

The Green Climate Fund (GCF) Readiness Programme

Overview of Climate Change Focus Areas – Federal Democratic Republic of Nepal October 2016

Supported by:



Federal Ministry for the
Environment, Nature Conservation,
Building and Nuclear Safety

based on a decision of the German Bundestag

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Executive Summary

This overview of “Climate Change Focus Areas - Nepal” has been prepared under the UNEP / UNDP / WRI Green Climate Fund (GCF) Readiness Programme (the Programme). The main objective of the Programme is to prepare Nepal to plan for, access, manage, deploy and monitor climate finance effectively and efficiently, especially through the Green Climate Fund, with a focus on using country systems. The programme commenced activities in Nepal in April 2015 with a scoping mission and a detailed work-plan was presented to the Government of Nepal in September 2015. Component 3 of the Readiness Plan envisages development of national capacity to prepare a project pipeline (bankable projects and programmes). The Programme envisages providing catalytic support to prioritise climate change programmes and projects. One important step will be facilitating selection of appropriate projects in climate relevant sectors both in mitigation and adaptation areas.

The Programme also envisaged a review of the prominent documents prepared by the Government of Nepal to derive a basis of climate change priorities. The main objective of this task is to take stock and consolidate priorities that have emerged from the National Adaptation Programme of Action (NAPA), the Local Adaptation Plans for Action (LAPA), low-emission development strategies and other climate change policies. The document is based on information gathered through secondary sources of information.

Nepal is a highly vulnerable country (fourth most vulnerable country in the world)¹ and is susceptible to natural and climate-induced disasters. Soon after signing the United Nations Framework Convention on Climate Change (UNFCCC) in Rio de Janeiro in June 1992, Nepal commenced efforts and initiatives to address climate change. A significant recent step in this regard was the Climate Change Policy, announced in 2011. The principal goal of the policy is to improve livelihoods by implementing mitigation and adaptation actions in order to alleviate the adverse impacts of climate change. The policy envisages Nepal adopting a low-carbon socio-economic development path. The principal objectives of the policy include (i) implementing climate adaptation related programmes, (ii) reducing GHG emissions by promoting use of clean energy, (iii) increasing the resilience capacity of local communities for optimum utilisation of natural resources, and (iv) establishing a Climate Change Centre as an effective technical institution to address issues of climate change. The Climate Change Policy outlined individual climate change

¹ Asian Development Bank – Environment Assessment Nepal - 2012

areas which can be broadly classified in to cross-cutting areas and thematic areas. The cross-cutting area includes: a) technology development, transfer and utilisation; b) access to financial resources and utilisation; c) capacity building and empowerment; and d) research and specialised studies. Thematic areas of the climate change policy comprise: (i) climate change adaptation and disaster risk reduction; (ii) low carbon development; and (iii) natural resources management.

Climate change related technologies will play a significant role in reducing GHG emissions, building climate resilience and mitigating adverse impacts of climate change. The Climate Change Policy recommends scanning of technologies to select those appropriate for Nepal. Further evaluation of these technologies is required in order to acquire or to develop them within the country for ultimate utilisation. The Climate Change Policy has highlighted the following areas for technology development / transfer and utilisation:

- Climate friendly, clean and green technologies
- Adaptation:
 - Water conservation and alternative irrigation systems (alternative to flood irrigation);
 - Varieties of crops / agricultural varieties / species that are drought resistant and those which can withstand floods;
 - Low methane emitting agricultural technologies;
 - Construction technologies for climate-resilient structures and infrastructure;
- Mitigation:
 - Clean, renewable and alternative energy technologies;
 - Energy efficiency improvement;
 - Air pollution;
 - Transportation (electricity based transportation);
 - Carbon sequestration and forestry;

Implementation of climate change related programmes and actions using appropriate technology options require financial resources. The Government of Nepal proposes to achieve impact at the local level and hence has recommended appropriate utilisation of these resources. The policy suggests allocating at least 80% of the funds available for field level climate change activities. The policy recommends setting up a “Climate Change Fund” for mobilising financial resources to address climate change issues.

The successful implementation of climate change solutions requires adequate capacity within institutions related to climate change adaptation or mitigation actions. Accordingly,

the Climate Change Policy provides emphasis on capacity building and people's participation. Capacity enhancement of local level institutions is essential for implementation of the local climate change related programmes. The Climate Change Policy clearly outlines the role of information dissemination and knowledge related materials including success stories on climate change programmes in overall capacity enhancement. The Climate Change Policy has suggested establishing and maintaining an up-to-date database of climate change sector and theme-based knowledge, data and reports. It recommends conducting regular research and monitoring of risks related to climate change impacts. The Policy has defined the role of results from research for the formulation and implementation of policy, strategy and programmes.

The National Adaptation Programme of Action (NAPA) was prepared to address climate vulnerability and to further developmental goals. The Government of Nepal prepared the NAPA by undertaking a process as per the guidelines of Least Developed Countries Expert Group. The NAPA, the first comprehensive government document on climate change, was published in September 2010. Through intensive consultative and inclusive processes, the NAPA document contains a list of priority adaptation options. These adaptation actions, in particular the most urgent and immediate adaptation programmes, in key vulnerable sectors have been structured into the nine project profiles as follows:

1. Promoting Community based Adaptation through Integrated Management of Agriculture, Water, Forest and Biodiversity Sectors;
2. Building and Enhancing Adaptive Capacity of Vulnerable Communities through Improved System and Access to Service Related to Agricultural Development;
3. Community Based Disaster Management for Facilitating Climate Adaptation;
4. Glacial Lake Outburst Flood (GLOF) Monitoring and Disaster Risk Reduction;
5. Forest and Ecosystem Management for Supporting Climate Led Adaptation Innovations;
6. Adapting to Climate Challenges in Public Health (management of ecosystems so that they do not breed vectors or pathogens);
7. Ecosystem Management for Climate Adaptation;
8. Empowering Vulnerable Communities through Sustainable Management of Water Resource and Clean Energy Supply (including groundwater); and
9. Promoting Climate Smart Urban Settlement (including groundwater).

The Government of Nepal has already commenced implementation of a few of the programmatic actions whereas some other actions are under formulation. The Nepal

Climate Change Support Programme (NCCSP) is the first programme (of the Government of Nepal) to implement the NAPA.

The Government of Nepal has developed and endorsed the National Framework on Local Adaptation Plans for Action (LAPA), to implement the National Adaptation Program of Action (NAPA) priorities. The LAPA Manual describes its guiding principles, LAPA formulation steps, a monitoring and evaluation approach, and provides tools that are practical and simple. The Framework and Manual together provide opportunities to formulate and implement LAPAs in an integrated manner with the participation of the poorest and most climate vulnerable communities. The LAPA manual is primarily intended to provide an emphasis on the process of developing actions, unlike NAPA, which identified several action areas in different sectors around thematic areas. Thus it is essential to follow NAPA to identify action areas at local levels and prioritise them. This will be a comprehensive task, which needs overall implementation capacity at local Village Development Committee (VDC) level. Local VDCs not only have to work on adaptation actions but also incorporate climate change mitigation actions as appropriate.

Nepal's Climate Change Policy recommended adopting a low carbon emissions development strategy and climate-resilient development for sustainable socio-economic growth. One of the recommendations includes reducing GHG emissions through additional development and utilisation of clean, renewable and alternative energy technologies. The Government of Nepal is in the process of preparing a Low Carbon Economic Development Strategy (LCEDS). The Ministry of Science, Technology and Environment along with the National Planning Commission (NPC) are leading the preparation of the LCEDS. The Alternate Energy Promotion Centre (AEPC) has been designated to manage the work of the LCEDS formulation.

The LCEDS document is under formulation and the Government of Nepal has prepared a draft strategy paper on the subject. With low per capita GHG emission of 0.2 tonne per year², Nepal is among the nations with the smallest carbon footprints in the world. The energy mix of Nepal comprises largely of hydropower, biomass, and petroleum products (diesel, liquefied petroleum gas, kerosene). Residential energy consumption accounts for more than 85% of the total energy consumption in the country³. Biomass is the principal fuel used for domestic cooking. The total installed electricity capacity in Nepal of about 740 MW is lower than the peak demand of 1,200 MW⁴, so there is a deficit of installed

² <http://data.worldbank.org/indicator/EN.ATM.CO2E.PC>

³ Low carbon competitiveness in Nepal - Policy brief, Karen Ellis, Alberto Lemma and Andrew Scott with Asish Subedi and Ratnakar Adhikari, September 2013, <http://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/8594.pdf>

⁴ http://www.nea.org.np/images/supportive_docs/Annual%20Report-2014.pdf

electricity generation capacity from the grid to meet the electricity demand. Many electricity consumers have installed standby electricity generators to address this problem of shortage of electricity. This diesel-based generation contributes to GHG emissions. The demand for petroleum products comprises demand for liquefied petroleum gas (LPG), kerosene, petrol (motor gasoline) and diesel. LPG and kerosene are used mainly for cooking and heating in urban areas. Diesel is mainly used for the transportation and captive electricity generation. To supplement national energy needs, small-scale renewable energy technologies have been widely promoted in Nepal (e.g. smokeless cook-stoves and biogas digesters). Nepal will need to utilise appropriate technology options to promote climate friendly energy. The Climate Change Policy has recommended technology transfer and utilisation especially for development of clean energy technologies to help reduce GHG emissions. Apart from energy, forestry area also contributes to GHG emissions in Nepal.

Reduction in forest cover and degradation of forests contribute to GHG emission. At present, deforestation accounts for approximately 18-25% of global GHG emissions⁵. Nepal has about 40% of its land covered by forests and shrub lands. Over the years, a sizeable area of forests was either converted into agricultural land or degraded into shrub land. The GoN has been promoting different policy measures to manage forest sustainably. One of these measures is the community forestry programme. Nepal has one community based REDD project under implementation. Nepal also has potential to generate carbon revenues under the REDD+ mechanism.

This overview document consolidates in summary form Nepal's significant climate change policies. These policies are also outlined in Nepal's Intended Nationally Determined Contribution (INDC), submitted in February 2016 to the United Nations Framework Convention on Climate Change. The INDC and Nepal's climate change policies should be the starting point for decision-making when addressing potential ideas for funding proposals to be submitted to the Green Climate Fund. Indeed, all such funding proposals should aim to implement the policy goals outlined in these documents. On the other hand, there will be limited resources and limited capacity to implement several initiatives simultaneously. Funding proposals submitted to the GCF will also need to be spread over time. Decisions will need to be taken as to which implementing entity or entities could be charged with implementing GCF funding proposals in Nepal. Funding proposals will therefore need to be prioritised, using an appropriate approach. As indicated, the starting

⁵ REDD in Nepal through Community Forest Management- Information brochure. ICIMOD www.icimod.org/resource/2875

point for this prioritization should be compatibility and relevance vis-à-vis Nepal's INDC and climate policies. In addition, funding proposals need to be consistent with and support the GCF's strategic priorities. They also need to be able to match the GCF's investment framework, which is based on the following:

- Impact potential
- Paradigm shift potential
- Sustainable development potential
- Responsive to recipients needs
- Promote country ownership
- Efficiency & effectiveness

As part of the GCF Readiness Programme UN Environment has prepared an assessment tool which will assist the Government of Nepal to mirror ideas for funding proposals against both Nepal's climate change policies, as well as the GCF's requirements. This stock-taking document is one part of this process, as it consolidates Nepal's climate policies. Under this process, UN Environment proposes that the Ministry of Finance of Nepal, as Nepal's Nationally Designated Authority to the Green Climate Fund, requests stakeholder ministries to submit project ideas to the NDA. These project ideas will then be reviewed in light of their relevance vis-à-vis Nepal's climate change priorities, as well as the GCF's requirements.

The conclusions and recommendations section of the report provides principal climate change areas that have emerged from the review. Broad thematic climate change adaptation areas include agriculture and food security; water resources and energy; forests and biodiversity; urban settlements and infrastructure; public health; and urban Settlements. Cross-cutting areas include capacity building (skills development); community based climate adaptation; enhancing adaptive capacities; monitoring and communications; disaster risk reduction (Climate induced disasters); early warning systems and forecasting and awareness creation. It may be note that nine project profiles in the NAPA document have been identified from out over 250 adaptation actions. As these adaptation actions have already been prioritised, this list could be used as a useful starting point when prioritising adaptation project ideas to be submitted to the Green Climate Fund.

The climate change mitigation areas identified can be classified in three categories: electricity and energy access; renewable energy and energy efficiency; and forestry. In electricity and energy access the following areas emerged: development of hydro-

electricity sector to meet enhanced demand; enhanced access to modern and clean energy resources including electricity; and promotion of energy efficient small appliances and machines for end-use technologies. In renewable energy and energy efficiency the following area emerged: creation of awareness of use of renewable energy technologies; formulation of suitable policies to encourage renewable energy; provision of appropriate incentives to propagate renewable energy technologies; promotion of efficient utilization of available biomass resources; and promotion of efficient electricity end-use technologies. In the forestry sector the following areas emerged: sustainable management of forests, effective land use systems; and carbon sequestration.

List of Abbreviations

AEPC	Alternate Energy Promotion Centre
AF	Adaptation Fund
BMUB	The Federal German Ministry for the Environment, Nature Conservation, Building and Nuclear Safety
CPEIR	Climate Public Expenditure and Institutional Review
DDC	District Development Committee
DCEP	District Climate and Energy Plans
DHM	Department of Hydrology and Meteorology
EbA	Ecosystem based Adaptation
GCF	Green Climate Fund
GEF	Global Environment Fund
GLOF	Glacial Lake Outburst Flood
INGO	International Non-Governmental Organization
kWh	Kilo Watt Hour (Unit to measure electricity consumption)
LAPA	Local Adaptation Plans for Action
LCD	Least Developed Countries
LCEDS	Low Carbon Economic Development Strategy
LEG	Least Developed Countries Expert Group
MCCICC	Multi-Sectoral Climate Change Initiatives Coordination Committee
MoAD	Ministry of Agricultural Development
MoF	Ministry of Finance
MoFSC	Ministry of Forest and Soil Conservation
MoPIT	Ministry of Physical Infrastructure and Transport
MoICS	Ministry of Industry, Commerce and Supplies
MoSTE	Ministry of Science, Technology and Environment
NAP	National Adaptation Plan
NAPA	National Adaptation Programme of Action
NCCSP	Nepal Climate Change Support Programme
NDA	National Designated Authority
NPC	National Planning Commission
REDD+	Reducing Emissions from Deforestation and Forest Degradation
TWGs	Thematic Working Groups
UNDP	United Nations Development Programme

UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
VDC	Village Development Committee
WRI	World Resources Institute

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1 Introduction

This overview document is prepared under the UNEP / UNDP / WRI Green Climate Fund (GCF) Readiness Programme for the Government of Federal Democratic Republic of Nepal. The main purpose of the document is to provide a list of climate change priorities that emerge from different climate change policy, strategy and programme documents prepared by the Government of Nepal. This document is also expected to serve as a reference report for the workshop on prioritisation of GCF funding proposals expected to be organised in the last quarter of 2016.

1.1 UNEP / UNDP / WRI GCF Readiness Programme

The Green Climate Fund (GCF), which was established as an operating entity of the UNFCCC financial mechanism, is expected to become the main global fund for financing climate change mitigation and adaptation measures. While it has been agreed that Direct Access will be one of the modalities for the disbursement of the funds, it is recognized that certain levels of capacity will be required by governments and other actors involved in accessing the GCF. For the GCF to succeed, national capacities and mechanisms need to correspond to the GCF requirements, while also aligning with country planning, budgeting, programming and MRV systems.

The German Government, through the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB), is committed to supporting developing countries in strengthening their national capacities to access the GCF, and thereby to help operationalize the GCF as soon as possible. In order to do so, BMUB invited UNEP, the United Nations Development Programme (UNDP) and the World Resources Institute (WRI) ("the Programme partners" or "the partners") to develop a GCF Readiness Programme in nine countries. The Programme is based on a previous inception phase that yielded country readiness plans drawn from country specific needs assessments. The Programme is expected to offer need-oriented support to countries for accessing and using the GCF. The Programme includes (i) specific capacity building programmes in nine target countries, (ii) the development of national project pipelines on the basis of existing and potential specific national plans and policies, together with feeding back lessons learned identified with GCF processes to support the work of the GCF Board and Secretariat.

Nepal is one of the partner countries of the Programme. The Programme team conducted two scoping missions in April and September 2015 and developed a detailed "Readiness Plan". A stakeholder consultation workshop, under the Chairmanship of Ministry of Finance, was held on 24th September 2015 in Kathmandu. The stakeholder group

comprising important ministries, government organisations and NGOs approved the Readiness Plan at the meeting. An inception workshop was held on 22 April 2016 to validate the final work plan and decide on next steps. Component 3 of Nepal's Readiness Plan envisages developing a national project pipeline (bankable projects and programmes). Towards this, different activities and tasks have been planned, ultimately, to increase the capacity of Nepal to develop climate change projects.

The first activity under the Component 3 is to prioritize climate change needs and select potential GCF funding proposals. This stock-taking and consolidation report is designed to support this process. Climate change priorities that have emerged from the National Adaptation Programme of Action (NAPA), The Local Adaptation Plans for Action (LAPA) and low-emission development strategies have been consolidated. This overview document identifies different climate change needs and focus areas identified in the plans and programmes mentioned above. The report has also suggests an indicative approach for the prioritisation of these needs.

1.2 Approach and Methodology

This overview document has been prepared to develop an overview of climate change priorities identified by the Government of Nepal. The document is based on secondary sources of information and papers published in the field. Principal documents include (i) the Climate Change Policy, (ii) The NAP document, and (iii) the LAPA Manual. The overview document does not discuss processes adopted for the development NAPA, LAPA and the Low Carbon Economic Development Strategy (LCEDS). The overview does not provide any rank or priority while enumerating them. This document does not list potential projects or project concepts for submission to GCF. The overview document has been kept as brief as possible.

The list thus identified can facilitate discussions in respect of ranking of funding proposals and ideas submitted by stakeholders. The GCF Readiness Programme proposes to organise a workshop on the prioritization processes for the national coordination mechanism for adaptation and mitigation. This overview document may serve as a reference report for the discussion at the workshop.

2 Nepal Climate Change Scenario

Nepal is endowed with natural wealth and diverse flora and fauna. Nepal is a landlocked country and is located in the central Himalayas. With mostly mountainous terrain, the country is divided into four main regions i) High Mountain, ii) mid-hills, iii) Siwalik (The Churia Range) and iv) "The Terai". Each of these regions has distinct climatic conditions. The Himalayan mountain range and the South Asian monsoon mainly influence Nepal's climate. Nepal is a highly vulnerable country (fourth most vulnerable country in the world⁶) and is susceptible to natural and climate-induced disasters.

Agriculture is the principal sector of Nepal's economy which forms about 31.7 %⁷ of the gross domestic product (GDP). The agricultural sector employs 69 %⁸ of the population of Nepal. Twenty % of the land is cultivable⁹, mainly in Terai region). The problems in this sector are exacerbated by poor irrigation, inadequate access to modern technology and insufficient investment. In addition, frequent climate-induced disasters also negatively impact agricultural productivity leading to food insecurity. Climate vulnerability first impacts the poor, especially women and children. Marginal farmers are thus worst exposed to impacts of climate change.

Water and forests are Nepal's most abundant natural resources. The freshwater resources of Nepal account for 2.27 % of the total world supply¹⁰. The impact of climate change on Nepal's water resources is hazy, as its influence on glaciers' behaviour is not adequately understood. It is estimated that almost 20% of glacier mass could be lost as a result of 1°C rise in temperature. Average mean temperature is likely to increase more than 1.3°C by 2060. Climate change may lead to drier winters and more wet monsoon summers. These changes could result in higher frequency of floods in summers and droughts in winters. On the other hand, lower winter snows could reduce snow melt levels during summers. Over the period long term availability of water is likely to reduce.

2.1 Response to Climate Change

In view of the above, it is essential to take into account climate risks while evolving the economic and social development plans of the country. Incorporation of appropriate risk mitigation measures and adaptation measures will enhance sustainability of overall

⁶ Asian Development Bank – Environment Assessment Nepal - 2012 (<http://www.adb.org/sites/default/files/linked-documents/cps-nep-2013-2017-ena-summary.pdf>)

⁷ <https://www.cia.gov/library/publications/the-world-factbook/geos/np.html>

⁸ <https://www.cia.gov/library/publications/the-world-factbook/geos/np.html>

⁹ Nepal –Environmental and Climate Change Assessment, IFAD, March 2013

¹⁰ Vulnerability, Risk Reduction, and Adaptation to Climate Change – Nepal (Climate Risk and Adaptation Country Profile – Nepal, April 2011, The World Bank)

economy. The National Planning Commission (NPC) of the Government of Nepal initiated climate resilient planning in 2010. Apart from climate resilient planning, Nepal has implemented several initiatives and programmes. These are summarised in the following paragraphs.

Nepal signed the United Nations Framework Convention on Climate Change (UNFCCC) in Rio de Janeiro in June 1992 and ratified it in May 1994. The country has been regularly participating in Conferences of the Parties and other subsidiary meetings. Nepal became party to the Kyoto Protocol in September 2005. Nepal prepared the Initial National Communication in 2004. Over the years, the Government of Nepal has implemented several initiatives to address climate change challenges. The Government of Nepal formed the Climate Change Management Division in 2010. The Government also formed the Multi-Sectoral Climate Change Initiatives Coordination Committee (MCCICC), comprising representatives from ministries, government institutions, national NGOs, academics, private sectors and donors. The National Planning Commission (NPC) initiated climate-resilient planning tools in the fiscal year 2010-11 with a view to making the country's economy and infrastructure climate-resilient. The Ministry of Science Technology and Environment (MoSTE) is the Designated National Authority (DNA) for The Clean Development Mechanism (CDM)¹¹. The Global Environment Facility (GEF) has approved 22¹² national projects for the Nepal, which are at various stages of approval or implementation (including completed or closed).

The Least Developed Countries (LDCs) are 48 nations that are especially vulnerable to climate change but have not contributed significantly to climate change. They work together at the intergovernmental negotiations under the UN Framework Convention on Climate Change (UNFCCC) to demand that wealthier nations act in accordance with their responsibility for creating the problem and their capability for addressing it. Nepal Chaired the LDC Group during 2013-2014 and 2014-2015. In Paris, the COP renewed the mandate of the LEG for a period of five years (2016-2020).

MoSTE was nominated by Nepal as the *Designated Authority* to Adaptation Fund (AF) in 2014. The Government of Nepal nominated the Ministry of Finance as its National Designated Agency (NDA) for Green Climate Fund (GCF) in 2015.

¹¹ The Climate Change Policy 2011, Nepal

¹² The GEF Website (https://www.thegef.org/gef/country_profile/NP)

Significant milestones in the climate change area achieved by Nepal are listed in the following table:

Significant climate change initiatives / milestone	Date
Signed the United Nations Framework Convention on Climate Change (UNFCCC)	1992
Instrument of Ratification on Climate Change (under UNFCCC)	1994
Kyoto Protocol - Instrument of accession	2005
Climate Change Council formed under the Chairmanship of the Prime Minister	2009
National Planning Commission initiated climate resilience planning	2010
Government of Nepal endorsed National Adaptation Programme of Action (NAPA) document	2010
Nepal Climate Change Policy announced	2011
Government of Nepal decides to the formulate The National Rural Renewable Energy Programme	2011
Government of Nepal endorsed Local Adaptation Plans for Action (LAPA) manual	2011
Nepal chaired Least Developed Countries Group	2013-2014
Environment Friendly Local Governance Framework	2013
Government of Nepal nominated the Ministry of Science, Technology and Environment as the Designated Authority for Adaptation Fund	2014
The Nepal Biodiversity Strategy and Action Plan	2014
Environment-friendly Vehicle and Transport Policy	2014
Government of Nepal nominated the Ministry of Finance as the National Designated Authority (NDA) for Green Climate Fund (GCF)	2015
Agriculture Development Strategy	2015
National Conservation Strategy Framework	2015
Second National Communication	2015
Government of Nepal initiated National Adaptation Plan (NAP)	2015
Intended Nationally Determined Contribution	2016
Forestry Sector Strategy	2016
Low Carbon Economic Development Strategy	2016

3 Nepal Climate Change Policy, 2011

Climate change impacts Nepal in various forms and intensity. Some of the significant changes that have been observed include the rise in the average maximum annual temperature. This temperature rise is on the higher side in mountain areas. The country has experienced changes in the rainfall pattern. There are excessive rains, as well as drought spells. Glaciers recede due to melting of snow leading to the expansion of glacial lakes and eventual outbursts. Nepal has experienced adverse impacts of climate change on a broad cross section of areas including agriculture and food security, health, forests and biodiversity, water resources, tourism and infrastructure. Nepal, being a least developed, land locked and mountainous country, is highly vulnerable to impacts of climate change. As mentioned in the previous section, the Government of Nepal has undertaken several actions and initiatives to address climate change issues. An important milestone in this regard was achieved after Nepal formulated its climate change policy. Nepal announced its Climate Change Policy in 2011 in order to address some of these challenges, assessing the effects and likely impacts of climate change in order to identify vulnerable sectors, enhance their adaptive capacity, and to develop mechanisms to reduce GHG emissions. The policy was developed to serve some of the following needs:

- To inform the Parties to the UNFCCC about progress of the implementation of the Convention in the areas including institutional development and capacity enhancement, technology development and utilisation, fund flow, GHG measurement and updating data.
- To promote climate adaptation, mitigation and carbon sequestration;
- To mobilise financial resources for expanding some of the activities mentioned;
- To implement adaptation programmes and to ensure that at least 80% of the total funds available for climate change activities flow to the grassroots level.
- To make climate friendly resource management for socio-economic development and climate-resilient infrastructure development.
- To increase public awareness and capacity building
- To manage and mobilise additional technical and financial resources for clean and renewable energy development.

The Government of Nepal prepared and announced the Climate Change Policy in March 2011. The goal of the policy, as stated, is *to improve livelihoods by mitigating and adapting to the adverse impacts of climate change, adopting a low-carbon emissions socio-economic development path in the spirit of Nepal's commitments to national and international agreements related to climate change.*

The following paragraphs provide a brief overview of main elements of the policy. The discussion is segmented in to cross-cutting areas and thematic areas.

3.1 Cross-cutting Areas

The Climate Change Policy of Nepal has identified the following cross cutting areas:

- Technology development, transfer and utilisation;
- Access to financial resources and utilisation;
- Capacity Building and empowerment;
- Research and specialised studies;

Technology development, transfer and utilisation: Climate change mitigation and adaptation related technologies will play a significant role in reducing GHG emissions, building climate resilience and mitigating adverse impacts of climate change. The Climate Change Policy recommends scanning different technologies to identify those appropriate to the country. Traditional techniques and practices can be economical, if improvised to enhance their practicality. Developing technologies indigenously is a cost-effective way to promote their utilisation and propagation. Principal ingredients for technology development include adequately skilled scientists and appropriate infrastructure of research / technology institutions. On the other hand, private sector participation can facilitate technology deployment. Technology-transfer route is better suited for a few select technologies for effective utilisation. The technology transfer approach obviates the need to invest resources and time to develop the technologies indigenously. Over the years, a few climate change (mitigation and adaptation) technologies have been successfully commercialised in several parts of the world and can easily be acquired for utilisation. The Climate Change Policy has highlighted the following areas for technology development / transfer and utilisation:

- Climate friendly, clean and green technologies
- Adaptation:
 - Water conservation and alternative irrigation systems (alternative to flood irrigation);
 - Varieties of crops / agricultural varieties / species that are drought resistant and those which can withstand floods;
 - Low methane emitting agricultural technologies;
 - Construction technologies for climate-resilient structures and infrastructure;
- Mitigation:
 - Clean, renewable and alternative energy technologies;

- Energy efficiency improvement;
- Air pollution;
- Transportation (electricity based transportation);
- Carbon sequestration and forestry.

The areas mentioned above provide leads to develop and implement climate change projects in Nepal. A few of these areas have been mentioned in the next few chapters under NAPA and LCEDS.

Access to financial resources and utilisation: Implementation of climate change related programmes and actions require financial resources. The Government of Nepal aims to achieve impact at the local level and has thus recommended allocating at least 80% of the funds available projects at the grassroots level. The policy recommends setting up a “Climate Change Fund” for mobilising financial resources to address climate change issues. The fund could be structured to facilitate use of both the domestic and international financial resources, but would be set up as a public fund at the national level. The Policy has identified approaches to raise resources including the use of “polluter pays principle”. The policy envisages utilising money accrued from climate change mitigation and adaptation mechanisms for promoting sustainable development. The Climate Change Policy proposes utilising financial resources from domestic and international sources for climate adaptation, low carbon development activities and provision of livelihood security to victims of climate-induced disasters.

Capacity building, people’s participation and empowerment: The successful implementation of climate change solutions requires adequate capacity within institutions related to climate change adaptation or mitigation actions. On the other hand, an appropriate skill set is essential for persons associated with these institutions, both at the national and local levels. Besides, most climate change solutions need wider participation from local communities. The Climate Change Policy has provided emphasis on capacity building and people’s participation in climate mitigation, adaptation actions, impact mitigation, low carbon growth, technology development and transfer and carbon trade. Capacity enhancement of local level institutions is essential for the implementation of local climate change related programmes. The Policy recommends the participation of *Dalits*, marginalised indigenous communities, economically vulnerable communities, women and youth in the implementation of climate change related programmes.

The Climate Change Policy clearly outlines the role of information dissemination and knowledge related materials including success stories of climate change programmes in

overall capacity enhancement. The Policy has given emphasis on collecting and publishing information on traditional and local knowledge, skills, practices and technologies related to climate adaptation and adverse impact mitigation. Almost every adaptation project will have capacity building and knowledge management as core components.

Research and specialised studies: The Climate Change Policy has suggested establishing and maintaining an up to date database of climate change sector and theme-based knowledge, data and reports. It recommends conducting regular research and monitoring of risks related to climate change impacts. The Policy has defined the role of results from research for the formulation and implementation of policy, strategy and programmes. The research can contribute to vulnerability assessments and also for identifying mitigation measures. The policy has recommended expanding the network of climate observation centres to identify impacts of climate change in different regions of the country. The Government of Nepal has published several manuals and reports in the areas of climate change adaptation and mitigation such as training manuals (http://www.aepc.gov.np/?option=resource&page=resgfm&mid=&sub_id=27) and guidelines by Alternative Energy Promotion Centre – AEPC).

3.2 Thematic areas

The Climate Change Policy of Nepal has outlined the following thematic areas:

- Climate adaptation and disaster risk reduction;
- Low carbon development; and
- Natural resources management

Climate adaptation and disaster risk reduction: Nepal being a climate vulnerable country, implementing adaptation measures and actions is of significance. The policy, therefore, has provided due priority to adaptation. The Government of Nepal has already developed the National Adaptation Programme of Action (NAPA) and the Climate Change Policy recommends implementing medium and long term adaptation actions. This report has discussed NAPA in detail in the next chapter. It will be essential to identify people, communities and areas impacted by climate change in order to develop, formulate and implement appropriate adaptation actions. Monitoring the status of glaciers and glacier lakes will provide inputs for evolving an adaptation action plan in the case of vulnerable glaciers areas.

Glacier Lake Outburst Floods (GLOFs), drought, rain floods (water induced disasters) and epidemics of vector borne diseases are a few climate induced disasters. Climate induced

disaster risk reduction (DRR) forms an important area of focus under the policy. The Government of Nepal will have to give an appropriate priority to forecasting water-induced disasters and developing early warning system. Health is one of the areas of adaption planning. Development of a mechanism for forecasting and preventing vector-borne, infectious and communicable diseases will support DRR. Adaptation planning can form an integral part of national developmental planning. Nepal has adopted a climate resilient socio-economic development path for its national economic planning.

Low carbon development: The Climate Change Policy has recommended measures in the broad areas of energy, forestry and transportation to achieve low carbon and climate resilient development. Development and utilisation of clean, renewable and alternative energy technologies will help Nepal reduce GHG emissions. The policy has further recommended conducting energy audits with a view to implementing energy efficiency improvement measures in select sectors such as industry and tourism. Promoting electricity based transportation can help reducing GHG emissions due to the use of fossil fuels. Introducing climate resilient construction standards for bridges, dams and other infrastructure will help in effective adaptation and will reduce climate change impacts. The Climate Change Policy has outlined broad elements of low carbon development including scientific management of forests. The Government of Nepal is in the process of developing a Low Carbon Economic Development Strategy.

Natural resource management: Agriculture is a dominant economic activity in Nepal employing 69%¹³ of the population. Agriculture contributes to about 31.7%¹⁴ of the gross domestic product (GDP). Nepal is a mountainous country and only 20% of it's land area is cultivable. About 29% of the land is under forest cover. Both forestry and agriculture sectors are related to land. Therefore, proper land management is of prime importance for balancing all round development in the country. The Climate Change Policy has recommended development and implementation of a scientific land use system. Sustainable forest management, agro-forestry, pasture and soil conservation programmes can help reduce the impacts of climate change. Forest resources need to be used properly and carefully. Proper encouragement to carbon sequestration needs to be provided. It is essential to control encroachment on forest land. Controlling forest fires will help conserve them. Water conservation is another important aspect of natural resources management.

13 <https://www.cia.gov/library/publications/the-world-factbook/geos/np.html>

14 <https://www.cia.gov/library/publications/the-world-factbook/geos/np.html>

3.3 Climate Change Areas

The climate change areas that emerge out of the Climate Change Policy have been summarised on the following table.

Adaptation	Climate Change Focus Areas
Actions	National Adaptation Programme of Action (NAPA)
	Low methane emitting agricultural technologies
	Flood resistant and draught resistant crops
	Water conservation technologies and rainwater harvesting
	Integrated programmes considering objectives and provisions of the conventions related to climate change, desertification and biodiversity
Capacity Building	Local level adaptation action implementation
	Participation of poor, marginalised indigenous communities
Monitoring / Forecasting	Status of glaciers (including early warning system)
	Water induced disasters
	Vector-borne diseases
Mitigation	Climate Change Focus Areas
Action / Programme	Low Carbon Economic Development Strategy
	Transportation (Electric vehicles)
	Clean, Renewable and alternative energy development
	Energy Efficiency and energy audits
	Scientific land use system
	Sustainable management of forests, pastures, soil conservation
	Carbon sequestration, scientific management of forests, REDD+
Capacity Building	Low carbon growth
	Technology development and transfer
Other Common Areas	Climate Change Focus Areas
Finance	Establish Climate Change Fund
	Carbon trade, Clean Development Mechanism
	Taxation - using polluter pays principle
	Allocate at least 80% of funds for field level activities
	Access to bilateral and multilateral funding sources
Awareness creation	Compilation of success stories and dissemination
Information dissemination	Data and information on climate change
	Participation of local institutions, associations, NGOs, civil society

The Climate Change Policy of Nepal is broad based and encompasses all segments of climate change challenges. National level and local level projects in both, mitigation and adaptation areas emerge out of the policy. The Government of Nepal could suitably evolve appropriate institutional arrangements to accelerate the implementation of climate solutions.

The following diagram provides an overview of areas that need to be addressed while implementing the policy over the coming years:

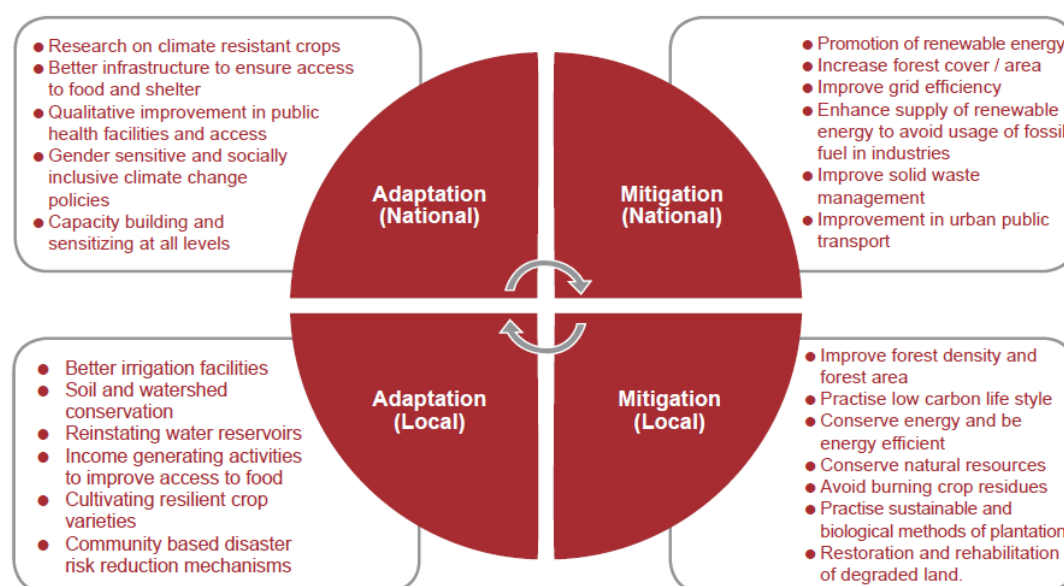


Figure 1: Overview of climate change areas to be addressed through the policy

Source: Nepal's Climate Change Policies and Plans: Local Communities' Perspective (HELVETAS Swiss Interco-operation Nepal, 2011)

The policy has outlined a strategy and proposed an indicative institutional structure for effective implementation. The policy clearly states the need to implement adaptation programmes according to the national development agenda and to ensure at least 80 percent of the total funds available for climate change activities flow to the grassroots level. Among key challenges, the policy has indicated that there is a need to effectively enhance the capacity of public institutions, planners and technicians, private sector, NGOs and civil society involved in development work.

The next three chapters of the overview document discuss the NAPA, LAPA and LCEDS. The report has outlined specific climate change areas in these sections.

4 National Adaptation Programme of Action

Least developed countries (LDCs) are vulnerable to climate change impacts, as these countries have fewer resources to adapt socially, technologically and financially. The principal characteristics of climate change¹⁵ are as follows:

- increases in average global temperature (global warming);
- changes in cloud cover and precipitation, particularly over land;
- melting of ice caps and glaciers and reduced snow cover; and
- increases in ocean temperatures and ocean acidity.

As a result of global warming, the type, frequency and intensity of extreme events, such as tropical cyclones (including hurricanes and typhoons), floods, droughts and heavy precipitation events, are expected to rise even with relatively small average temperature increases.

Climate change will have wide-ranging effects on the environment. Changes in rainfall pattern are likely to lead to severe water shortages and/or flooding. Glaciers in the Himalayas are melting due to global warming. This will result in increased risk of flooding, erosion, mudslides and GLOF in Nepal. Rising temperatures will cause shifts in crop growing seasons, which affects food security and changes in the distribution of disease vectors putting more people at risk from diseases such as malaria and dengue fever. Adaptation is a process through which societies make themselves better able to cope with an uncertain future. Adapting to climate change entails taking the right measures to reduce the negative effects of climate change (or exploit the positive ones) by making the appropriate adjustments and changes.¹⁶ There are many options and opportunities to adapt. These options include technological options such as flood-proof houses on stilts, and behaviour change at the individual level, such as reducing water use in times of drought. Other strategies include early warning systems for extreme events, better water management, improved risk management, various insurance options and biodiversity conservation.

Adaptation to climate change in LDCs is vital and has a high priority. However, implementing adaptation programmes is difficult for these countries owing to inadequate capacity and scarce financial resources. UNFCCC process helped LDCs to identify their

¹⁵ Climate Change: Impacts Vulnerability and adaptation in developing countries, UNFCCC (2007)

¹⁶ Climate Change: Impacts Vulnerability and adaptation in developing countries, UNFCCC (2007)

immediate priorities for adaptation options via the National Adaptation Programmes of Action (NAPAs). Over 40 LDCs (including Nepal) were funded under the Convention to prepare their NAPAs.

Nepal's contribution to global GHG emissions is small or negligible. However, the impacts of climate change are far reaching. Adaptation is a priority area for Nepal and is a core aspect of development planning. The National Adaptation Programme of Action (NAPA) was prepared to address climate vulnerability and to contribute to national development. Nepal prepared the NAPA by undertaking a process as per the guidelines of Least Developed Countries (LDCs) Expert Group (LEG). NAPA, the first comprehensive government document on climate change, was published in September 2010. The NAPA was prepared with a view to assessing and prioritizing climate change vulnerabilities and identifying adaptation measures; developing proposals for priority activities; preparing, reviewing and finalizing NAPA focus areas; developing and maintaining a knowledge management and learning platform; and developing a multi-stakeholder framework of action on climate change. The NAPA document was prepared through a nationwide consultative process associating all segments of the society. Ministry of Science, Technology and Environment (MoSTE) established six Thematic Working Groups (TWGs)¹⁷ led by corresponding line ministries. Two national, three regional workshops and several consultations with civil society and private sector groups including indigenous communities were conducted, as a part of the NAPA preparation. Micro level impact assessments were undertaken through three transect appraisal exercises. Government, non-government TWGs members (more than 60 members) participated in these exercises. Teams of experts analysed the outputs of the transect exercise both by agro-ecological zone and thematic area.

The comprehensive analyses resulted into thematic synthesis reports. The vulnerability assessments and the work of the TWGs concluded in a long list of adaptation options under each theme. There were almost 250 adaptation options emerged across six thematic groups. These options were prioritised using multi-criteria analysis in a step-wise process. The NAPA document has identified nine integrated projects as the urgent adaptation priority during the final prioritisation workshop.

¹⁷ The NAPA Document (2010)

The combined prioritised activities¹⁸ for climate change adaptation (nine integrated adaptation projects were identified in the NAPA report) with activity components are as follows:

1. Promoting Community-based Adaptation through Integrated Management of Agriculture, Water, Forest and Biodiversity Sector:

- Ensuring ecosystem and community adaptation to climate change through integrated watershed management in Churia;
- Initiating on-farm soil and water conservation activities to support hill and mountain communities vulnerable to climate change;
- Promoting water management in river basin areas at municipal level;
- Reducing the vulnerability of communities and increasing their adaptive capacity through flood management;
- Promoting and up-scaling Multi Use System (MUS) for the benefit of poor and vulnerable communities in the mid hills and Churia range;
- Scaling-up and implementing non-conventional irrigation system in water stressed areas.

2. Building and Enhancing Adaptive Capacity of Vulnerable Communities Through Improved System and Access to Services Related to Agriculture Development:

- Enabling climate vulnerable communities to sustain livelihoods by improving access to agricultural services;
- Increasing community climate adaptive capacity through improved production and marketing systems;
- Strengthening highland-lowland linkages to improve community access to goods and services;
- Promoting sustainable underground water management for irrigation;
- Promoting improved animal breeds adaptable to climate uncertainty.

3. Community-Based Disaster Management for Facilitating Climate Adaptation:

- Building capacity to enhance community adaptation to climate hazards;
- Developing water retaining structures as sustainable adaptation measures to address the effect of climate change;
- Establishing, rehabilitating and conserving small-scale drinking water supply schemes and traditional water resources;
- Reducing the disaster risks at community-level with climate change dimension

¹⁸ Prioritised activities were clustered into integrated project profiles

4. Glacial Lake Outburst Flood (GLOF) Monitoring and Disaster Risk Reduction:

- Monitoring of GLOF and reducing climate-related disaster risks;
- Developing early warning systems in disaster prone areas;
- Linking climate change with disaster risk reduction and enhancing institutional capacity at different levels;
- Mapping of hazards, assessing disaster impacts and developing contingency plans;
- Managing existing hydrological and meteorological network at the Department of Hydrology and Meteorology (DHM) and scaling-up its services;
- Initiating GLOF and disaster-related research and development activities.

5. Forest and Ecosystem Management for Supporting Climate-Led Adaptation Innovations:

- Managing trees outside the forests in public and private land (agro-forestry practice);
- Maintaining the balance between fuel-wood demand and supply for rural household energy through plantation;
- Scaling up of biomass energy technologies (quantity, quality and coverage) for less fuel-wood consumption;
- Managing community-based forest fire in the Terai and mid-hills regions.

6. Adapting to Climate Challenges in Public Health:

- Reducing public health impacts of climate change through evidence-based research and piloting;
- Empowering communities through public education for responding to the adverse effects of climate change in public health;
- Investigating disease outbreak and emergency response;
- Scaling-up programmes on vector borne, water and food borne diseases and disasters;
- Strengthening forecasting / early warning and surveillance system on climate change and health.

7. Ecosystem Management for Climate Adaptation:

- Promoting improved pasture and range land management techniques to rehabilitate degraded mountain ecological zones;

- Conserving and promoting medicinal plants and non-timber forest products in all potential ecological zones;
 - Initiating integrated wetland management in Terai;
 - Managing biological corridor in the *Terai* and mountains;
8. Empowering Vulnerable Communities through Sustainable Management of Water Resource and Clean Energy Supply:
- Conserving lakes supplying water and ecological services to urban areas;
 - Promoting rain water harvesting structures and technologies;
 - Conserving water supply sources (quality as well as quantity) and strengthening programmes of existing projects affected by source reduction;
 - Developing nation-wide urban groundwater monitoring system and enhancement of regulatory measures;
 - Establishing and improving micro-hydropower projects being affected by the acute water shortages;
 - Improving water mills for multi-use.
9. Promoting Climate Smart Urban Settlement:
- Enforcing building codes in municipal areas incorporating climate change dimensions;
 - Enhancing adaptive capacity of vulnerable communities;
 - Increasing the efficiency of the use of underground water resources for urban population;
 - Establishing municipal compost plants and developing strategy to link with Clean Development Mechanism (CDM) to generate additional revenue;
 - Building the capacity of local level institutions for efficient water and energy planning and project implementation.

The NAPA document has provided details of each of the above profiles including information on the project rationale, description, goal, objectives, activities, short term outputs, potential long term outcomes, implementation, time frame, estimated cost, risks and barriers and monitoring and evaluation aspects. Each profile has also outlined list of implementing ministries and other stakeholder organisations (including lead ministry that will steer each project). MoSTE will provide overall coordination support and line ministries will undertake implementation in respective areas.

As mentioned earlier, the Multi-Sectoral Climate Change Initiatives Coordination Committee (MCCICC) was formed in 2010 to foster a unified and consolidated climate change response in Nepal. It also institutionalised the multi-stakeholder and participatory process of the NAPA. A climate change adaptation projects implementation framework (Please refer Figure 2 on the page 29) provides linkages across planning, budgeting and monitoring. It also identifies key organisations for the NAPA implementation.

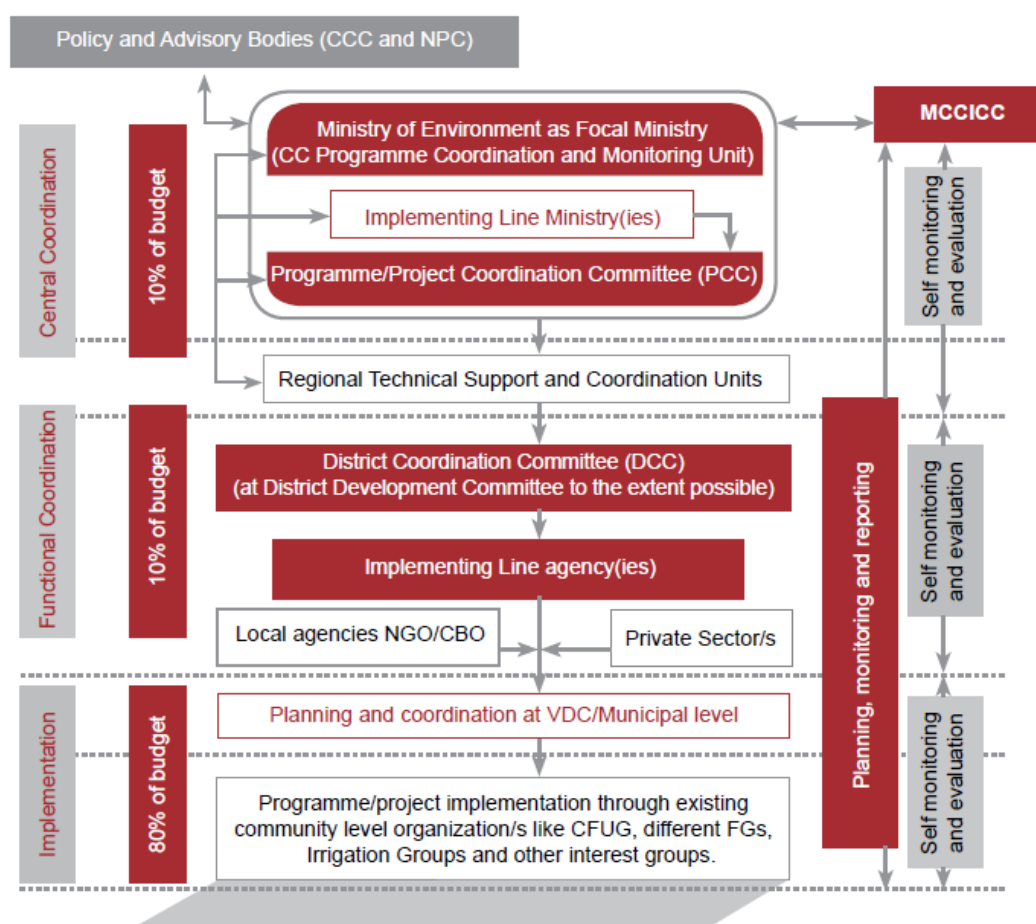


Figure 2: NAPA Implementation framework

Source: Nepal's Climate Change Policies and Plans: Local Communities' Perspective (HELVETAS Swiss Interco-operation Nepal, 2011)

The NAPA document has set the priorities of the Government of Nepal for adaptation action. The Government of Nepal adopted a three-year plan (2010-2012) at the time of preparation of the NAPA document. This national development plan did incorporate adaptation to make it climate resilient. This plan commenced the process of setting broad-based objectives of making development activities climate friendly, mitigating adverse impacts of climate change and promoting adaptation.

The Government of Nepal has commenced implementing a few of the adaptation actions outlined in the NAPA document. The Nepal Climate Change Support Programme (NCCSP) is the first programme (of the Government of Nepal) to implement the NAPA, with a focus on promoting the community based adaptation through integrated management of agriculture, water, forest and biodiversity sectors.

A brief outline of the NCCSP is provided in the following box:

The objective of the Nepal Climate Change Support Programme (NCCSP) is to mainstream climate change into Nepal's national development agenda, contributing to poverty reduction, livelihoods diversification and community resilience. This ensures that the most urgent and immediate adaptation actions are implemented so that the poorest and the most vulnerable communities in Nepal are able to adapt to the effects of climate change. The climate change impacts are experienced disproportionately by those that are not able to adapt their access to resources. The NCCSP has focused on the poorest, in Nepal's most vulnerable areas: 14 districts in the mid and far Western region of Nepal with a particular focus on poor and marginalized groups, including women. The program also aims to link bottom up (local) and top down (national) planning process.

The Programme consists of 3 key outputs: i) implementing 70 Local Adaptation Plan for Actions (LAPAs) in 69 Village Development Committees (VDCs) and 1 municipality of 14 districts in the Mid & Far Western regions of Nepal; ii) putting in place local and regional mechanisms to implement and promote scalable adaptation actions and peoples' resilience; and iii) establishing/further developing institutional and funding mechanisms for climate change adaptation actions.

Source: MoSTE and UNDP Documents (2012)

A select few of the profiles (from the NAPA document) have been developed into detailed proposals for the submission to various funding agencies. Ecosystem based Adaptation (EbA) in Mountain Ecosystems in Nepal has already been financed by BMUB and is under implementation by a consortium of MoSTE, MoFSC, UNDP, UNEP and IUCN.

The NAPA document has set out the government's priorities for adaptation actions. The NAPA development process has been consultative as well as inclusive and country-driven. NAPA also dovetailed well in the then three-year plan (2010-12). In conclusion, the NAPA document identifies comprehensive sets of adaptation needs and actions applicable to six different sectors and thematic areas. These actions have been derived after prioritising and selecting from a "long-list" of actions that emerged during the

process. This forms a good foundation for developing individual projects in adaptation area. MoSTE has also initiated National Adaptation Plan Process (NAP) in September 2015. The NAP process is an opportunity for countries to address Nepal's medium- and long-term adaptation needs, building on the NAPA process.

5 Local Adaptation Plans for Action

As per Nepal's INDC, in order to localize climate change adaptation, Nepal has adopted a National Framework on Local Adaptation Plans for Action (LAPA) to ensure integration of adaptation and resilience into local to national planning processes. This ensures bottom-up, inclusive, responsive and flexible planning. The LAPA contributes to sensitizing local people and stakeholders, carrying out vulnerability and adaptation assessment; identifying, selecting and prioritizing adaptation options; and formulating and implementing adaptation plans. The framework provides opportunities to develop and implement a stand-alone LAPA and/or integrate adaptation options into the regular planning and implementation processes.

At present, Nepal is implementing LAPAs in 90 Village Development Committees and 7 Municipalities – the lowest administrative units in the country. Similarly, about 375 local adaptation plans and nearly 2200 Community Adaptation Plans of Action (CAPAs) for community forests have been developed.

The LAPA Manual describes its guiding principles, LAPA formulation steps, a monitoring and evaluation approach, and provides tools that are practical and simple. The LAPA framework and manual together provide opportunities to formulate and implement adaptation actions in an integrated manner with the participation of poor and climate vulnerable communities. The LAPA manual has been developed with a view to:

- Enabling communities to understand the changing and uncertain future climatic conditions and engaging them effectively in the process of developing adaptation priorities;
- Implementing climate-resilient plans that are flexible enough for responding to changing climatic conditions; and
- Informing sectoral programmes and to catalyse integrated approaches among various sectors and sub-sectors.

The LAPA framework supports the operationalisation of the objectives outlined in:

- The NAPA document;
- The National Climate Change Policy; and
- Climate Resilience National Planning.

The LAPA manual also facilitates the integration of climate change resilience into local-to-national development planning processes and outcomes. Specifically, the LAPA Framework supports:

1. The development of local adaptation plans, which reflect location or region specific climate change hazards and impacts. The plans support adaptation options that are

available locally and that are accessible to the most vulnerable communities and households, including women.

2. The integration of local adaptation priorities into village, municipality, district and sectoral level planning processes in accordance with the Local Self Governance Act.
3. The implementation of local adaptation plans by supporting the timely and sustainable delivery of adaptation services to the most climate vulnerable including women.
4. Iterative adaptation planning through constant monitoring, evaluation and feedback.

The LAPA Framework ensures that the process of integrating climate change resilience into local-to-national planning is bottom-up, inclusive, responsive and flexible. The Village Development Committees (VDCs) and the Municipality Development Committees (MDCs) have been identified as the most appropriate units for integrating climate change resilience into local-to-national development planning processes and outcomes. The VDCs as administrative and geographic units are able to capture location/community specific adaptation priorities. Further, these units ensure that the national level support for local adaptation actions does not get fragmented. Integration at these units enables a match between bottom-up and top down adaptation planning.

The steps involved in preparing and implementing local adaptation plans for action are as follows:

1. Climate change sensitisation (creating awareness);
2. Climate vulnerability and adaptation assessment;
3. Prioritization of adaptation options;
4. Developing Local Adaptation Plans for Action;
5. Integrating Local Adaptation Plans for Action into planning processes;
6. Implementing Local Adaptation Plans for Action; and
7. Assessing progress of Local Adaptation Plans for Action.

These local plans are expected to be integrated in to the overall planning process and implemented eventually. One of the important features of the LAPA process is monitoring and reviewing to assess the progress. Developing adaptation plans at a village level or a district level (local plan) is an important step in the process. The adaptation plan should be based on actions needed. It will be essential to identify the locations of implementation of actions as well as sequencing of the same (when and where). The service providers and their roles need to be clearly defined. Finally, careful estimation of the cost of the project as also monitoring and review aspects will make it effective.

The Nepal Climate Change Support Programme (NCCSP) has helped the Government of Nepal develop 100 LAPAs in 14 districts. These plans have prioritised first round of immediate adaptation actions in the areas of a) agriculture, food security, livelihoods, forestry and biodiversity; b) capacity and skills buildings, income generation, planning and monitoring; c) mitigation of climate-induced disasters (such as early warning systems flood and landslide protection); d) water resource management, alternative energy; e) infrastructure development. Monitoring and evaluation systems have been developed for LAPAs and the baseline survey and capacity assessments have been completed for 14 districts. All District Development Committees (DDCs) had commenced implementation of adaptation activities. As of February 2015, more than 715 adaptation actions were implemented. The National Planning Commission (NPC) has approved the LAPA Red Book. NCCSP organised 1-2 training sessions to local committees on LAPA with a total of 2,342 participants. Similarly, NCCSP organised orientation sessions to create awareness on climate change adaptation for more than 2,000 Ward Citizen Forum (WCF) members.

The following two cases illustrate farmers' response and coping strategy:

- Farmers in Terhathum have replaced maize with different cash crops, such as ginger, cardamom and broom grass, which can provide a good source of income under suitable conditions. These crops require less water and less labour input. Other households have supplemented the small income earned from farming or wage labour by collecting medicinal plants from the forests and selling them to traders. Some have started cultivating tea, which fetches a higher price than traditional crops such as rice. Other farmers have shifted their crops to rice varieties that require less water or can be sown at a later date if the rains are delayed. Those unable to cope and make such shifts have abandoned farming altogether and changed occupations or relied on different sources of income.
- Villages in Maunabudhuk have continued to build traditional multi-purpose ponds close to their homes to harvest rainwater. Water can remain in these ponds for many months to be used by livestock and for irrigating fruit trees and vegetable gardens. In some villages, farmers use sprinklers and drip irrigation systems to offset the cost of establishing expensive large irrigation channels that also necessitate external inputs, resources and skills. Others have started using pumps to lift irrigation from streams.

Source: ICIMOD Reports

The LAPA manual is intended to provide thrust on the process of developing actions, unlike NAPA, which identified several action areas in different sectors around thematic areas.

6 Low Carbon Economic Development Strategy (LCEDS)

The Climate Change Policy of Nepal has recommended adopting low carbon development path for achieving sustainable socio-economic growth. The Low Carbon Development Strategies (LCDS) was first discussed at the United Nations Framework Convention on Climate Change (UNFCCC) in 2008. LCDS is also referred to as low-emission development strategies (LEDS). Such strategies will help Nepal transforming its development pathway to a low carbon economy and also achieve sustainable development. Such a path will also adhere to socio-economic and development priorities of the country. LCDS are intended to help better co-ordination of climate change and economic development policies and strategies in a coherent manner.

The Government of Nepal is preparing the Low Carbon Economic Development Strategy (LCEDS). MoSTE along with National Planning Commission (NPC) are leading preparation of the LCEDS. Alternate Energy Promotion Centre (AEPC) is the designated agency to manage the LCEDS formulation process. AEPC has prepared a draft “Strategy Paper” on the subject (December 2015), which is in the process of being finalised.

As the LCEDS is being evolved and formulated, it may be useful to take a brief review of energy and forestry sector in Nepal. Both these sectors are of significance from the perspective of climate change mitigation. The following sections attempt to review Nepal’s climate change mitigation segment briefly. The first part provides discussion on the energy sector followed by the forestry sector.

6.1 Energy

With low per capita GHG emission of 0.2 tonne per year¹⁹, Nepal is among the nations with the smallest carbon footprints in the world. Residential energy consumption accounts for more than 85% of the total energy consumption in the country²⁰. Biomass is the principal fuel used for cooking. Access to the centralised grid is largely restricted to urban areas. Load shedding (i.e. forced power outage) is prevalent in Nepal. There is considerable un-tapped potential to generate hydro-electricity. The total installed electricity capacity in Nepal of about 740 MW is lower than the peak demand of 1,200 MW²¹. Almost 92% of the total installed capacity for electricity generation is hydropower²². The contribution of installed electricity to Nepal’s carbon footprint is thus negligible.

¹⁹ <http://data.worldbank.org/indicator/EN.ATM.CO2E.PC>

²⁰ Low carbon competitiveness in Nepal - Policy brief, Karen Ellis, Alberto Lemma and Andrew Scott with Asish Subedi and Ratnakar Adhikari, September 2013, <http://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/8594.pdf>

²¹ http://www.nea.org.np/images/supportive_docs/Annual%20Report-2014.pdf

²² Low carbon competitiveness in Nepal - Policy brief, Karen Ellis, Alberto Lemma and Andrew Scott with Asish Subedi and Ratnakar Adhikari, September 2013, <http://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/8594.pdf>

There is a deficit of installed electricity generation capacity from the grid to meet the electricity demand. Many electricity consumers have thus installed electricity generators to address the problem of electricity shortage. These diesel-based solutions contribute to Nepal's GHG emissions. The demand for petroleum products comprises demand for liquefied petroleum gas (LPG), kerosene, petrol (motor gasoline) and diesel. LPG and kerosene are used chiefly for cooking and heating in urban areas. Diesel is mainly used for the transportation.

There is an apparent need to increase investment in transmission and distribution (T&D) infrastructure. Under-investment in transmission has also resulted in to a high level of losses. In view of the recent development in renewable energy technologies and grid systems, Nepal needs to consider an appropriate strategy to adopt smart grid options to tap in to potential for renewable energy base electricity generation. The Nepal Electricity Authority (NEA) adopted the Community Electricity Bylaws in 2003, which resulted in to establishing more than 230 community electrification schemes, supplying electricity to more than 278,000 households. There is considerable potential to increase community based electricity supply programmes.

The Nepal Energy Efficiency Programme (NEEP) has identified the hotel, food and beverages, metals, cement, pulp and paper, cold storage, soap-making, chemical and brick-making industries as energy-intensive sectors. The potential for energy savings has been estimated as 15% in electricity consumption and 30% in thermal energy, valued at an estimated NPR 6,337 million.

Most of Nepal's hydro-electricity capacity is run-of-river type. Therefore electricity generation depends on the levels of water in rivers associated with hydroelectricity installations. There is higher level of demand for electricity in Nepal during the dry season. Water levels in rivers are at their lowest in the dry season and many hydropower plants operate at lower capacities (50-60%) in the dry season because of low water levels²³. Nepal has been promoting the use of renewable energy over the past few years. Some of the technologies recommended under District Climate and Energy Plans (DCEP)²⁴ include domestic biogas digesters, improved cook stoves, solar home systems, micro and pico hydro and improved water mills.

²³ Climate change in Nepal and its impact on Himalayan glaciers, Shrestha 2010

²⁴ Low carbon competitiveness in Nepal, 2013, Overseas Development Institute (ODI), U.K.

The following table provides a brief list of clean energy technologies having considerable potential to reduce GHG emissions in Nepal:

Clean Energy Technology	Minitgation potential
Large-Scale	
Solar PV (Electricity)	Significant reduction potential; Replaces diesel
Biomass Power Generation	Reduction in GHG emissions; Replaces diesel
Hydro electricity	Reduction in GHG emissions;
Small-Scale	
Improved Cookstoves	Reduction in GHG emissions; protection of forest resources
Household Biogas digester	Good potential to reduce GHG emissions; Reduces black soot, saving of fuel wood, kerosene use
Solar Home System	Significant reduction potential; Replaces diesel
Micro and Pico Hydro	Significant reduction potential; Replaces diesel
Improved Watermills	Significant reduction potential; Replaces diesel
Small-scale wind power systems	Reduction in GHG emission;
Bio-diesel	Reduction in GHG emission; replaces petro-diesel

Table: Potential Clean Energy Technologies

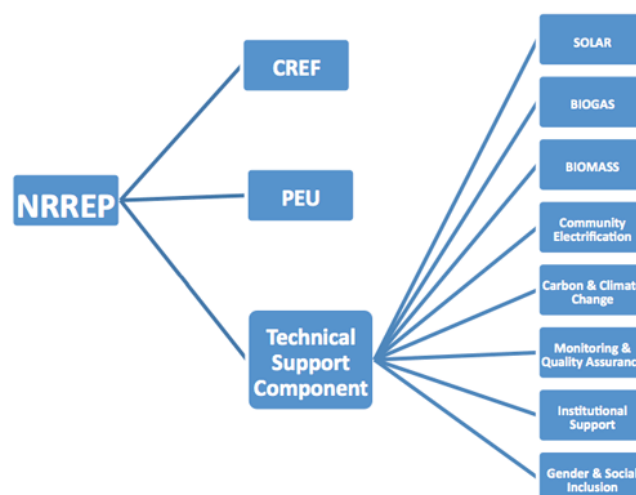
Source: Case Studies on Low Emission Development, Nepal's District Climate and Energy Plans <http://cdkn.org/wp-content/uploads/2013/05/Asia-LEDS-Partnership-Case-Study-Nepals-District-Climate-and-Energy-Plans.pdf>

National Renewable Energy Programme:

In 2011, the Government of Nepal began supporting the formulation of a National Rural and Renewable Energy Programme, with an objective of raising the living standards, providing employment, and promoting sustainable development by integrating alternative energies into rural economies.

The NRREP focuses on poverty reduction, and is targeted towards the poorest areas of the country. Gender and social inclusion have been mainstreamed at every level of the programme through its immediate objectives and activities. The programme also actively involves beneficiaries in the decision making process, commitments in line with the interim 3-year plan and the 13th Plan. The NRREP follows a single programme modality, and as such is the only renewable energy programme supported by the Alternate Energy Promotion Center (AEPC).

One of the components of the NRREP is the Central Renewable Energy Fund (CREF), which is the principal entity responsible for the delivery of subsidies and incentives to the renewables sector. CREF aims to have the capacity to effectively deliver renewables at a grassroots level. The NRREP also has a technical support component, which aims to deliver high quality renewable energy service delivery for various technologies



to remote households. It is hoped that this will strengthen the supply of RET across the country and build a base for expanding services to non-subsidized markets.

The third component of the NRREP deals with Business Development for Renewable Energy and Productive Energy Use (PEU), with an objective of increasing income and employment within MSMEs, particularly for economically and socially disadvantaged groups. The NRREP has a budget of \$170.1 million, to which the Government of Nepal contributes 40%. Management of NRREP is undertaken by the NRREP Programme Steering Committee, with the AEPC acting as the executing entity.

6.2 Forestry and REDD+

Reduction in forest cover and degradation of forests contribute to GHG emission. At present, deforestation accounts for approximately 18-25% of global GHG emissions²⁵.

These emissions can be reduced effectively and efficiently by avoiding deforestation and forest degradation through improving the management regimes of existing forests. Nepal has about 40% of its land covered by forests and shrub lands. This indicates the importance of forestry related climate change actions.

Over the years, a sizeable area of forests was either converted in to agricultural land or degraded in to shrub land. There is increased demand for forest products as the population increases resulting in increased pressure on forests. Local and poor indigenous people's livelihood often depends on forests. The Ministry of Forests and Soil Conservation (MoFSC) has identified reasons for deforestation and forest degradation in Nepal. These include: high dependence on forest and forest products (timber, firewood

²⁵ REDD in Nepal through Community Forest Management- Information brochure. ICIMOD www.icimod.org/resource/2875

and other non-timber forest products); illegal harvesting of forest products; unsustainable harvesting practices; forest fire; encroachment; overgrazing; infrastructure development; resettlement; and expansion of invasive plant species. The Government of Nepal has promoted different policy measures to manage the forest more sustainably. For example, the Forestry Sector Strategy has been developed.

Forestry Sector Strategy for Nepal (2014)

Nepal's forestry development was guided for almost 25 years by the Master Plan for the Forestry Sector (MPFS), however this ended in 2011. Recognising the importance of forest ecosystems and watersheds and their role in providing goods and services for people's livelihoods and welfare, the Government of Nepal developed the Forestry Sector Strategy. The Forestry Sector Strategy aims to have sustainably managed and climate resilient forest ecosystems and watersheds, through a decentralised, competitive and well-governed forestry sector that provides inclusive and equitable incomes, employment and development opportunities.

The following eight strategic pillars form the bulwark of the Strategy, and are integral to the thematic focuses of the FSS- managing Nepal's forests, ecosystems, and watersheds, conserving biodiversity, responding to climate change, promoting economic development and enhancing capacities, institutions and partnerships.

1. Sustainably managed resources and ecosystem services
2. Conducive policy process and operational environment
3. Responsive and transparent organisations and partnerships
4. Improved governance and effective service delivery
5. Security of community tenure
6. Private sector engagement and economic development
7. Gender equality, social inclusion and poverty reduction
8. Climate change mitigation and resilience

The Forestry Sector Strategy is expected to produce following outcomes:

1. Enhanced forest productivity and sustainable supply of products and services
2. Biodiversity, watersheds and ecosystem services improved
3. Improved livelihoods and greater contribution of the forestry sector contribution to national economic development
4. A competitive, accountable, and inclusive forestry sector, where institutional power has been devolved
5. Climate resilient society and forest ecosystems

Another measure in the forestry sector is the community forestry programme, which has had quite a degree of success. The community of forest user groups, whose ongoing livelihoods depend on the forest, is given the control. The community creates incentives for sustainable forest management.

Community forestry has been successful in promoting sustainable use of forests in Nepal. Deforestation (described by the FAO as the conversion of forest to another land use or the long-term reduction of the tree canopy cover below the minimum 10% threshold) and forest degradation (a reduction of canopy cover or stocking within the forest, and changes within the forest that negatively affect the structure or function of the stand or site and thereby lower the capacity to supply products and/or services) have been reduced as a result of the community-based forestry programmes. Participation in the international “Reducing Emissions from Deforestation and Forest Degradation (REDD+)” mechanism has a potential for Nepal to generate carbon revenues.

REDD in Nepal through Community Forest Management Project: The main goal of this project is to demonstrate a national governance and payment system for emission reduction through sustainable forest management which benefits local communities in general, and indigenous people in particular. To achieve this goal, the pilot project will strengthen the capacity of civil society actors in Nepal to ensure their active engagement in planning and preparation of national strategies related to REDD by using the experiences and knowledge gained from three pilot demonstration sites in Nepal. The project will facilitate the establishment of a Forest Carbon Trust Fund that will be sustainable, equitable, and creditable in the long term for community forest users. The project is currently active in three watersheds within the mid-hills of Nepal; namely, Charnawati in Dolakha district, Ludikhola in Gorkha district, and Kayarkhola in Chitwan district. Nepal’s forestry sector needs a multi-stakeholder approach for addressing issues and challenges that it faces. The draft strategy paper on LCEDS has discussed forestry and energy sectors and suggested strategies for achieving climate resilient, low carbon economic development.

6.3 The Draft Strategy Paper on LCEDS

As mentioned earlier, the Government of Nepal has prepared a draft “Strategy Paper” on the LCEDS. The Government has identified the following major principles of Low Carbon Economic Development Strategy (LCEDS) in the draft strategy paper:

- Flexible approach for design as well as implementation;
- Nationally owned, transparent and collaborative study process;
- Broad stakeholder engagement and inclusive;

- Build on the existing national planning processes and strategies. Integrate in to government structures.

The objective of the LCEDS²⁶ is to catalyse concrete actions that support development, but with less emissions than without intervention. The draft Strategy Paper on LCEDS has prescribed following main strategy elements / features:

- Economic development based on agriculture, forestry and hydroelectricity sectors; hence these sectors need to be provided adequate attention while implementing LCEDS.
- Promote and encourage development of solar, wind and hydro-electricity. Also promote clean and alternative energy;
- Wider dissemination and knowledge sharing of clean and green energy; Priority be given for clean energy development;
- Wider promotion and encouragement to energy efficiency improvement;
- Energy audit needs to be conducted in energy intensive sectors such as industry and commerce as also in transportation, agriculture and tourism sectors.
- Conduct research and development in the area of climate smart agriculture.
- Agriculture based on minimum water utilisation;
- Capacity development of marginalised / deprived / vulnerable communities.

The draft Strategy Paper on LCEDS has outlined sector-wise main features as follows:

Energy Sector: Nepal proposes to set a high target for the hydro-electricity generation (4,000 MW by 2020 and 12,000 MW by 2030). Hydroelectricity projects are also expected to reduce incidence of flash floods and better drought management needs to be incorporated suitably. The electricity thus generated will need transmission and distribution infrastructure, for which appropriate financial resources need to be mobilised. Clean, renewable and alternative energy generation needs to be ensured through suitable financing mechanisms. Solar, wind and biomass based electricity will supplement hydroelectricity. Household biogas digesters play an important role in providing clean fuel for cooking using animal waste. Nepal has been implementing household biogas digesters programme and has achieved good results.

Industrial Sector: Nepal's energy intensive industrial sectors include cement, steel processing, bricks, food, beverages and paper. Industrial units from these sectors use

²⁶http://www.aepc.gov.np/?option=nrrep&page=subsubtechsupport&mid=5&sub_id=41&ssid=20&cat=Low%20Carbon%20Economic%20Development%20Strategy

heating equipment and boilers, the energy efficiency of which need to be improved. Energy audits could facilitate implementation of energy efficiency improvements. The draft paper has recommended use of clean energy in these sectors. Effective industrial waste management will further help in achieving low carbon development.

Residential Sector: Residential sector uses energy mainly for cooking in the form of biomass based energy. The draft paper, hence, has recommended wide-spectrum strategy elements. It is envisaged to promote use of improved cook-stoves, biogas and LPG for cooking in rural areas. Electricity needs to be used for cooking in urban areas. The paper has also discussed recommendation for house construction and materials to be used to reduce energy loss. In the case of rural houses local wood is encouraged. It is expected that hollow wall construction and double glazed windows are used in urban housing. Thermal insulating materials should be promoted in housing construction. Higher percentage of solar energy for household energy requirement can reduce GHG emissions. LED lighting could reduce electricity load and consumption for lighting end-use. LED lighting needs to be promoted both in rural and urban areas.

Agriculture Sector: The draft paper has recommended development of low carbon agriculture. Integrated plant nutrition and pest control will help promoting climate friendly agriculture. As a part of adaptation measure, it is recommended to develop drought resistant crops as well as crops that can remain submerged over an extended period of time. Clean energy needs to be used to the maximum possible extent in agriculture, which can reduce carbon intensity within the sector.

Forestry Sector: One of the reasons for reduction in forestry cover is encroachment which needs to be controlled. Effective and better forestry management will help achieve low carbon development. Increased participation of women and economically disadvantaged groups will enhance socio-economic development. The draft paper has recommended more efforts under REDD+. Ecosystem based adaptation and better management of forest resources are among the strategies, which will help achieving lower emissions in the forestry sector.

Nepal has potential to develop projects and initiatives in the energy sector including renewable energy. The Nepal Climate Change Policy has identified low carbon development as one of the principal areas to address. Target segments and technologies are expected to emerge out the proposed LCEDS. An indicative list of areas to address include as follows:

Electricity and energy access

- Develop hydro-electricity sector to meet the enhanced demand;
- Enhanced access to modern and clean energy resources including electricity;
- Promote efficient small appliances, machines, for end-uses in selected sectors.

Renewable Energy and energy efficiency

- Create awareness of use of renewable energy (RE) technologies;
- Formulate suitable policies to encourage RE;
- Provide appropriate incentives to propagate RE technologies;
- Promote efficient utilization of available biomass resources;
- Promote efficient electricity end-use technologies.

Forestry

- Sustainable management of forests;
- Effective land use system;
- Carbon sequestration.

7 Nature Conservation National Strategic Framework

The Nature Conservation National Strategic Framework for Sustainable Development was launched on the 18th of December, 2015 aiming to contribute to the integration of development and conservation efforts. The Framework's purpose is to develop nature conservation and sustainable development as complementary to each other, an aim that was a reflection of the Constitution of Nepal of September 2015, which posited that every citizen has the right to live in a clean and healthy environment, and a right to compensation from polluters.

The Framework was developed through consultations between experts, civil society, and the government, representing all ecological regions in Nepal. The Framework aims to reconcile the challenge of providing food, water, energy, housing, transportation and other public services without loss of biodiversity and ecosystems, or environmental pollution. The Nature Conservation National Strategic Framework is based on the results of Nepal's National Conservation Strategy of 1988, consultations with stakeholders, and multiple approach papers commissioned on forests, biodiversity, agriculture, physical infrastructure, water resource and disaster management, climate change and energy, tourism, health, and education. The Framework is designed to take into account the needs of indigenous peoples, and incorporate gender and social inclusion into decision making.

A National Conservation Strategy had been drafted by the Government of Nepal and the National Planning Commission in 1988. However, its implementation was hampered for a multitude of reasons, and it was not adapted to the specificities of contemporary Nepal. In order to achieve the government's goals of poverty reduction, primary education, gender equity, and environmental sustainability, it is necessary to integrate nature conservation in development initiatives.

The Nature Conservation National Strategic Framework for Sustainable Development contends that sustainable development has been hampered by:

- An increase in global temperature due to greenhouse gas emissions;
- A decline in carbon sequestration capacity due to deforestation and forest degradation;
- Emission of harmful chemicals into the atmosphere by industries, factories and atomic plants;
- Land erosion, siltation, salinization due to exploitation of non-renewable mineral resources over the past two decades.

The Government of Nepal has set ambitious goals in the 13th Plan and in related development initiatives. GoN has pledged that the country will graduate from LDC status by 2022, a pledge that includes the following components:

- 8% GDP growth rate within the next eight years (2022);
- Increasing irrigation coverage from 1,311,000 ha to 1,713,000 ha by 2027;
- Rehabilitating 1.6 million ha of degraded land by 2033;
- Increasing the proportion of population with access to electricity facility from 67% to 87% by the end of the Thirteenth Plan;
- Constructing 1,776 km of mid-hill highway by the end of the Thirteenth Plan and 945 kilometers of the Mechi-Mahakali electric railway;
- Implementing a policy of constructing one road and one bridge in every electoral constituency;
- Constructing international airports in Pokhara, Nijgadh and Bhairahawa;
- Maintaining forest coverage in 40% of the land in the country and maintaining 'one house, one tree' and 'one village, one forest'; maintaining open space for every 25,000 persons in each municipality area;
- Bringing down overall poverty from 23.8% to 18% by the end of the Thirteenth Plan period and rural poverty from 27% to 10% within 20 years.

Achieving these goals will require significant oversight and planning, and must be done in a manner that is resilient to the effects of natural disasters, such as the 2015 earthquake. Sectoral and thematic policies often focus on regional development, thus the National Strategic Framework is formulated to be an umbrella strategy, designed to achieve the development imperatives highlighted in the 13th Plan in an environmentally sustainable manner across Nepal. It is based on nature conservation, sustainable use of natural resources and equitable distribution of their benefits.

The guiding principles of the Framework include the use and promotion of nature-based solutions, sustainable use of natural resources, harmonisation between development and conservation, collaboration and partnership, traditional knowledge, respect for skills and culture, compliance with national and international commitments, guarantees for good governance, promotion of positive external impacts and integrity in ecosystems. The Framework also stresses the importance of equitable participation of stakeholders in the formulation and implementation of sectoral and thematic developmental strategies. The Framework is organised around five key pillars:

1. Mainstreaming nature conservation in development efforts:

- Weaknesses observed in mainstreaming nature conservation will be addressed by analysing and reviewing existing policies, laws, and investments in conservation.
2. Harmonising sectoral policies and strategies:
 - Uniformity of strategy and policy will be enforced between different institutions, in order to ensure that they are complementary and not contradictory, or working at odds with each other.
 3. Strengthen coordination among sectoral bodies:
 - Agencies coordinating with each other shall consider the goals set by sectoral agencies as their shared targets.
 4. Valuing and accounting ecosystem goods and services:
 - Mainstreaming of the value of biodiversity and ecosystem economics into the decision making process.
 - Raising awareness regarding the importance of ecosystem services.
 - Creating of a framework for decision making that takes into account resources and their utility value.
 - Providing payment for ecosystem services whenever possible.
 5. Improving accountability on conservation.
 - With the aim of increasing accountability, the National Planning Commission will play a coordinating role in encouraging cooperation and harmonisation of policies between sectoral ministries.

The Framework will be implemented by the Government of Nepal through its plans and programmes over the course of 16 years, and coordinated efforts will be undertaken by the National Planning Commission. This ensures that nature conservation is integrated into sectoral development and ministerial policy. Implementation of the Framework is planned over multiple time frames, with short (1-3 years), medium (4-8 years) and long (9-15 years) term implementation plans all the way to 2030. Implementation of the framework is seen by the Planning Commission as further contributing to mainstreaming environmental sensitivity, achieving coordination between government agencies, valuing and accounting ecosystem goods and services in development investments, and enhancing accountability of all concerned in relation to the results of conservation.

An implementing coordination council will be set up, comprising of members of various Ministries, and include members of academia and civil society. The Council will be chaired by the Vice Chair of the National Planning Commission, and charged with:

- a) Making development efforts nature-sensitive.
- b) Integrating nature conservation into all development efforts.
- c) Guiding ministries to mainstream the issues of nature conservation in their strategies.
- d) Arranging financial resources for the mainstreaming of nature conservation.
- e) Ensure equitable sharing of benefits from nature conservation.
- f) Ensure the participation of thematic ministries and agencies, non-governmental organisations and the private sector in implementation of the Framework.
- g) Help in formulating laws and regulations recommended by the National Strategic Framework Implementation Coordination Committee
- h) Make the necessary provisions for the representation of Provinces in the Implementation Council and the Committee after the State has been restructured
- i) Arrange Provincial Councils as required after the State has been restructured.

In addition to the Coordinating Council, a Coordinating Committee shall also be set up in order to implement the decisions and guidance of the Council, and to monitor and evaluate the effectiveness of the Framework.

The Framework includes three major areas of monitoring and evaluation.

The first deals with *conservation related results*, which mandates the evaluation of two main types of results: Those related to the implementation of the five pillars of the Framework, and those related to sectoral and thematic strategies. The second deals with the *evaluation of the assumptions* envisioned in the result of nature conservation, including the assumptions made for achieving the goal and objectives of the Framework, and for achieving the results of the strategic pillars. The third includes the *reduction of foreseen risk* associated with achieving the results of nature conservation. This deals with evaluating the implementation of risk reduction measures foreseen for achieving thematic and sectoral strategies.

The various thematic and sectoral conservation-related representative indicators to be monitored and evaluated include the forest sector, biodiversity, agricultural sector, development of physical infrastructure, land management, renewable energy, climate change, health, poverty alleviation, water resource and disaster management, gender and social inclusion, and society, nature, and indigenous nationalities. The monitoring of the implementation of the Framework Implementation shall proceed as per the standard

monitoring and evaluation schedule of the National Planning Commission. A first evaluation of the Framework shall be undertaken after the completion of the short term implementation plan, followed by evaluations in the mid-term and final evaluation of every periodic plan, with an aim to revise the Framework accordingly.

National Biodiversity Strategy and Action Plan (NBSAP):

Nepal's National Biodiversity Strategy and Action Plan (2014 – 2020) highlights the importance of biodiversity, mentioning its utilitarian value, the role of biodiversity in maintaining the natural balance within ecosystems that provide a number of ecological services, and the intrinsic value of diversity. The NBSAP thus highlights the importance of conserving biodiversity as an essential part of safeguarding life support systems on Earth. The NBSAP includes sections on Nepal's national context, various threats to biodiversity in Nepal, efforts, outcomes and gaps in the management of biodiversity, strategies for management of biodiversity, arrangements for implementation of the strategy, and a framework for Local Biodiversity Strategy and Action Plans. The NBSAP highlights six thematic focus areas: Protected Areas, Forests outside Protected Areas, Rangelands, Wetlands, Agriculture, and Mountains. The Strategy is meant to be cross-cutting, and is made up of fifteen themes that include gender and social inclusion.

Nepal can be divided into five major geographic areas, the High Himal, High Mountains, Middle Mountains, Siwaliks and Tarai. 118 distinct ecosystems have been identified in Nepal, and the country is extremely diverse in terms of flora and fauna. This diversity has come under threat from the loss and alternation of natural habitats, overexploitation of natural resources, invasions of alien species, and the pollution of water bodies. The NBSAP has been drafted with a long term vision of conserving biodiversity in order to enable resilient ecosystems and national prosperity.

The NBSAP includes mechanisms for coordination and monitoring of biodiversity related plans, programmes and activities at the national, district and local levels. The capacity building plan includes recommendations for improved management of biodiversity at an institutional level. The plan for fund generation and mobilization also identifies cost categories and possible financing mechanisms for the implementation of the NBSAP. The Strategy also includes a monitoring and evaluation mechanism and framework.

8 National Sustainable Transport Strategy

The rapid urbanization and economic development of Asia has led to the emergence of urban transportation and waste management as priority environmental issues to address in order to achieve sustainable development. With these issues in mind, the United Nations Centre for Regional Development (UNCRD) and Ministry of the Environment of the Government of Japan launched the Asian Environmentally Sustainable Transport Initiative in 2004, aiming to integrate Environmentally Sustainable Transport (EST) in overall policy, planning and development. The EST emerged after engagement with stakeholders across the board, including at the governmental level, with private players, and civil society.

Nepal's EST developed from the Asian EST. As part of the EST initiative, UNCRD is supporting the Government of Nepal and the Ministry of Physical Infrastructure and Transport (MoPIT) to prepare a National Sustainable Transport Strategy. The Sustainable Transport Strategy built on existing initiatives, and aims to be an umbrella strategy for the transport sector in Nepal. The Strategy will remain in place until 2040, and envisions the development of a transport system in Nepal that is efficient, accessible, people-centric, affordable, reliable, safe, inclusive, environmental friendly, and climate/disaster resilient.

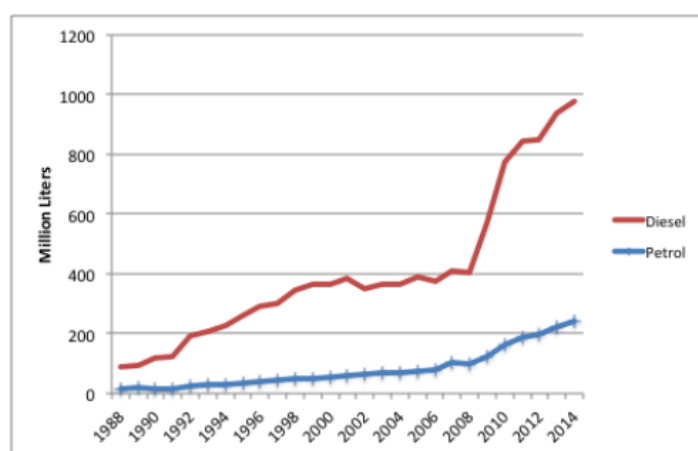


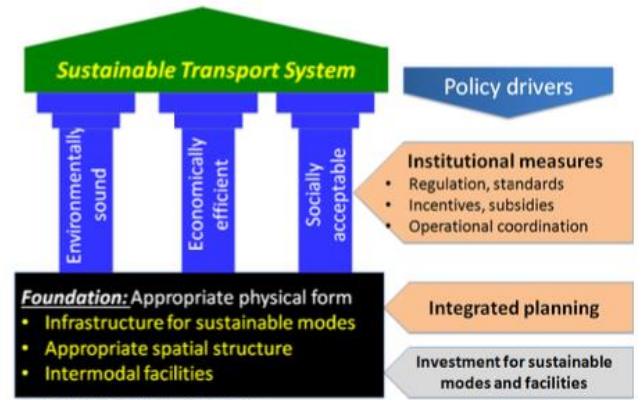
Figure 3: Trend of Diesel and Petrol consumption
Data source: Economic Survey, Ministry of Finance, Various Years

Key elements of the Sustainable Transport System include road safety strategies, transport management strategies, and electric vehicle promotion strategies, which have been prioritised. Sustainable transport forms a major portion of the overall strategy, however, focus is also placed on the issues of thematic and institutional coordination, in an effort to streamline and include existing strategies and guidelines. The Earthquake in 2015 affected some of Nepal's transport infrastructure, which led the government further towards developing climate and disaster resilient transport systems. Nepal's Sustainable Transport Strategy thus represents a holistic approach towards dealing with contemporary challenges in the transport system. The integrated approach taken by the Government of Nepal and UNCRD, addressing a variety of social, economic, and environmental issues related to the transport system stands to make a significant impact of Nepal's human and environmental security in the future.

Key Principles:

As mentioned briefly in the introduction, the vision of the National Sustainable Transport Strategy is guided by the following 9 principles.

- 1) Efficiency is one of the chief principles of the Strategy. The strategy outlines the importance of better operational performance and lower energy intensity, which is understood as contributing to lower costs and emissions.



Source: Adapted from Morichi and Acharya (2013)

- 2) Accessibility of transport is another core precept of the Strategy, which defines accessibility not only in terms of physical accessibility, but also by social accessibility, which underscores the potential for the system to be utilised by all sections of society. The strategy thus emphasizes the importance of a well-developed public transport system.
- 3) Modern transport systems are made up of a network of infrastructure, vehicles, and users. However, these systems tend to be designed from the perspective of vehicles rather than users. The Transport Strategy envisions a system designed to be people friendly.
- 4) Affordability of the transport system to all members of society is a key element of the Strategy. To this end, the government may invest in cross-subsidy or direct public subsidy, while also driving down costs through increases productivity, efficiency, and investment in public transport.
- 5) The reliability of a transport system plays an important role in determining its adoption by end-users. The Transport Strategy strives to create predictable and reliable services.
- 6) Safety of users is another principle of the Transport Strategy, mandating that vehicles and operating and maintenance system should ensure adequate safety for the users.
- 7) Along with accessibility, the Transport Strategy envisions and inclusive transport system that there does not exclude or discriminate against to any section of society (particularly the elderly, infirm, women, children, and marginalised communities). The strategy states that there should not be any physical or institutional barrier in using transport infrastructure and services.

- 8) As is the case with many developmental activities, there is a degree of damage to natural habitats when developing transport infrastructure. The Transport Strategy thus mandates that any initiatives undertaken ought to minimise this damage and make the transport system environmental friendly.
- 9) The Earthquake in 2015 highlighted the importance of a climate and disaster resilient transport system. The Transport Strategy thus envisages the creation of a resilient transport system that has the capacity to adapt to and recover from such events.

In order to develop Nepal's transport system to be more productive, resilient, and sustainable, it is important that there be a balance among economic progress, social equity, a healthy and protective environment and people-friendly infrastructure and transport services. Nepal's Sustainable Transport System would lead to the integration of these elements at the level of policy formulation, plan preparation, infrastructure building and transport service operation.

Table 1: Common indicators for sustainable transport

Economic aspects	Environmental aspects	Social aspects
<ul style="list-style-type: none"> • Degree of accessibility • Transport costs • Productivity • Efficiency • Congestion • Mobility • Employment • Comfortability • Profitability • Energy efficiency • Public subsidy • Load factor • System reliability • Multimodality • Connectivity • Energy security 	<ul style="list-style-type: none"> • Local emissions • GHG emissions • Pass-km per capita • Fuel consumption • Fuel quality • Ecological impacts • Soil/water pollution • Noise and wastes • Transport use of arable land • Per capita travel • Transit mode share • Natural resource exploitation • Climate resiliency 	<ul style="list-style-type: none"> • Traffic safety • Accessibility • Inclusiveness • Affordability • Gender equity • Universal access • Resettlement • Poverty reduction • Road use parity • Participatory • Impact on heritage • Security • Fitness/health • Livability • Spatial separation • Disaster resiliency

9 Environmentally Friendly Local Governance Framework (EFLG Framework)

The Constitution of Nepal guarantees the right to live in clean environment as the fundamental right of each person. The Environmentally Friendly Local Governance Framework puts this principle into practice, with a vision of establishing environmental governance and creating a sustainable environment-friendly society at household, village, municipality and district levels. The Framework focuses on mainstreaming issues relating to the environment, climate change adaptation, disaster and waste management into the planning process at a local level in order to drive sustainable development. The framework thus aims at developing a cooperative, collaborative system based on simple, measureable indicators.

The EFLGF was put into place in September 2013, as a reflection of the Nepal's Directive Principles of State, that mandate the government with the protection of the environment while also calling for infrastructure development, raising awareness about environmental issues, protecting biodiversity and equitably sharing the benefits of natural resources. The Framework consolidated the work of the Millennium Development Goals, Three Year Interim Plan (2007 - 2010) and the 13th Plan, Solid Waste Management Act and Rule, Environment Protection Act and Rule, Local Self-Governance Act and Rule (1999), National Adaptation Plan of Action (2010), National Strategy for Disaster Risk Management (2009), National Agriculture Policy (2004), Local Infrastructure Development Policy, National Rural Energy Policy (2006), Sanitation and Hygiene Master Plan (2010), and other related policies. The framework empowered local institutional bodies to mobilise resources, and carry out activities including waste management, environment protection and disaster management related basic works by themselves or with their involvement. The Framework posited that people's participation was inevitable and crucial for the effective implementation of the above policies and environmental protection.

The Framework maintains five key objectives:

- Mainstreaming issues related to environment, climate change adaptation and disaster management in the local planning process;
- Making the local governance system environment-friendly;
- To increase the accountability of local communities towards sustainable development initiatives;
- To encourage the coordination and cooperation between environmental and development initiatives;
- To increase local ownership by localizing its different dimensions for the sustainable management of environment

The EFLG Framework has a broad scope, and is meant to be implemented across the country and at various levels of political organisation, from settlements and wards to municipalities and districts in various phases. Every household in Nepal is covered under the EFLG Framework.

Following are the key principles that govern the EFLG Framework:

- 1) Wherever possible, decision making power for initiatives will be devolved to the level of implementation. Higher level institutions will only be responsible for works that cannot be implemented at a devolved level.
- 2) Decentralisation is a basic principle of the EFLG Framework, which encourages local institutions to take a leading role in environmental works.
- 3) The Framework states that positive competition is as an important catalyst in the process of effective environmental management at different political levels.
- 4) The EFLG Framework also sets moral and financial accountability for projects at the level of the responsible person/entity.
- 5) The core principles of sustainable development; social justice, sustainable environment management, and economic equity have been adopted into the Framework, and indicators have been set accordingly.
- 6) This framework sets multilateral issues of development such as poverty alleviation, sanitation, educational awareness and promotion of public health as complementary to each other. Disaster management is also recognized as a key part of sustainable multi-dimensional development.

The EFLG Frameworks posits that since households and individuals bear the brunt of negative effects of the environment change, they ought to have a greater of a voice in determining developmental activities. Thus those households and individuals who are directly affected by developmental works or disasters shall be closely involved in order to advance the goal of environment protection. Their duties and responsibilities regarding issues such as waste management, environmental protection, disaster management, and conservation shall be clarified, along with the expected results. The Framework also creates an environment of collaboration between the various stakeholders involved in environmental protection and works towards the mainstreaming of issues relating to the environment and disaster management at the local level.

The EFLG Framework builds on many of the existing policies and strategies put into place for environmental protection and waste and disaster management. The Framework was

designed based on the procedures, regulations and analysis of the various Master Plans (such as those on forestry and hygiene sanitation) put forward by the Government of Nepal and recommendations received from local institutions.

The various policies and strategies that form the basis of the Framework are as follows:

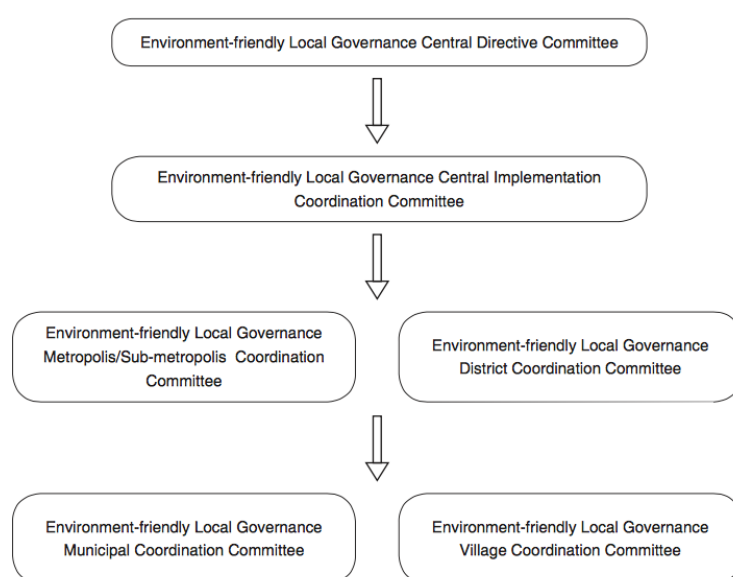
- The Local Self-governance Act deals with provisions related to village and municipality development, including activities relating to water resources, sanitation, health services, and tourism.
- The Environmental Protection Act of 1997, which includes various provisions to mitigate the adverse effects of environmental degradation, and mandates that environmental impact assessments be carried out prior to carrying out development activities, along with initial environmental examinations.
- The Waste Management Act (2007) and Waste Regulation (2013), which lays out provisions to make waste management more effective.
- The Three Year Plan (2007—2010) and the Concept Paper of the Thirteenth Plan, which state the objectives of making human activities more environmentally friendly, along with the internalization of environment management in developmental activities and sustainable use of natural resources.
- The National Land Use Policy (2012), designed to empower local institutions in the context of the Local Self-Governance Act.
- The Millennium Development Goals also form a basis in the Framework, particularly the sections pertaining to environmental sustainability. Key points include the integration of principles of environmental sustainability into the decision making process, halving the population deprived of access to safe drinking water, and improving the situation of people residing in unsafe areas.
- Local Body Minimum Conditions and Performance Measurement Guidelines, which lay out a set of indicators related to environmental protection, waste management, climate change, and disaster management.
- The Local Body Resource Mobilization and Management Guidelines (2013) state the priority investment areas for local bodies. Forestry, climate change, health and sanitation, water management, renewable energy development, cooperative farming, and economic development infrastructure are all identified as priorities.
-

The framework sets up separate environment-friendly basic and advanced indicators for the household, settlement, ward, village, municipality and district levels, along with some special indicators.

- a) Basic Indicators are to be mandatorily fulfilled by households in a district in order for the district to be certified as environmentally friendly.
- b) Advanced Indicators are higher level indicators, that have been set up in order to encourage more environmentally friendly activities.
- c) Special Indicators are approved by the national implementation coordination committee. Special indicators relate to developmental activities with a particular vision, and can be proposed and submitted in any village committee, municipality or geographical area. They indicate specific priority areas, and can lead to the creation of special zones, such as green cities.

Implementation of the EFLG Framework and Monitoring and Evaluation of Results

The Frameworks aims to encourage grassroots participation in governance, it thus advertises to residents to make their households, toles, villages and cities environment friendly through various media. Stakeholders are given orientation training about the framework, and orientation programmes are also planned at the school level. Data collection and analysis as per the indicators is crucial to the successful long term implantation of the EFLG Framework. As such, data will be collected every quarter to measure achievements.



In order to ensure that environmental friendly local governance is carried out, coordination committees will be set up at various levels, from villages to municipalities to districts. The district coordination committees will include an environment, climate, and energy section. In parallel, capacity building exercises shall also be carried out at various levels of governance. Monitoring and measurement of activities at the Municipality level is carried out as per the following table.

Table 18: Monitoring and measurement method at different levels of Municipality

Level	Institution/Mechanism	Duration	Method
Household level	Tole Improvement Committee/Tole Development Organization	Twice a year	Observation, separate measurement forms of each household filled and sent to the ward office
Tole/Community level	Group consisted of the technician as decided by the ward committee on the coordination of ward chairperson or member, principal of the school within the ward, health post; and in case of ward level, youth club, NGOs/ community organizations working on environment, representatives from ward citizen forum and female health volunteer etc.	Twice a year	Observation, separate measurement forms of each Tole filled and sent through ward office along with recommendations to the municipality
Ward level	Group consisted of the technician of Municipality under the chairpersonship of the chief or vice-chief of municipality or chairperson of other ward, drinking water and sanitation division office, district health office, schools and NGOs actively working within the municipal level. (In case of the absence of Municipal incumbent, concerned officer can be deployed as the coordinator.)	Twice a year	Observation, separate measurement forms of each ward filled and sent along with recommendation to the municipality

Monitoring and Evaluation at the Village level is carried out as per the following table.

Table 19: Monitoring and measurement method at different levels of Village Development area

Level	Institution/Mechanism	Duration	Method
Household level	One or more than one group formed consisted of the representatives of the ward citizen forum as decided by the ward committee, schools, youth club, mothers group etc. and monitored/measured through the same group.	Twice a year	Observation, separate measurement forms of each household filled and submitted to the ward committee, and sent to the VDC along with recommendation by the ward committee
Ward level	Measured by the group consisted of the area forest office under the chairmanship of the village development committee's chairperson or vice-chairperson, or chairperson of the other ward, schools, NGOs working actively within the village, forest users group, local mothers group.	Twice a year	Measurement report of the ward level should be submitted to the village development committee. Visit to the ward as per the indicators, minutes of the programme as conducted by the ward, resource materials, record of the advertisement materials, and observation.
Village development Committee level	Measured by the group consisted of two staffs from the thematic office on the coordination of the incumbent as decided by the environment-friendly local governance coordination committee, technical officers of DDC and the representatives of the concerned district level NGOs	Once annually	Observation, study of the planning documents, study of the land-use plan, building code, relevant contract/ agreement with the private sector etc.

10 Conclusions and Prioritisation Process

Nepal faces several challenges as a result of climate change. Being a landlocked and mountainous country it faces high level of vulnerability. Farmers, including women and children bear the brunt of these challenges. Nepal has initiated several efforts to address the challenges arising due to climate change. Besides announcing the Climate Change Policy in 2011, the Government of Nepal has prepared the NAPA document and the LAPA manual. The Low Carbon Economic Development Strategy (LCEDS) is under preparation. Nepal submitted its Intended Nationally Determined Contribution to the UNFCCC in February 2016. The overview of various document of the Government of Nepal has provided climate change areas to be addressed under adaptation and mitigation.

The summarised main Adaptation Focus Areas are as follows:

Focus Areas	Broad Adaptation Actions (Inter-disciplinary)
Agriculture and food security	<ul style="list-style-type: none">• Capacity building (skills development)• Community based climate adaptation• Enhancing adaptive capacities• Monitoring and communications• Disaster risk reduction (Climate induced disasters)• Early warning systems and forecasting• Awareness creation
Water resources and energy	
Forests and biodiversity	
Urban settlements and infrastructure	
Public health	
Urban Settlements	

The NAPA document also specifically identifies nine integrated adaptation projects.

The summarised main climate change mitigation areas include:

Electricity and energy access

- Develop hydro-electricity sector to meet the enhanced demand;
- Enhanced access to modern and clean energy resources including electricity;
- Promote efficient small appliances, machines, for end-uses in selected sectors.

Renewable Energy and energy efficiency

- Create awareness of use of renewable energy (RE) technologies;
- Formulate suitable policies to encourage RE
- Provide appropriate incentives to propagate RE technologies;
- Promote efficient utilization of available biomass resources;

- Promote efficient electricity end-use technologies.

Forestry

- Sustainable management of forests;
- Effective land use system;
- Carbon sequestration.

Broad cross-cutting areas related to mitigation include the following:

- Technology implementation (through development, transfer and commercialisation);
- Capacity building (of institutions – both national and local and of communities);
- Awareness creation; and
- Financing (dedicated funds and financing mechanisms).

It is possible to develop projects in a single area from the topics mentioned above or a combination of two or more areas.

Approach to prioritisation of climate change needs and GCF funding proposals / programmes / initiatives

This overview document consolidates in summary form Nepal's significant climate change policies. These policies are also outlined in Nepal's Intended Nationally Determined Contribution (INDC), submitted in February 2016 to the United Nations Framework Convention on Climate Change. The INDC and Nepal's climate change policies should be the starting point for decision-making when addressing potential ideas for funding proposals to be submitted to the Green Climate Fund. Indeed, all such funding proposals should aim to implement the policy goals outlined in these documents. On the other hand, there will be limited resources and limited capacity to implement several initiatives simultaneously. Funding proposals submitted to the GCF will also need to be spread over time. Decisions will also need to be taken as to which implementing entity or entities could be charged with implementing GCF funding proposals in Nepal. Funding proposals will therefore need to be prioritised, using an appropriate approach. As indicated, the starting point for this prioritization should be compatibility and relevance vis-à-vis Nepal's INDC and climate policies. In addition, funding proposals need to be consistent with and support the GCF's strategic priorities. They also need to be able to match the GCF's investment framework, which is based on the following:

- Impact potential
- Paradigm shift potential
- Sustainable development potential

- Responsive to recipients needs
- Promote country ownership
- Efficiency & effectiveness

As part of the GCF Readiness Programme, UN Environment has prepared an assessment tool which will assist the Government of Nepal to mirror ideas for funding proposals against both Nepal's climate change policies, as well as the GCF's requirements. This document is one part of this process, as it consolidates Nepal's climate policies. Under process, UN Environment proposes that the Ministry of Finance of Nepal, as Nepal's Nationally Designated Authority to the Green Climate Fund, requests stakeholder ministries to submit project ideas to the NDA. These project ideas will then be reviewed in light of their relevance vis-à-vis Nepal's climate change priorities, as well as the GCF's requirements.

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