.1.4 : Population, Households and Population Density of District in Nepal

S.N.	District	Population 2011			Annual Growth Rate(%)	Sex Ratio (males per 100 females)	Number of Household	Average Household Size	Area in Sq.km.	Population Density (persons / sq.km.)
		Total	Male	Female						
1	Taplejung	127,461	60,552	66,909	-0.55	90	26,509	4.81	3,646	35
2	Panchthar	191,817	90,186	101,631	-0.52	89	41,196	4.66	1,241	155
3	Ilam	290,254	141,126	149,128	0.26	95	64,502	4.50	1,703	170
4	Jhapa	812,650	385,096	427,554	1.66	90	184,552	4.40	1,606	506
5	Morang	965,370	466,712	498,658	1.35	94	213,997	4.51	1,855	520
6	Sunsari	763,487	371,229	392,258	1.99	95	162,407	4.70	1257	607
7	Dhankuta	163,412	76,515	86,897	-0.19	88	37,637	4.34	891	183
8	Terhathum	101,577	47,151	54,426	-1.08	87	22,094	4.60	679	150
9	Sankhuwasabha	158,742	75,225	83,517	-0.03	90	34,624	4.58	3,480	46
10	Bhojpur	182,459	86,053	96,406	-1.07	89	39,419	4.63	1,507	121
11	Solukhumbu	105,886	51,200	54,686	-0.17	94	23,785	4.45	3,312	32
12	Okhaldhunga	147,984	68,687	79,297	-0.57	87	32,502	4.55	1,074	138
13	Khotang	206,312	97,092	109,220	-1.15	89	42,664	4.84	1,591	130
14	Udayapur	317,532	149,712	167,820	0.99	89	66,557	4.77	2,063	154
15	Saptari	639,284	313,846	325,438	1.14	96	121,098	5.28	1,363	469
16	Siraha	637,328	310,101	327,227	1.07	95	117,962	5.40	1,188	536
17	Dhanusa	754,777	378,538	376,239	1.17	101	138,249	5.46	1,180	640
18	Mahottari	627,580	311,016	316,564	1.26	98	111,316	5.64	1,002	626
19	Sarlahi	769,729	389,756	379,973	1.91	103	132,844	5.79	1,259	611
20	Sindhuli	296,192	142,123	154,069	0.57	92	57,581	5.14	2,491	119
21	Ramechhap	202,646	93,386	109,260	-0.47	85	43,910	4.62	1,546	131
22	Dolakha	186,557	87,003	99,554	-0.91	87	45,688	4.08	2,191	85
23	Sindhupalchok	287,798	138,351	149,447	-0.61	93	66,688	4.32	2542	113
24	Kavrepalanchowk	381,937	182,936	199,001	-0.10	92	80,720	4.73	1396	274
25	Lalitpur	468,132	238,082	230,050	3.26	103	109,797	4.26	385	1216
26	Bhaktapur	304,651	154,884	149,767	3.01	103	68,636	4.44	119	2560
27	Kathmandu	1,744,240	913,001	831,239	4.78	110	436,344	4.00	395	4416
28	Nuwakot	277,471	132,787	144,684	-0.39	92	59,215	4.69	1,121	248
29	Rasuwa	43,300	21,475	21,825	-0.33	98	9,778	4.43	1,544	28
30	Dhading	336,067	157,834	178,233	-0.08	89	73,851	4.55	1,926	174
31	Makwanpur	420,477	206,684	213,793	0.69	97	86,127	4.88	2,426	173
32	Rautahat	686,722	351,079	335,643	2.31	105	106,668	6.44	1,126	610
33	Bara	687,708	351,244	336,464	2.07	104	108,635	6.33	1,190	578
34	Parsa	601,017	312,358	288,659	1.90	108	95,536	6.29	1,353	444
35	Chitawan	579,984	279,087	300,897	2.06	93	132,462	4.38	2,218	261
36	Gorkha	271,061	121,041	150,020	-0.61	81	66,506	4.08	3,610	75
37	Lamjung	167,724	75,913	91,811	-0.55	83	42,079	3.99	1,692	99
38	Tanahu	323,288	143,410	179,878	0.25	80	78,309	4.13	1,546	209
39	Syangja	289,148	125,833	163,315	-0.93	77	68,881	4.20	1,164	248
40	Kaski	492,098	236,385	255,713	2.57	92	125,673	3.92	2,017	244
41	Manang	6,538	3,661	2,877	-3.83	127	1,480	4.42	2,246	3
42	Mustang	13,452	7,093	6,359	-1.08	112	3,354	4.01	3,573	4
43	Myagdi	113,641	51,395	62,246	-0.07	83	27,762	4.09	2,297	49
44	Parbat	146,590	65,301	81,289	-0.74	80	35,719	4.10	494	297
45	Baglung	268,613	117,997	150,616	-0.01	78	61,522	4.37	1,784	151
46	Nawalparasi purba	311,604	142,769	168,825	NA	85	66,934	4.66	NA	
47	Gulmi	280,160	120,995	159,165	-0.57	76	64,921	4.32	1,149	244
48	Palpa	261,180	115,840	145,340	-0.28	80	59,291	4.41	1,373	190
49	Rupandehi	880,196	432,193	448,003	2.17	96	163,916	5.37	1,360	647
50	Kapilbastu	571,936	285,599	286,337	1.71	100	91,321	6.26	1,738	329
51	Arghakhanchi	197,632	86,266	111,366	-0.53	77	46,835	4.22	1,193	166

S.N.	District	Population 2011			Annual Growth Rate(%)	Sex Ratio (males per 100 females)	Number of Household	Average Household Size	Area in Sq.km.	Population Density (persons / sq.km.)
		Total	Male	Female						
52	Pyuthan	228,102	100,053	128,049	0.71	78	47,730	4.78	1,309	174
53	Rolpa	224,506	103,100	121,406	0.67	85	43,757	5.13	1,879	119
54	Salyan	242,444	115,969	126,475	1.27	92	46,556	5.21	1,462	166
55	Dang	552,583	261,059	291,524	1.78	90	116,415	4.75	2,955	187
56	Banke	491,313	244,255	247,058	2.42	99	94,773	5.18	2,337	210
57	Bardiya	426,576	205,080	221,496	1.09	93	83,176	5.13	2,025	211
58	Nawalparasi paschim	331,904	160,896	171,008	NA	94	61,859	5.37	NA	-
59	Rukum purba	53,184	24,980	28,204	NA	89	11,209	4.74	NA	-
60	Surkhet	350,804	169,421	181,383	1.95	93	72,863	4.81	2,451	143
61	Dailekh	261,770	126,990	134,780	1.50	94	48,919	5.35	1,502	174
62	Jajarkot	171,304	85,537	85,767	2.39	100	30,472	5.62	2,230	77
63	Dolpa	36,700	18,238	18,462	2.17	99	7,488	4.90	7,889	5
64	Jumla	108,921	54,898	54,023	1.97	102	19,303	5.64	2,531	43
65	Kalikot	136,948	68,833	68,115	2.60	101	23,013	5.95	1,741	79
66	Mugu	55,286	28,025	27,261	2.30	103	9,619	5.75	3,535	16
67	Humla	50,858	25,833	25,025	2.25	103	9,479	5.37	5,655	9
68	Rukum paschim	155,383	74,179	81,204	NA	91	30,647	5.07	NA	-
69	Bajura	134,912	65,806	69,106	2.15	95	24,908	5.42	2,188	62
70	Bajhang	195,159	92,794	102,365	1.56	91	33,786	5.78	3,422	57
71	Achham	257,477	120,008	137,469	1.07	87	48,351	5.33	1,680	153
72	Doti	211,746	97,252	114,494	0.22	85	41,440	5.11	2,025	105
73	Kailali	775,709	378,417	397,292	2.29	95	142,480	5.44	3,235	240
74	Kanchanpur	451,248	216,042	235,206	1.77	92	82,152	5.49	1,610	280
75	Dadeldhura	142,094	66,556	75,538	1.19	88	27,045	5.25	1,538	92
76	Baitadi	250,898	117,407	133,491	0.68	88	45,191	5.55	1,519	165
77	Darchaula	133,274	63,605	69,669	0.88	91	24,618	5.41	2,322	57
Nepal		**26,494,504**	**12,849,031**	**13,645,463**	**1.35**	**94**	**5,427,302**	**4.88**	**147,181**	**180**

Source: Central Bureau of Statistics,Population Census 2011

Table 6.1.5 : Distribution of district by size of Population,Nepal,1971-2011

Size of Population	Number of District						Population					
	1971	1981	1991	2001	2011	2017*	1971	1981	1991	2001	2011	2017*
Less than 10,000	1	1	1	1	1	1	7,436	7,021	5,363	9,587	6,538	6,538
10,000-19,999	3	1	1	1	1	1	45,644	12,930	14,292	14,981	13,452	13,452
20,000-29,999	3	2	1	1	-	-	82,186	42,346	25,013	29,545	-	-
30,000-39,000	-	1	3	-	1	1	-	30,241	107,491	-	36,700	36,700
40,000-49,999	-	1	-	3	1	1	-	43,705	-	129,263	43,300	43,300
50,000-59,999	1	-	-	-	2	3	57,946	-	-	-	106,144	159,328
60,000-69,999	3	1	-	-	-	-	199,073	68,797	-	-	-	-
70,000-79,999	-	1	1	-	-	-	-	74,649	75,964	-	-	-
80,000-89,999	2	3	1	1	-	-	171,279	262,736	88,805	89,427	-	-
90,000-99,999	2	4	2	-	-	-	190,986	378,888	189,210	-	-	-
100,000-199,999	41	28	25	16	20	21	5,802,698	4,433,030	3,842,156	2,240,152	3,014,094	3,169,477
200,000-299,999	12	18	20	23	19	18	2,752,028	4,293,871	5,034,279	5,570,510	4,816,345	4,607,778
300,000-399,999	7	10	6	11	6	8	2,245,707	3,505,384	2,092,131	3,920,048	2,014,279	2,657,787
400,000-499999	-	3	9	4	6	6	-	1,334,549	4,006,670	1,913,623	2,749,844	2,749,844
500,000 or more	-	1	5	14	18	17	-	534,692	3,009,723	9,234,287	13,693,808	13,050,300
	75	**75**	**75**	**75**	**75**	**77**	**11,554,983**	**15,022,839**	**18,491,097**	**23,151,423**	**26,494,504**	**26,494,504**

Source : Central Bureau of Statistics (Population census 1971,1981,1991,2001 and 2011)

** Based on population census 2011*

Table 6.1.6 : Population Distribution and Composition, 1971-2011

Population Distribution	1971	1981	1991	2001	2011
Nepal (Number of Population)	**11554983**	**15022839**	**18491097**	**23151423**	**26494504**
Ecological belt					
Mountain	9.9	8.7	7.8	7.29	6.73
Hill	52.5	47.7	45.5	44.28	43.01
Tarai	37.6	43.6	46.7	48.43	50.27
Residence					
Rural	96	93	91	86	82.93
Urban	4	7	9	14	17.07
Population composition					
By age					
0-14	40	41	42	39	34.91
15-59	54	53	52	54	56.96
60-+	6	6	6	7	8.13
Total	**100**	**100**	**100**	**100**	**100**
By sex					
Male	50.34	51.22	49.87	49.95	48.5
Female	49.66	48.78	50.13	50.05	51.5
Sex ratio	101.4	105	99.5	99.8	94.2
By cast/ethnic group					
Chhetri			16.1	15.3	16.6
Bramhin			13.8	12.7	12.2
Magar			7.2	7.1	7.1
Tharu			6.7	6.8	6.6
Tamang			5.5	5.6	5.8
Newar			5.6	5.5	5
Muslim			4.1	4.2	4.4
Others			40.9	42.7	42.3
Total			**100**	**100**	**100**
By literacy					
Male		34	54	65.5	75.1
Female		12	25	42.8	57.4
Total		**23.3**	**39.6**	**54.1**	**65.9**
By religion					
Hindu		90	86	81	81.3
Baudha		5	8	11	9
Islam		3	4	4	4.4
Others		2.5	2.1	4	5.3
By Mother Tongue					
Nepali		58	50	48.6	44.6
Maithali		11.1	11.8	12.3	11.7
Bhojpuri		7.6	7.5	7.5	6
Tharu		3.6	5.4	5.8	5.8
Tamang		3.5	4.9	5.2	5.1
Newar		3	3.5	3.6	3.2
Others		13.2	16.9	17	23.6
By employment status					
Employer				3.81	2.15
Employee				24.63	27.47
Self employed				62.73	65.82
Unpaid family worker				8.83	1.33
Not stated					3.24
By occupation					
Agriculture		91.4	81.1	65	60.43

Population Distribution	1971	1981	1991	2001	2011
Nepal (Number of Population)	**11554983**	**15022839**	**18491097**	**23151423**	**26494504**
Non- agriculture		6.3	18.6	35	37.54
Not stated		2.3	0.3	0	2.03
Occupational classifications					
Manager / Administrator / Legislator		0.1	0.3	0.6	1.41
Professional		0.9	1.8	2.5	3.99
Technician				1.7	2.09
Clerks/office assistance		0.7	1.1	2.03	1.27
Service worker		1.5	9.2	7.9	8.29
Agriculture / livestock / forestry / fisheries		92.2	81.2	65.7	60.43
Craft production worker				9.3	8.07
Plant production worker				1.4	2.22
Elementary				8.8	9.94
Armed force					0.24
Not stated					2.03

Source: Central Bureau of Statistics (National Population Censuses 1971,1981,1991,2001 and 2011).

Table 6.1.7 : Population and Household

S.N.	Description	1961	1971	1981	1991	2001	2011
1	Population ('000)	9412	11556	15023	18491	23151	26494
2	Average annual population growth rate	1.64	2.05	2.62	2.08	2.25	1.35
3	Number of households	1738975	2084062	2585154	3328198	4253220	5427302
4	Average household size	5.3	5.5	5.8	5.6	5.44	4.88

Source : Central Bureau of Statistics

Table 6.1.8 : Percentage distribution of Households by types of House, Nepal, 1991-2001

Year	Area	Total Households	Households by types of House(%)			
			Permanent (Pakki)	Semi-permanent (Ardha-Pakki)	Impermanent (Kachchi)	Others
1991	**Nepal**	3328721	23.5	24.8	49.7	2.0
	Ecological Belt					
	Mountain	274135	32.4	47.3	19.2	1.1
	Hill	1558493	34.7	33.1	31	1.2
	Tarai	1496093	10.4	12.2	75.2	2.2
2001	**Nepal**	4174374	36.6	29.2	33.5	0.7
	Ecological Belt					
	Mountain	285213	44.8	41.6	13	0.6
	Hill	1951191	51.1	30.8	17.6	0.5
	Tarai	1937970	20.8	25.7	52.4	1
	Place of Residence					
	Urban	664507	68.2	16.1	15.2	0.4
	Rural	3509867	30.6	31.7	36.9	0.8

Source : Central Bureau of Statistics, Population Census,1991 and 2001: National Report and Selected Urban Tables

Table 6.1.9 : Households by types of Ownership of House/housing unit in used, Nepal

Name of province	Total	Ownership of house/housing unit			
		Owned	Rented	Institutional	Others
Nepal	**5,423,297**	**4,623,653**	**694,701**	**34,313**	**70,630**
Province 1	991,750	865,693	96,068	9,137	20,852
Province 2	932,087	896,369	25,970	3,284	6,464
Province 3	1,269,144	860,603	378,404	10,830	19,307
Gandaki	577,682	472,211	91,423	4,083	9,965
Province 5	884,757	802,408	70,972	4,060	7,317
Karnali	298,174	281,352	13,696	892	2,234
Sudurpaschim	469,703	445,017	18,168	2,027	4,491

Source : Central Bureau of Statistics, Population Census, 2011

Table 6.1.10 : Percentage distribution of Households by foundation of house/housing unit,Nepal

Name of province	Total	Type of foundation of house					
		Mud bonded bricks/stone	Cement bonded bricks/stone	RCC with pillar	Wooden pillar	Others	Not Stated
Nepal	**5,423,297**	2397441	952702	539004	1350151	126,281	57718
Province 1	991,750	339653	138197	89901	351228	66,488	6283
Province 2	932,087	67588	213922	39003	578971	18,338	14265
Province 3	1,269,144	587718	291019	269032	97243	3,911	20221
Gandaki	577,682	387311	87648	69259	28702	1,384	3378
Province 5	884,757	483067	155997	62090	141966	34,370	7267
Karnali	298,174	265417	7159	3978	18793	366	2461
Sudurpaschim	469,703	266687	58760	5741	133248	1,424	3843

Source: National Population Census, 2011

Table 6.1.11 : Households by outer wall of house/housing unit,Nepal

Name of province	Total	Type of outer wall						
		Mud bonded bricks/stone	Cement bonded bricks/stone	Wood/ planks	Bamboo	Unbaked brick	Others	Not Stated
Nepal	**5,423,297**	2244112	1558823	287859	1096988	**61,317**	**112,694**	61504
Province 1	991,750	317987	212984	75177	367048	2,001	9,952	6601
Province 2	932,087	52441	240251	40914	571396	2,900	8,609	15576
Province 3	1,269,144	555422	599160	43743	31792	7,405	10,614	21008
Gandaki	577,682	370513	174382	11434	10869	1,808	4,948	3728
Province 5	884,757	435200	238846	26866	69919	44,317	61,704	7905
Karnali	298,174	258338	17590	16179	1960	853	643	2611
Sudurpaschim	469,703	254211	75610	73546	44004	2,033	16,224	4075

Source: National Population Census, 2011

Table 6.1. 12 : Percentage Distribution of Households by roof of house/housing unit Nepal

Name of province	Total	Roof of the house(%)							
		Thatch/ straw	Galvanized iron	Tile/ slate	RCC	Wood / planks	Mud	Others	Not stated
Nepal	**5,423,297**	**1,032,282**	**1,532,804**	**1,446,998**	**1,219,060**	**44,069**	**59,029**	**22,703**	**66,352**
province 1	991,750	303,086	506,570	43,575	111,075	10,874	249	8,847	7,474
province 2	932,087	211,637	51,613	493,871	147,883	8,151	0	2,599	16,333
province 3	1,269,144	89,874	427,659	186,185	528,809	11,043	267	2,624	22,683
Gandaki	577,682	64,176	271,119	116,642	112,899	4,213	3,619	1,065	3,949
province 5	884,757	205,723	200,439	204,941	254,884	4,292	2,784	3,357	8,337
Karnali	298,174	95,364	33,544	98,582	13,301	3,241	49,782	1,455	2,905
Sudurpashchim	469,703	62,422	41,860	303,202	50,209	2,255	2,328	2,756	4,671

Table 6.1.13 : Percentage Distribution of Households by number of floor of house/housing unit, Nepal

Province	No. of floor										Total No.
	1 floor	2 floor	3 floor	4 floor	5 floor	6 floor	7 floor	8 floor	9 floor	10 floor	
	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	
Province 1	491,594	375,193	118,296	5,057	1,333	206	44	27			991,750
Province 2	736,767	177,905	11,393	4,383	1,579	60					932,087
Province 3	245,459	492,267	355,949	117,353	46,343	8,501	2,161	487	443	181	1,269,144
Gandaki	161,581	339,349	69,267	6,219	1,139	78	49				577,682
Province 5	534,502	255,502	89,405	4,122	1,103	78	45				884,757
Karnali	48,040	155,502	93,167	1,192	263	8	2				298,174
Sudurpaschim	169,335	211,149	87,520	1,313	372	14					469,703
Total	2,387,278	2,006,867	824,997	139,639	52,132	8,945	2,301	514	443	181	5,423,297

Source: Population Census, 2011

Table 6.1.14 : Distribution of House, Household and Average Household size ,Nepal, 2011

Province	Number of House	Number of Household	Total Population	Male Population	Female Population	Average household Size	Average household per house	Average person per house
	878,109	992,445	4,534,943	2,166,536	2,368,407	4.57	1.13	5.16
Province 1	770,755	932,308	5,404,145	2,717,938	2,686,207	5.80	1.21	7.01
Province 2	892,419	1,270,797	5,529,452	2,747,633	2,781,819	4.35	1.42	6.20
Province 3	482,361	578,219	2,403,757	1,090,808	1,312,949	4.16	1.20	4.98
Gandaki	775,464	885,203	4,499,272	2,140,316	2,358,956	5.08	1.14	5.80
Province 5	266,258	298,359	1,570,418	767,923	802,495	5.26	1.12	5.90
Karnali	401,565	469,971	2,552,517	1,217,887	1,334,630	5.43	1.17	6.36
Sudurpaschim	4,466,931	5,427,302	26,494,504	12,849,041	13,645,463	4.88	1.21	5.93

Note :- Including institutional household

Source: Central Bureau of Statistics (Population Census 2011)

Table 6.1.15 : Percentage Distribution of House having Number of Households Residing in the house, Nepal, 2001

Province	Number of House	Number of Household	House with		
			One Household	2-3 household	4+ Household
Province 1	878,109	992,445	801,331	68,566	8,212
Province 2	770,755	932,308	664,813	93,315	12,627
Province 3	892,419	1,270,797	724,465	120,951	47,003
Gandaki	482,361	578,219	425,731	47,723	8,907
Province 5	775,464	885,203	700,813	66,761	7,890
Karnali	266,258	298,359	241,035	23,897	1,326
Sudurpaschim	401,565	469,971	349,592	48,864	3,109
Total	4,466,931	5,427,302	3,907,780	470,077	89,074

Source : Central Bureau of Statistics (2003), Special Tabulation National Population Census, 2001.

Table 6.1.16 : Households by Type of Lighting facilities, Nepal

Name of province	Total household	Usual source of lighting					
		Electricity	Kerosene	Bio gas	Solar	Others	Not Stated
Nepal	**5,423,297**	**3,647,746**	**991,510**	**15,264**	**403,504**	**330,170**	**35,103**
Province 1	991,750	652,770	215,230	4,034	86,752	28,774	4,190
Province 2	932,087	556,342	348,232	1,985	12,234	2,206	11,088
Province 3	1,269,144	1,087,058	95,056	3,448	53,104	22,063	8,415
Gandaki	577,682	476,841	57,404	1,233	29,124	10,767	2,313
Province 5	884,757	583,931	181,881	2,133	58,365	53,863	4,584
Karnali	298,174	64,850	16,552	414	99,495	115,099	1,764
Sudurpaschim	469,703	225,954	77,155	2,017	64,430	97,398	2,749

Source : Central Bureau of Statistics,2017(Based on Population Census 2011)

Table 6.1.17 : Households by Type of Main Fuel Used for Cooking, Nepal

Name of province	Total household	Fuel usually used for cooking							
		Wood / firewood	Kero-sene	LP gas	Santhi/ guitha (cow dung)	Bio gas	Electri-city	Others	Not Stated
Nepal	**5,423,297**	**3,470,224**	**55,610**	**1,140,662**	**563,126**	**131,596**	**4,523**	**22,583**	**34,973**
Province 1	991,750	664,953	8,948	157,904	117,127	30,752	1,496	6,432	4,138
Province 2	932,087	485,156	11,832	54,133	353,237	7,116	310	9,222	11,081
Province 3	1,269,144	585,649	22,328	621,041	983	25,801	1,433	3,526	8,383
Gandaki	577,682	395,522	3,421	148,008	1,194	25,981	691	570	2,295
Province 5	884,757	629,432	6,043	128,567	88,751	25,307	312	1,775	4,570
Karnali	298,174	281,662	586	11,587	1,076	988	191	323	1,761
Sudurpaschim	469,703	427,850	2,452	19,422	758	15,651	90	735	2,745

Source : Central Bureau of Statistics,2017(Based on Population Census 2011)

Table 6.1.18 : Percentage Distribution of Households using Main Sources of Drinking Water, Nepal, 2011

Area	Total Households	Main Source of Drinking Water (%)							
		Tap/Piped	Tubewell/ hand pump	Covered well/kuwa	Uncovered well/kuwa	Spout water	River/ stream	Others	Not Stated
Nepal	**5,423,297**	**2,591,379**	**1,904,965**	**132,870**	**255,658**	**311,394**	**60,580**	**132,551**	**33,900**
Province 1	991,750	436,316	436,909	9,528	46,383	43,369	7,578	7,622	4,045
Province 2	932,087	97,472	762,099	4,487	37,542	3,735	2,578	13,478	10,696
Province 3	1,269,144	852,253	112,156	67,291	58,880	69,252	9,226	92,051	8,035
Gandaki	577,682	462,277	13,104	17,081	28,959	46,786	4,272	2,988	2,215
Province 5	884,757	370,788	392,136	21,559	46,300	28,251	11,875	9,400	4,448
Karnali	298,174	182,981	1,453	5,277	21,590	71,865	11,803	1,472	1,733
Sudur Paschim	469,703	189,292	187,108	7,647	16,004	48,136	13,248	5,540	2,728

Source: Central Bureau of Statistics,Population Census 2011

Table 6.1.19 : Percentage Distribution of Households by Toilet Facility, Nepal, 2011

Area	Total Households	Type of Toilet Facilities (%)			
		Household without toilet facility	Flush toilet	Ordinary toilet	Toilet facility not stated
Nepal	**5,423,297**	**2,069,812**	**2,262,652**	**1,055,862**	**34,971**
Province 1	991,750	300,349	339,269	347,951	4,181
Province 2	932,087	678,058	150,763	92,256	11,010
Province 3	1,269,144	218,301	850,207	192,227	8,409
Gandaki	577,682	83,842	369,707	121,873	2,260
Province 5	884,757	397,821	323,575	158,777	4,584
Karnali	298,174	143,855	83,580	68,969	1,770
Sudurpaschim	469,703	247,586	145,551	73,809	2,757

Source: Central Bureau of Statistics (Population Census 2011

Table 6.1.20 : Multidimensional Poverty by Province, 2014

Sub-national region	Population share (%)	MPI			Headcount ratio (H, %)			Intensity (A, %)		
		Value	Confidence interval (95%)		Value	Confidence interval (95%)		Value	Confidence interval (95%)	
Province 1	17.60%	0.085	0.062	0.108	19.7	14.9	24.4	43.2	41.2	45.2
Province 2	18.40%	0.217	0.18	0.254	47.9	40.7	55	45.3	43.4	47.3
Province 3	22.00%	0.051	0.033	0.069	12.2	8.3	16.2	41.9	39.6	44.1
Gandaki	11.60%	0.061	0.036	0.085	14.2	8.9	19.5	42.9	40.4	45.3
Province 5	16.50%	0.133	0.107	0.158	29.9	24.7	35.1	44.3	42.7	45.9
Karnali	5.40%	0.23	0.198	0.261	51.2	44.7	57.8	44.9	43.4	46.4
Sudurpaschim	8.50%	0.146	0.127	0.165	33.6	29.9	37.2	43.5	42.2	44.8

Source: Calculations based on data from MICS 2014, NPC

Table 6.1.21 : Poverty Head Count Rate

S.N.	Region	Poverty Head count Rate			Distribution of the Poor		
		1995/96	2003/04	2010/11	1995/96	2003/04	2010/11
1	**Ecological Belt**						
	Mountain	57	32.6	42.27	10.7	7.5	11.8
	Hill	40.7	34.5	24.32	41.9	47.1	42.8
	Tarai	40.3	27.6	23.44	47.4	45.4	45.4
2	**Residence**						
	Urban	21.6	9.6	15.46	3.6	4.7	11.7
	Rural	43.3	34.6	27.43	96.4	95.3	88.3
3	**Nepal**	**41.8**	**30.8**	**25.16**	**100**	**100**	**100**

Source : Central Bureau of Statistics (Nepal Living Standard Surveys,1995/96, 2003/04, 2010/11)

Table 6.1.22 : Poverty Gap in Rural and Urban, Nepal

	Year	Urban	Rural	Nepal
Poverty Gap Index	1995/96	6.54	12.14	11.75
	2003-04	2.18	8.5	7.55
	2010/11	3.19	5.96	5.43
	1995/96-2003/04 Change (%)	-66.67	-29.98	-35.74
	2003/04-2010/11Change (%)	46.33	-29.88	-28.08
Squared Poverty Gap Index	1995-96	2.65	4.83	4.67
	2003-04	0.71	3.05	2.7
	2010/11	1.01	2.00	1.81
	1995/96-2003/04 Change (%)	-73.21	-36.85	-42.18
	2003/04-2010/11Change (%)	42.25	-34.43	-32.96

Source : Central Bureau of Statistics (Nepal Living Standard Surveys,1995/96 , 2003/04 and 2010/011).

Table 6.1.23 : Inter-Zonal Life-Time Migrants, Nepal, 1971-2011

Year	Place of Birth	Place of Enumeration				% Out-Migration	Net-Migration
		Mountain	Hill	Tarai	Total		
1971	Mountain	-	15667	33990	49657	11.1	-39959
	Hill	9258	-	376074	385332	86.6	-359966
	Tarai	440	9699	-	10139	2.3	399925
	Total	**9698**	**25366**	**410064**	**445128**	**100.0**	
	% In-migration	**2.2**	**5.7**	**92.1**	**100.0**		
1981	Mountain	-	134,254	162,832	297,086	32	-261,467
	Hill	33,423	-	561,211	594,634	64	-424,711
	Tarai	2,196	561,211	-	37,865	4.1	686,178
	Total	**35,619**	**169,923**	**724,043**	**929,585**	**100.0**	
	% In-migration	**3.8**	**18.3**	**77.9**	**100.0**		
1991	Mountain	-	76,503	121,826	198,329	16.1	-161,655
	Hill	32,003	-	895,888	927,891	75.5	-753,923
	Tarai	4,671	97,465	-	102,136	8.3	915,578
	Total	**36,674**	**173,968**	**1,017,714**	**1,228,356**	**100.0**	
	% In-migration	**3.0**	**14.2**	**82.9**	**100.0**		
2001	Mountain	-	125597	169825	295422	17.1	-255103
	Hill	33895	-	1157035	1190930	68.9	-830759
	Tarai	6424	234574	-	240998	14	1085862
	Total	**40319**	**360171**	**1326860**	**1727350**	**100.0**	
	% In-migration	**2.3**	**20.9**	**76.8**	**100.0**		
2011	Mountain	**-**	**37672**	**7497**	**45169**	**18.9**	**-349132**
	Hill	**213714**	**-**	**375101**	**588815**	**62.8**	**-722456**
	Tarai	**180587**	**1273599**	**-**	**1454186**	**18.3**	**1071588**
	Total	**394301**	**1311271**	**382598**	**2088170**	**100.0**	
	% In-migration	**2.2**	**28.2**	**69.6**	**100.0**		

(Source : Central Bureau of Statistics(Population Monograph of Nepal ,2014 vol I)

Table 6.1.24 : Inter-Zonal Migrants for Both Sexes, Nepal

Origin	Destination				% Out-Migration	Net-Migration
	Mountain	Hill	Tarai	Total		
Nepal						
Mountain	-	37,672	7,497	45,169	18.9	-349,132
Hill	213,714	-	375,101	588,815	62.8	-722,456
Tarai	180,587	1,273,599	-	1,454,186	18.3	1,071,588
Total	394,301	1,311,271	382,598	2,088,170	100	
% In-migration	**2.2**	**28.2**	**69.6**	**100**		
Male						
Mountain	-	9,555	3,878	13,433	19.4	-171,541
Hill	98,533	-	187,784	286,317	**68.4**	-290,606
Tarai	86,441	567,368	-	653,809	**14.8**	462,147
Total	184,974	576,923	191,662	953,559	**100**	
% In-migration	1.4	30	68.6	100		
Female						
Mountain	-	28,116	3,618	31,734	18.4	-177,593
Hill	115,181	-	187,317	302,498	64.7	-431,849
Tarai	94,146	706,231	-	800,377	16.8	609,442
Total	209,327	734,347	190,935	1,134,609	100	
% In-migration	2.8	26.7	70.5	100		

(Source : Central Bureau of Statistics(Population Monograph of Nepal ,2014 vol I)

Table 6.1.25 : Farm population 1991/92 - 2011/12

Discription	Census year		
	1991/92	**2001/02**	**2011/12**
Total household*****	3328721	4253220	5427302
Total holding	2736050	3364139	3831093
Percentage of holding	82	79.1	70.6
Total Population***			
Male	9220974	11563921	12849041
Female	9270123	11587502	13645463
Total	18491097	23151423	26494504
Sex ratio	99.5	99.8	94.2
Farm population			
Male	8496843	10267646	10317681
Female	7761377	9544003	10234862
Total	16258220	19811649	20552543
Percentage of the total population			
Male	52.3	51.8	50.2
Female	47.7	48.2	49.8
Total	87.9	85.6	77.6
Sex ratio of farm population	109.5	107.6	100.8
Average size of farm household	5.9	5.9	5.4

***** *Population Census*

Source: CBS

Table 6.1.26 :Total Strategic Road Network (SRN) Length, Influenced Population of District in Nepal, 2015/16

S.N.	District	Total Population 2011	Total Area in Sq.km.	Type of Road				Population Influenced per km. Road	Road Density (km./100 sq.km.)
				Black Topped	Graveled	Earthen	Total		
1	Taplejung	127,461	3,646	35.50	13.00	21.00	69.50	1834	2
2	Panchthar	191,817	1,241	97.86	19.00	104.00	220.86	869	18
3	Ilam	290,254	1,703	115.75	12.20	123.00	250.95	1157	15
4	Jhapa	812,650	1,606	139.92	39.68	17.00	196.60	4134	12
5	Morang	965,370	1,855	153.03	39.90	23.30	216.23	4465	12
6	Sunsari	763,487	1257	115.03	68.80	10.00	193.83	3939	15
7	Dhankuta	163,412	891	80.68	45.00	9.00	134.68	1213	15
8	Terhathum	101,577	679	92.00	21.70	76.40	190.10	534	28
9	Sankhuwasabha	158,742	3,480	92.00	21.70	76.40	190.10	835	5
10	Bhojpur	182,459	1,507	0.00	44.00	63.00	107.00	1705	7
11	Solukhumbu	105,886	3,312	37.20	0.00	0.00	37.20	2846	1
12	Okhaldhunga	147,984	1,074	69.90	0.00	65.00	134.90	1097	13
13	Khotang	206,312	1,591	18.00	12.00	170.46	200.46	1029	13
14	Udayapur	317,532	2,063	89.96	133.30	25.90	249.16	1274	12
15	Saptari	639,284	1,363	168.00	48.50	30.00	246.50	2593	18
16	Siraha	637,328	1,188	93.93	37.00	14.00	144.93	4397	12
17	Dhanusa	754,777	1,180	108.14	66.32	28.68	203.14	3716	17
18	Mahottari	627,580	1,002	81.98	89.56	13.49	185.03	3392	18
19	Sarlahi	769,729	1,259	31.59	133.83	16.00	181.42	4243	14
20	Sindhuli	296,192	2,491	145.80	57.30	75.50	278.60	1063	11
21	Ramechhap	202,646	1,546	41.90	0.00	66.00	107.90	1878	7
22	Dolakha	186,557	2,191	108.75	10.00	31.00	149.75	1246	7
23	Sindhupalchok	287,798	2542	144.17	6.00	56.50	206.67	1393	8
24	Kavrepalanchowk	381,937	1396	137.22	17.90	0.00	155.12	2462	11
25	Lalitpur	468,132	385	72.75	26.44	32.20	131.39	3563	34
26	Bhaktapur	304,651	119	92.89	22.17	0.00	115.06	2648	97
27	Kathmandu	1,744,240	395	221.86	3.00	22.84	247.70	7042	63
28	Nuwakot	277,471	1,121	132.21	23.00	56.17	211.38	1313	19
29	Rasuwa	43,300	1,544	50.50	15.70	0.00	66.20	654	4
30	Dhading	336,067	1,926	114.88	59.20	45.00	219.08	1534	11
31	Makwanpur	420,477	2,426	193.67	72.87	62.80	329.34	1277	14
32	Rautahat	686,722	1,126	71.83	42.00	7.00	120.83	5683	11
33	Bara	687,708	1,190	112.23	61.00	13.35	186.58	3686	16
34	Parsa	601,017	1,353	37.82	18.00	32.00	87.82	6844	6
35	Chitawan	579,984	2,218	148.89	47.50	37.00	233.39	2485	11
36	Gorkha	271,061	3,610	31.04	28.80	153.40	213.24	1271	6
37	Lamjung	167,724	1,692	31.84	1.00	74.00	106.84	1570	6
38	Tanahu	323,288	1,546	128.49	0.00	51.00	179.49	1801	12
39	Syangja	289,148	1,164	117.58	0.00	54.00	171.58	1685	15
40	Kaski	492,098	2,017	92.46	5.00	31.50	128.96	3816	6
41	Manang	6,538	2,246	0.00	0.00	30.00	30.00	218	1
42	Mustang	13,452	3,573	0.00	0.00	194.00	194.00	69	5
43	Myagdi	113,641	2,297	0.00	10.00	34.00	44.00	2583	2
44	Parbat	146,590	494	47.11	0.00	45.00	92.11	1591	19
45	Baglung	268,613	1,784	71.71	15.42	141.00	228.13	1177	13
46	Gulmi	280,160	1,149	44.54	0.00	160.60	205.14	1366	18
47	Palpa	261,180	1,373	139.59	3.30	105.99	248.88	1049	18
48	Nawalparasi	643,508	2,162	197.19	29.54	149.00	375.73	1713	17
49	Rupandehi	880,196	1,360	148.47	65.50	19.00	232.97	3778	17
50	Kapilbastu	571,936	1,738	60.91	0.00	110.00	170.91	3346	10
51	Arghakhanchi	197,632	1,193	60.91	0.00	110.00	170.91	1156	14
52	Pyuthan	228,102	1,309	85.43	15.00	69.00	169.43	1346	13
53	Rolpa	224,506	1,879	58.41	73.00	39.00	170.41	1317	9

S.N.	District	Total Population 2011	Total Area in Sq.km.	Type of Road				Population Influenced per km. Road	Road Density (km./100 sq.km.)
54	Rukum	208,567	2,877	31.40	0.00	127.00	158.40	1317	6
55	Salyan	242,444	1,462	112.66	5.00	58.00	175.66	1380	12
56	Dang	552,583	2,955	259.22	107.00	0.00	366.22	1509	12
57	Banke	491,313	2,337	178.81	24.60	23.00	226.41	2170	10
58	Bardiya	426,576	2,025	133.35	49.07	29.00	211.42	2018	10
59	Surkhet	350,804	2,451	168.14	17.00	79.00	264.14	1328	11
60	Dailekh	261,770	1,502	152.67	21.00	101.56	275.23	951	18
61	Jajarkot	171,304	2,230	37.00	13.00	108.00	158.00	1084	7
62	Dolpa	36,700	7,889	0.00	0.00	0.00	0.00	0	0
63	Jumla	108,921	2,531	0.00	30.90	0.00	65.10	1673	3
64	Kalikot	136,948	1,741	64.00	6.00	36.00	106.00	1292	6
65	Mugu	55,286	3,535	0.00	0.00	28.00	28.00	1975	1
66	Humla	50,858	5,655	0.00	0.00	60.00	60.00	848	1
67	Bajura	134,912	2,188	15.30	0.00	34.70	50.00	2698	2
68	Bajhang	195,159	3,422	79.08	0.00	22.00	101.08	1931	3
69	Achham	257,477	1,680	70.00	0.00	74.00	144.00	1788	9
70	Doti	211,746	2,025	116.46	5.00	103.00	224.46	943	11
71	Kailali	775,709	3,235	207.48	68.12	36.00	311.60	2489	10
72	Kanchanpur	451,248	1,610	45.32	88.00	22.10	155.42	2903	10
73	Dadeldhura	142,094	1,538	77.08	40.00	44.00	161.08	882	10
74	Baitadi	250,898	1,519	174.62	0.00	64.00	238.62	1051	16
75	Darchaula	133,274	2,322	71.42	0.00	50.00	121.42	1098	5
Nepal		**26,494,504**	**147,181**	**6823.43**	**2044.22**	**4030.55**	**12898.20**	**2054**	**9**

Source: Central Bureau of Statistics ,Population Census 2011

Department of Roads (Statistics of Strategic Road Network SSRN 20015/16)

 # Information of then 75 districts of Nepal

Table 6.1.27 : Number of Refugees in Nepal

Refugee	Year	Male	Female	Total
Bhutanese Refugee	2006	54486	52261	106747
	2007	55217	52965	108182
	2009	48014	46429	94443
	2010	40987	39526	80513
	2011	34168	32819	66987
	2012	22252	21205	43457
	2013	18175	16993	35168
	2014	12681	11659	24340
	2015	11229	10322	21551
	2016	8113	7387	15500
	2017	6122	5525	11647
Tibetan Refugee	12540			

Source : Ministry of Home Affairs,2017

Table 6.1.28 : Number of Vehicles Registered, 1989/90 - 2016/17

Year	Number of Vehicles Registered											
	Bus	Minibus	Crane/Dozer/ Excavator/ Truck	Car/Jeep / Van	Pickup	Micro	Tempo	Motorcycle	Tractor/ Power Tailor	E-ricksaw	Others	Total
up to 1989/90	4159	2064	8969	24050	-	-	2359	35776	6769	0	102	84248
1990/91	458	226	800	1893	-	-	856	4954	788	0	1549	11524
1991/92	413	148	1524	2115	-	-	1207	8154	548	0	358	14467
1992/93	606	185	1491	2266	-	-	62	7608	262	0	381	12861
1993/94	1168	77	1740	3049	-	-	154	8653	1396	0	372	16609
1994/95	850	83	1629	3043	-	-	241	9401	1814	0	353	17414
1995/96	486	82	1151	5261	-	-	117	13855	2183	0	58	23193
1996/97	608	175	907	2993	-	-	185	12633	1257	0	352	19110
1997/98	899	130	1291	4139	-	-	344	12306	1265	0	51	20425
1998/99	872	19	978	2507	-	-	388	17090	2248	0	37	24139
1999/00	494	122	829	3647	-	-	789	19755	2542	0	102	28280
2000/01	1203	250	1271	5152	-	-	232	29291	3519	0	77	40995
2001/02	868	475	1798	4374	-	-	248	38522	3189	0	86	49560
2002/03	432	298	1212	2906	581	232	17	29404	2485	0	43	37610
2003/04	732	237	1477	7079	478	884	16	26547	2191	0	58	39699
2004/05	753	285	1592	4781	-	584	48	31093	1374	0	21	40531
2005/06	1528	663	2263	5114	36	66	60	45410	635	0	-	55775
2006/07	1564	806	3278	5156	736	138	12	72568	2942	0	1535	88735
2007/08	1419	1179	3594	4741	1588	31	18	69666	3297	0	206	85739
2008/09	1843	593	3643	6857	1287	128	20	83334	4663	0	202	102570
2009/10	1888	780	4524	12268	1975	145	9	168707	11460	0	31	201787
2010/11	1610	1370	1969	8510	3087	115	2	138907	7937	0	133	163640
2011/12	2085	1170	1333	8711	2981	155	10	145135	8413	0	91	170084
2012/13	3263	1328	3332	9595	5422	158	57	175381	9795	0	152	208483
2013/14	2776	1412	2789	11372	5668	178	17	163945	10070	0	116	198343
2014/15	3737	2270	4236	13560	6057	932	1541	196383	10524	0	343	239583
2015/16	4353	4625	8328	28361	5060	1137	2613	267439	9786	11894	169	343765
2016/17	5342	2008	12712	21292	10675	841	17782	354071	17085	2247	204	444259
Total	**46409**	**23060**	**80660**	**214792**	**45631**	**5724**	**29404**	**2185988**	**130437**	**14141**	**7182**	**2783428**

Source : Department of Transport Management.

Table 6.2.1 : Annual Livestock Disease Report, 2015

Diseases Name	Epizootiology of the diseases			Disease control	
	Number of			Number of animals	
	Outbreaks	Affected	Dead	Vaccinated	Treated
Foot and mouth disease	196	16200	292	533193	15908
Peste des petits rumunants	71	18261	7118	1675003	11143
Sheep and goat pox	32	675	0	0	675
Classical swine fever (Hog cholera)	4	170	4	86866	166
Newcastle disease/Ranikhet	128	76571	15832	501650	60739
Highly Pathogenic Avian Influenza					
Anthrax	1	1	1	150	0
Rabies	60	154	154	44750	0
Anaplasmosis					
Babesiosis	35	148	8	0	140
Haemorrhagic septicaemia	43	1465	138	479552	1327
Theileriosis	33	447	17	0	430
Fowl cholera	47	25108	3570	2300	21538

Diseases Name	Epizootiology of the diseases			Disease control	
	Number of			Number of animals	
	Outbreaks	Affected	Dead	Vaccinated	Treated
Fowl pox	143	12642	1045	64272	11597
Fowl typhoid (S.gallinarum)	19	19601	2328	0	17273
(Gumboro disease)	171	188647	18679	303888	169968
Marek's disease	4	1690	0	0	1690
Mycoplasmosis (M.gallisepticum)	27	24601	3350	0	21251
Pullorum disease(S.pullorum)	50	19095	3322	0	15773
Blackquarter	39	2038	116	439174	1922
Actionomycosis/Lumpy jaw	33	1269	0	0	1269
Coccidiosis	721	245684	12949	0	232735
Distomatosis	0	554128	687	0	553441
Warble infection	42	2913	0	0	2913
Contagious pustular dermatitis					
Enterotoxaemia	80	1764	80	0	1684
Infectious coryza	1	45	0	0	45
Abortion	100	30502	52	0	30450
Cough	0	26487	11	0	26476
Colibacillosis	49	112965	7804	0	105161
Calf-scour	5	238	0	0	238
Degnala disease					
Diarrhoea	0	398857	11660	0	387197
Dystocia	0	11122	76	0	11046
Enzootic bovine haematuria	17	274	8	0	266
Ephemeral fever	225	8488	4	0	8484
External parasites	0	355161	1030	0	354134
Foot lesion	0	140	0	0	140
Gastro - intestinal nematodes	0	8861	1	0	8860
Infertility	0	81203	0	0	81203
Intestinal helminthiasis	0	152006	3485	0	148521
Khari disease	5	178	0	0	178
Milk fever	84	816	0	0	816
Mange	0	138189	69	0	138120
Metritis	10	845	0	0	845
Mycotoxicosis	64	57004	5102	0	51902
Nervous sign	1025	31473	2004	0	29469
Parasitic gastroenteritis	0	209158	1232	0	207926
Pneumonia	0	5	0	0	5
Paramphistomosis	0	200235	97	0	200138
Parvo virus enteritis	7	197	13	0	184
Respiratory disease -unclassified	389	278763	12309	0	266454
Respiratory sign	0	88602	1866	0	86736
Red urine	0	9006	19	0	8987
Tetanus					
Tympany	0	40737	147	0	40590

Source: Veterinary Epidemiology center

Table 6.2.2 : Infection Cases by Disease

Infection Diseases	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
Malaria												
Total Slide Examination	135781	170988	137444	152492	1E+05	136719	135363	133730	134909	113382	101377	116276
Total Positive	4557	5691	5293	4574	3577	2920	3239	2857	2172	1674	1352	991
Kala-azar												
Number of Patient	1169	1341	1531	1371	1019	791	806	118	305	339	215	250
Death due to Kala-azar	NA	NA	14	14	6	4	4	3	0	0	0	0
Tuberculosis												
TB case finding rate(%)	NA	65	70	72	75	76	73	73	78	136	123	113
Treatment Success Rate (Percent)	88	88	89	88	89	90	90	90	90	90	92	90
Leprosy												
New Case Detection Rate/10,000	2.40	1.96	1.67	1.67	1.99	1.15	1.12	1.01	1.19	1.18	1.1	1.07
Prevalence Rate/10,000	2.02	1.65	1.45	1.42	1.09	0.77	0.79	0.85	0.82	0.83	0.89	0.89
Other Transmitting Diseases												
ARI reported Deaths	227	228	252	163	237	319	646	201	1793	168	155	225
Total Diarrhoeal deaths	244	82	113	206	147	91	44	45	116	36	80	89
Incidence of diarrhoea /1000 < 5 year population	219	204	185	378	488	598	500	528	578	629	501	422

Note: ARI= Acute Respiratory Tract Infection

Source: Department of Health Services, Annual Report, 2004/05 -2015/16

Table 6.2.3: Increase of Incidence of Type of Disease in Last 25 Years

Analytical Domain	Types of Disease (HH%)																	
	Diarrhea	Dysentery	Malaria	Skin diseases	Cough	Fever	Typhoid	Asthma	Jaundice	Malnutrition	Dengue	Psychological	Chicken Pox	Cholera	Respiration	Viral infection	Kala-azar	Water/Food borne diseases	others
Urban/Rural																			
Urban	16	2.4	1.9	19.8	37	32	9.9	12	5.8	0.3	0	3	0.4	0	17.7	0.8	0	7.8	64
Rural	24	3.8	2.4	19.7	39	36	14	13	3.9	0.8	0	3.7	0.3	0	9.4	0.5	0	9.6	51
Ecological Belt																			
Mountain	43	13.8	2.2	26.3	88	79	26	11	6.7	0	0	0.3	0	0	14.6	0.3	0	20.6	14
Hill	14	2	0.4	10.2	31	24	9.7	14	3.7	1.3	0	4.1	0	0	15.5	0.9	0	7.1	49
Terai	22	2.2	3.4	24.2	34	33	12	11	4.4	0.4	0	3.7	0.7	0	9.1	0.4	0	8.1	66
Kathmandu Valley	3.9	1.8	0	8.7	47	13	5	12	2	0	0	1.3	0	0	46.6	0	0	1.7	42
NAPA Combined Vulnerability Index																			
Very High	13	1.2	0.4	16.9	39	32	2.4	10	2.7	0	0	3.1	0	0	15.3	0	0	1.6	58
High	19	2.5	2.6	16.1	36	40	13	14	4.3	1.7	0	4	0.3	0	7.3	0.1	0	4.8	50
Moderate	19	7.7	2	19.2	29	28	14	18	3.1	0.5	0	2.9	0.5	1	8.5	1.1	0	10.8	50
Low	26	3.6	3	25.7	39	33	16	11	10	0.7	1	2.1	1	0	14.5	0.9	1	10.3	59
Very Low	39	2	4	24	54	42	21	6.3	2.4	0	0	5.3	0.2	0	15.8	1.1	0	24	59
Climate Zone																			
Tropical	20	2.2	3	22	32	31	11	12	4.4	0.6	0	3.7	0.6	0	9	0.6	0	8	65
Sub-tropical	19	5.4	1	12.1	47	37	15	14	4.8	0.9	0	3.5	0	0	18.9	0.7	0	10.2	36
Temperate	56	7.1	0	36.7	78	69	17	8.2	3	0	0	0	0	0	6.3	0	0	16.8	28
Overall	22	3.4	2.3	19.7	39	35	13	12	4.4	0.7	0	3.4	0.4	0	11.8	0.6	0	9.1	55

Source : NCCIS 2016, CBS

Table 6.2.4 : Status of Calorie Consumption and Malnutrition

(proportion)

Region	Calorie Intake Shortfall (k_0)		Stunting (S_o)<5 age		Underweight (U_o) <5 age		Wasting (W_o) <5 age	
	NLSS-II 2003/04	Small Area Estimation CBS	Nepal Demographic and Health Survey 2006	Small Area Estimation CBS	Nepal Demographic and Health Survey 2006	Small Area Estimation CBS	Nepal Demographic and Health Survey 2006	Small Area Estimation CBS
Ecological Belt								
Mountain	0.400	0.452	0.586	0.614	0.473	0.451	0.062	0.053
Hill	0.371	0.418	0.523	0.524	0.433	0.414	0.051	0.059
Tarai	0.330	0.374	0.465	0.473	0.504	0.484	0.134	0.133
Residence								
Urban	0.426	0.416	0.363	0.368	0.331	0.335	0.085	0.078
Rural	0.339	0.395	0.506	0.522	0.483	0.467	0.096	0.98
Nepal	**0.352**	**0.398**	**0.497**	**0.504**	**0.473**	**0.452**	**0.095**	**0.096**

Nutrition Status	DHS 2001^	DHS 2006^	DHS 2011^	NLSS- III 2010/11*
Stunting (So)<5 age %	57	49	41	41.5
Underweight (Uo) <5 age %	43	39	29	31.1
Wasting (Wo) <5 age %	11	13	11	13.7

*Source : * Central Bureau of Statistics (Nepal Living Standard Surveys, 2003/04).^ Demographic Health Surveys*

Table 6.2.5 : Statistics on Crime, Corruption, Traffic Accidents in Nepal,2001/02-2012/13

Cases	Year													
	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
Crime (Case Number)*	36763	26586	9320	11,329	10413	11672	NA	16753	19575	21577	22632	27386	28070	28563
Corruption (Case Number)+	3966	3732	4759	4324	3564	2732	4149	4295	6145	8839	11298	22602	31213	24691
Traffic Accident*	4030	5532	3868	4545	916	1483	5519	7438	8803	8892	8484	8406	9146	10013

*Source : * Police Headquarter*
+ Commission for Investigation Abuse Authority.

Table 6.2.6 : Number of Hard Drug Users by Sex,Nepal, 2012

Area	Number of current hard drug users by sex					
	2012			2006		
	Total	Male	Female	Total	Male	Female
Kathmandu Valley	36998	33513	3485	17458	15580	1878
Sunsari	7407	6956	451	3186	2854	332
Kaski	6917	6414	503	5112	4794	318
Morang	6415	6228	187	1316	1266	50
Jhapa	6008	5764	244	3523	3378	145
Rupandehi	5997	5750	247	2587	2454	133
Chitawan	4515	4151	364	2071	1880	191
Banke	4050	3876	174			
Parsa	2130	1993	137	1301	1212	89
Makawanpur				481	462	19
Others	11097	10559	538	9274	9074	200
Total	**91534**	**85204**	**6330**	**46309**	**42954**	**3355**

Source : Central Bureau of Statistics (Survey on Hard Drug Users in Nepal, 2006,2012)

CHAPTER VII

Environmental Protection, Management and Engagement

Table 7.1.1: Climate Relavent Budget Allocation in Nepal

Fiscal year	Climate relevant budget of Government of Nepal (Rupees, in Arab), (%)		
	Directly Relevant	Relevant	Neutral
2012/2013	18(4.45)	9.28(2.29)	377.54(93.26)
2013/2014	27.75(5.36)	25.73(4.98)	463.76(89.66)
2014/2015	34.98(5.66)	31.37(5.07)	551.75(89.27)
2015/2016	46.37(5.66)	112.98(13.79)	660.12(80.55)
2016/2017	61.85(5.90)	139.76(13.32)	847.31(80.78)
2017/2018	57.7(4.42)	335.62(26.24)	885.63(69.24)
2018/2019	69.22(5.26)	281.49(21.40)	964.44(73.33)

Source: Ministry of finance,Red Book

Table 7.1.2 : Sectoral share of Climate Budget (in %)

Budget Head	2013/14	2014/15	2015/16	2016/17	2017/18
Economic affairs	68.9	68	84.7	70.7	27.8
Housing and community amenities	24.3	21	9.1	14.6	9.1
Environment protection	5.4	8.5	4.5	7	3.6
General public service	1	0.7	0.4	0.6	59.3
Education	0.2	0.7	0.4	0	0
Health	0	0.1	0.1	0.1	0.2

Source: MoF

Table 7.1.3: Contribution to climate budget by source

Budget details			Fiscal Year				
			2013/14	2014/15	2015/16	2016/17	2017/18
Total Climate Budget (in US$ million)			534	663	1,594	2,016	3,933
Contribution in (%)	Government		**57**	**56**	**44**	**44**	**81**
	Donor fund	Grant	**22**	**23**	**32**	**14**	**4**
		Loan	**21**	**21**	**24**	**42**	**15**

Source: MoF

Table 7.2.1 : National Ambient Air Quality Standards for Nepal, 2012

Parameters	Units	Averaging Time	Concentration in Ambient Air, maximum	Test Methods
TSP (Total SuspendedParticulates)	µg/m^3	Annual	-	
		24-hours*	230	High Volumne Sampling and Gravimetric Analysis
PM10	µg/m^3	Annual	-	
		24-hours*	120	High Volume Sampler and Gravimetric Analysis, TOEM,Beta Attenuation
Sulphur Dioxide	µg/m^3	Annual**	50	Ultraviolet Fluorescence,Waste & Gaeke method
		24-hours*	70	Same as annual
Nitrogen Dioxide	µg/m^3	Annual	40	Chemiluminescence
		24-hours*	80	Same as annual
Carbon Monoxide	µg/m^3	8 hours*	10,000	Non dispersive Infra Red spectrophotometer(NDIR)
Lead	µg/m^3	Annual**	0.5	High volume sampling, followed by atomic absorption spectrometry
Benzene	µg/m^3	Annual**	5	Gas chrometographic Technique
PM2.5	µg/m3	24-hours*	40	PM2.5 sampling gravimetric analysis
Ozone	µg/m3	8 hours*	157	UV spectrophotometer

** 24 & 8 hourly values shall be met 95% of the time in a year. 18 days per calendar year the standard may be exceeded but not on two consecutive days.*

*** The above indicators are prepared by the 104 data taken yearly averagein a fixed location in one week by observing two times in 24 hours.*

Table7.2.2 : Standard on Emission for Dust Particles in Air

Industry	Compulsory	Emission limit
Cement Industry	Total Suspended Perticulate Matter	Less than 500 µg/Nm3
Croser Industry		Less than 600 µg/Nm3

Source: Ministry of Environment, Science and Technology ,Nepal Gazette 2069/07/13

Table7.2.3 : Standard on Emission of Smoke in Air by New Dissel Generator (Import)

Emission limit (g/kWh)

Category_(kW)	CO	HC+Nox	PM
kW<8	8	7.5	0.8
8=kW<19	6.6	7.5	0.8
19=kW<37	5.5	7.5	0.6
37=kW<75	5	4.7	0.4
75=kW<130	5	4	0.3
130=kW<560	3.5	4	0.2

Note : This standard is equivalent to EURO III or INDIA III

Source: Ministry of Environment, Science and Technology, Nepal Gazette 2069/07/13

Table 7.2.4 : WHO Guideline Value on Air Quality

Compound	Guideline Value	Averaging Time
Ozone (1)	120 micrograms/m^3 (0.06 ppm)	8 hours
Nitrogen dioxide (1)	200 micrograms/cubic metre (0.11 ppm)	1 hour
	40 to 50 micrograms/cubic metre (0.021 to 0.026 ppm)	1 hour
Sulfur dioxide (1)	500 micrograms/cubic metre(0.175 ppm)	10 min
	125 micrograms/cubic metre (0044 ppm)	24 hours
	50 micrograms per cubic metre (0.017 ppm)	1 hour
Carbon monoxide (2)	100 milligrams/cubic metre (90 ppm)[b]	15 min
	60 mg/cubic metre (50ppm)	30 min
	30 mg/cubic metre (25 ppm)	1 hour
	10 mg/cubic metre (10 ppm)	8 hours
Lead (3)	0.5 to 1.0 micrograms/cubic	1 hour

(1) No guideline values were set for particulate matter because there is no evident threshold for effects on morbidity and mortality.
(2) The guideline is to prevent carboxyhemoglobin levels in the blood from exceeding 2,5%. The values above are mathematical estimates of some of the CO concentrations and averaging times at which this goal should be achieved.
(3) The guideline for lead was established by WHO in 1987.

Source: World Health Organization (Ambient Air Quality Guideline).

Table 7.2.5 : Standard on Emission for Industrial Boiler

Province	Pollutant	Limits mg/Nm3
less than 2000	Pollutate matter	1200*
2000 to less than 10000		800*
10000 to less than 15000		600*
15000 to above		150**

** As a controller equipment Cyclone/Muticyclone to be attached with Boiler*

*** As a controller equipment Bag filter/Electrostatic precipittor, ESP to be assocaited with Boiler*

12% of CO2 correction is used as reference to the emission of particulate matter in mg/Nm3.

Source: Ministry of Environment, Science and Technology ,Nepal Gazette 2069/07/13

Table 7.2.6 : National Ambient Sound Quality Standard,2012

	Area	Sound limit Leq (dBA)	
		Day	Night
Sound Limit	Industrial Area	75	70
	Commercial Area	65	55
	Rural Residental Area	45	40
	Urban Residental Area	55	50
	Mixed Residental Area	63	55
	Peace Area	50	40
Uptimum Sound emission limit		Household applicance	Uptimum limit (dBA)
		Water Pump	65
		Disel Generetor	90
		Entertainment goods	70

Source: Ministry of Environment, Science and Technology ,Nepal Gazette 2069/07/13

Table 7.2.7 : Ranges of Emission Reductions Required for Various Stabilization Level (Bali Declaration)

(The ranges of the difference between emission in 1990 and emission allowances in 2030/2050 for various GHG concentration levels Annex I and Non-Annex I countries as a group [a])

SCENARIO CATEGORY (lowest level of GHG assesses by IPCC 2007)	UNIT	REGION	2020	2050
A- 450	ppmv CO_2 -eq (b)	Annex I	-25% to -40%	-80% to -95%
		Non- Annex I	Substantial deviation from baseline in Latin America, Middle East, East Asia and Centrally- planned Asia	Substantial deviation from base line in aii regions
B-550	ppmv CO_2 -eq (b)	Annex I	-10% to -30%	-40% to -90%
		Non- Annex I	Deviation from baseline in Latin america, Middle East, East Asia.	Deviation from baseline in most regions, specially Latin america, Middle East.
C-650	ppmv CO_2 -eq (b)	Annex I	-0% to -25%	-30% to -80%
		Non- Annex I	Baseline	Deviation from baseline in most regions, specially Latin america, Middle East.

a- The aggregate range is based on multiple approaches to apportion emission between regions (concentration and convergence, multistage. Triptych and intensity targets among others). Each approach makes different assumptions about the pathway, specific national efforts and other variables. Additional extreme cases- in which Annex. I undertakes all reductions, or non-Annex I undertakes all reductions- are not included.

The range presented here do not imply political feasibility, nor do not result reflect cost variances.

b- Only the studies aiming at stabilization at 450 ppmv CO_2, -eq assume a (temporary) overshoot of about 50 ppmv CO_2, -eq (see Den Elzen and Mainshausen, 2006)

Annex I and II = Industrialized countries and that pay for cost in developing countries . (The Bali Road Map page 205). Non-Annex - I except Annex I and II.

Source : IPCC Working Group III (WG III) Chapter 13 Box 13.7.

Table 7.2.8 : List of Banned Pesticides in Nepal

S.N.	Name of Pesticide	S.N.	Name of Pesticides
1	Chlordane	50	Mirex
2	DDT	9	BHC
3	Dieldrin	10	Lindane
4	Endrin	11	Phosphamidon
5	Aldrin	12	Orano mercury fungicides
6	Heptachlor	13	Methyl parathion
7	Toxafen	14	Monocrotophos
15	Endosulphan*		

** Persistent Organic Pollutant; Deregisterd in 2069/7/20, grace period for sell and use till 2071/7/19*

Source: Pesticide Registration and Management Section

Table 7.2.9 : Classification of registered pesticides (WHO,2004)

S.N.	Hazard level	WHO group	Pesticides (Technical)
1	Extremely hazardous	Ia	0
2	Highly hazardous	Ib	53
3	Moderately hazardous	II	541
4	Slightly hazardous	III	219
5	Unlikely to present acute hazard in normal use	NH	258
6	Not calculated	NC	27
Total			**1098**

Source: Pesticide Registration and Management Section,MOAD

Table 7.2.10 : Pesticides Registered in Nepal

S.N.	Pesticide	Number of Trade Name										
		1997*	2002+	2003+	2004+	2009	2010	2013	2014	2015	2016	2017
1	Insecticides	46	207	213	213	210	391	613	889	1185	1276	1405
2	Herbicides (Weedicides)	9	22	23	23	24	63	120	168	259	286	350
3	Fungicides	17	71	71	71	62	170	304	408	509	564	648
4	Acaricides	1	2	2	2	–	–	12	19	20	23	27
5	Rodenticides		8	8	8	9	7	18	23	26	29	33
6	Bio- Pesticides	–	–	–	–	13	16	23	42	70	78	90
7	Bactericides						4	7	11	13	13	15
8	Molluscicide							1	1	2	2	2
9	Others	5	2	2	2	8	–	–	–	–	4	6
Total		**78**	**312**	**319**	**319**	**326**	**651**	**1098**	1561	2084	2275	2576

**Nepal Gazette vol.47, No. 11 (1997).+Updated Registration List of the Pesticide.*

Source :Pesticide Registration and management Section,MOALD

Table 2.7.11 : Nepal's Drinking Water Quality Standards

Group	Parameter	Unit	Maximum Concentration Limits
Physical	Turbidity	NTU	5 (10)**
	pH		6.5-8.5*
	Color	TCU	5 (15)**
	Taste & Odor		Would not be objectionable
	Total Dissolved Solids	mg/l	1000
	Electrical Conductivity	µc/cm	1500
	Iron	mg/l	0.3 (3)**
	Manganese	mg/l	0.2
	Arsenic	mg/l	0.05
	Cadmium	mg/l	0.003
	Chromium	mg/l	0.05
	Cyanide	mg/l	0.07
	Fluoride	mg/l	0.5-1.5*
	Lead	mg/l	0.01
	Ammonia	mg/l	1.5

Group	Parameter	Unit	Maximum Concentration Limits
Chemical	Chloride	mg/l	250
	Sulphate	mg/l	250
	Nitrate	mg/l	50
	Copper	mg/l	1
	Total Hardness	mg/l	500
	Calcium	mg/l	200
	Zinc	mg/l	3
	Mercury	mg/l	0.001
	Aluminum	mg/l	0.2
	Residual Chlorine	mg/l	0.1-0.2*
Micro Germs	E-Coli	MPN/100ml	0
	Total Coli form	MPN/100ml	95 % in sample

*Note : * These standards indicate the maximum and minimum limits.*

*** Figures in parenthesis are upper range of the standards recommended.*

Source : Nepal Gazette (26 June 2006).

Table 7.2.12 : Tolerance Limits for Different Industrial Effluents Discharged into Inland Surface Water

S.N.	Characteristics	Land Surface Water	Public Sewerage	Inland Surface Water
1	Total Suspended solids, mg/l, Max	30-200	600	50
2	Particle size of total suspended particles	Shall pass 850-micron sieve		Shall pass 850-micron sieve
3	pH value	5.5-9.0	5.5-9.0	5.5-9.0
4	Temperature, ^{0}C , Max	Shall not exceed 40 degree C in any section of the stream within 15 meters downstream from the effluent outlet.	45	Shall not exceed 40 degree C in any section of the stream within 15 meters downstream from the effluent outlet.
5	Total Chromium, mg/l, Max	-	2	
6	Sulphates (SO_4), mg/l, Max		500	
7	Total Dissolved Solids, mg/l, Max	-	2100	
8	Biochemical oxygen demand (BOD) for 5 days at 20 degree C, mg/l, Max	50	400	50
9	Oils and grease, mg/l, max	10	50	10
10	Phenolic compounds, mg/l, max	1	10	1
11	Cynides (as CN), mg/l, max	0.2	2	0.2
12	Sulphides (as S), mg/l, max	2	2	2
13	Radioactive materials			
	a. Alpha emitters, c/ml, max	10^{-7}		10^{-7}
	b. Beta emitters, c/ml, max	10^{-8}		10^{-8}
14	Insecticides	absent	absent	absent
15	Total residual chlorine, mg/l	1		1
16	Fluorides (as F), mg/l, max	2	10	2
17	Arsenic (as AS), mg/l, max	0.2	1	0.2
18	Cadmium (as Cd), mg/l, max	2	2	2
19	Hexavalent chromium (as Cr,) mg/l max	0.1		0.1
20	Copper (as Cu), mg/l, max	3	3	3
21	Lead (as pb), mg/l, max	0.1	0.1	0.1
22	Nickel (as Ni), mg/l, max	3	3	3
23	Selenium (as Se), mg/l, max	0.05	0.05	0.05
24	Zinc (as Zn), mg/l, max	5	5	5

S.N.	Characteristics	Land Surface Water	Public Sewerage	Inland Surface Water
25	TDS, mg/l, max			
26	Chloride (Cl), Mg/l, max			
27	Soleplate (SO_4), mg/l, max			
28	Mercury (as Hg) mg/l, max	0.01	0.01	0.01
29	Mineral oils, mg/l, max		10	
30	Inhibition of nitrification test at 2000 ml/l		<50%	
31	Sodium, % max			
32	Ammonical nitrogen, mg/l, max	50	50	50
33	Chemical Oxygen Demand, mg/l, max	250	1000	250
34	Silver, mg/l, max	0.1	0.1	0.1

Source:: Nepal Gazette , 30 April 2001 and 23 June 2003

Table 7.2.13 : Generic Standard /Tolerance Limits for Different Industrial Effluents Discharged into Inland Surface Water

S.N.	Characteristics	Environmental Standard and Norms										
		Tanning Industry	Wool Processing Industry	Fermentat Industry	Vegetable Ghee & Oil Industry	Paper & Pulp Industry	Dairy Industry	Sugar Industry	Cotton and Textile Industry	Soap Industry	Brick kiln Industry Suspended Particulate Matter (Max. Limit)	Heights of Chimney (Max. Limit)
1	TSS mg/l	100	100	100		100	150	100	100	200		
2	Particle Size of TSS											
3	pH value	5.5-9.0	5.5-9	5.5-9	5.5-9.0	5.5-9	5.5-8.5	5.5-9	6.0-9.0	5.5-9.0		
4	Temperature ^{0}C		40									
5	TDS, mg/l, max	2100										
6	Color and Odor	Absent										
7	BOD for 5 days at 200 degree C, mg/l, max	100	100	60	100	100	100	100	100	100		
8	Oils and grease, mg/l, max		10		10		10			10		
9	Cyanides (as CN), mg/l, max		5 (as C6 h5 OH)	101								
10	Sulphides (as S), mg/l, max	2	2									
11	Radioactive materials;			5.5-10								
12	Total residual Chlorine, mg/l			61								
13	Nickel (as Ni), mg/l, max				3							
14	Chlorides (as Cl), mg/l, max	600										
15	Sodium, % max	60										
16	Chemical oxygen demand mg/l, Max	250	250		250		250	250	250	250		
17	Total chromium (as Cr) mg/l, max	2	2									
18	Bull's Trench Kiln, Forced Draught (Fixed Chimney)										600mg/Nm^3	17 Meter
19	Bull's Trench Kiln, Natural Draught (Fixed Chimney)										700mg/Nm^3	30 Meter
20	Vertical Shaft Brick Kiln (VSBK)										400mg/Nm^3	15 Meter
21	Hexavalent chromium (as Cr) mg/l, Max	0.1										
22	Phenolic compounds (as C_6 h_5 OH), mg/l		5							1		
23	Temperature ^{0} C		40									

Source: Nepal Gazette ,30 April 2001 and 23 June 2003

Table 7.2.14 : Nepal Water Quality Guidelines for Irrigation Water

S.N.	Parameter name	Target Water Quality Range	Remarks
Microbiological constituents:			
1	Coliforms(faecal)	< 1 count /100 ml	1 – 1000 count / 100 ml could be used for plants for which edible parts are not wetted.
Physical Constituents:			
1	pH	6.5 – 8.5	Adverse effect on plants outside this range
2	Suspended Solids	< 50 mg/l	Above the limit problem with sedimentation and irrigation system
3	Electrical Conductivity	< 40 mS/m	Upto 540 mS/m depending upon sensitivity of crops.
Chemical Constituents:			
1	Aluminium	< 5 mg/l	Upto 20 mg/l max. acceptable conc.
2	Arsenic	< 0.1 mg/l	> 2 mg/l creates severe problem
3	Beryllium	< 0.1 mg/l	0.1 – 0.5 mg/l max. acceptable conc.
4	Boron	< 0.5 mg/l	Upto 15 mg/l depending upon species.
5	Cadmium	< 0.01 mg/l	0.01 – 0.05 mg/l max. acceptable conc.
6	Chloride	< 100 mg/l	Upto 700 mg/l depending upon species
7	Chromium	< 0.1 mg/l	Upto 1.0 mg/l max. acceptable conc.
8	Cobalt	< 0.05 mg/l	Upto 5.0 mg/l max. acceptable conc.
9	Copper	< 0.2 mg/l	Upto 5.0 mg/l max. acceptable conc.
10	Fluoride	< 2.0 mg/l	Upto 15 mg/l max. acceptable conc.
11	Iron	< 5.0 mg/l (non-toxic)	> 1.5 mg/l creates problem in drip irrigation system
12	Lead	< 0.2 mg/l	Upto 2.0 mg/l max. acceptable conc.
13	Lithium	< 2.5 mg/l	For citrus < 0.75 mg/l
14	Manganese	< 0.02 mg/l	Upto 10 mg/l max. acceptable conc.
15	Molybdenum	< 0.01 mg/l	Upto 0.05 mg/l max. acceptable conc.
16	Nickel	< 0.2 mg/l	Upto 2.0 mg/l max. acceptable conc.
17	Nitrogen (inorganic)	< 5 mg/l	Higher concentration may affect sensitive plants and may contaminate ground water
18	Selenium	< 0.02 mg/l	Upto 0.05 mg/l max. acceptable conc.
19	Sodium Adsorption Ratio (SAR)	< 2.0	Upto 10 depending upon sensitivity of crops.
20	Sodium	< 70 mg/l	Upto 460 depending upon sensitivity of crops
21	Total Dissolved Solids (as EC)	< 40 mS/m	Upto 540 mS/m depending upon sensitivity of crops
22	Uranium	< 0.01 mg/l	Upto 0.1 mg/l max. acceptable conc.
23	Vanadium	< 0.1 mg/l	Upto 1.0 mg/l max. acceptable conc.
24	Zinc	< 1.0 mg/l	Upto 5 mg/l max. acceptable conc.

Source: Department of Irrigation, Ground Water Project (Neapl Gazette (Number 10.16 June 2008))

Table 7.2.15 : Nepal Water Quality Guidelines for Aquaculture

S.N.	Constituents	Target Water Quality Range		Remarks
1	Algae	No criteria		
2	Alkalinity	20 – 100 mg/l as $CaCO_3$		High alkalinity reduces natural food production in ponds below optimal production
3	Aluminium	< 30µg/L (pH >6.5),		Highly toxic to trouts (1.5 µg/l is fatal to brown trout)
		< 10 µg/L (pH < 6.5)		
4	Ammonia (for cold water fish)	0 – 25 µg/L		
5	Ammonia (for warm water fish)	0 – 30 µg/L		
6	Arsenic	0 – 0.05 mg/l		
7	Bacteria (E. Coli)	< 10 counts of E.coli /g of fish flesh		
8	BOD_5	< 15 mg/l		
9	Cadmium	Hardness: 0– 60 mg/l	< 0.2 mg/l	Cadmium toxicity depends upon hardness of water
		Hardness: 60–120 mg/l	< 0.8 mg/l	
		Hardness: 120–180mg/l	< 1.3 mg/l	
		Hardness: >180 mg/l	< 1.8 mg/l	
10	Carbon dioxide	< 12 mg/l, upto 75 mg/l for warm water fish		
11	Chloride	Value not recommended (fish can survive at < 600 mg/l Chloride but the production is not optimum)		
12	Chlorine	< 2 µg HOCl /L for cold water fish		
		< 10 µg HOCl/L for warm water fish		
13	Chromium (VI)	< 20 µg/L		
14	COD	< 40 mg/l		
15	Colour	< 100 Pt-Co unit		
16	Copper	< 5 µg/L		0.006 and 0.03 µg/L are upper limits for hard and soft water
17	Cyanides	< 20 µg/L as HCN		LC_{50} starts from 100 µg/L upwards
18	Dissolved oxygen	6 – 9 mg/l for cold water species		
		5 – 8 for intermediate water species,		
		5 – 8 for warm water species.		
19	Fluoride	< 20 µg/l		
20	Iron	< 10 µg/l		0.2 - 1.75 general lethal threshold for fish
21	Lead	< 10 µg/l		30 µg/L max. conc. limit for brook trout
22	Magnesium	< 15 mg/l		
23	Manganese	< 100 µg/l		Above 500 µg/L increasing risk of lethal effect
24	Mercury	< 1 µg/l		Bioaccumulation and biomagnification occurs
25	Nickel	< 100 µg/l		
26	Nitrate-N	< 300 mg/l		1000 mg/l is below the 96-hour LC_{50} values for most fish
27	Nitrite-N	0 – 0.05 mg/l for cold water fish		> 7 mg/l is LC_{50} for many fish species
		0.06 - .25 mg/l for warm water fish		
28	Nuisance plants	Less than 10 % of the fish pond should be covered by aquatic plants.		
29	Oils and Greese (including Petrochemicals)	< 300 µg/L		
30	PCBs	No quantitative guidelines, should not be detected in fish		
31	pH	6.5 – 9.0		Outside this range the health of fish is adversely affected

S.N.	Constituents	Target Water Quality Range	Remarks
32	Phenols	< 1 mg/l	> 7.5 mg/l 24 hr. LC_{50} starts for most fish
33	Phosphorus	< 0.6 mg/l as orthophosphate	> 12.5 mg/l 96 hr. LC_{50} starts for most fish
34	Selenium (VI)	< 0.3 mg/l	
35	Sulphide as H_2S	< 0.001 mg/l	> 0.002 mg/l long term health hazard for fish
36	Temperature	4 – 18 for cold water fish 16 – 32 for intermediate species 24 – 30 for warm water fish	Mortality increases with increasing TGP
37	Total Dissolved Gases as Total Gas Pressure (TGP)	< 100 % for cold water fish < 105 % for warm water fish	
38	Total Dissolved Solids	< 2000 mg/l	
39	Total Hardness as $CaCO_3$	20 – 100 mg/l ,	In > 175 mg/l osmoregulation of fish is affected.
40	Total Suspended Matter.	< 20000 mg/l for turbid water species, < 25 NTU for clear water species	
41	Zinc, depends upon water hardness: mg/l dissolved Zn	Hardness: / Coldwater / Warm water 10 mg/l / 0.03 / 0.3 50 mg/l / 0.2 / 0.7 100 mg/l / 0.3 / 1 500 mg/l / 0.5 / 2	Warm water fish are more tolerant

Pesticides: No guideline values provided.

Source : Department of Irrigation, Ground Water Projcet (Nepal Gazette (Number 10, 16 June 2008).

Table 7.2.16 : Nepal Water Quality Guidelines for Recreation

S.N.	Parameter Name:	Full contact	Partial contact	Non contact
Biological Parameters:				
1	Algae, macrophytes, phytoplankton scum, etc.	Should not be present in excessive amount		
Indicator Organism				
	Total coliform Bacteria			
	Faecal coliform	<130 count/100 ml	<1000 count/100ml	No target value
	Escherichia coli	<130 count/100 ml	No target value	No target value
	Entero cocci			
	Faecal Streptococci	<30 count/100 ml	0 – 230 count/100 ml	No target value
	Coliphage	< 20 count/100 ml	No target value	No target value
	Schistosoma/ Bilharzia	No snails capable of acting as the intermediate host of the bilharzia parasite	No snails capable of acting as the intermediate host of the bilharzia parasite	No target value
Nuisance plants				
		Swimmer should not be entangled	Boats should not be entangled.	
Chemical Irritant				
The criteria are qualitative and no specific irritant and quantitative measures are given				
Chemical Parameters:				
	pH	6.5 – 8.5	6.5 – 8.5	No target value
Physical Parameters:				
1	Clarity	> 1.6 (Sechchi disc depth Metres)	No target value	No target value
2	Colour	100 Pt-Co units	100 Pt-Co units	No Target value
3	Floating Matter and refuse	Free of floating or submerged debris	No target value	No target value
4	Odour	No objectionable or unpleasant odour	No objectionable or unpleasant odour	No objectionable or unpleasant odour
5	Residual Chlorine	0.1 mg/l	No target value	No target value
6	Surface films	Should not be noticeable	Should not be noticeable	Should not be noticeable
7	Turbidity	0.5 NTU		

Source : Department of Irrigation, Ground Water Project (Nepal Gazette (Number 10, 16 June 2008).

Table 7.2.17 : Nepal Water Quality Guidelines for Livestock Watering

S.N.	Constituent	Proposed concentration
1	Algae	No visible blue-green scum
2	Aluminium	< 5 mg/l
3	Arsenic	< 0.2 mg/l
4	Beryllium	< 0.1 mg/l
5	Boron	< 5 mg/l
6	Cadmium	< 0.01 mg/l
7	Calcium	< 1000 mg/l
8	Chloride	
9	Chromium (VI)	< 1 mg/l
10	Cobalt	< 1 mg/l
11	Copper	< 0.5 mg/l
12	Electrical Conductivity	< 1.5 dS/m
13	Fluoride	< 2 mg/l
14	pH	6.5 – 8.5
15	Iron	Not Toxic
16	Lead	< 0.1 mg/l
17	Magnesium	< 500 mg/l
18	Manganese	< 10 mg/l
19	Mercury	< 10 µg/L
20	Molybdenum	< 0.01 mg/l
21	Nickel	< 1 mg/l
22	Nitrate/Nitrite	< 100 mg/l as nitrate
23	Nitrite – N	< 10 mg/l
24	Selenium	< 0.05 mg/l
25	Sodium	< 2000 mg/l
26	Sulphate	< 1000 mg/l
27	Total Dissolved Solids	
	Dairy Cattle	< 7100 mg/l
	Sheep	<12800 mg/l
	Horse	< 6400 mg/l
	Pigs	< 4300 mg/l
	Poultry	< 2800 mg/l
28	Vanadium	< 0.1 mg/l (FAO)
29	Zinc	< 24 mg/l (FAO)
Pathogens		
1	Faecal coliform count	< 200 count /100ml
		< 1000 counts for < 20 % of the samples

Pesticides: Guidelines applicable for human beings.

Chlorinated Hydrocarbons: Guidelines for human beings apply.

Source : Department of Irrigation, Ground Water Project (Nepal Gazette (Number 10, 16 June 2008).

Table 7.2.18 : Nepal Water Quality Guidelines for the Protection of Aquatic Ecosystem

S.N.	Parameter name			Target Water Quality Range	Chronic Effect Value	Acute Effect Value
1	Aluminium (mg/l)			At pH <6.5: 5	10	100
				At pH >6.5:10	20	150
2	Ammonia (µg/L)			< 7	< 15	< 100
3	Arsenic (µg/L)			< 10	< 20	< 130
4	Atrazine (µg/L)			< 10	< 19	< 100
5	Cadmium					
	Soft water	(60 mg/l $CaCO_3$)		< 0.15	0.3	3
	Medium water	(60 – 119 mg/l)		< 0.25	0.5	6
	Hard water	120 – 180 mg/l		< 0.35	0.7	10
	Very Hard	> 180 mg/l		< 0.40	0.8	13
6	Chlorine (Residual) µg/L			< 0.2	0.35	5
7	Chromium (VI) µg/L			7	10	200
8	Chromium (III) µg/L			< 12	24	340
9	Copper µg/L					
	Soft water	(60 mg/l $CaCO_3$)		< 0.3	0.53	1.6
	Medium water	(60 – 119 mg/l)		< 0.8	1.5	4.6
	Hard water	120 – 180 mg/l		< 1.2	2.4	7.5
	Very Hard	> 180 mg/l		< 1.40	2.8	12
10	Cyanide µg/L			1	4	110
11	Dissolved Oxygen (% saturation)			80 – 120	> 60	> 40
12	Endosulphan (µg/L)			< 0.01	0.02	0.2
13	Fluoride (µg/L)			< 750	1500	2540
14	Iron			The iron concentration should not be allowed to vary by more than 10 % of the background dissolved iron concentration for a particular site or case, at a specific time.		
15	Lead µg/L					
	Soft water		(60 mg/l $CaCO_3$)	< 0.2	0.5	4
	Medium water		(60 – 119 mg/l)	< 0.5	1	7
	Hard water		120 – 180 mg/l	< 1.0	2	13
	Very Hard		> 180 mg/l	< 1.2	2.4	16
16	Manganese (µg/L)			< 180	370	1300
17	Mercury (µg/L)			< 0.04	0.08	1.7
18	Nitrogen (inorganic)			Inorganic nitrogen concentrations should not be changed by more than 15 % from that of the water body under local unimpacted conditions at any time of the year; The trophic status of the water body should not increase above its present level, though a decrease in trophic status is permissible (see Effects); The amplitude and frequency of natural cycles in inorganic nitrogen concentrations should not be changed.		
19	pH			pH values should not be allowed to vary from the range of the background pH values for a specific site and time of day, by > 0.5 of a pH unit, orby > 5 %, and should be assessed by whichever estimate is more conservative.		
	All aquatic ecosystems					
20	Phenols (µg/l)			<30	60	500
21	Phosphorus (inorganic)	All surface waters		Inorganic phosphorus concentrations should not be changed by > 15 % from that of the water body under local, unimpacted conditions at any time of the year; The trophic status of the water body should not increase above its present level, though a *decrease* in trophic status is permissible (see *Effects*); The amplitude and frequency of natural cycles in inorganic phosphorus concentrations should not be changed.		

S.N.	Parameter name			Target Water Quality Range	Chronic Effect Value	Acute Effect Value
22	Selenium (µg/l)			< 2	5	30
23	Temperature (All aquatic ecosystems)			Water temperature should not be allowed to vary from the background average daily water temperature considered to be normal for that specific site and time of day, by > 2 °C, or by > 10 %, whichever estimate is the more conservative.		
24	Total Dissolved Solids (All inland waters)			· TDS concentrations should not be changed by > 15 % from the normal cycles of the water body under un impacted conditions at any time of the year; ▪ The amplitude and frequency of natural cycles in TDS concentrations should not be changed.		
25	Total Suspended Solids (All inland waters)			Any increase in TSS concentrations must be limited to < 10 % of the background TSS concentrations at a specific site and time.		
26	Zinc (µg/l)			< 2	3.6	36

Source : Department of Irrigation, Ground Water Project (Nepal Gazette (Number 10, 16 June 2008).

Table 7.2.19 : Nepal Water Quality Guidelines for Industries

S. N.	Parameter Name:	Recommended value			
		Category 1	Category 2	Category 3	Category 4
1	Alkalinity	<50 mg/l	< 120 mg/l	< 300 mg/l	< 1200 mg/l
2	COD	< 10 mg/l	< 15 mg/l	< 30 mg/l	< 75 mg/l
3	Chloride	< 20 mg/l	< 40 mg/l	< 100 mg/l	< 500 mg/l
4	Iron	< 0.1 mg/l	< 0.2 mg/l	< 0.3 mg/l	< 10 mg/l
5	Manganese	< 0.05 mg/l	< 0.1 mg/l	< 0.2 mg/l	< 10 mg/l
6	pH	7.0 - 8.0	6.5 - 8.0	6.5 - 8.0	10-May
7	Silica	< 5 mg/l	0 - 10 mg/l	< 20 mg/l	< 150 mg/l
8	Sulphate	< 30 mg/l	< 80 mg/l	< 200 mg/l	< 500 mg/l
9	Suspended solids	< 3 mg/l	< 5 mg/l	< 5 mg/l	< 25 mg/l
10	Total dissolved solids	TDS: < 100 mg/l	TDS: < 200	TDS: < 450	TDS: < 1600
		EC: < 15 mS/m	EC: < 30	EC: < 70	EC: < 250
11	Total Hardness	< 50 mg/l as $CaCO_3$	< 100 mg/l as $CaCO_3$	< 250 mg/l as $CaCO_3$	< 1000 mg/l as $CaCO_3$

Source : Department of Irrigation, Ground Water Project (Nepal Gazette (Number 10, 16 Juene 2008).

Table 7.2.20 : Emission Guidelines for Hospital / Medical / Infectious Waste by Incinerator

Pollutant	Small	Medium	Large
Particular matter	(<=91 kg/h)	(>91-227kg/h)	(>227 kg/h)
	115 mg m^3	69 mg/ m^3	
Carbon monoxide (Co)	40 ppmv	40ppmv	
Dioxins / furans	125 mg/m^3	125 mg/m^3	125 mg/m^3
	Total CCD/CCF or	Total CCD/CCF or	Total CCD/CCF or
	2.3mg /m^3 TEQ	2.3mg/m^3 TEQ	2.3mg/m^3 TEQ
Hydrogen Chloride (HCl)	100 ppmv or	100 ppmv or	100 ppmv or
	93 % reduction	93 % reduction	93 % reduction
Sulfur dioxide ($SO_{2)}$	55 ppmv	55 ppmv	55 ppmv
Nitrogen oxides	250 ppmv	250 ppmv	250 ppmv
Lead	1.2 mg/m^3 or	1.2 mg/m^3 or	1.2 mg/m^3 or
	70 % reduction	70 % reduction	70 % reduction
Cadmium	0.16 mg/m^3 or	0.16 mg/m^3 or	0.16 mg/m^3 or
	65 % reduction	65 % reduction	65 % reduction
Mercury	0.55 mg/m^3 or	0.55 mg/m^3 or	0.55 mg/m^3 or
	85 % reduction	85 % reduction	85 % reduction

Source: World Health Organization (Safe Management of Wastes from Health Care Activities and National Health Care Waste Management Guidelines, 2002).

Table 7.2.21 : Nepal National Building Code, 2003

S. N.	Building Code No.	Contents	Remarks
1	NBC 000	Requirements for State of the Art Design: An Introduction	Building for Foreign Donor Organizations
2	NBC 001	Materials Specifications	> 1000 sq.ft plinth area and more than 3 flats. Building designer and monitoring by Architecture Engineer
3	NBC 002	Unit Weight of Materials	
4	NBC 003	Occupancy Load (Imposed Load)	
5	NBC 004	Wind Load	
6	NBC 005	Seismic Design of Building	
7	NBC 006	Snow Load	
8	NBC 007	Provisional Recommendation on First Safety	
9	NBC 008	Site Consideration for Seismic Hazards	
10	NBC 009	Masonry : Unreinforced	
11	NBC 010	Plain and Reinforced Concrete	
12	NBC 011	Steel	
13	NBC 012	Timber	
14	NBC 013	Aluminum	
15	NBC 014	Construction Safety	
16	NBC 201	Mandatory Rule of Timber : Reinforced Concrete Buildings with Masonry Infill	< 1000 sq. ft plinth area and less than 3 flats. Building designer and monitoring by Architecture Sub-Engineer
17	NBC 202	Mandatory Rule of Timber : Load Bearing Masonry	
18	NBC 203	Guidelines for Earthquake Resident Building Construction : Low Strength Masonry	
19	NBC 204	Guidelines for Earthquake Resident Building Construction : Earthen Building (EB)	
20	NBC 205	Mandatory Rule of Thumb : Reinforced Concrete Buildings without Masonry Infill	
21	NBC 206	Architectural Design Requirements	> 1000 sq.ft plinth area and more than 3 flats. Building designer and monitoring by Architecture Engineer
22	NBC 207	Electrical Design Requirements for (public Buildings)	
23	NBC 208	Sanitary and Plumbing Design Requirements	

Source : Department of Housing and Urban Development.

Table 7.2.22 : Air Quality Index

Parameters			AQI	Category
O_3(ppb) 8-hours average	$PM_{2.5}$(µg/m³) 24-hour average	PM_{10}(µg/m³) 24-hour average		
0.0-40.0	0.0-20.0	0.0-60.0	0-50	Good
41.0-75.0	20.0-40.0	61.0-120.0	51-100	Moderate
76.0-85.0	41.0-60.0	121.0-254.0	101-150	Unhealthy for Sensitive Group
86.0-105.0	61.0-160.0	255.0-354.0	151-200	Unhealthy
106.0-200.0	161.0-260.0	355.0-424.0	201-300	Very Unhealthy
200.0-400.0	261.0-360.0	425.0-504.0	301-400	Hazardous
> 401.0	> 360.0	> 505.0	401-500	Very Hazardous

Source: Department of Environment, 2018

Table 7. 2.23: Environment Related Laws, Regulations and Policies

I. Laws Having Environment Friendly Provisions:
1. Constitution of Nepal, 2015 (2072)
2. Nepal Disaster Risk Management Act, 2017
3. Nepal Tourism Board Act, 1996
4. Environment Protection Act, 1997
5. Forest Act, 1993
6. Local Government Operation Act 2017
7. Water Resources Act, 1992
8. Electricity Act, 1992
9. Motor Vehicle & Transportation Management Act, 1992
10. Labour Act, 2074 B. S.
11. Industrial Enterprises Act, 2016
12. Pesticides Act, 1991
14. Nepal Water Supply Corporation Act, 1989
15. Town Development Act, 1988
16. Kathmandu Valley Development Authority Act, 1988
17. Pashupati Area Development Trust Act, 1987
18. Mines & Mineral Act, 1985
19. Nepal Electricity Authority Act, 1984
20. Nepal Petroleum Act, 1983
21. Nature Conservation Trust Act, 1982
22. Soil & Watershed Conservation Act, 1982
23. Tourism Act, 1978
24. Trust Corporation Act, 1976
25. Public Road Act, 1974
26. National Parks & Wild Life Conservation Act, 1973
27. Plant Protection Act, 1964
28. Aquatic Animals Protection Act, 1960
29. Civil Aviation Act, 1958
30. Ancient Monuments Protection Act,1956
31.Public Health Services Act, 2075 B.S.
33. National Periodic Plans
34. Human Rights Commission Act, 1997
35. Social Welfare Act, 1992
36. Solid Waste Management Act, 2011
37. Poverty Alleviation Fund Act, 2006
38. National Trust for Nature Conservation Act, 1982
39. Statistics Act, 1958

II. Rules & Regulations
1. Vehicle & Transportation Management Rules, 1997
2. Environment Protection Rules, 1997
3. Bardiya National Park Rules, 1996
4. Conservation Area Management Rules, 1996
5. Forest Rules, 1995
6. Buffer Zone Management Rules, 1995

7. Water Resources Rules, 1993
8. Pesticides Rules, 1993
9. Labour Rules, 2075
10. Electricity Rules, 1993
11. Local Self-government Rules 1993
12. Ancient Monuments Protection Rules, 1989
13. Solid Waste (Management & Resource Mobilization) Rules, 1989
14. Khaptad National Park Rules, 1987
15. Nature Conservation Trust Rules, 1984
16. Petroleum Rules, 1984
17. Himalayan National Park Rules, 1979
18. Wild Life Reserve Rules, 1977
19. Mountaineering Rules, 1979
20. Plant Protection Rules, 2010
21. National Parks & Wild Life Conservation Rules, 1973

III. Policies

1. Climate Change Policy, 2011
2. Wildlife Protection, Fertility & Research Policy, 2060
3. Nepal Environmental Policy & Action Plan, 2050
4. Environment Conselvation Policy, 2044
5. Industrial Polocy. 2067
6. National Land use Polocy 2012
7. National Agriculture Polocy, 2064
8. Rural Energy Policy, 2011

Source: Ministry of Forest and Environment

Table 7.2.24 : List of Conventions Signed and/or Ratified by the Government of Nepal

S. N.	Name of Convention	Ratification	Entry into Force in Nepal
1	UN Convention to Combat Desertification in those Countries Experiencing Serious Drought and / or Desertification Particularly in Africa,1994	10 Sept, 1996	13 Jan, 1997
2	UN Framework Convention on Climate Change, 1992	2 May, 1994	31 Jul, 1994
3	Convention on Biodiversity Diversity May 22,1992 Bio-safety Protocol	23 Nov,1993	21 Feb, 1994
4	Agreement on the Network of Aquaculture Centers in Asia and the Pacific Region,1988		4 Jan,1990
5	Convention on Wetlands of International Importance especially as Waterfowl habitat, 1971	17 Dec ,1975	17 Apr,1988
6	Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) 1973	18 June, 1975	16 Sep,1975
7	Plant Protection Agreement for the South East Asia and Pacific Region (as amended) 1956	12 Aug,1965	12 Aug,1965
8	Convention on the High Seas,1958	28 Dec, 1962	27 Jan,1963
9	Treaty Banning Nuclear Weapon Test in the Atmosphere, in outer Space and Sea-bed 1963	7 Oct, 1964	7 Oct, 1964
10	Treaty on Prohibition of the Emplacement Nuclear Weapons and Other Weapons of Mass destruction on the Sea-bed and the Ocean Floor and in the Subsoil Thereof 1971	6 Jul, 1971	18 May, 1972
11	Convention for the Protection of the World Cultural and Natural Heritage, 1972	21 Jun,19785	20 Sept, 1978
12	International Agreement for Tropical Timber (ITTA),1983		3 Jul ,1990
13(a)	Vienna Convention for the Protection of the Ozone Layer, 1985	6 Apr, 1994	4 Oct,1994
13(b)	Montreal Protocol substances that Deplete the Ozone Layer (Montreal Protocol), 1987	6 Jul, 1994	4 Oct,1994
13(c)	London Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer (London Agreement), 1990	6 Jul, 1994	4 Oct,1994
14	Basel Convention on the Control of Tran boundary Movements of Hazardous Wastes (Basel Convention), 1989.	15 Aug, 1996	13 Jan, 1997
15	Treaty on Principals Governing the activities of State in the Exploration and Use of Outer Space including and Other the Moon Celestial Bodies, 1967		10 Oct, 1967
16	Kyoto Protocol	16 Sept,2005	14 Dec, 205
17	Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972		1 Jan,1973
18	Stockholm Convention on Persistent Organic Pollutants, 20001	2006	2002
19	Rotterdam Convention on the Prior Informed Consent Procedure for certain Hazardous chemicals and Pesticides in international Trade	2007	2007
	Signed		
1	Convention on the Prohibition of the Development, Production and stockpiling of Bacteriological and Toxic Weapons and on their Destruction,1972		10 Apr,1972
2	United Nations on the Law of the Sea, 1982		10 Dec,1982
3	Convention on Fishing and Convention of the Living Resources of the High Sea, 1958.		29 Apr,1958
4	Convention on the Continental Shelf, 1958.		29 Apr,1958
5	Minamata Convention on Mercury		10,oct. 2013

Source: Ministry of Forest and Environment

Table 7.2.25 : Ozone Depleting Substance (ODS) Protection Status-Montreal Protocal, 1987

A) Montrial Protocal : Controlled Substance-1					
No	Annex	Group	Chemical Composition of Ozone Depleting Substance	Name of Ozone Depleting Substance	Ozone-Depleting Potencial
1	A	1	Trichlofluoromethane $CFCl_3$	(CFC -11)	1.0
2	A	1	Dichlorodifluoromethane CF_2Cl_2	(CFC -12)	1.0
B) Montrial Protocal : Controlled Substance-2					
1	C	1	Chlorodifluoromethane CHF_2Cl	(HCFC -2402)	0.055
C) Montrial Protocal : Controlled Substance-3					
1	A	II	Bromochlorodifluoromethane (CF_2BrCl)	Halon-1211	3.0
2	A	II	Bromotrifluoromethane (CF_3Br)	Halon-1301	10.0
3	A	II	Dibromotetrafluoromethane ($C_2F_4Br_2$)	Halon-1213	6.0
4	B	II	Carbon Tetrachloride (CCl_4)	Carbon Tetrachloride	1.1
5	B	III	1,1,1-trichloroethane($C_2H_2Cl_3$)	Methyl Chloroform	0.1
6	E	I	Bromomethane (CF_3Br)	Methyl Bromide	0.6

D) Phase Out rate of CFC-11 and CFC-12	
Year	CFC-11 and CFC-12 (MT)
2000	29.058
2001	26
2002	23
2003	20
2004	17.0
2005	14
2006	11
2007	8
2008	5
2009	2
2010	0

Source : Nepal Gazette 2057/6/9 . Aditional 36

Table 7.3.1 : Number of Environment Related NGOs and INGOs Affiliated with Social Welfare Council

S.N.	District	NGOs									
		2003/4	2004/5	2007/8	2008/9	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
1	Taplejung	3	3	4	4	5	6	6	6	6	6
2	Panchthar	8	9	4	4	5	5	5	5	7	7
3	Ilam	5	5	6	6	6	6	6	6		7
4	Jhapa	14	16	16	17	19	21	22	23	23	24
5	Morang	16	18	17	17	21	21	21	23	23	23
6	Sunsari	15	15	18	19	21	22	23	25	26	28
7	Dhankuta	1	1	2	3	3	3	3	3	3	3
8	Terhathum	1	2	3	3	3	3	3	3	3	3
9	Sankhuwasabha	1	1	1	1	1	1	1	1	1	1
10	Bhojpur	2	2	2	2	2	2	2	2	2	2
11	Solukhumbu	2	2	3	3	3	3	3	3	3	3
12	Okhaldhunga	3	3	3	3	3	3	3	4	4	4
13	Khotang	2	2	2	2	2	2	2	2	2	2
14	Udayapur	1	2	4	4	4	4	4	4	4	4
15	Saptari	14	14	14	16	21	21	21	21	21	22
16	Siraha	7	9	11	11	13	13	13	15	15	15
17	Dhanusa	8	9	12	14	15	15	15	15	17	20
18	Mahottari	6	7	9	9	9	10	10	10	11	11
19	Sarlahi	3	4	6	9	11	11	11	11	11	11
20	Sindhuli	19	20	11	11	12	12	12	12	12	12
21	Ramechhap	3	3	4	4	4	4	4	4	4	4
22	Dolakha	10	11	10	10	11	11	12	12	12	12
23	Sindhupalchok	10	12	9	9	9	9	9	9	10	10
24	Kavre	7	9	14	14	17	18	19	20	24	24
25	Lalitpur	35	38	61	66	78	78	79	80	88	89
26	Bhaktapur	7	7	8	9	10	10	11	12	12	13
27	Kathmandu	391	429	481	503	562	567	570	584	596	608
28	Nuwakot	4	5	5	6	9	9	9	10	12	13
29	Rasuwa	1	1	1	2	2	2	2	2	3	3
30	Dhading	9	10	11	11	15	15	15	16	17	18
31	Makwanpur	12	13	15	18	20	20	20	21	21	21
32	Rautahat	2	6	10	11	15	15	15	15	16	16
33	Bara	6	9	10	13	13	13	13	14	14	14
34	Parsa	6	8	8	8	13	13	14	14	14	14
35	Chitawan	37	41	41	41	46	46	46	50	52	53
36	Gorkha	9	10	11	11	11	11	11	13	13	13
37	Lamjung	10	11	13	13	13	13	13	13	13	13
38	Tanahu	7	7	7	7	10	10	10	10	10	10
39	Syangja	6	6	6	6	8	8	8	8	8	8
40	Kaski	29	35	40	41	43	44	45	45	45	46
41	Manang	0	0	0	0	0	0	0	0	0	0
42	Mustang	0	1	1	1	1	1	1	1	1	1
43	Myagdi	2	2	3	4	4	4	4	4	4	4
44	Parbat	7	8	8	9	9	9	10	10	10	10
45	Baglung	4	4	4	4	4	4	4	4	5	5
46	Gulmi	6	6	6	6	8	8	8	9	9	9
47	Palpa	8	9	11	12	13	13	13	14	14	14
48	Nawalparasi	10	12	13	16	18	18	18	19	19	21
49	Rupandehi	2	3	18	18	20	20	20	21	21	21
50	Kapilbastu	6	7	8	8	9	9	9	9	10	10
51	Arghakhanchi	2	2	5	5	5	5	5	5	5	5
52	Pyuthan	2	2	2	2	3	3	3	3	4	4
53	Rolpa	1	1	2	2	2	2	2	2	2	2
54	Rukum	0	0	1	2	2	2	2	2	3	3
55	Salyan	8	8	9	9	9	9	9	9	9	9
56	Dang	16	18	21	24	34	34	34	34	34	34
57	Banke	15	18	19	20	21	21	21	21	22	23
58	Bardiya	18	18	28	20	20	20	20	20	20	20
59	Surkhet	21	23	13	13	15	15	15	15	16	18
60	Dailekh	3	3	6	6	9	9	9	9	9	9
61	Jajarkot	1	1	1	1	3	3	3	3	3	3
62	Dolpa	3	4	4	4	5	5	5	5	5	5
63	Jumla	1	1	1	1	2	2	2	2	2	5
64	Kalikot	7	8	8	9	13	13	13	13	13	13
65	Mugu	2	2	7	8	10	10	10	11	11	11

S.N.	District	NGOs									
		2003/4	2004/5	2007/8	2008/9	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
66	Humla	2	2	2	2	3	3	3	3	4	4
67	Bajura	2	2	3	3	3	3	3	3	3	3
68	Bajhang	3	5	7	7	7	7	8	8	8	8
69	Achham	4	5	8	8	10	10	10	10	10	10
70	Doti	5	5	6	6	8	8	8	9	9	9
71	Kailali	15	16	21	28	32	33	33	34	36	38
72	Kanchanpur	12	16	23	27	28	28	28	29	30	30
73	Dadeldhura	3	3	5	5	5	5	5	5	6	6
74	Baitadi	2	2	5	5	6	6	6	6	6	6
75	Darchaula	1	3	4	4	4	4	4	4	4	4
Total		**926**	**1035**	**1196**	**1260**	**1431**	1446	1459	1502	1545	1587
INGOs											
1	Lalitpur	0	0	0	3	7	7	7	8	8	9
2	Kathmandu	3	3	3	4	4	5	7	9	10	10

Source: Social Welfare Council, *# Information of then 75 districts of Nepal*

Table 7.3.2: Households Which Have Heard About Climate Change

Analytical Domain	Perception (%)		Total
	Yes	No	
Urban/Rural			
Urban	56.79	43.21	100
Rural	46.24	53.76	100
Ecological Belt			
Mountain	36.41	63.59	100
Hill	49.53	50.47	100
Terai	51.35	48.65	100
Kathmandu valley	66.89	33.11	100
Sex			
Male	54.07	45.93	100
Female	39.08	60.92	100
Age Group of Respondent			
45-54 Yrs.	55.16	44.84	100
55-64 Yrs.	47.61	52.39	100
65-74 Yrs.	43.84	56.16	100
75+ Yrs.	41.01	58.99	100
Education Level			
Informal education	51.83	48.17	100
Primary (1-5)	52.87	47.13	100
Lower Sec.(6-8)	67.97	32.03	100
Secondary (9-10)	73.6	26.4	100
SLC	85.49	14.51	100
Class 12 / Certificate	91.22	8.78	100
Bachelor	94.62	5.38	100
Master and above	98.85	1.15	100
Illiterate	32.87	67.13	100
NAPA Combined Vulnerability Index			
Very High	53.18	46.82	100
High	42.04	57.96	100
Moderate	53.59	46.41	100
Low	49.34	50.66	100
Very Low	47.37	52.63	100
Climate Zone			
Tropical	50.46	49.54	100
Sub-tropical	49.13	50.87	100
Temperate	36.19	63.81	100
Sub-alpine	5	95	100
Total	49.33	50.67	100

Source: NCCIS 2016, CBS

Table 7.3.3: Distribution of Households by Sources of Climate Information

Analytical Domain	Source of information about climate change (%)								Total
	Radio	Television	News paper	Awareness programmes	Local agencies/ official	Neighbor / friends	Family member	Others	
Urban/Rural									
Urban	27.25	46.58	7.6	3.17	1	12.01	1.9	0.49	100
Rural	50.72	17.99	1.18	6.18	1.33	21.02	1.08	0.5	100
Ecological Belt									
Mountain	68.1	10.86	0.12	7.1	1.16	10.45	2.22	0	100
Hill	51.24	24.24	4.77	5.07	1.48	11.32	1.55	0.32	100
Terai	31.65	32.91	2.37	5.02	0.98	25.28	1.07	0.73	100
Kathmandu valley	6.93	66.5	16.32	3.5	0	5.31	0.94	0.5	100
Sex									
Male	43.85	27.18	4.04	5.14	1.31	17.19	0.86	0.43	100
Female	39.67	28.97	1.27	5.23	0.95	20.36	2.85	0.7	100
Education Level									
Informal education	56.19	22.57	1.37	2.92	0.38	15.1	1.37	0.09	100
Primary (1-5)	43.14	32.26	1.83	5.91	1.05	15.18	0.12	0.5	100
Lower Sec. (6-8)	32.1	41.98	4.47	3.44	3.27	13.26	1.47	0	100
Secondary (9-10)	36.54	35.01	4.39	9.5	1.3	11.5	1.45	0.31	100
SLC	48.55	36.59	4.44	5	1.93	3.25	0.23	0	100
Class 12 / Certificate	33.2	51.39	9.87	3.19	0	2.13	0.21	0	100
Bachelor	23.35	46.95	22.79	3.71	0	0.61	0.33	2.27	100
Master and above	10.49	60.35	24.59	3.21	0	0	0	1.36	100
Illiterate	41.31	12.82	0.34	6.57	1.44	33.97	2.55	0.99	100
Income Quintile Groups									
First Quintile (Lowest)	49.37	9.55	0.67	5.49	2.8	31.01	1	0.11	100
Second Quintile	54.16	16.21	1.19	5.73	0.77	19.76	1.8	0.38	100
Third Quintile	44.05	24.47	2.27	5.63	0.89	20.52	1.72	0.45	100
Fourth Quintile	38.78	39.6	3.33	4.14	0.21	12.12	1.4	0.44	100
Fifth Quintile (Highest)	30.88	48.18	8.85	4.43	0.95	5.43	0.72	0.56	100

Analytical Domain	Source of information about climate change (%)								Total
	Radio	Television	News paper	Awareness programmes	Local agencies/ official	Neighbor / friends	Family member	Others	
Not Stated	35.1	16.86	3.2	7.2	3.88	29.04	1.98	2.74	100
NAPA Combined Vulnerability Index									
Very High	54.94	27.54	5.23	2.69	1.18	6.97	1.36	0.09	100
High	53.97	17.22	1.82	3.81	2.6	17.81	2.14	0.63	100
Moderate	47.56	10.41	1.92	8.69	1.34	28.9	1.18	0	100
Low	21.49	44.13	4.78	3.98	0.28	22.26	1.39	1.71	100
Very Low	18.76	64.84	2.44	7.5	0	6.46	0	0	100
Climate Zone									
Tropical	34.22	32.03	3.03	5.37	1.19	22.51	0.97	0.67	100
Sub-tropical	54.85	21.57	4.22	5.02	1.39	10.61	2.11	0.23	100
Temperate	78.74	7.95	0.21	2.73	0	9.57	0.8	0	100
Sub-alpine	0	100	0	0	0	0	0	0	100
Total	42.81	27.63	3.34	5.16	1.22	17.98	1.36	0.5	100

Source: NCCIS 2016, CBS

Table 7.3.4: Perception on Reasons of Climate Change

Disasters	Reasons																					
	Increased (%)											Decreased (%)										
	Insufficient rainfall	Heavy rainfall	Temperature Increase	Temperature decrease	Road construction	Urbanisation	Deforestation	Heavy use of underground water	Earthquake	Population increase	Others	Insufficient rainfall	Heavy rainfall	Temperature Increase	Temperature decrease	Road construction	Urbanisation	Deforestation	Heavy use of underground water	Earthquake	Population increase	Others
Drought	91.7	0	58.8	0	4.2	9.2	32	2.6	3.7	12.5	2.7	0.2	0.1	0.3	0	0.2	0	0.2	0	0	0.1	0.1
Fire (forest)	27.5	0	40.1	0.4	2.5	4.5	11	0.1	0	22.3	13	3.7	0.2	13.6	0.2	0.9	3	3.6	0.1	0	8.1	25
Fire (settlement)	37.8	0.2	35.3	0.3	0.3	6.6	5.5	0.3	0.1	12.5	14	2.5	0.2	1.4	0.1	0.4	6	1.8	0.1	0	9.9	38
Flood	0.7	53	3.6	0.1	6.4	4.4	15	0	2.3	4.1	2.8	33.4	0.5	9.6	0.3	1.6	4	8.6	0.4	1	2.3	4.3
Inundation	0.3	43	2.3	0.3	4.9	8.5	7.7	0.3	0.4	5.2	7.1	41.3	1.4	15.2	0.7	2.6	9	15	0.5	0	3.9	9.8
Windstorm	11.1	1.3	10.6	0.1	0	0	9.7	1	0	1.3	7.2	37.1	7.3	16.6	0.5	0.5	6	20	0.5	1	7.6	14
Thunderstorm	24.6	2.8	27.8	0.4	0	3.7	7.3	0.6	0	5.6	19	22.8	4.9	16.2	0.7	0	2	8.9	0.6	0	1.4	10
Hailstorm	10.1	3.6	9.5	0.9	0	1.1	4.7	0	0	1.9	7.3	38.2	15	33	2.2	0	5	13	0.7	0	3.6	9.7
Heavy rain	2.3	9	14	0.1	1	6.1	9.7	0.4	0	3.7	2.9	24.2	36	7	0.9	0.4	2	13	0.3	0	1	4.7
Sporadic rain	56.3	2.4	34	0.5	3.7	9.5	41	5.2	0	11.3	11	4.2	0.1	2.6	0.3	0.1	1	1.9	0	0	0.3	1.2
Soil erosion	5.4	16	7.7	0	36.5	4.1	22	0	9.2	6.6	7.8	24.7	5.1	6.8	0.4	4.6	3	7.9	0.3	1	2.7	2.6
Landslide	0	37	9.4	0.4	41.1	4.4	34	0.4	22	4.4	3.4	18.7	0.4	2.9	0.3	2	0	2.1	0.3	2	0.7	1.1
Snowstorm	0	0	0	0	0	0	0	0	0	0	3.3	48.1	28	34.7	54	0	0	62	0	0	0	13
Avalanche	0	7.7	0	0	0	0	0	0	0	0	3.9	44.9	0	33.5	58.8	0	0	45	0	0	0	0
GLOF	0	0	62.8	0	0	0	0	0	0	0	31	0	0	37.2		0	0	0	0	0	0	0
Heat wave	35	0.6	57.3	0.2	1	8.9	38	6.9	0.2	11.1	2.3	13.6	0.3	19.9	1.8	0.1	9	8.9	0.5	0	7.4	2
Cold wave	21.5	1.4	4.6	14.4	0.1	3.7	12	1.1	0.2	2.2	5.2	36.6	2.5	20.7	21.1	0.1	4	12	0.6	0	5.7	3.9
Diseases/ insect	69.9	1.1	56.8	1.3	2.7	13	17	0.6	0.5	28.3	21	1.4	0	1	0.1	0.1	0	0.5	0.1		0.8	0.6

Source: NCCIS 2016, CBS

ANNEX I

Basic Set of Environment Statistics

Annex: I

Basic Set of Environment Statistics

Topic	Statistics and Related Information (**Bold Text - Core Set/Tier 1**; Regular Text - Tier 2; *Italicized Text - Tier 3*)		Category of Measurement	Potential Aggregations and Scales	Methodological Guidance
Component 1: Environmental Conditions and Quality					
Sub-component 1.1: Physical Conditions					
Topic 1.1.1: Atmosphere, climate and weather	a.	Temperature		▪ National ▪ Sub-national	▪ World Meteorological Organization (WMO) ▪ Intergovernmental Panel on Climate Change (IPCC) ▪ National Oceanic and Atmospheric Administration (NOAA)/National Aeronautics and Space Administration (NASA)
		1. **Monthly average**	Degrees		
		2. **Minimum monthly average**	Degrees		
		3. **Maximum monthly average**	Degrees		
	b.	Precipitation (also in 2.6.1.a)			
		1. **Annual average**	Height		
		2. **Long-term annual average**	Height		
		3. Monthly average	Height		
		4. Minimum monthly value	Height		
		5. Maximum monthly value	Height		
	c.	Relative humidity			
		1. Minimum monthly value	Number		
		2. Maximum monthly value	Number		
	d.	Pressure		▪ National ▪ Sub-national ▪ By station	
		1. *Minimum monthly value*	Pressure unit		
		2. *Maximum monthly value*	Pressure unit		
	e.	Wind speed		▪ National ▪ Sub-national	
		1. *Minimum monthly value*	Speed		
		2. *Maximum monthly value*	Speed		
	f.	Solar radiation			▪ WMO ▪ IPCC ▪ NOAA/NASA
		1. *Average daily value*	Area, Energy unit		
		2. *Average monthly value*	Area, Energy unit		
		3. *Number of hours of sunshine*	Number	▪ National ▪ Sub-national ▪ By month and per year	
	g.	UV radiation		▪ National ▪ Sub-national	▪ World Health Organization (WHO)-UV Radiation Index ▪ WMO-UV Radiation
		1. *Maximum daily value*	Area, Energy unit		
		2. *Average daily value*	Area, Energy unit		
		3. *Maximum monthly value*	Area, Energy unit		
		4. *Average monthly value*	Area, Energy unit		
	h.	Occurrence of El Niño/La Niña events, when relevant		▪ By location ▪ National ▪ Sub-national	
		1. *Occurrence*	Number		
		2. *Time period*	Time period		

Topic 1.1.2: Hydrographical characteristics	a.	Lakes		▪ By location ▪ By watershed/river basin ▪ National ▪ Sub-national	▪ United Nations Statistics Division (UNSD): International Recommendations for Water Statistics (IRWS) ▪ UN-Water
		1. Surface area	Area		
		2. *Maximum depth*	Depth		
	b.	Rivers and streams			
		1. Length	Length		
	c.	Artificial reservoirs			
		1. *Surface area*	Area		
		2. *Maximum depth*	Depth		
	d.	Watersheds			
		1. **Description of main watersheds**	Area, Description		
	e.	Seas		▪ By location ▪ National, within coastal waters or ExclusiveEconomic Zone (EEZ)	
		1. Coastal waters	Area		
		2. Territorial sea	Area		
		3. Exclusive Economic Zone (EEZ)	Area		
		4. *Sea level*	Depth		
		5. *Area of sea ice*	Area		
	f.	*Aquifers*	Depth, Description	▪ By location ▪ By salinity levels ▪ By watershed ▪ National ▪ Sub-national ▪ Renewable ▪ Non-renewable	
	g.	Glaciers	Area	▪ By location ▪ National ▪ Sub-national	
Topic 1.1.3: Geological and geographical information	a.	Geological, geographical and geomorphological conditions of terrestrial areas and islands		▪ National	▪ UNSD: Demographic Yearbook ▪ Food and Agriculture Organization of the United Nations (FAO) ▪ Center for International Earth Science Information Network (CIESIN)
		1. Length of border	Length		
		2. **Area of country or region**	Area, Location		
		3. Number of islands	Number	▪ By location ▪ National	
		4. Area of islands	Area		
		5. *Main geomorphological characteristics of islands*	Description		
		6. *Spatial distribution of land relief*	Description, Location		
		7. *Characteristics of landforms* (e.g., plains, hills, plateaus, dunes, volcanoes, mountains,seamounts)	Description, Area, Height		
		8. *Area byrock types*	Area		
		9. *Length of fault lines*	Length		
	b.	**Coastal waters** (including area of coral reefs and mangroves)	Area, Description		
	c.	**Length of marine coastline**	Length		
	d.	**Coastal area**	Area		

Topic 1.1.4: Soil characteristics	a.	Soil characterization		▪ By location ▪ By soil type ▪ National ▪ Sub-national	▪ FAO and the International Institute for Applied Systems Analysis (IIASA) Harmonized World Soil Database ▪ International Soil Reference and Information Centre (ISRIC) World Data Centre for Soils ▪ United Nations Convention to Combat Desertification (UNCCD) ▪ FAO Global Assessment of Human-induced Soil Degradation (GLASOD)
		1. **Area bysoil types**	Area		
	b.	Soil degradation			
		1. **Area affected by soil erosion**	Area		
		2. **Area affected by desertification**	Area		
		3. Area affected by salinization	Area		
		4. Area affected by waterlogging	Area		
		5. Area affected by acidification	Area		
		6. *Area affected by compaction*	Area		
	c.	Nutrient content of soil, measured in levels of:		▪ By soil type ▪ By nutrient ▪ National ▪ Sub-national	
		1. Nitrogen (N)	Concentration		
		2. Phosphorous (P)	Concentration		
		3. *Calcium (Ca)*	Concentration		
		4. *Magnesium (Mg)*	Concentration		
		5. *Potassium (K)*	Concentration		
		6. *Zinc (Zn)*	Concentration		
		7. *Other*	Concentration		

Component 1: Environmental Conditions and Quality					
Sub-component 1.2: Land Cover, Ecosystems and Biodiversity					
Topic	**Statistics and Related Information** (**Bold Text - Core Set/Tier 1**; Regular Text - Tier 2; *Italicized Text - Tier 3*)		**Category of Measurement**	**Potential Aggregations and Scales**	**Methodological Guidance**
Topic 1.2.1: Land cover	a.	**Area under land cover categories**	Area	▪ By location ▪ By type of land cover (e.g., artificial surfaces including urban and associated areas; herbaceous crops; woody crops; multiple or layered crops; grassland; tree-covered areas; mangroves; shrub-covered areas; shrubs and/or herbaceous vegetation, aquatic or regularly flooded; sparsely natural vegetated areas; terrestrial barren land; permanent snow and glaciers; inland water bodies; and coastal water bodies and inter-tidal areas)[a] ▪ National ▪ Sub-national	▪ FAO Land Cover Classification System ▪ System of Environmental-Economic Accounting (SEEA) Central Framework (2012) land cover categories ▪ European Environment Agency (EEA)

	a.	General ecosystem characteristics, extent and pattern		▪ By location ▪ By ecosystem (e.g., forest, cultivated, dryland, coastal, marine, urban, polar, inland water, island, mountain)[(b)]	▪ Millennium Ecosystem Assessment ▪ Convention on Biological Diversity (CBD) ▪ UN Economic Commission for Europe (UNECE) Standard Statistical Classification of Flora, Fauna and Biotopes (1996) ▪ Convention on Wetlands of International Importance, especially as Waterfowl Habitat (the Ramsar Convention)
		1. **Area of ecosystems**	Area		
		2. *Proximity of ecosystem to urban areas and cropland*	Distance		
	b.	Ecosystems' chemical and physical characteristics			
		1. *Nutrients*	Concentration		
		2. *Carbon*	Concentration		
		3. *Pollutants*	Concentration		
Topic 1.2.2: Ecosystems and biodiversity	c.	Biodiversity		▪ By ecosystem (e.g., forest, cultivated, dryland, coastal, marine, urban, polar, inland water, island, mountain)[(b)] ▪ By status category (e.g., extinct, extinct in the wild, threatened, near threatened, least concern) ▪ By class (e.g., mammals, fishes, birds, reptiles) ▪ National ▪ Sub-national	▪ Millennium Ecosystem Assessment ▪ CBD ▪ International Union for Conservation of Nature and Natural Resources (IUCN) Red List of Threatened Species ▪ UNECE Standard Statistical Classification of Flora, Fauna and Biotopes (1996) ▪ FAO FISHSTAT (Species population and number ofinvasive alien species)
		1. **Known flora and fauna species**	Number		
		2. Endemic flora and fauna species	Number		
		3.Invasive alien flora and fauna species	Number		
		4. Species population	Number		
		5. *Habitat fragmentation*	Area, Description, Location, Number		

	d.	Protected areas and species		▪ By location ▪ By management category[c] ▪ By ecosystem (e.g., forest, cultivated, dryland, coastal, marine, urban, polar, inland water, island, mountain)[b] ▪ National ▪ Sub-national	▪ IUCN Protected Area Management Categories ▪ UNSD: Millennium Development Goal (MDG) Indicator 7.6 Metadata
		1. **Protected terrestrial and marine area** (also in 1.2.3.a)	Number, Area		
		2. Protected flora and fauna species	Number	▪ By species ▪ By ecosystem (e.g., forest, cultivated, dryland, coastal, marine, urban, polar, inland water, island, mountain)[b] ▪ By status category ▪ National ▪ Sub-national	▪ IUCN Red List of Threatened Species ▪ UNSD: MDG Indicator 7.7 Metadata
(a) SEEA land cover categories, based on FAO Land Cover Classification System (http://unstats.un.org/unsd/envaccounting/seeaRev/SEEA_CF_Final_en.pdf) (b) Reporting categories used in the Millennium Ecosystem Assessment (http://www.millenniumassessment.org/documents/document.356.aspx.pdf) (c) IUCN reporting categories: Strict nature reserves; Wilderness areas; National parks, Natural monuments or features; Habitat/species management areas; Protected landscapes/seascapes; and Protected areas with sustainable use of natural resources (http://www.iucn.org/theme/protected-areas/about/categories)					
Topic 1.2.3: Forests	a.	Forest area		▪ By forest type ▪ National ▪ Sub-national ▪ By dominant tree species ▪ By ownership category	▪ FAO Global Forest Resources Assessment (FRA) ▪ UN Forum on Forests (UNFF) Monitoring, Assessment and Reporting (MAR) ▪ UNSD: MDG Indicator 7.1 Metadata ▪ Montreal Process (Working Group on Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests) ▪ State of Europe's Forests (Forest Europe/UNECE-FAO Forestry and Timber Section)
		1. **Total**	Area		
		2. Natural	Area		
		3. Planted	Area		
		4. Protected forest area(also in 1.2.2.d)	Area		
		5. Forest area affected by fire	Area		
	b.	Forest biomass			
		1. Total	Volume		
		2. *Carbon storage in living forest biomass*	Mass		

Component 1: Environmental Conditions and Quality					
Sub-component 1.3: Environmental Quality					
Topic	**Statistics and Related Information** (**Bold Text - Core Set/Tier 1**; Regular Text - Tier 2; *Italicized Text - Tier 3*)		**Category of Measurement**	**Potential Aggregations and Scales**	**Methodological Guidance**
Topic 1.3.1: Air quality	a.	Local air quality		▪ By point measurement ▪ Sub-national ▪ Daily maximum ▪ Monthly maximum and average ▪ Yearly maximum and average	▪ WHO Air Quality Guidelines-Global Update 2005, Particulate matter, ozone, nitrogen dioxide and sulfur dioxide ▪ WHO Air quality guidelines for particulate matter, ozone, nitrogen dioxide and sulfur dioxide, Global Update 2005, Summary of risk assessment ▪ UNECE Standard Statistical Classification of Ambient Air Quality (1990)
		1. **Concentration level of particulate matter (PM_{10})**	Concentration		
		2. **Concentration level of particulate matter ($PM_{2.5}$)**	Concentration		
		3. **Concentration level of tropospheric ozone (O_3)**	Concentration		
		4. **Concentration level of carbon monoxide (CO)**	Concentration		
		5. **Concentration level of sulphur dioxide (SO_2)**	Concentration		
		6. **Concentration levels of nitrogen oxides (NO_X)**	Concentration		
		7. Concentration levels of heavy metals	Concentration		
		8. Concentration levels of non-methane volatile organic compounds (NMVOCs)	Concentration		
		9. *Concentration levels of dioxin*s	Concentration		
		10. *Concentration levels of furan*s	Concentration		
		11. Concentration levels of other pollutants	Concentration		
		12. Number of days when maximum allowable levels were exceeded per year	Number	▪ By pollutant	
	b.	Global atmospheric concentrations of greenhouse gases		▪ Global	▪ WMO
		1. Global atmospheric concentration level of carbon dioxide (CO_2)	Concentration		
		2. Global atmospheric concentration level of methane (CH_4)	Concentration		

Topic 1.3.2: Freshwater quality	a.	Nutrients and chlorophyll		▪ By water body ▪ By watershed/river basin ▪ By surface or groundwater ▪ By point measurement ▪ By type of water resource	▪ UNECE Standard Statistical Classification of Freshwater Quality for the Maintenance of Aquatic Life (1992) ▪ UN Environment Programme (UNEP) Global Environment Monitoring System-Water (GEMS-Water) ▪ WHO
		1. **Concentration level of nitrogen**	Concentration		
		2. **Concentration level of phosphorous**	Concentration		
		3. Concentration level of chlorophyll A	Concentration		
	b.	Organic matter			
		1. **Biochemical oxygen demand (BOD)**	Concentration		
		2. Chemical oxygen demand (COD)	Concentration		
	c.	Pathogens			
		1. **Concentration levels of faecal coliforms**	Concentration		
	d.	Metals (e.g., mercury, lead, nickel, arsenic, cadmium)			
		1. Concentration levels in sediment and freshwater	Concentration		
		2. Concentration levels in freshwater organisms	Concentration		
	e.	Organic contaminants (e.g., PCBs, DDT, pesticides, furans, dioxins, phenols, radioactive waste)			▪ UNECE Standard Statistical Classification of Freshwater Quality for the Maintenance of Aquatic Life (1992) ▪ UNEP GEMS-Water ▪ Stockholm Convention
		1. Concentration levels in sediment and freshwater	Concentration		
		2. Concentration levels in freshwater organisms	Concentration		
	f.	Physical and chemical characteristics			▪ UNECE Standard Statistical Classification of Freshwater Quality for the Maintenance of Aquatic Life (1992) ▪ UNEP GEMS-Water
		1. pH/Acidity/Alkalinity	Level		
		2. Temperature	Degrees		
		3. *Total suspended solids (TSS)*	Concentration		
		4. Salinity	Concentration		
		5. Dissolved oxygen (DO)	Concentration		
	g.	Plastic waste and other freshwater debris			
		1. Amount of plastic waste and other debris	Area, Mass		

Topic 1.3.3: Marine water quality	a.	Nutrients and chlorophyll		▪ By coastal zone, delta, estuary or other local marine environment ▪ Sub-national ▪ National ▪ Supranational ▪ By point measurement ▪ By water resource	▪ UNECE Standard Statistical Classification of Marine Water Quality (1992) ▪ NOAA/NASA ▪ UNEP Regional Seas Programme
		1. **Concentration level of nitrogen**	Concentration		
		2. **Concentration level of phosphorous**	Concentration		
		3. Concentration level of chlorophyll A	Concentration		
	b.	Organic matter			
		1. **Biochemical oxygen demand (BOD)**	Concentration		
		2. Chemical oxygen demand (COD)	Concentration		
	c.	Pathogens			
		1. Concentration levels of faecal coliforms in recreational marine waters	Concentration		
	d.	Metals (e.g., mercury, lead, nickel, arsenic, cadmium)			
		1. Concentration levels in sediment and marine water	Concentration		
		2. Concentration levels in marine organisms	Concentration		
	e.	Organic contaminants (e.g., PCBs, DDT, pesticides, furans, dioxins, phenols, radioactive waste)			▪ UNECE Standard Statistical Classification of Marine Water Quality (1992) ▪ NOAA/NASA ▪ UNEP Regional Seas Programme ▪ Stockholm Convention
		1. *Concentration levels in sediment and marine water*	Concentration		
		2. *Concentration levels in marine organisms*	Concentration		
	f.	Physical and chemical characteristics			▪ UNECE Standard Statistical Classification of Marine Water Quality (1992) ▪ NOAA/NASA ▪ UNEP Regional Seas Programme
		1. *pH/Acidity/Alkalinity*	Level		
		2. Temperature	Degrees		
		3. *Total suspended solids (TSS)*	Concentration		
		4. *Salinity*	Concentration		
		5. Dissolved oxygen (DO)	Concentration		
		6. *Density*	Density		
	g.	Coral bleaching			
		1. **Area affected by coral bleaching**	Area		
	h.	Plastic waste and other marine debris		▪ By coastal zone,delta, estuary or other local marine environment ▪ By location ▪ Sub-national ▪ National ▪ Supranational ▪ By point measurement	▪ UNECE Standard Statistical Classification of Marine Water Quality (1992) ▪ NOAA/NASA ▪ UNEP Regional Seas Programme
		1.*Amount of plastic waste and other debris in marine waters*	Area, Mass		
	i.	Red tide			
		1. *Occurrence*	Number		
		2. *Impacted area*	Area		
		3. *Duration*	Duration		
	j.	Oil pollution			
		1. *Area of oil slicks*	Area		
		2. *Amount of tar balls*	Area, Diameter, Number		

Topic 1.3.4: Soil pollution	a.	Sites affected by pollution		▪ By location ▪ Sub-national ▪ By type of pollutant ▪ By source	
		1. Contaminated sites	Area, Number		
		2. Potentially contaminated sites	Area, Number		
		3. Remediated sites	Area, Number		
		4. Other sites	Area, Number		
Topic 1.3.5: Noise	a.	Noise levels from specific sources	Level	▪ By source ▪ By location ▪ Sub-national	▪ WHO
	b.	Noise levels in specific locations	Level		

Component 2: Environmental Resources and their Use					
Sub-component 2.1: Mineral Resources					
Topic	**Statistics and Related Information** (**Bold Text - Core Set/Tier 1**; Regular Text - Tier 2; *Italicized Text - Tier 3*)		**Category of Measurement**	**Potential Aggregations and Scales**	**Methodological Guidance**
Topic 2.1.1: Stocks and changes of mineral resources	a.	Mineral resources		▪ By mineral (e.g., metal ores including precious metals and rare earths,coal, oil, gas, stone, sand and clay, chemical and fertilizer minerals, salt, gemstones, abrasive minerals, graphite, asphalt, natural solid bitumen, quartz, mica) ▪ National ▪ Sub-national	▪ United Nations Framework Classification for Energy and Mineral Resources (UNFC 2009) ▪ SEEA Central Framework (2012) asset and physical flow accounts ▪ International Standard Industrial Classification of All Economic Activities (ISIC) Rev. 4, Section B, Divisions 05-09
		1. **Stocks of commercially recoverable resources**	Mass, Volume		
		2. New discoveries	Mass, Volume		
		3. *Upward reappraisals*	Mass, Volume		
		4. *Upward reclassifications*	Mass, Volume		
		5. **Extraction**	Mass, Volume		
		6. *Catastrophic losses*	Mass, Volume		
		7. *Downward reappraisals*	Mass, Volume		
		8. *Downward reclassifications*	Mass, Volume		
		9. Stocks of potentially commercially recoverable resources	Mass, Volume		
		10. *Stocks of non-commercial and other known resources*	Mass, Volume		
Topic 2.1.2: Production and trade of minerals	a.	Production of minerals	Mass, Volume		▪ Harmonized Commodity Description and Coding Systems (HS) 2012, Section V, Chapters 25 and 26, and Section VI Chapter 28
	b.	Imports of minerals	Currency, Mass, Volume		
	c.	Exports of minerals	Currency, Mass, Volume		

Component 2: Environmental Resources and their Use					
Sub-component 2.2: Energy Resources					
Topic	**Statistics and Related Information** (**Bold Text - Core Set/Tier 1**; Regular Text - Tier 2; *Italicized Text - Tier 3*)		**Category of Measurement**	**Potential Aggregations and Scales**	**Methodological Guidance**
Topic 2.2.1: Stocks and changes of energy resources	a.	Energy resources		▪ By resource (e.g., natural gas, crude oil and natural gas liquids, oil shale,and extra heavy oil (includes oilextracted from oilsands), coal and lignite, peat,non-metallic minerals except for coal or peat, uranium and thorium ores) ▪ National ▪ Sub-national	▪ UNSD: International Recommendations for Energy Statistics (IRES) ▪ International Energy Agency (IEA) Energy Statistics Manual ▪ SEEA Central Framework (2012) asset and physical flow accounts ▪ UNFC 2009 ▪ ISIC Rev. 4, Section B, Divisions 05-09 ▪ HS 2012, Section V, Chapter 27
		1. **Stocks of commercially recoverable resources**	Mass, Volume		
		2. New discoveries	Mass, Volume		
		3. *Upward reappraisals*	Mass, Volume		
		4. *Upward reclassifications*	Mass, Volume		
		5. **Extraction**	Mass, Volume		
		6. *Catastrophic losses*	Mass, Volume		
		7. *Downward reappraisals*	Mass, Volume		
		8. *Downward reclassifications*	Mass, Volume		
		9. Stocks of potentially commercially recoverable resources	Mass, Volume		
		10. *Stocks of non-commercial and other known resources*	Mass, Volume		
Topic 2.2.2: Production, trade and consumption of energy	a.	Production of energy		▪ By non-renewable resource (e.g., petroleum, natural gas, coal, nuclear fuels, non-sustainable firewood, waste, other non-renewables) ▪ By renewable resource (e.g., solar, hydroelectric, geothermal, tidal action, wave action, marine, wind, biomass) ▪ National ▪ Sub-national	▪ UNSD: IRES ▪ IEA Energy Statistics Manual ▪ Joint Wood Energy Enquiry (UNECE-FAO Forestry and Timber Section)
		1. **Total production**	Energy unit, Mass, Volume		
		2. **Production from non-renewable sources**	Energy unit, Mass, Volume		
		3. **Production from renewable sources**	Energy unit, Mass, Volume		
		4. **Primary energy production**	Energy unit, Mass, Volume	▪ By primary energy resource (e.g., petroleum, natural gas, coal, hydroenergy, geothermal, nuclearfuels, cane products, other primary) ▪ By secondary energy product(e.g., electricity, liquefied petroleum gas, gasoline/alcohol, kerosene, diesel oil, fuel oil, coke, charcoal, gases, other secondary) ▪ National ▪ Sub-national	
		5. Imports of energy	Energy unit, Mass, Volume		
		6. Exports of energy	Energy unit, Mass, Volume		
		7. **Secondary energy production**	Energy unit, Mass, Volume		
	b.	**Total energy supply**	Energy unit, Mass, Volume	▪ By energy product	
	c.	**Final consumption of energy**	Energy unit, Mass, Volume	▪ By households ▪ By ISIC economic activity ▪ By tourists ▪ National ▪ Sub-national	

Component 2: Environmental Resources and their Use

Sub-component 2.3: Land

Topic	Statistics and Related Information (**Bold Text - Core Set/Tier 1**; Regular Text - Tier 2; *Italicized Text - Tier 3*)		Category of Measurement	Potential Aggregations and Scales	Methodological Guidance
Topic 2.3.1: Land use	a.	**Area under land use categories**	Area	▪ By type of land use (e.g., agriculture; forestry; land used for aquaculture; use of built-up and related areas; land used for maintenance and restoration of environmental functions; other uses of land not elsewhere classified; land not in use; inland waters used for aquaculture or holding facilities; inland waters used for maintenance and restoration of environmental functions; other uses of inland waters not elsewhere classified; inland water not in use; coastal waters (including area of coral reefs and mangroves); Exclusive Economic Zone (EEZ)) ▪ National ▪ Sub-national	▪ FAO ▪ UNECE Standard Classification of Land Use (1989) ▪ SEEA Central Framework (2012) Annex 1
	b.	Other aspects of land use		▪ National ▪ Sub-national	
		1. *Area of land under organic farming*	Area		▪ FAO Inter-departmental Working Group on Organic Agriculture
		2. Area of land under irrigation	Area		
		3. Area of land under sustainable forest management	Area		▪ Forest Stewardship Council
		4. *Area of land under agroforestry*	Area		
	c.	Land ownership	Area	▪ By ownership category ▪ National ▪ Sub-national	▪ FAO
Topic 2.3.2: Use of forest land	a.	Use of forest land		▪ By forest type ▪ National ▪ Sub-national ▪ By dominant tree species	▪ FAO FRA ▪ UNFF MAR ▪ UNSD: MDG Indicator 7.1 Metadata ▪ Montreal Process (Working Group on Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests) ▪ State of Europe's Forests (Forest Europe/ UNECE-FAO Forestry and Timber Section)
		1. **Area deforested**	Area		
		2. Area reforested	Area		
		3. Area afforested	Area		
		4. *Natural growth*	Area		
	b.	Forest area by primary designated function	Area	▪ Production ▪ Protection of soil and water ▪ Conservation of biodiversity ▪ Social services ▪ Multiple use ▪ Other	▪ FAO FRA

Component 2: Environmental Resources and their Use				
Sub-component 2.4: Soil Resources				
Topic	**Statistics and Related Information** (**Bold Text - Core Set/Tier 1**; Regular Text - Tier 2; *Italicized Text - Tier 3*)	**Category of Measurement**	**Potential Aggregations and Scales**	**Methodological Guidance**
Topic 2.4.1: Soil resources	Further research is needed to develop the necessary statistics in this topic.			

Component 2: Environmental Resources and their Use					
Sub-component 2.5: Biological Resources					
Topic	**Statistics and Related Information** (**Bold Text - Core Set/Tier 1**; Regular Text - Tier 2; *Italicized Text - Tier 3*)		**Category of Measurement**	**Potential Aggregations and Scales**	**Methodological Guidance**
Topic 2.5.1: Timber resources	a.	Timber resources		▪ By type (e.g., natural or planted) ▪ National ▪ Sub-national	▪ SEEA Central Framework (2012) ▪ FAO FRA ▪ State of Europe's Forests (Forest Europe/UNECE-FAO Forestry and Timber Section) ▪ UNECE/FAO Joint Working Party on Forest Statistics, Economics and Management ▪ ISIC Rev. 4, Section A, Division 02 ▪ FAOSTAT database
		1. **Stocks of timber resources**	Volume		
		2. Natural growth	Volume		
		3. Fellings	Volume		
		4. Removals	Volume		
		5. *Felling residues*	Volume		
		6. *Natural losses*	Volume		
		7. *Catastrophic losses*	Volume		
		8. *Reclassifications*	Volume		
	b.	Amount used of:		▪ National ▪ Sub-national	
		1. Fertilizers (also in 3.4.1.a)	Area, Mass, Volume		
		2. Pesticides(also in 3.4.1.b)	Area, Mass, Volume		
	c.	Forest production	Volume	▪ By type of product (e.g., timber, industrial roundwood, fuelwood, pulp, chips) ▪ National ▪ Sub-national	▪ Central Product Classification (CPC) ▪ Joint Forest Sector Questionnaire (UNECE/FAO/Eurostat International Tropical Timber Organization [ITTO]) ▪ FAO/ITTO/ UNECE/Eurostat Inter-secretariat Working Group on Forest Sector Statistics ▪ UNECE Timber Committee ▪ UNECE/FAO Joint Working Party on Forest Statistics, Economics and Management ▪ ISIC Rev. 4, Section A, Division 02 ▪ FAOSTAT database
	d.	Fuelwood production	Volume	▪ National	▪ FAO/ITTO/ UNECE/ Eurostat Inter-secretariat Working Group on Forest Sector Statistics ▪ State of Europe's Forests (Forest Europe/ UNECE-FAO Forestry and Timber Section) ▪ HS 2012, Sections IX and X ▪ FAOSTAT database
	e.	Imports of forest products	Currency, Mass, Volume	▪ By type of product	
	f.	Exports of forest products	Currency, Mass, Volume		

Topic 2.5.2: Aquatic resources	a.	**Fish capture production**	Mass	▪ By relevant freshwater and marine species ▪ National ▪ Sub-national	▪ FAO International Standard Statistical Classification of Aquatic Animals and Plants (ISSCAAP) ▪ ISIC Rev. 4, Section A, Division 03 ▪ The United Nations Convention on the Law of the Sea (UNCLOS) ▪ UNSD: MDG Indicator 7.4 Metadata ▪ HS 2012, Section I, Chapter 03 ▪ SEEA Central Framework (2012)
	b.	**Aquaculture production**	Mass		
	c.	Imports of fish and fishery products	Currency, Mass, Volume	▪ By relevant freshwater and marine species ▪ By type of product ▪ By species	
	d.	Exports of fish and fishery products	Currency, Mass, Volume		
	e.	Amount used of:		▪ By type of water (i.e., marine or freshwater) ▪ National ▪ Sub-national	
		1. *Pellets* (also in 3.4.1.c)	Mass, Volume		
		2. *Hormones* (also in 3.4.1.d)	Mass, Volume		
		3. *Colourants* (also in 3.4.1.e)	Mass, Volume		
		4. *Antibiotics* (also in 3.4.1.f)	Mass, Volume		
		5. *Fungicides*	Mass, Volume		
	f.	Aquaticresources		▪ By relevant freshwater and marine species ▪ By type (e.g., natural or cultivated) ▪ National ▪ Sub-national	
		1. Stocks of aquaticresources	Mass		
		2. *Additions to aquaticresources*	Mass		
		3. *Reductions in aquatic resources*	Mass		
Topic 2.5.3: Crops	a.	Main annual and perennial crops		▪ By crop ▪ By size ▪ National ▪ Sub-national	▪ FAO Indicative Crop Classification (for 2010 round of agricultural censuses) ▪ FAO/WHO Specifications for Pesticides (2010) ▪ FAO Specifications for Commonly Used Fertilizers (2009) ▪ ISIC Rev. 4, Section A, Division 1 ▪ FAOSTAT database ▪ HS 2012, Section II
		1. **Area planted**	Area		
		2. **Area harvested**	Area		
		3. **Amount produced**	Mass		
		4. *Amount of organic production*	Mass		
		5. *Amount of genetically modified crops produced*	Mass		
	b.	Amount used of:		▪ By type of fertilizer ▪ By type of pesticide ▪ By crop ▪ National ▪ Sub-national	
		1. **Natural fertilizers** (e.g., manure, compost, lime) (also in 3.4.1.a)	Area, Mass, Volume		
		2. **Chemical fertilizers** (also in 3.4.1.a)	Area, Mass, Volume		
		3. **Pesticides** (also in 3.4.1.b)	Area, Mass, Volume		
		4. Genetically modified seeds	Mass	▪ By crop ▪ National ▪ Sub-national	
	c.	Monoculture/resource-intensive farming systems		▪ By crop ▪ By size ▪ National ▪ Sub-national	
		1. Area being used for production	Area		
		2. Amount produced	Mass		
		3. *Amount of genetically modified crops produced*	Mass		
	d.	Imports of crops	Currency, Mass		
	e.	Exports of crops	Currency, Mass		

Topic 2.5.4: Livestock	a.	Livestock		▪ By type of animal ▪ National ▪ Sub-national	▪ FAOSTAT database ▪ ISIC Rev. 4, Section A, Division 01 ▪ HS 2012, Section I, Chapter 01
		1. **Number of live animals**	Number		
		2. Number of animals slaughtered	Number		
	b.	Amount used of:			
		1. *Antibiotics* (also in 3.4.1.f)	Mass		
		2. *Hormones* (also in 3.4.1.d)	Mass		
	c.	Imports of livestock	Currency, Number		
	d.	Exports of livestock	Currency, Number		
Topic 2.5.5: Other non-cultivated biological resources	a.	Permits for regulated hunting and trapping of wild animals		▪ By type of animal ▪ By species	▪ ISIC Rev. 4, Section A, Class 0170
		1. Number of permits issued per year	Number		
		2. Number of animal kills allowed by permits	Number		
	b.	Imports of endangered species	Currency, Number		▪ Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
	c.	Exports of endangered species	Currency, Number		
	d.	*Reported wild animals killed or trapped for food or sale*	Number		▪ ISIC Rev. 4, Section A, Class 0170
	e.	*Trade in wildlife and captive-bred species*	Description, Mass, Number	▪ By status category ▪ National ▪ Sub-national	▪ CITES
	f.	*Non-wood forest products and other plants*	Mass, Volume	▪ By type of product ▪ National ▪ Sub-national	▪ ISIC Rev. 4, Section A, Class 0230

Component 2: Environmental Resources and their Use					
Sub-component 2.6: Water Resources					
Topic	**Statistics and Related Information** (**Bold Text - Core Set/Tier 1**; Regular Text - Tier 2; *Italicized Text - Tier 3*)		**Category of Measurement**	**Potential Aggregations and Scales**	**Methodological Guidance**
Topic 2.6.1: Water resources	a.	Inflow of water to inland water resources		▪ National ▪ Sub-national ▪ By territory of origin and destination	▪ UNSD: IRWS ▪ UNECE Standard Statistical Classification of Water Use (1989) ▪ UNSD: MDG Indicator 7.5 Metadata ▪ FAO AQUASTAT ▪ SEEA Central Framework (2012) asset accounts ▪ SEEA Water ▪ UNSD: Environment Statistics Section-Water Questionnaire
		1. **Precipitation** (also in 1.1.1.b)	Volume		
		2. **Inflow from neighbouring territories**	Volume		
		3. *Inflow subject to treaties*	Volume		
	b.	Outflow of water from inland water resources			
		1. **Evapotranspiration**	Volume		
		2. Outflow to neighbouring territories	Volume		
		3. Outflow subject to treaties	Volume		
		4. Outflow to the sea	Volume		
	c.	Inland water stocks		▪ National ▪ Sub-national	
		1. Surface water stocks in artificial reservoirs	Volume		
		2. Surface water stocks in lakes	Volume		
		3. *Surface water stocks in rivers and streams*	Volume		
		4. *Surface water stocks in wetlands*	Volume		
		5. *Surface water stocks in snow, ice and glaciers*	Volume		
		6. Groundwater stocks	Volume		
Topic 2.6.2: Abstraction, use and returns of water	a.	**Total water abstraction**	Volume	▪ By type of source ▪ National ▪ Sub-national	▪ UNSD: IRWS ▪ UNECE Standard Statistical Classification of Water Use (1989) ▪ FAO AQUASTAT ▪ SEEA Central Framework (2012) ▪ SEEA Water ▪ UNSD: Environment Statistics Section-Water Questionnaire
	b.	**Water abstraction from surface water**	Volume		
	c.	Water abstraction from groundwater			
		1. **From renewable groundwater resources**	Volume		
		2. **From non-renewable groundwater resources**	Volume		
	d.	Water abstracted for own use	Volume	▪ By ISIC economic activity ▪ National ▪ Sub-national	
	e.	Water abstracted for distribution	Volume		
	f.	Desalinated water	Volume	▪ National ▪ Sub-national	
	g.	Reused water	Volume		
	h.	Water use	Volume	▪ By ISIC economic activity ▪ By tourists ▪ National ▪ Sub-national	
	i.	*Rainwater collection*	Volume	▪ National ▪ Sub-national	
	j.	*Water abstraction from the sea*	Volume		
	k.	Losses during transport	Volume	▪ By ISIC economic activity ▪ National ▪ Sub-national	
	l.	*Exports of water*	Volume	▪ National ▪ Sub-national	
	m.	*Imports of water*	Volume		
	n.	*Returns of water*	Volume	▪ By ISIC economic activity ▪ By destination (e.g., inland water, land, sea, ocean) ▪ National ▪ Sub-national	

Component 3: Residuals

Sub-component 3.1: Emissions to Air

Topic		Statistics and Related Information (**Bold Text - Core Set/Tier 1**; Regular Text - Tier 2; *Italicized Text - Tier 3*)	Category of Measurement	Potential Aggregations and Scales	Methodological Guidance
Topic 3.1.1: Emissions of greenhouse gases	a.	Total emissions of direct greenhouse gases (GHGs), by gas:		▪ By ISIC economic activity ▪ By tourists ▪ National ▪ Sub-national ▪ By IPCC source categories	▪ IPCC Emission Factor Database ▪ UN Framework Convention on Climate Change (UNFCCC) Reporting Guidelines ▪ UNECE Standard Statistical Classification of Ambient Air Quality (1990) ▪ UNSD: MDG Indicator 7.2 Metadata ▪ WHO
		1. **Carbon dioxide (CO_2)**	Mass		
		2. **Methane (CH_4)**	Mass		
		3. **Nitrous oxide (N_2O)**	Mass		
		4. Perfluorocarbons (PFCs)	Mass		
		5. Hydrofluorocarbons (HFCs)	Mass		
		6. Sulphur hexafluoride (SF_6)	Mass		
	b.	Total emissions of indirect greenhouse gases (GHGs), by gas:			
		1. **Sulphur dioxide (SO_2)**	Mass		
		2. **Nitrogen oxides (NO_x)**	Mass		
		3. Non-methane volatile organic compounds (NM-VOCs)	Mass		
		4. Other	Mass		
Topic 3.1.2: Consumption of ozone depleting substances	a.	Consumption of ozone depleting substances (ODSs), by substance:			▪ UNEP Ozone Secretariat ▪ IPCC Emission Factor Database ▪ UNECE Standard Statistical Classification of Ambient Air Quality (1990) ▪ UNSD: MDG Indicator 7.3 Metadata ▪ WHO
		1. Chlorofluorocarbons (CFCs)	Mass		
		2. Hydrochlorofluorocarbons (HCFCs)	Mass		
		3. Halons	Mass		
		4. Methyl chloroform	Mass		
		5. Carbon tetrachloride	Mass		
		6. Methyl bromide	Mass		
		7. Other	Mass		
Topic 3.1.3: Emissions of other substances	a.	Emissions of other substances:			▪ UNECE Standard Statistical Classification of Ambient Air Quality (1990) ▪ European Monitoring and Evaluation Programme (EMEP) under the Convention on Long-range Transboundary Air Pollution
		1. Particulate matter (PM)	Mass		
		2. Heavy metals	Mass		
		3. *Other*	Mass		

Component 3: Residuals					
Sub-component 3.2: Generation and Management of Wastewater					
Topic	**Statistics and Related Information** (**Bold Text - Core Set/Tier 1**; Regular Text - Tier 2; *Italicized Text - Tier 3*)		**Category of Measurement**	**Potential Aggregations and Scales**	**Methodological Guidance**
Topic 3.2.1: Generation and pollutant content of wastewater	a.	**Volume of wastewater generated**	Volume	▪ By ISIC economic activity ▪ By tourists ▪ National ▪ Sub-national	▪ UNSD: IRWS ▪ ISIC Rev. 4, Section E, Divisions 35-37 ▪ SEEA Water ▪ UNSD: Environment Statistics Section-Water Questionnaire
	b.	Pollutant content of wastewater	Mass	▪ By pollutant or pollution parameter (e.g., biochemical oxygen demand (BOD), chemical oxygen demand (COD), nitrogen, phosphorous,- total suspended solids (TSS)) ▪ By ISIC economic activity ▪ National ▪ Sub-national	
Topic 3.2.2: Collection and treatment of wastewater	a.	**Volume of wastewater collected**	Volume	▪ National ▪ Sub-national	▪ UNSD: IRWS ▪ ISIC Rev. 4, Section E, Division 35 and 36 ▪ UNSD: Environment Statistics Section-Water Questionnaire
	b.	**Volume of wastewater treated**	Volume	▪ By treatment type (e.g., primary, secondary, tertiary) ▪ National ▪ Sub-national	
	c.	Total urban wastewater treatment capacity			
		1. Number of plants	Number		
		2. Capacity of plants	Volume		
	d.	Total industrial wastewater treatment capacity			
		1. Number of plants	Number		
		2. Capacity of plants	Volume		
Topic 3.2.3: Discharge of wastewater to the environment	a.	Wastewater discharge		▪ By treatment type (e.g., primary, secondary, tertiary) ▪ By recipient (e.g., surface water, groundwater, wetland, sea, land) ▪ By ISIC economic activity ▪ National ▪ Sub-national ▪ By source (point/non-point source)	
		1. **Total volume of wastewater discharged to the environment after treatment**	Volume		
		2. **Total volume of wastewater discharged to the environment without treatment**	Volume		
	b.	Pollutant content of discharged wastewater	Mass	▪ By pollutant or pollution parameter (e.g., BOD, COD, nitrogen, phosphorous) ▪ National ▪ Sub-national ▪ Net emission by ISIC economic activity ▪ By source (point/non-point source)	

Component 3: Residuals					
Sub-component 3.3: Generation and Management of Waste					
Topic	**Statistics and Related Information** (**Bold Text - Core Set/Tier 1**; Regular Text - Tier 2; *Italicized Text - Tier 3*)		**Category of Measurement**	**Potential Aggregations and Scales**	**Methodological Guidance**
Topic 3.3.1: Generation of waste	a.	**Amount of waste generated by source**	Mass	▪ By ISIC economic activity ▪ By households ▪ By tourists ▪ National ▪ Sub-national	▪ European Commission: European List of Waste, pursuant to European Waste Framework Directive ▪ Eurostat: Environmental Data Centre on Waste ▪ Eurostat: European Waste Classification for Statistics (EWC-Stat), version 4 (Waste categories) ▪ Basel Convention: Waste categories and hazardous characteristics ▪ Eurostat: Manual on Waste Statistics ▪ Eurostat: Guidance on classification of waste according to EWC-Stat categories ▪ SEEA Central Framework (2012) ▪ UNSD: Environment Statistics Section-Waste Questionnaire
	b.	Amount of waste generated by waste category	Mass	▪ By waste category (e.g., chemical waste, municipal waste, food waste, combustion waste) ▪ National ▪ Sub-national	
	c.	**Amount of hazardous waste generated**	Mass	▪ By ISIC economic activity ▪ National ▪ Sub-national	

Topic 3.3.2: Management of waste	a.	Municipal waste		▪ By type of treatment and disposal (e.g., reuse, recycling, composting, incineration, landfilling, other) ▪ By type of waste, when possible ▪ National ▪ Sub-national	▪ Eurostat: Environmental Data Centre on Waste ▪ Eurostat metadata: Organisation for Economic Co-operation and Development (OECD)/ Eurostat definition of municipal waste ▪ UNSD: Environment Statistics Section-Waste Questionnaire ▪ Basel Convention: Waste categories and hazardous characteristics ▪ Eurostat: EWC-Stat, version 4 (Waste categories) ▪ European Commission: European Waste Framework Directive (Waste treatment operations) ▪ Eurostat: Manual on Waste Statistics ▪ Eurostat: Guidance on classification of waste according to EWC-Stat categories ▪ Rotterdam Convention
		1. **Total municipal waste collected**	Mass		
		2. **Amount of municipal waste treated by type of treatment and disposal**	Mass		
		3. **Number of municipal waste treatment and disposal facilities**	Number		
		4. Capacity of municipal waste treatment and disposal facilities	Volume		
	b.	Hazardous waste			
		1. **Total hazardous waste collected**	Mass		
		2. **Amount of hazardous waste treated by type of treatment and disposal**	Mass		
		3. **Number of hazardous waste treatment and disposal facilities**	Number		
		4. Capacity of hazardous waste treatment and disposal facilities	Volume		
	c.	Other/industrial waste			
		1. Total other/industrial waste collected	Mass		
		2. Amount of other/industrial waste treated by type of treatment and disposal	Mass		
		3. Number of other/industrial treatment and disposal facilities	Number		
		4. Capacity of other/industrial waste treatment and disposal facilities	Volume		
	d.	**Amount of recycled waste**	Mass	▪ By specific waste streams (e.g., e-waste, packaging waste, end of life vehicles) ▪ By waste category ▪ National ▪ Sub-national	
	e.	Imports of waste	Mass	▪ By waste category (e.g., chemical waste, municipal waste, combustion waste)	
	f.	Exports of waste	Mass		
	g.	Imports of hazardous waste	Mass		
	h.	Exports of hazardous waste	Mass		

Component 3: Residuals					
Sub-component 3.4: Release of Chemical Substances					
Topic	**Statistics and Related Information** (**Bold Text - Core Set/Tier 1**; Regular Text - Tier 2; *Italicized Text - Tier 3*)		**Category of Measurement**	**Potential Aggregations and Scales**	**Methodological Guidance**
Topic 3.4.1: Release of chemical substances	a.	Total amount of fertilizers used		▪ National ▪ Sub-national ▪ By ISIC economic activity (forestry, agriculture) ▪ By type of fertilizer ▪ By type of pesticide	▪ FAOSTAT database ▪ Stockholm Convention
		1. Natural fertilizers(also in 2.5.1.b and 2.5.3.b)	Area, Mass, Volume		
		2. Chemical fertilizers(also in 2.5.1.b and 2.5.3.b)	Area, Mass, Volume		
	b.	Total amount of pesticides used (also in 2.5.1.b and 2.5.3.b)	Area, Mass, Volume		
	c.	*Total amount of pellets used* (also in 2.5.2.e)	Mass, Volume	▪ National ▪ Sub-national ▪ By ISIC economic activity (aquaculture)	▪ Stockholm Convention
	d.	*Total amount of hormones used* (also in 2.5.2.e and 2.5.4.b)	Mass, Volume	▪ National ▪ Sub-national ▪ By ISIC economic activity (aquaculture, livestock production)	
	e.	*Total amount of colourants used* (also in 2.5.2.e)	Mass, Volume	▪ National ▪ Sub-national ▪ By ISIC economic activity (aquaculture)	
	f.	*Total amount of antibiotics used* (also in 2.5.2.e and 2.5.4.b)	Mass, Volume	▪ National ▪ Sub-national ▪ By ISIC economic activity (aquaculture, livestock production)	

Component 4: Extreme Events and Disasters					
Sub-component 4.1: Natural Extreme Events and Disasters					
Topic	**Statistics and Related Information** (**Bold Text - Core Set/Tier 1**; Regular Text - Tier 2; *Italicized Text - Tier 3*)		**Category of Measurement**	**Potential Aggregations and Scales**	**Methodological Guidance**
Topic 4.1.1: Occurrence of natural extreme events and disasters	a.	Occurrence of natural extreme events and disasters		▪ By event ▪ National ▪ Sub-national	▪ Centre for Research on the Epidemiology of Disasters Emergency Events Database (CRED EMDAT) ▪ UN Economic Commission for Latin America and the Caribbean (UNECLAC) Handbook for Estimating the Socio-economic and Environmental Effects of Disasters ▪ The United Nations Office for Disaster Risk Reduction(UNISDR)
		1. **Type of natural extreme event and disaster** (geophysical, meteorological, hydrological, climatological, biological)	Description		
		2. **Location**	Location		
		3. Magnitude (where applicable)	Intensity		
		4. Date of occurrence	Date		
		5. Duration	Time period		
Topic 4.1.2: Impact of natural extreme events and disasters	a.	People affected by natural extreme events and disasters			
		1. **Number of people killed**	Number		
		2. Number of people injured	Number		
		3. Number of people homeless	Number		
		4. Number of people affected	Number		
	b.	**Economic losses due to natural extreme events and disasters** (e.g., damage to buildings, transportation networks, loss of revenue for businesses, utility disruption)	Currency	▪ By event ▪ By ISIC economic activity ▪ National ▪ Sub-national ▪ By direct and indirect damage	
	c.	Physical losses/damages due to natural extreme events and disasters (e.g., area and amount of crops, livestock, aquaculture, biomass)	Area, Description, Number		
	d.	Effects of natural extreme events and disasters on integrity of ecosystems		▪ By event ▪ By ecosystem ▪ National ▪ Sub-national	
		1. *Area affected by natural disasters*	Area		
		2. *Loss of vegetation cover*	Area		
		3. *Area of watershed affected*	Area		
		4. *Other*	Description		
	e.	*External assistance received*	Currency	▪ By event ▪ National	

Component 4: Extreme Events and Disasters					
Sub-component 4.2: Technological Disasters					
Topic	**Statistics and Related Information** (**Bold Text - Core Set/Tier 1;** Regular Text - Tier 2; *Italicized Text - Tier 3*)		**Category of Measurement**	**Potential Aggregations and Scales**	**Methodological Guidance**
Topic 4.2.1: Occurrence of technological disasters	a.	Occurrence of technological disasters		▪ By event ▪ By ISIC economic activity ▪ National ▪ Sub-national	▪ CRED EMDAT ▪ UNECLAC: Handbook for Estimating the Socio-economic and Environmental Effects of Disasters
		1. Type of technological disaster (industrial, transportation, miscellaneous)	Description		
		2. *Location*	Location		
		3. *Date of occurrence*	Date		
		4. *Duration*	Time period		
Topic 4.2.2: Impact of technological disasters	a.	People affected by technological disasters		▪ By event ▪ National ▪ Sub-national	
		1. Number of people killed	Number		
		2. *Number of people injured*	Number		
		3. *Number of people homeless*	Number		
		4. *Number of people affected*	Number		
	b.	Economic losses due to technological disasters (e.g., damage to buildings, transportation networks, loss of revenue for businesses, utility disruption)	Currency	▪ By event ▪ By ISIC economic activity ▪ National ▪ Sub-national ▪ By direct and indirect damage	
	c.	Physical losses/damages due to technological disasters (e.g., area and amount of crops, livestock, aquaculture, biomass)	Area, Description, Number		
	d.	Effects of technological disasters on integrity of ecosystems		▪ By event ▪ National ▪ Sub-national	
		1. *Area affected by technological disasters*	Area		
		2. *Loss of vegetation cover*	Area		
		3. *Area of watershed affected*	Area		
		4. *Other* (e.g., for oil spills: volume of oil released into the environment, impact on ecosystem)	Description		
	e.	*External assistance received*	Currency	▪ By event ▪ National	

Component 5: Human Settlements and Environmental Health					
Sub-component 5.1: Human Settlements					
Topic	**Statistics and Related Information** (**Bold Text - Core Set/Tier 1**; Regular Text - Tier 2; *Italicized Text - Tier 3*)		**Category of Measurement**	**Potential Aggregations and Scales**	**Methodological Guidance**
Topic 5.1.1: Urban and rural population	a.	Population living in urban areas	Number	▪ Urban ▪ Rural	▪ UN Population Division ▪ UN PopulationFund (UNFPA)
	b.	Population living in rural areas	Number		
	c.	Total urban area	Area		
	d.	Total rural area	Area		
	e.	Population living in coastal areas	Number		

Topic 5.1.2: Access to selected basic services	a.	**Population using an improved drinking water source**	Number	▪ Urban ▪ Rural ▪ National ▪ Sub-national	▪ UNSD: MDG Indicator 7.8 and 7.9 Metadata ▪ UN-Water ▪ UNSD: Environment Statistics Section- Water and Waste Questionnaire ▪ WHO/(United Nations Children's Fund (UNICEF) Joint Monitoring Programme for Water Supply and Sanitation
	b.	**Population using an improved sanitation facility**	Number		
	c.	**Population served by municipal waste collection**	Number		
	d.	*Population connected to wastewater collecting system*	Number	▪ By treatment type (e.g., primary, secondary, tertiary) ▪ National ▪ Sub-national	▪ UNSD: IRWS ▪ ISIC Rev. 4, Section E, Division 35-37 ▪ UNSD: Environment Statistics Section-Water Questionnaire
	e.	**Population connected to wastewater treatment**	Number		
	f.	**Population supplied by water supply industry**	Number	▪ National ▪ Sub-national	
	g.	Price of water	Currency	▪ By source (e.g., piped, vendor)	
	h.	Population with access to electricity	Number		
	i.	Price of electricity	Currency		
Topic 5.1.3: Housing conditions	a.	Urban population living in slums	Number		▪ UN Habitat ▪ UNSD: MDG Indicator 7.10 Metadata
	b.	Area of slums	Area		
	c.	Population living in hazard-prone areas	Number	▪ Urban ▪ Rural ▪ National ▪ Sub-national	
	d.	Hazard-prone areas	Area		
	e.	*Population living in informal settlements*	Number		
	f.	*Homeless population*	Number		
	g.	*Number of dwellings with adequacy of building materials defined by national or local standards*	Number		
Topic 5.1.4: Exposure to ambient pollution	a.	Population exposed to air pollution in main cities	Number	▪ By pollutant (e.g., SO_2, NOx, O_3)	▪ WHO
	b.	*Population exposed to noise pollution in main cities*	Number		
Topic 5.1.5: Environmental concerns specific to urban settlements	a.	Extent of urban sprawl	Area		▪ UN Habitat ▪ WHO ▪ UNEP Urban Environment Unit
	b.	Available green spaces	Area		
	c.	**Number of private and public vehicles**	Number	▪ By type of engine or type of fuel	
	d.	Population using public modes of transportation	Number		
	e.	*Population using hybrid and electric modes of transportation*	Number		
	f.	Extent of roadways	Length		
	g.	*Existence of urban planning and zoning regulations and instruments in main cities*	Description		
	h.	*Effectiveness of urban planning and zoning regulations and instruments in main cities*	Description		

Component 5: Human Settlements and Environmental Health					
Sub-component 5.2: Environmental Health					
Topic	**Statistics and Related Information** (**Bold Text - Core Set/Tier 1**; Regular Text - Tier 2; *Italicized Text - Tier 3*)		**Category of Measurement**	**Potential Aggregations and Scales**	**Methodological Guidance**
Topic 5.2.1: Airborne diseases and conditions	a.	Airborne diseases and conditions		▪ By disease or condition ▪ National ▪ Sub-national ▪ Urban ▪ Rural ▪ By gender ▪ By age group ▪ By time period	▪ WHO
		1. Incidence	Number		
		2. Prevalence	Number		
		3. Mortality	Number		
		4. *Loss of work days*	Number		
		5. *Estimates of economic cost in monetary terms*	Currency		
Topic 5.2.2: Water-related diseases and conditions	a.	Water-related diseases and conditions			
		1. **Incidence**	Number		
		2. **Prevalence**	Number		
		3. **Mortality**	Number		
		4. *Loss of work days*	Number		
		5. *Estimates of economic cost in monetary terms*	Currency		
Topic 5.2.3: Vector-borne diseases	a.	Vector-borne diseases			
		1. **Incidence**	Number		
		2. **Prevalence**	Number		
		3. **Mortality**	Number		
		4. *Loss of work days*	Number		
		5. *Estimates of economic cost in monetary terms*	Currency		
Topic 5.2.4: Health problems associated with excessive UV radiation exposure	a.	Problems associated with excessive UV radiation exposure			
		1. *Incidence*	Number		
		2. *Prevalence*	Number		
		3. *Loss of work days*	Number		
		4.*Estimates of economic cost in monetary terms*	Currency		
Topic 5.2.5: Toxic substance- and nuclear radiation-related diseases and conditions	a.	Toxic substance-and nuclear radiation-related diseases and conditions		▪ By category of toxic substance ▪ By disease or condition ▪ National ▪ Sub-national ▪ Urban ▪ Rural ▪ By gender ▪ By age group	▪ WHO
		1. Incidence	Number		
		2. Prevalence	Number		
		3. *Loss of work days*	Number		
		4. *Estimates of economic cost in monetary terms*	Currency		

Component 6: Environmental Protection, Management and Engagement					
Sub-component 6.1: Environmental Protection and Resource Management Expenditure					
Topic	**Statistics and Related Information** (**Bold Text - Core Set/Tier 1**; Regular Text - Tier 2; *Italicized Text - Tier 3*)		**Category of Measurement**	**Potential Aggregations and Scales**	**Methodological Guidance**
Topic 6.1.1: Government environmental protection and resource management expenditure	a.	Government environmental protection and resource management expenditure		▪ By environmental activity ▪ By type of expenditure: current, investment ▪ By ministry ▪ National ▪ Sub-national ▪ By funding	▪ Eurostat-SERIEE EnvironmentalProtection Expenditure Accounts Compilation Guide (2002) ▪ Eurostat-Environmental expenditure Statistics. General Government and Specialised Producers Data Collection Handbook (2007) ▪ Classification of EnvironmentalActivities (CEA) ▪ SEEA Central Framework (2012)Annex 1
		1. **Annual government environmental protection expenditure**	Currency		
		2. Annual government resource management expenditure	Currency		
Topic 6.1.2: Corporate, non-profit institution and household environmental protection and resource management expenditure	a.	Private sector environmental protection and resource management expenditure		▪ By environmental activity ▪ By type of expenditure: current, investment ▪ By ISIC economicactivity ▪ National ▪ Sub-national	▪ Eurostat-Environmental expenditure statistics. Industry data collection handbook (2005) ▪ Eurostat-Environmental expenditure Statistics. General Government and Specialised Producers Data Collection Handbook (2007)
		1. Annual corporate environmental protection expenditure	Currency		
		2. *Annual corporate resource management expenditure*	Currency		
		3. *Annual non-profit institution environmental protection expenditure*	Currency		
		4. *Annual non-profit institution resource management expenditure*	Currency		
		5. *Annual household environmental protection expenditure*	Currency		
		6. *Annual household resource management expenditure*	Currency		

Component 6: Environmental Protection, Management and Engagement					
Sub-component 6.2: Environmental Governance and Regulation					
Topic	**Statistics and Related Information** (**Bold Text - Core Set/Tier 1**; Regular Text - Tier 2; *Italicized Text - Tier 3*)		**Category of Measurement**	**Potential Aggregations and Scales**	**Methodological Guidance**
Topic 6.2.1: Institutional strength	a.	Government environmental institutions and their resources		▪ National ▪ Sub-national	
		1. Name of main environmental authority and year of establishment	Description		
		2. Annual budget of the main environmental authority	Currency		
		3. Number of staff in the main environmental authority	Number		
		4. List of environmental departments in other authorities and year of establishment	Description		
		5. Annual budget of environmental departments in other authorities	Currency		
		6. Number of staff of environmental departments in other authorities	Number		
	b.	Other environmental institutions and their resources			
		1. Name of institution and year of establishment	Description		
		2. Annual budget of the institution	Currency		
		3. Number of staff in the institution	Number		
Topic 6.2.2: Environmental regulation and instruments	a.	Direct regulation		▪ By media (e.g., water, air, land, soil, oceans) ▪ By ISIC economic activity ▪ National ▪ Sub-national	
		1. **List of regulated pollutants and description** (e.g., by year of adoption and maximum allowable levels)	Description, Number		
		2. Description (e.g., name, year established) of licensing system to ensure compliance with environmental standards for businesses or other new facilities	Description		
		3. Number of applications for licences received and approved per year	Number		
		4. List of quotas for biological resource extraction	Number		
		5. Budget and number of staff dedicated to enforcement of environmental regulations	Currency, Number		
	b.	Economic instruments			
		1. *List and description* (e.g., year of establishment) *of green/environmental taxes*	Description, Currency		
		2. *List and description* (e.g., year of establishment) *of environmentally relevant subsidies*	Description, Currency		
		3. *List of eco-labelling and environmental certification programmes*	Description		
		4. Emission permits traded	Number, Currency		
Topic 6.2.3: Participation in MEAs and environmental conventions	a.	Participation in MEAs and other global environmental conventions			▪ MEA Secretariats
		1. **List and description** (e.g., country's year of participation[(d)]) **of MEAs and other global environmental conventions**	Description, Number		

(d)Participation means that the country or area has become party to the agreements under the treaty or convention, which is achieved through various means depending on the country's circumstances, namely: accession, acceptance, approval, formal confirmation, ratification and succession. Countries or areas that have signed but not become party to the agreements under a given convention or treaty are not considered to be participating.

Component 6: Environmental Protection, Management and Engagement					
Sub-component 6.3: Extreme Event Preparedness and Disaster Management					
Topic	**Statistics and Related Information** (**Bold Text - Core Set/Tier 1**; Regular Text - Tier 2; *Italicized Text - Tier 3*)		**Category of Measurement**	**Potential Aggregations and Scales**	**Methodological Guidance**
Topic 6.3.1: Preparedness for natural extreme events and disasters	a.	National natural extreme event and disaster preparedness and management systems		▪ National ▪ Sub-national	▪ International EmergencyManagement Organization (IEMO) ▪ UNISDR ▪ Hyogo Framework for Action
		1. Existence of national disaster plans/programmes	Description		
		2. Description (e.g., number of staff) of national disaster plans/programmes	Description		
		3. Number and type of shelters in place or able to be deployed	Description, Number		
		4. *Number and type of internationally certified emergency and recovery management specialists*	Description, Number		
		5. *Number of volunteers*	Number		
		6. *Quantity of first aid, emergency supplies and equipment stockpiles*	Number		
		7. *Existence of early warning systems for all major hazards*	Description		
		8. *Expenditure on disaster prevention, preparedness, clean-up and rehabilitation*	Currency		
Topic 6.3.2: Preparedness for technological disasters	a.	National technological disaster preparedness and management systems			
		1. *Existence and description* (e.g., number of staff) *of public disaster management plans/programmes (and private when available)*	Description		
		2. *Expenditure on disaster prevention, preparedness, clean-up and rehabilitation*	Currency		

Component 6: Environmental Protection, Management and Engagement					
Sub-component 6.4: Environmental Information and Awareness					
Topic	**Statistics and Related Information** (**Bold Text - Core Set/Tier 1**; Regular Text - Tier 2; *Italicized Text - Tier 3*)		**Category of Measurement**	**Potential Aggregations and Scales**	**Methodological Guidance**
Topic 6.4.1: Environmental information	a.	Environmental information systems		▪ National ▪ Sub-national	
		1. Existence of publicly accessible environmental information system	Description		
		2. Annual number of visits/users of specific environmental information programmes or environmental information systems	Number		
	b.	Environment statistics			
		1. Description of national environment statistics programmes (e.g., existence, year of establishment, lead agency, human and financial resources)	Description		
		2. *Number and type of environment statistics products and periodicity of updates*	Description, Number		
		3. Existence and number of participant institutions in inter-agency environment statistics platforms or committees	Number		
Topic 6.4.2: Environmental education	a.	Environmental education			
		1. *Allocation of resources by central and local authorities for environmental education*	Currency		
		2. *Number and description of environmental education programmes in schools*	Description, Number		
		3. *Number of students pursuing environment-related higher education* (e.g., science, management, education, engineering)	Number		
Topic 6.4.3: Environmental perception and awareness	a.	Public environmental perception and awareness			
		1. *Knowledge and attitudes about environmental issues or concerns*	Description		
		2. *Knowledge and attitudes about environmental policies*	Description		
Topic 6.4.4: Environmental engagement	a.	Environmental engagement			
		1. Existence of pro-environmental NGOs (number of NGOs and their respective human and financial resources)	Currency, Number		
		2. *Number of pro-environmental activities*	Number		
		3. *Number of pro-environmental programmes*	Number		

ANNEX II
Glossary

Annex: II

Glossary

Abiotic: non- living, e.g. rocks or minerals.

Algae: simple non-vascular plants with unicellular organs of reproduction. Algae are found in fresh and salt water. They range from unicellular forms, usually microscopic, to multi cellular forms up to 30 m in length.

Afforestation: artificial establishment of forests by planting or seeding in an area of non-forest land.

Acidification: increase of hydrogen ions, usually expressed as the pH value of environmental media.

Airborne Disease: disease that is generally transmitted by nasopharyngeal discharges and by respiratory secretions, through coughing and sneezing, though it may also be conveyed through close contact. Respiratory diseases include the common childhood infections, measles, whooping cough, chickenpox, mumps, diphtheria and acute sore throat, as well as diseases of the respiratory tract, influenza and other acute viral infections, the pneumonias, and pulmonary tuberculosis (WHO, 1992).

Air Pollution: the presence of contaminant of pollutant substances in the air that do not disperse properly and that interferes with human health of welfare, or produces other harmful environmental effects.

Air Quality Standards: levels of air pollutants prescribed by regulations that may not be exceeded during a specified time in a defined area.

Air Pollutants: substances in air that could, at high enough concentrations, harm human beings, animals, vegetation or material. Air pollutants may thus include forms of matter of almost any natural or artificial composition capable of being airborne. They may consist of solid particles, liquid droplets or gases, or combinations of these forms. See also hazardous air pollutants.

Alternative Energy: energy sources other than the traditional forest product and commercial energy items. They are: Direct Solar Insulation, Wind, Micro-hydro, Geothermal, Bio-gas plants.

Ambient: surrounding, environmental.

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.

Average Daily Sunshine Hours: average of daily sunshine hours measured over one year.

Acidity: acidity as applied to water is defined as the quantitative capacity of aqueous media to react with hydroxyl ions. The determination of acidity may provide an index of the severity of pollution or may indicate the probable behavior of water in treatment processes.

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.

Alkalinity: the alkalinity of a solution may be defined as the capacity for solutes it contains to react with and neutralize acid. In water the alkalinity is produced by the dissolved carbon dioxide species, bicarbonate and carbonate. There are three types of alkalinity methyl-orange alkalinity, total alkalinity, and phenolphthalein alkalinity.

Ammonia: the term ammonia includes the non-ionized ammonia molecule and ionized ammonium ion species. Ammonia in water is an indicator of possible bacterial, sewage and animal waste pollution. No health related guidance value for drinking water has been set by WHO but concentration above 1.5 mg/l creates odour and taste problems.

Amphibians: class of cold-blooded vertebrates comprising frogs. They live both in water and on land. Most amphibians have to become temporarily aquatic for the purpose of reproduction.

Angiosperm: flowering plants, which produce one or more seeds enclosed in a fruit.

Aquifer: underground geologic formation, or group of formation, containing ground water that can supply wells and springs.

Bacteria: single- celled micro-organisms. Some are useful in pollution control because they break down the organic matter in water and land. Other bacteria may cause disease.

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.

Base Period: the period that provides the weights for an index is described as the base period

Biochemical Oxygen Demand (BOD): the biochemical oxygen demand is the mass of dissolved molecular oxygen, which is needed by micro organisms for the aerobic oxidation of organic substances to CO_2 and water. Generally in water analysis BOD is determined at 20oc with 5 days incubation period. It depends on the amount of organic substances present in water and is useful in expressing stream pollution load. Generally, effluents having BOD value greater than 4 mg/l are not allowed to be discharged into water courses.

Bio-gas: mixture of methane and carbon dioxide in the ratio of 7:3 that is produced by the treatment of animal dung, industrial wastes and crop residues. It is used as an alternative source of energy.

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

Biomass: total living weight (generally in dry weight) of all living organisms in a particular area or habitat. It is sometimes expressed as weight per unit area of land or per unit volume of water.

Bryophytes: non-vascular and non-flowering plants comprising mosses and liverworts, widely distributed on moist soil and rocks.

Carbon Dioxide (CO_2): It is a chemical compound consisting of one atom of carbon and two atoms of oxygen. A colorless, odorless, non-poisonous gas, which results from fossil fuel combustion and burning of materials, and is normally a part of ambient air.

Carbon Dioxide Equivalent : A metric measure used to compare the emissions from various greenhouse gases based upon their global warming potential (GWP). Carbon dioxide equivalents are commonly expressed as "million metric tons of carbon dioxide equivalents (MMTCO2Eq)." The carbon dioxide equivalent for a gas is derived by multiplying the tons of the gas by the associated GWP.

MMTCO2Eq = (million metric tons of a gas) * (GWP of the gas)

Carbon Monoxide (CO): It is a chemical compound consisting of one atom of carbon and one atom of oxygen. It is a colorless and odorless gas formed whenever carbon or substances containing carbon are burned with an insufficient air supply (incomplete fuel combustion). It is poisonous to all warm-blooded animals and to many other forms of life. Automobile - exhaust gases contain harmful quantities of carbon monoxide.

Carbon Sequestration: Terrestrial, or biologic, carbon sequestration is the process by which trees and plants absorb carbon dioxide, release the oxygen and store the carbon. Geologic sequestration is one step in the process of carbon capture and sequestration (CCS) and involves injecting carbon dioxide deep underground where it stays permanently.

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

Chemical Oxygen Demand (COD): chemical oxygen demand (COD) is used as a measure of the oxygen equivalent of the organic matter content of a sample that is susceptible to oxidation by a strong chemical oxidant. It is a measure of the total amount of oxygen required for oxidation of waste to CO_2 and water and is used to determine pollution or oxidizable material loads quickly.

Chloro-fluorocarbons (CFCs): inert, non-toxic and easily liquefied chemicals used in refrigeration, air-conditioning, packaging and insulation or as solvents and aerosol propellants. Because CFCs are not destroyed in the lower atmosphere, they drift into the upper atmosphere where their chlorine components destroy ozone. They are also among the greenhouse gases that may affect climate change. See also aerosol propellant.

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 (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.

Climate change mitigation : Efforts to reduce or prevent greenhouse gas emissions and may involve using new technologies, incorporating and increasing renewable energies, making older equipment more energy efficient and changing management practices or consumer behavior. Protecting natural carbon sinks like forests and oceans, or creating new sinks through silviculture or green agriculture, are also elements of mitigation.

Coliform: coli form organisms are defined as Gram-negative, rod-shaped, non- sporing bacteria capable of growing in the presence of bile salts or other surface - active agents and of fermenting lactose within 48 hours at 35-37^{o}C. This group of bacteria includes organisms originating from intestinal tract of warm-blooded animals and also from soil and vegetation. Its presence in water indicates probable contamination from human waste. Recent health related WHO guideline value for drinking water does not permit the presence of even a single coliform bacterium in drinking water.

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

Decibel (dB): unit of sound measurement on a logarithmic scale, with sound approximately doubling in loudness for every increase of 10 decibels.

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.

Dissolved Oxygen (DO): dissolved oxygen is an important parameter of water quality. The water when comes in contact with air dissolves oxygen depending on, or according to atmospheric pressure, the temperature, and the content of dissolved salts. Its presence is essential to maintain the higher forms of biological life and the effect of a waste discharged on a river is largely determined by the oxygen balance of the system. Aquatic animals require certain amounts of DO depending upon their species, stage of development, level of activity and the water temperature.

Domestic Waste: domestic waste consists of solid and liquid wastes originating from residential, commercial and institutional buildings. These are both biodegradable and non-biodegradable.

Dust: particles light enough to be suspended in air.

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).

Ecology: totality or pattern of relationships between organisms and their environment.

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.

Effluent: liquid waste product (whether treated or untreated) discharged from an industrial process or human activity that is discharged into the environment.

Emission: discharge of pollutants into the atmosphere from stationary sources such as smokestacks, other vents, surface areas of commercial or industrial facilities and mobile sources, for example, motor vehicles, locomotives and aircraft.

Emissions Factor : A unique value for scaling emissions to activity data in terms of a standard rate of emissions per unit of activity (e.g., grams of carbon dioxide emitted per barrel of fossil fuel consumed, or per pound of product produced)

Endemic Disease: disease that is only, or regularly, found among a specified population or in a specified locality.

Enhanced Greenhouse Effect: The concept that the natural greenhouse effect has been enhanced by increased atmospheric concentrations of greenhouse gases (such as CO2 and methane) emitted as a result of human activities. These added greenhouse gases

Endangered: plant and animal species which are under threat and likely to become extinct if casual factors continue operating. They may be abundant over their range but are endangered because of such factors as habitat deterioration, trade or the onset of disease.

Endemic: plants or animals prevalent in or peculiar to a particular locality, region or people.

Environmental Disease: disease that is, at least in part, caused or aggravated by living conditions, climate and water supply or other environmental conditions. Environmental factors that may affect health include psychological, biological, physical and accident-related factors. Environmental diseases include in particular communicable diseases, such as respiratory diseases, and vector-borne diseases such as malaria, schistosomiasis and onchocerciasis. See also airborne disease and waterborne disease.

Environmental Expenditures: capital and current expenditures related to characteristic activities and facilities specified in classifications of environmental protection activities.

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.

Environmental Indicator: Parameter or a value derived from parameters that points to, provides information about and/or describes the state of the environment, and has a significance extending beyond that directly associated with any given parametric value. The term may encompass indicators of environmental pressures, conditions and responses (OECD, 1994).

Environmental indices: Composite or more complex measures that combine and synthesize more than one environmental indicator or statistic and are weighted according to different methods.

Epidemic: widespread outbreak of a disease that affects a large number of individuals at a particular time.

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, decline of arable layers, siltation in lakes, lagoons and oceans.

Eutrophication: when water bodies like lakes, reservoirs streams, & estuaries receive effluents rich in nutrients (phosphorous and nitrogen) growth of water plants (algae) is stimulated as a result of which deoxygenating of the water, major ecological changes, increase in turbidity, increase in rate of sedimentation occur. An insidious form of water pollution that causes progressive deterioration of water resources on a wide scale by the overabundance of plant life as a result of over enrichment with the nutrients is known as Eutrophication.

Extinct Species: the endangered or threatened plant and animal species lost for ever because of their habitat being destroyed through a change in land use or some use for them resulted in mass slaughter/over use or export.

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.

Faecal Coliform: faucal coli forms are that part of the coli form group which is present in the intestines and faeces of warm-blooded animals. These bacteria are capable of producing gas from lactose and form blue colonies within 24 hours when incubated at 44.5^{o}C ± 0.2^{o}C on M-FC medium. It should be nil in potable water according to WHO guideline.

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

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

Fungi: simple plants including moulds and mushrooms with thread like cells and without green chlorophyll. Fungi have no roots, stem, or leaves like flowering plants and ferns.

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.

Gymnosperm: Plants that have naked seeds, which form an intermediate group between the cryptogams and the angiosperms. Examples: cicadas and conifers. They are primitive seed plants with many fossil representatives.

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

Hazardous Waste: hazardous wastes include toxic chemicals, biological and medical wastes, flammable wastes, corrosive wastes, radioactive wastes, and explosives. They usually are produced in industrial operations or in technical institutions.

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.

Incinerator: furnace for burning wastes under controlled conditions.

Industrial Wastes: solid, liquid and gaseous wastes originating from the manufacture of specific products.

Infrared Radiation: Infrared radiation consists of light whose wavelength is longer than the red color in the visible part of the spectrum, but shorter than microwave radiation. Infrared radiation can be perceived as heat. The Earth’s surface, the atmosphere and clouds all emit infrared radiation, which is also known as terrestrial or long-wave radiation. In contrast, solar radiation is mainly short-wave radiation because of the temperature of the Sun.

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. Leading experts on climate change and environmental, social and economic sciences from some 60 nations have helped the IPCC to prepare periodic assessments of the scientific underpinnings for understanding global climate change and its consequences. With its capacity for reporting on climate change, its consequences and the viability of adaptation and mitigation measures, the IPCC is also looked to as the official

advisory body to the world's governments on the state of the science of the climate change issue. For example, the IPCC organized the development of internationally accepted methods for conducting national greenhouse gas emission inventories.

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

Land Affected by Desertification (man made): the area of land which is in the degrading process by the removal of forest vegetation, grassland vegetation and other natural resources.

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

Lead (Pb): a heavy metal whose compounds are highly poisonous to health. It is used enormous quantities in storage batteries, paints, sheathing electric cables, lining pipes etc. Lead compound is the chief constituent of gasoline and is considered a significant contributor to air pollution.

Lichens: species formed from the symbiotic association of algae and fungi. Commonly occur on tree - trunks, old walls, on the ground, exposed rocks. They are the primary colonizers of bare areas.

Methane (CH_4): colorless and odorless gas composed of one atom of carbon and four atoms of hydrogen. It is non-poisonous and flammable gaseous hydrocarbon created by anaerobic decomposition of organic compounds. It occurs in natural gas, as fire damp in coal mines, and as a product of decomposition in swamps.

Mercury: heavy metal that can accumulate in the environment and is highly toxic if breathed or swallowed.

Mitigation: A human intervention to reduce the human impact on the climate system; it includes strategies to reduce greenhouse gas sources and emissions and enhancing greenhouse gas sinks.

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

Natural Disaster: sudden calamitous such as earthquakes, tsunamis, floods, volcanic eruptions, cyclones and landslide, of ongoing misfortune as in conditions of processes such as drought and desertification.

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.

Nitrates: already cover in Water Resources component. In the context of soil, it is nitrogenous fertilizer in the form of nitrate.

Nitrogen Oxides (Nox): these are compounds of nitrogen and oxygen combined in various ratios. The major human-caused source of NO_2 is fuel combustion in motor vehicles, utility and industrial boilers. The gas is toxic in high concentrations, a lung irritant and lowering resistance to respiratory infection. It is a major contributor to acid deposition and the formation of ground level ozone in troposphere.

Noise: audible sound from traffic, construction and so on that may generate unpleasant and harmful effects (hearing loss). It is measured in decibels.

Noise Pollution: sound of excessive levels that may be detrimental to human health.

N.P.K. Content in Soil: N.P.K. stands for nitrogen, phosphorous and potassium compounds, which are also called nutrients as these compounds are essential for growing crops and, hence, are added to soil in the form of fertilizers.

Nutrient: substance, element or compound necessary for the growth and development of plants and animals.

Nutrients: Nutrients include phosphorous, nitrogen, carbon, and silica in their various chemical forms. The degree of eutrophication in lakes is dependent largely on nutrient concentrations in the lake waters.

Organic Constituents: there are the substances found in water which have originated from organic sources or which have organic nature (e.g. hydrocarbons, pesticides etc.).

Organism: any living plant, animal or human being.

Other Lands: this refers to his land type which is catch-all for other uses of land and may include rocky areas,

lakes, ponds, water ways or settlements etc.

Ozone (O_3): pungent, colorless, toxic gas that contains three atoms of oxygen in each molecule. It occurs naturally at a concentration of about 0.01 parts per million (p.p.m.) of air. Levels of 0.1 p.p.m. are considered to be toxic. In the stratosphere, ozone provides a protective layer shielding the earth from the harmful effects of ultraviolet radiation on human beings and other biota. In the troposphere, it is a major component of photochemical smog, which seriously affects the human respiratory system.

Ozone Depletion: destruction of ozone in the stratosphere, where it shields the earth from harmful ultraviolet radiation. Its destruction is caused by chemical reactions in which oxides of hydrogen, nitrogen, chlorine and bromine act as catalysts.

Pesticide: any substance or mixture of substances that is used to prevent, destroy or control pests - including vectors of human or animal disease, and unwanted species of plants or animals. Pesticides may cause harm during, or otherwise interfere with, the production, processing, storage, transport or marketing of food, agricultural commodities, wood and wood products or animal feedstuffs - or that may be administered to animals so as to control insects, arachnids or other pests in or on their bodies.

pH: It is used as a measuring unit of the intensity of acidity or alkalinity of a sample. In other words, the pH is defined as the negative logarithm of molar hydrogen-ion activity or hydrogen-ion concentration (in dilute solutions).

pH Value: measure of the acidity or alkalinity of a liquid. A pH value in the range of 0 to 7 indicates acidity, a pH value in the range of 7 to 14 indicates alkalinity, and a pH value of 7 signifies neutrality.

Pollutant: substance that is present in concentrations that may harm organisms (humans, plants and animals) or exceed an environmental quality standard.

Pollution: 1. presence of substances and heat in environmental media (air, water, land) whose nature, location, or quantity produces undesirable environmental effects; 2. activity that generates pollutants.

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.

Pteridophytes: non-flowering vascular plants with root stem and leave e.g. ferns, horsetails. Widely distributed group attaining its development in the tropics.

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.

Red Data Book: a document containing information on threatened, rare or endangered species in a given habitat.

Relative Humidity: It is defined as a ratio of actual water vapor pressure to the saturation vapor pressure and is expressed in percentage. It is the measure of the water vapor content in the air.

Residual: amount of a pollutant that remains in the environment after a natural or technological process has taken place.

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.

Sewage: organic wastes and wastes water produce by residential and commercial establishments.

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.

Slums : Residential areas where dwellings are unfit for human habitation by reasons of dilapidation, overcrowding, faulty arrangements and design of such buildings, narrowness or faulty arrangement of street, lack of ventilation, light, or sanitation facilities or any combination of these factors which are detrimental to the safety and health.

Soil pH: Already covered in Water Resources component. pH is measured in the aqueous extract of the soil.

Solid Waste: useless and sometimes hazardous material with low liquid content. Solid wastes include municipal

garbage, industrial and commercial waste, sewage sludge, wastes resulting from agricultural and animal husbandry operations and other connected activities, demolition wastes and mining residues.

Solid Waste Disposal: ultimate disposition or placement of refuse that is not salvaged or recycled.

Solid Waste Management: supervised handling of waste material from generation at the source through the recovery processes to disposal.

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

Sulphate (SO_4): sulphate ion consists of one atom of sulphur and four atoms of oxygen and carries two negative charge. Sulphur dioxide in the atmosphere ultimately gets converted into sulphate particles, and it combines with moisture in the air to form sulphuric acid (precursor to acid rain).

Sulphur Dioxide (SO_2): A heavy, pungent with suffocating odour, colourless gas formed primarily by the combustion of fossil fuels such as gas, petroleum and coal. It constitutes one of the most troublesome air pollutants. In moist air it is slowly oxidized to sulphuric acid. It is harmful to human beings and vegetation and contributes to acidity in rain. It may be responsible for the decay of buildings and monuments.

Suspended Solid Particles or Suspended Particulate Matter: It consists of particles of a wide range of sizes varying from greater than 100 m to less than 0.1 m. Particles larger than 10 m mainly consists of dust, coarse dirt and fly ashes which settle rapidly. Small particles less than 10 m remain much longer in the air as Suspended Particulate Matter (SPM). Human - caused sources include a variety of combustion sources (vehicles, dryers), wood stoves, field burning, and dusts from mining, roads and construction. It causes breathing and respiratory symptoms (diseases) and premature mortality. Other effects are soiling and corrosion of building materials.

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

System of Environmental - Economic Accounting (SEEA): The economic impact on the environment and the environment impact on economy. To understand these linkage we need to integrate environmental and economic information. So, SEEA is the internationally agreed standard framework to measure the environment and its interaction with economy

Threatened species: species having low fecundity (offspring production rate) or prone to extinction in human-dominated landscapes.

Tolerance: 1. ability of an organism to endure unfavorable environmental conditions; 2. amount of a chemical in food considered safe for humans or animals.

Toxic Substances: substances, which cause adverse effects on living organisms (e. g. pesticides, arsenic, mercury etc.)

Turbidity: the presence of suspended and /or colloidal substance give liquid a cloudy appearance, which is, knows as turbidity. No health based guidance value for turbidity has been proposed but it makes the water unattractive and possibly harmful.

United Nations Framework Convention on Climate Change (UNFCCC): The Convention on Climate Change, which entered into force on 21 March 1994, sets an overall framework for intergovernmental efforts to tackle the challenge posed by climate change. It recognizes that the climate system is a shared resource whose stability can be affected by industrial and other emissions of carbon dioxide and other greenhouse gases. The Convention enjoys near universal membership, with 189 countries having ratified. Under the Convention, governments:

- gather and share information on greenhouse gas emissions, national policies and best practices
- launch national strategies for addressing greenhouse gas emissions and adapting to expected impacts, including the provision of financial and technological support to developing countries
- cooperate in preparing for adaptation to the impacts of climate change

Vulnerable: Species believed likely to move into the endangered category in the near future if the causal factors continue operating. Included are species of which most or all the populations are decreasing because of overexploitation, extensive destruction of habitat or other environmental disturbance; species with populations that have been seriously depleted and whose ultimate security is not yet assured; and species with populations that are still abundant but are under threat from serious adverse factors throughout their range.

Vulnerable Species: taxa of various types, including (a) taxa believed likely to move into the "endangered" category in the near future if the relevant causal factors continue to operate. These factors may include overexploitation, extensive destruction of habitat and other environmental disturbances, (b) taxa with populations that have been seriously depleted and whose ultimate security has not yet been assured and (c) taxa with populations that are still abundant but are under threat from severe adverse factors throughout their range.

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.

Waste-water Treatment: process to render waste water fit to meet environmental standards or other quality norms. Three broad types of treatment may be distinguished.

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

Water Quality Index: weighted average of selected ambient concentrations of pollutants usually linked to water quality classes.

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.