



Government of Nepal  
Ministry of Environment,  
Science and Technology

# Climate Change and UNFCCC Negotiation Process

November 2012

A Resource Book for Climate Change Negotiators



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Ministry of Environment,  
Science and Technology

# **Climate Change and UNFCCC Negotiation Process**

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### **Preface**

Climate change has emerged as one of the most prominent challenges throughout the world in recent decades. No nation is immune to the adverse impacts of this a phenomenon. Countries having resources and technological capabilities are coping with this change to a certain degree. But the countries with less access to technological resources and budgetary constraints are exposed to the adverse impacts like floods, drought, landslides and ecosystem degradation. Nepal, which is very vulnerable country in terms of climate change impacts, has been, and will be more direly affected in the future.

To achieve the core objective of the UN Framework Convention on Climate Change (UNFCCC), Nepal has joined the international community to stabilize the concentration level of greenhouse gases (GHGs) in the atmosphere to prevent deleterious anthropogenic interference within the climate system. Nepal, as a party to UNFCCC and the Kyoto Protocol, has made comprehensive effort since 2007 to implement the provisions made by the Convention. Nepal has made notable achievements to minimize the effects of climate change by strengthening information-sharing at national level. Moreover, Climate Change Policy has been formulated to address and adapt to climate change impacts along with the implementation of some activities of National Adaptation Programme of Action (NAPA), on other climate resilient activities have been planned for implementation e.g. identification of mitigation technologies, eco-system based adaptation extensive promotion of renewable energy and Clean Development Mechanism (CDM) activities.

Nepal has been playing an increasingly visible role in the UNFCCC negotiation process in recent years. The Least Developed Countries (LDCs) Group has entrusted Nepal to function as the Chair of the LDC Group for 2013 and 2014 which is a significant step towards capacity building at a national level and exploring opportunities to benefit Nepal from climate change regime. Nepal has recently formed a Core Negotiating Team (CNT) to prepare ourselves in the climate negotiation. A process to orient and/or re-orient CNT members on global and national perspectives on climate negotiation has already been commenced. The CNT will, among others, provide additional opportunities in capacity building, and utilisation of enhanced knowledge and skills to ensure Nepal's success in international negotiations.

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The initiative started by IDS-Nepal in collaboration with the Climate and Development Knowledge Network (CDKN) has been successful in enhancing the capacity of Nepalese delegation to UNFCCC. This book will serve as a very good reference book to understand the state of climate change and international negotiation to stabilize the GHGs emissions. I believe that the relevant issues that this book has raised will be instrumental in enhancing awareness on climate change, particularly in the policy and decision-making level.

I would like to thank the editors of this book for their appreciable effort in bringing the pertinent issues of climate change in a coherent and convincing way. I would also like to acknowledge all the authors for contributing important information on climate negotiation. On a special note, I would like to thank Ms. Prabha Pokhrel, Chairperson, Mr. Prakash Koirala, Executive Director and Mr. Sandeep Dhakal, IDS Nepal for their effort in bringing this book in the present form and Mr. Mabindra Regmi for editing the language of the book.

I believe this book will encourage all of us to act now, act together, and act innovatively to address the adverse impacts of climate change that looms over humanity. It will also provide us insights into exploring opportunities and the benefits that can be obtained within the climate change regime.

Keshab Prasad Bhattarai  
Secretary

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# Table of Contents

1.	<b>Climate Change Negotiation: Understanding the Process</b>	1
	<i>Batu Krishna Uprety</i>	
2.	<b>State of Climate Change and its Impact in Nepal</b>	13
	<i>Tara Nidhi Bhattarai, Ph.D.</i>	
3.	<b>Climate Change and Policy Perspective</b>	29
	<i>Dinesh Chandra Devkota, Ph.D.</i>	
4.	<b>Adaptation to Climate Change: Status and Our Position</b>	41
	<i>Ram Chandra Khanal</i>	
5.	<b>Clean Development Mechanism in the Context of Climate Change Mitigation</b>	51
	<i>Ganesh Raj Joshi, Ph.D.</i>	
6.	<b>REDD+: Issues and Challenges from a Nepalese Perspective</b>	61
	<i>Resham Dangi</i>	
7.	<b>Gender Perspective in UNFCCC Process</b>	73
	<i>Prabha Pokhrel</i>	
8.	<b>Climate Finance and Nepalese Perspective</b>	83
	<i>Govind Nepal, Ph.D.</i>	



## CHAPTER 1

# Climate Change Negotiation: Understanding the Process

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## BACKGROUND

In 1979, scientists discussed the science of climate change at the first World Climate Conference and urged for actions to address the impacts of accelerated change in the climate system. Similarly, in 1988, the Toronto Conference on the Changing Atmosphere recommended developing a comprehensive global framework convention. Furthermore, the UN General Assembly established the Inter-governmental Negotiating Committee (INC) in 1990 to draft the legally-binding instrument on climate change. Accordingly, the text of the UN Framework Convention on Climate Change (UNFCCC) was negotiated and adopted on 9 May 1992 in New York. The Convention was opened for signature at the Rio Earth Summit in June 1992 and entered into force in 1994. Nepal signed the Convention in Rio on 12 June 1992. It was ratified by the then Parliament on 2 May 1994 and has entered into force in Nepal since 31 July 1994 based on the Convention's provisions and instruments of ratification deposited to its depositary – the UN Secretary General.

Under the UNFCCC, the text of the Kyoto Protocol (KP) was negotiated and adopted on 11 December 1997 in Kyoto, Japan during the third session of the Conference of the Parties (COP3) to the UNFCCC. The main feature of the Protocol lies in

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Uprety, B.K. (2012). Climate change negotiation: Understanding the process. In: Devkota, D.C., Uprety, B.K. and Bhattarai, T.N. (eds.) Climate Change and UNFCCC Negotiation Process, Kathmandu: MoEST Publication.

(Note: Most of the information mentioned in this text is taken from the UNFCCC Handbook published by the Climate Change Secretariat in 2006.)



establishing commitment for reduction in greenhouse gases (GHGs) emissions that are legally binding for Annex I Parties. Article 25 of the Protocol states that this Protocol shall enter into force on the 90<sup>th</sup> day after the date on which not less than 55 Parties to the Convention, incorporating Parties included in Annex I which accounted for at least 55 percent of the total carbon dioxide emissions for 1990, have deposited their instruments of ratification, acceptance, approval or accession. This is the major reason that Protocol took 8 years for its entry into force as the major emitters did not ratify or accessed it earlier.

Nepal deposited KP's instrument of accession to its depositary (UN Secretary General) on 16 September 2005 and it has entered into force on 14 December 2005. About 190 countries are Parties to this Protocol, but the USA – one of the major GHGs emitters – is not a Party to it and attends meetings on an observer status.

## THE CONVENTION

### Objectives and Principles

The main objective of the UNFCCC is to achieve stabilisation of the GHGs concentration in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. It places an emphasis on achieving such levels within a time-frame that is sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened, and to enable sustainable economic development. The Convention includes, inter alia, the principles of equity and common but differentiated responsibilities (CBDR) with respective capabilities, thereby, calling on the developed countries to take the lead in combating climate change and its adverse effects.

### Institutional Arrangements

The Convention and the Protocol provide provisions for institutional arrangements such as the establishment of the Conference of the Parties (COP), Bureau, Subsidiary Bodies (SBs), Secretariat and other bodies such as the Ad-hoc Working Groups (AWGs) and limited-membership bodies (Fig.1.1). The Convention established the COP and the KP established the COP serving as the Meeting of the Parties (COP/MOP

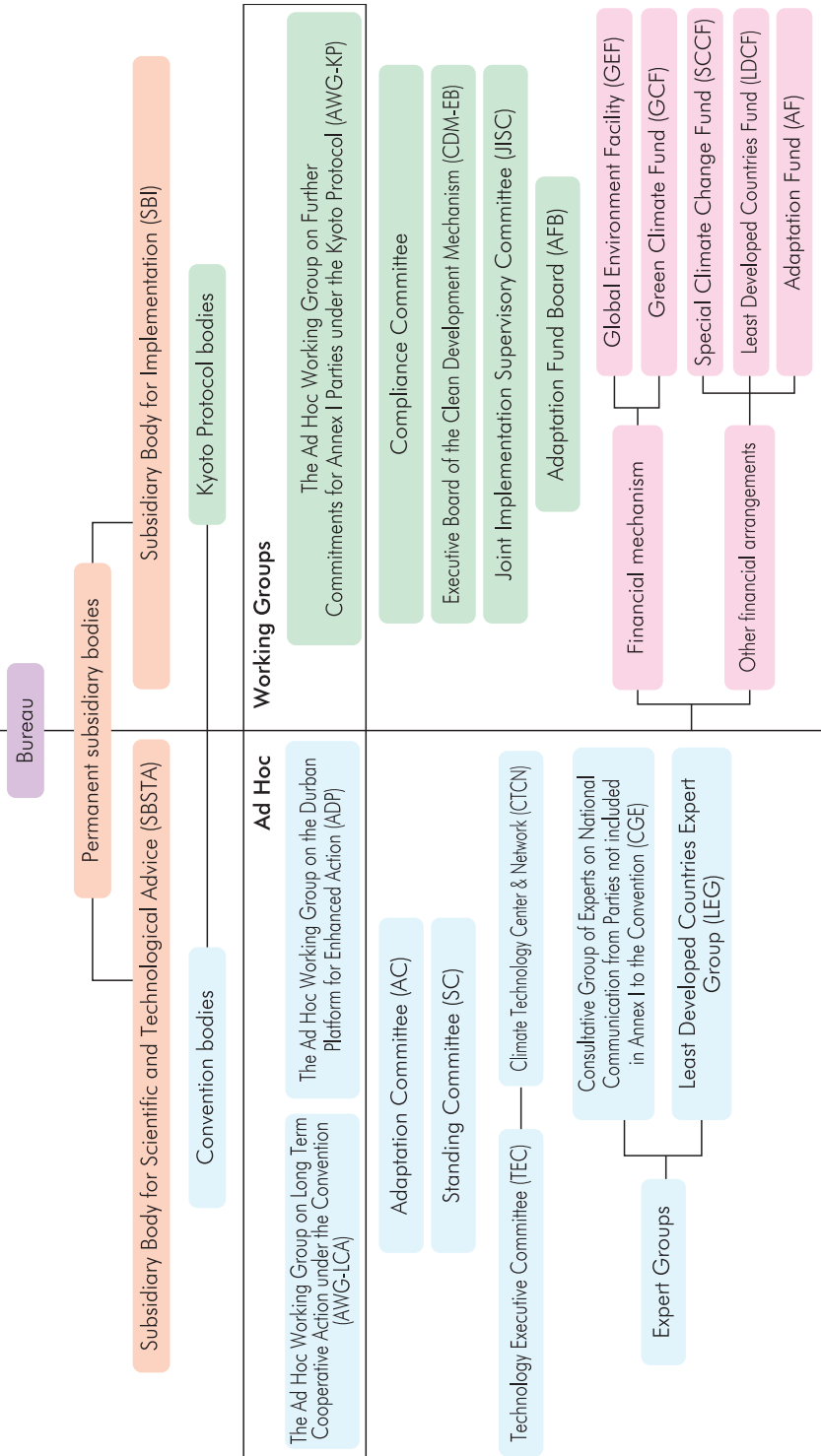
or CMP) which are the supreme bodies and the highest decision making authorities. The COP (hereafter refers to both the COP to UNFCCC and the CMP to KP), a permanent institution, is in particular responsible for reviewing the implementation of the Convention and the KP, and making necessary decisions to promote their effective implementation. These supreme bodies meet annually and also examine the Parties' commitments, promote exchange of information, facilitate coordination of measures to address climate change and its effects, seek to mobilise financial resources, and exercise functions as required to achieve the ultimate objectives of the Convention. The COP is chaired by the President who is usually the Minister for Environment or a designated authority (sometimes the Head of the State/Government during the high-level segment) of the COP host country. The Bureau comprises of the COP President, seven Vice-Presidents, two chairs of SBs, and a Rapporteur. The Bureau deals with procedural and organisational issues, including technical matters such as examining the credentials of the Party representatives.

The Convention and the Protocol have Subsidiary Bodies - Subsidiary Body for Implementation (SBI) and the Subsidiary Body for Scientific and Technological Advice (SBSTA). They act as advisory bodies to the COP and meet biannually (COP and one other meeting). The SBI deals with, and assists, the COP/CMP in the assessment and review of the effective implementation of the Convention and the KP. The SBSTA advises the COP/CMP on scientific and technological matters - state of the scientific knowledge of climate change and its effects, identification of innovative and efficient technologies, scientific programmes and research and development, and capacity building in developing countries. The SBs are important institutional structures for elaborated negotiation on aspects related to the implementation of the Convention and the KP. The SBs report regularly to the COP on all aspects of their works.

The Convention provisions for the establishment of the Secretariat, popularly known as the Climate Change Secretariat, which makes arrangements for sessions, assists Parties on communication of information, supports negotiations, and coordinates with the secretariats of other multilateral environmental arrangements and international bodies such as Global Environmental Facility and its implementing agencies.

The COP/CMP establishes AWGs and limited-membership bodies as required. Some AWGs are: AWG on Long-term Cooperative Action (LCA), AWG on Durban Platform for Enhanced Action (ADP), and AWG on further commitments for KP Annex I Parties.

Conference of the Parties (COP) / Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP)



United Nations Framework Convention on Climate Change (UNFCCC) secretariat

Fig. 1.1: Institutional arrangement for the implementation of the climate change regime (As of 18 June 2012)

Examples of limited-membership bodies include Consultative Group of Experts (CGE) on national communications, LDCs Expert Group (LEG), etc. The 13-member LEG comprises of 5 members from African LDCs, 2 from Asian LDCs, 2 from Small Island Developing States, 3 from developed countries and 1 from any LDC of any region nominated by the Chair of the LDC Coordination Group.

The COP has decided the Global Environment Facility (GEF) to function as the operational entity for the financial mechanism under the Convention. The GEF operates LDC Fund and Special Climate Change Fund. The Adaptation Fund is under operation and Green Climate Fund has also been established recently. Similarly, Technology Executive Committee, Adaptation Committee, Compliance Committee etc. are established with specific terms of reference to support the implementation of the Convention.

## **NEGOTIATING GROUPS**

The Parties are responsible for the effective implementation of the Convention and the KP to achieve the ultimate objectives based on the decisions made at COPs. Hence, Parties negotiate and agree on ways and means for implementation of the decisions. Based on UN practice, regional groups provide representatives for Bureaus and other bodies. The meetings and consultations are open-ended and transparent. Issues or theme-based negotiation is generally done within negotiating groups. However, rights of individual countries are also equally honoured and protected. Beside Annex I and non-Annex I Parties, the Convention also recognises LDCs.

The Convention and the KP do not have any formal process for establishing negotiating groups. However, in practice, countries with common interests may form a group and inform the COP Bureau, SBs and the Secretariat for official recognition. These groups meet informally during sessions; exchange ideas, information and views; develop and agree on common positions; and negotiate with other groups. The country holding the chair of the group often speaks on its behalf on agreed issues and delivers statements during the plenary sessions. Even though individual countries may intervene and raise issues during the sessions or debates, group voices are generally more influential. It should be noted that, in most cases, negotiations are basically within developing countries and between developed and developing countries. However, it does not preclude participation of several negotiating groups and/or individual Party in the negotiation process.

In line with the UN practice, there are 5 regional groups recognised in the climate negotiation process - Africa; Asia and the Pacific; Central and Eastern Europe; Latin America and Caribbean States (GRULAC); and Western Europe and Others (WEOs). Others here include: Australia, Canada, New Zealand, Turkey and the USA. At the present, other major negotiation groups are: Group of 77 and China; European Union; Umbrella Group; and Environmental Integrity Group. Similarly, other groups are: Caucasus, Albania and Moldova (CACAM) group, Land-locked Mountainous Developing Countries (LLMDCs), Least Developed Countries (LDCs), Alliance of Small Island States (AOSIS), ALBA (Cuba, Venezuela, Ecuador, Bolivia, and Nicaragua), and recently formed LMDCs (Like Minded Developing Countries) etc. Nepal is a member of the LDCs, and G77 and China and has not joined LLMDCs. Taking into consideration the Mountain Initiatives started by Nepal, outcome of the International Conference of Mountain Countries on Climate Change and Article 4.8 of the Convention, there is a high possibility of establishing a negotiating group of the mountainous countries. In general parlance, two or more than two countries may form a group and inform the UNFCCC Secretariat.

Beside these groups, Observer States which are not Party to the Convention and KP may attend sessions provided there are no objections from the Parties. Such States are invited by the COP President to participate in the sessions but they are not allowed to vote. In case of Kyoto Protocol, the USA participates as an Observer State. The meetings are also attended by representatives of UN bodies/agencies, NGOs, INGOs including media, private sector and civil society organisations (CSOs) as observers.

## **NEGOTIATION PROCESS**

There are several stages of negotiation. In general, it starts with the adoption of the agenda at the plenary session. The Climate Change Secretariat, in agreement with the COP President or the SBs Chair, draft and circulate the provisional agenda six weeks before the meeting. The draft agenda has to be approved by the COP session or the meetings of the SBs and AWGs before discussions start. Any country can propose the agenda that requires approval for future deliberations. In UNFCCC process, all decisions are made on consensus as Rules of Procedures is yet to be approved. The draft rules of procedure provide general rules for proceedings of formal meetings

and negotiations. The formal meetings such as plenary are interpreted into all six languages of the UN (Arabic, Chinese, English, French, Russian and Spanish). A quorum of two-thirds of Parties must be present to take decisions. The rules also cover the participation of the observers. The draft rules of procedure have not yet been approved, particularly on the provision of voting. This means voting is extremely rare and consensus is the preferred method of arriving at a solution.

During the COP, the President, with advice from the Bureau and the Secretariat, may decide on the structure of procedure for the session. In general, most of the COP's work is usually referred to the SBs for negotiations and the SBs then forward the draft decisions to the COP. The COP may also delegate the work to a group, commonly known as 'Committee of the Whole' to conduct negotiations and report back to the COP. The COP may also form issue-based small informal negotiating groups, usually led by a Bureau member. In addition, open-ended contact groups and drafting groups may be formed. In general, drafting groups are closed to the observers. In many cases, informal consultations are conducted to reach any conclusion. The informal groups do not take any decision but forward it to their convening bodies. The COP President may also form a small group of delegates to meet as Friends of the President to give advice on complicated issues under negotiation. The President may also invite participating ministers for consultations on key issues. In many cases, the President consults the major negotiating groups so that decisions can be made during the plenary session. Thus there are several ways for conducting negotiations and reaching conclusions.

For reference, the process of negotiation for one of the agenda, namely National Adaptation Plan (NAP), is briefly discussed below. This agenda item was discussed in the 36<sup>th</sup> session of the SBI held in Bonn, Germany from 14 to 25 May 2012. Under NAP agenda, the following items were discussed:

- (a) A process to enable LDC Parties to formulate and implement NAPs, building upon their experience in preparing and implementing NAPA; and
- (b) Modalities and guidelines for LDC Parties and other developing country Parties to employ the modalities formulated to support NAPs.

Step 1: The NAP item was included in the provisional agenda which was approved in the plenary session. The SBI Chair formed the informal group and

proposed co-chairs (one from developed and one from developing country Parties) to coordinate and organise meetings to draft the conclusions and report back to the plenary on 24 May 2012.

- Step 2: The co-chairs organised informal consultations on NAP. In general, the first meeting is open to NGOs to provide them an opportunity to offer their views, ideas and concerns. Inputs were provided by the negotiating groups such as G77 and China, LDCs, AOSIS, EU, Environmental Integrity Group or Umbrella Group. After preliminary inputs, the co-chairs or facilitators invited inputs, ideas and concerns in writing within the specified time period. As it was open to all Parties, individual countries also put their concerns, ideas and views. Normally, an individual country supports the group position. In general practice, if Nepal takes the floor, first it supports (or associates with) what has been said by the coordinators (in this case NAP coordinator) of the G77 and China and LDC Coordination Group because Nepal is a member of these two negotiating groups. Then it puts its ideas, views or concerns.
- Step 3: The co-chairs, on their own responsibility, drafted the conclusions and/or decisions based on the inputs received, and organised informal and/or “informal informal” consultations to finalise the draft conclusions and/or decisions. Once the draft text was circulated, intense discussion (word by word or line by line) starts.
- Step 4: The final meeting of the contact/informal group, which was very short, agreed on the draft conclusions and/or decisions and co-chair presented the outcome to the plenary session for decision.

During the process, each negotiating group met as necessary to agree on group positions. For example, LDCs met several times, prepared and submitted the text to the co-chairs of the thematic areas such as adaptation, finance etc. and participated in the negotiations. As negotiations follow a ‘give and take’ approach, some of the positions (used as leverage) may be given-up at any stage. The conclusions were drafted for the SBs’ decisions, and draft decisions were proposed for the COP. In general, draft decisions included preambles the operating paragraphs. This process, in general, is followed for each agenda item.

## **The Practice**

Before each meeting of the UNFCCC (sessions or inter-sessional), Parties to the Convention and the KP meet in preparatory meetings to discuss on the agenda items, major issues and coordination mechanisms. Nepal participates in the preparatory meetings of the LDCs; and the G77 and China. The LDC preparatory meeting is generally organised for two days. LDC Parties review the outcomes of the previous meetings, analyse the strengths and weaknesses of negotiations, discuss on key issues, develop key positions or messages, and confirm on the thematic coordinators and countries willing to participate in the thematic group. This thematic group is effective for all the sessions. The thematic coordinator regularly organises internal consultations to prepare positions for negotiations with other groups. In some cases, working groups are formed to discuss on specific issues. In 2012, the strategic planning meeting attended by the key negotiators was also organised during the middle of the session to review progress and discuss strategies which could influence negotiations. The preparatory meetings and the strategic meetings have been extremely useful to orient the new delegates and refresh the experienced ones. The Chair of the LDC Coordination Group also organises bilateral meetings with other major negotiating groups, including the chairs of SBs and AWGs so that LDCs' needs and requirements are well understood by the partners. Nepal also participates in the G77 and China meeting which is organised just before the start of the normal sessions. This group's procedures for meetings are similar to LDC meetings.

Conclusions are drawn and decisions taken only after agreement is reached by each Party and negotiating group. In general, nothing is agreed until everything is agreed upon. It means negotiations and agreements are sometimes made in a collaborative manner. In practice, decisions on major issues are made either late at night or early in the morning because of lengthy negotiation process.

The climate negotiation process has become more complex economic and political entity lately, particularly after the Copenhagen Climate Change Conference in 2009. Parties, observer States and organisations, academia, NGOs, CSOs and private sector all have a strong stake in the climate negotiations. NGOs may make statements during the plenary if none of the Parties attending oppose it and chair allocates the time. NGOs are also encouraged to make submissions



which are made available by the UNFCCC Secretariat as Miscellaneous (Misc.) document. In order to benefit from climate negotiations, a country's preparation for the negotiations and its coordination with others during the sessions is of paramount importance.

## **UNFCCC and Nepal's Achievements**

In 2005, Nepal submitted the biogas project as Clean Development Mechanism (CDM) to the CDM Executive Board (EB) for Certified Emission Reductions (CERs) in accordance with Article 12 of the Kyoto Protocol. The first session of the COP serving as the Meeting of the Parties to the Kyoto Protocol in Montreal in 2005 unfortunately rejected the methodology Nepal used to develop the biogas CDM project. Based on Nepal's effort in 2006, Nepalese delegation was able to convince Parties to the Kyoto Protocol in 2007 in Bali to take necessary decisions on non-renewable biomass methodology to benefit from biogas as CDM project. Finally in 2011, CDM-EB has issued CERs for two biogas CDM projects of Nepal. In terms of benefitting from KP, it can be considered as a major achievement.

In 2007, Nepal submitted a proposal for NAPA (National Adaptation Programme of Action) preparation to the LDC Fund by designating UNDP as the GEF (Global Environmental Facility) Implementing Agency. From 2008 onwards, Nepal has represented the Asian LDCs in the LDC Expert Group (LEG) which has provided a basis to prepare NAPA of programmatic level within a short period of time and access funding for NAPA implementation as well. Furthermore, Nepal also functioned as the SBSTA Rapporteur from 2008 to 2010. The participation in the UNFCCC process has provided Nepal additional opportunities to strengthen institutional capacity and secure more funds for climate adaptation, resilience, and renewable energies.

Forty-eight LDC Parties to the UNFCCC established the LDC Coordination Group in 2001 as a major negotiating bloc. Taking into consideration the number of LDCs in each geographical region, Africa chairs the group two times, and Asia and Island countries each one time for a duration of two years. As of now, Mali, Tanzania, Bangladesh, Maldives and Lesotho have chaired it. The Gambia will chair it till 2012. Nepal's interest and offer to chair the LDC Coordination Group was accepted by the Asian LDCs in May 2012 and hence, Nepal will function as its chair for 2013 and 2014.

## **CONCLUSION**

Climate change negotiation has become increasingly complex over the years. A number of major negotiating blocs have been formed and are active in negotiation. Most of the issues are linked with economic and social aspects and hence difficult to agree upon. It is expected that COP18 at Doha will decide on remaining issues for the second commitment period of the Kyoto Protocol which will basically deal with GHGs emissions till 2017 or 2020.

The AWG-Durban Platform on Enhanced Action (ADP) will work for post-2020 legal regime in line with the decisions of COP17 which decided to launch a process to develop a protocol a legal instrument or an agreed outcome with legal force under the Convention applicable to all Parties (GHGs emissions reduction under the KP lies with Annex I Parties only). The ADP should complete its work as early as possible but no later than 2015 in order to adopt this protocol, another legal instrument or an agreed outcome with legal force at COP21 and to be implemented from 2020. Nepal should participate in climate change negotiation as it provides an opportunity to benefit from international regime. As LDC group is one of the powerful negotiating blocs and as a chair of the LDC Coordination Group for 2013-2014, Nepal will have numerous opportunities to develop its negotiating capabilities, influence climate negotiations, and benefit from in-country climate change activities.



## CHAPTER 2

# State of Climate Change and its Impact in Nepal

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## GLOBAL CONTEXT

Climate change has become a general topic of discussion in the form of classroom lectures at universities, policy making discussions at government premises, or as a topic of awareness-raising activity at community-level meetings in villages. In any climate change related meeting, a common point of reference that the speakers usually refer to are terms like climate and weather. However, many of these discussions proceed without a clear definition of these terms. The term *weather* corresponds to the changing state of atmosphere around us characterized by temperature, precipitation and wind, which can change on an hourly or daily basis; whereas, the word *climate* refers to the average weather in terms of the mean weather conditions and its variability over a certain time-span within a certain area. Climate is the overall result of the climate system which consists of the atmosphere, the ocean, the ice and snow cover, the land surface and its features, and numerous physical, chemical and biological interactions between these components. Consequently, it varies from place to place depending on latitude, distance to the sea, vegetation, and presence or absence of mountains. Likewise, climate of a region goes on changing from season to season, year to year, decade to decade, or even century to century. If there is a statistically significant variation of the mean state of the climate or of its variability continuing for decades or longer, such changes are referred to as climate change. It means if we do not have climate data (temperature and precipitation) of a particular place or region at least for a few decades (the classical period is 30 years

according to the World Meteorological Organization), we cannot ascertain the state of climate change of that region. It is also equally important to note that climate change is a natural process and there have been several episodes of significant climatic warming and cooling in the geological past due to various natural causes (Marsh and Dozier, 1981). But the ongoing debate on climate change is not limited within the naturally occurring climate change. The UN Framework Convention on Climate Change (UNFCCC, 1992) defines climate change as “a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods”. The UNFCCC thus makes a distinction between “climate change” attributable to human activities altering the atmospheric composition and “climate variability” attributable to natural causes. The present state of climate change is different to the other periods of warming and cooling in terms of speed, causes and potential impact on humans and their surroundings.

## **Climate Change Science**

The Sun and the atmosphere play crucial roles in determining the Earth’s weather. The Sun provides energy to warm the Earth; whereas the atmosphere, composed of various gases, behaves like a means of transferring as well as resisting heat to and from the Earth and its surrounding. Certain gases in the atmosphere such as water vapour, carbon dioxide, methane, nitrous oxide, fluorinated gases, etc. allow the sunlight, which provides the energy to heat the Earth, to pass through the atmosphere but prevent it from escaping back out of the atmosphere. This behaviour is similar to that of gases in a greenhouse (Fig. 2.1). Therefore, these gases are called greenhouse gases (GHGs) and the overall effect is called the greenhouse gas effect. It is important to understand that the greenhouse gas effect is a natural phenomenon occurring for millions of years on Earth and on other planets of the solar system. If this natural process were not there to trap heat in the atmosphere, Earth would have been approximately 33°C cooler than it is now, and all the surface water would be frozen (Titus and Seidel, 1986). Therefore, any considerable fluctuation in the levels of greenhouse gases in the atmosphere, regardless of the causes, will certainly alter the Earth’s temperature. Scientists have observed that the level of the existing greenhouse gases has gone up, which has led to an increase in the average air temperature on Earth known as global warming. Some of the human activities that play a crucial role

to increase the amount of GHGs in the atmosphere are burning of fossil fuels – oil, petroleum, coal, gas, etc.; industrial processes and mining; landfills, septic, and sewer system; agricultural practices, including fertilizer and manure management; and land use practices, including deforestation.

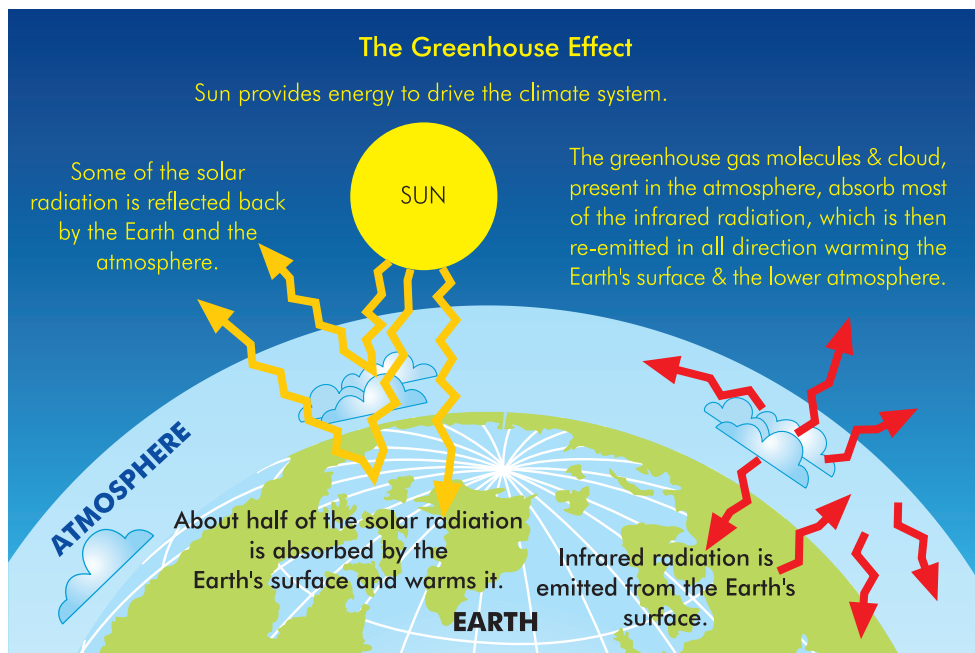


Fig. 2.1: Process of warming the Earth's surface and the lower atmosphere.

According to IPCC (2007), "warming of the climate system is unequivocal, as is evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level". It also states that "the linear warming trend over the last 50 years ( $0.13^{\circ}\text{C}$  [ $0.10^{\circ}\text{C}$  to  $0.16^{\circ}\text{C}$ ] per decade) is nearly twice that for the last 100 years. The total temperature increase from 1850–1899 to 2001–2005 is  $0.76^{\circ}\text{C}$  [ $0.57^{\circ}\text{C}$  to  $0.95^{\circ}\text{C}$ ]. It has further highlighted a fact that the "observations since 1961 show that the average temperature of the global ocean has increased to depths of at least 3000m and that the ocean has been absorbing more than 80% of the heat added to the climate system. Such warming causes seawater to expand, contributing to rise in sea level". These facts and figures are sufficient enough to understand that the global climate has been changing rapidly posing a serious threat to human civilization.

## **Climate Change Prediction**

The projection of the future climate change is a curiosity not only for scientists, but also for policy makers and the general public. Climatologists predict future climate change on the basis of the physical understanding of the climate system, trends of observed climate data, and computer-based climate projections. The future climate depends on several factors, some of which are the amount and quality of fossil fuels being used, availability and use of the appropriate technologies that reduce emissions, and the rate of population and economic growth. Since these parameters can't be ascertained with accuracy, there seem to be some uncertainties in future climate prediction.

While predicting the future climate based on computer-aided models, first an assumption is made on the limit of maximum global temperature rise. During UNFCCC COP15, discussions were held to limit global temperature rise by either 1.5°C or 2°C. A maximum global temperature rise of 2°C has been set as a common target in the Copenhagen Accord, but African countries have proposed a global target of 1.5°C noting that the 2°C is dangerous for Africa. Secondly, it is thought that the assumed global rise of temperature (say 2°C) will result in greenhouse gas concentration to an acceptable limit. Finally, an estimation of emission limitation required not to exceed that concentration is worked out. As all of these steps are based on assumptions (which may not be reflective of the real situation), the predicted future climate scenarios also contain high degree of uncertainties.

The concentration of carbon dioxide (CO<sub>2</sub>) in the atmosphere was about 280 parts per million during the pre-industrial time. Most emission scenarios predict a concentration of 500 parts per million by 2100 if no mitigation measures are applied. As a part of mitigation programs, many countries have set pledged targets to reduce their emission by 50 to 80 percent by 2050. But whether these countries will keep their promises or not is a question unresolved until now. Nevertheless, the global average temperature rise is predicted to be more than 1°C than that of 1960 to 1990, and may be as much as 6°C higher by the end of this century (Dow and Downing, 2011). It has also been predicted that the high altitude and Polar Regions will have more temperature rise than the global average. Compared to the certainty of the rise in global temperature, change in precipitation pattern, however, is predicted to be less certain. These are for global level predictions. For local and regional level predictions, one has to understand the micro-climate system of that region which is influenced by mid-

latitude high pressure and local topography such as rain shadow zone created by steep and high mountains. Since integrating these situations is a complex process, the predicted local climate consists of uncertainties.

## **Climate Change Impact**

Impacts of climate change are becoming more frequent and visible around the world. According to CAMEL (2012),

“All of the permafrost observatories in Alaska have shown a substantial warming during the last 20 years, often resulting in damage to infrastructure, rivers, shorelines, lakes, and forests. In locations such as Franklin Bluff on the North Slope, the top layer of permafrost has warmed by 3°C between 1987 and 2003. Notably, the warming of permafrost has penetrated deeply, with observations of 2°C warming 60 feet under the ground.”

Several glaciers in the Himalayas and other part of the world are melting faster than their average natural rate, and extreme climate events are also in increasing trend. Beside glacier melting, there were some events such as floods in Pakistan, Australia and China; heat waves and forest fires in Russia and in the USA; drought in the Amazon and record breaking temperature rise around the world in 2010 and 2011. The increasing frequency and severity of such climatic events clearly depict that the impact of climate change is becoming increasingly aggravated year by year.

Without a doubt, the rise in global temperature in the range of 1-6°C by 2100 will affect almost all parts of the world. Most importantly, it has created potential threat to polar glaciers which has already shown signs of rapid melting. The major consequence of this event would be global rise in sea level. Although the upper range of sea level rise is not known exactly, many projections have shown an upper limit of 0.5m by 2100. But considering the facts that the sea levels are rising faster, and the glaciers at Antarctica and Greenland have potential of releasing a huge amount of water into the sea, the sea level might be 2m higher than its 1990 position (Dow & Downing, 2011). If such a situation occurs, the consequences would be interconnected through physical and social systems. For example, the rise in global sea level will destroy low lying habitat, erode fertile cultivated lands in coastal areas compelling people to migrate, inundate large parts of many island countries, threaten world-famous sites of cultural and historical heritages at coastal areas, advance sea water intrusion up



rivers and freshwater aquifers affecting drinking water supply across the world, and require significant investment to upgrade the infrastructures at ports as a means of adapting to climate change impact.

The rise in global temperature will also reduce the supply and increase the water demand due to more evaporation, and evapo-transpiration from plants. The resulting drought will cause water scarcity both for drinking and irrigation. Besides, the “too little water” and “too much water” scenarios collectively cause severe food insecurity. The concern is not only for reducing crop yield, but also for subsequent escalating food price. According to Dow and Downing (2011), “nearly 3 billion people are now living in areas where water demand already exceeds supply. By 2050, the number of people living in areas of water-stressed locations will be around 5 billion. An investment of about \$7 billion a year is estimated to reduce climate impact on agriculture in developing countries alone”.

Climate change also increases health hazards. For example, climate disasters like heat waves, cyclones, sea level rise, and ocean acidification will affect peoples’ health directly. The drought-driven forest fire will cause air pollution in rural areas, whereas the mismanagement of solid waste results in volatile organic compounds in urban areas. This will lead to an increasing number of deaths related to respiratory diseases. Drought and disasters will also reduce food supply causing malnutrition in vulnerable populations. Similarly, floods not only take lives and injure people, but it will also pollute drinking water sources creating a favourable situation for the spread of transferable diseases.

The effect of climate change is not limited within an area, region or a nation as the atmosphere and land surface interaction is connected globally. Although the effect of climate change is felt by all, poor people of the underdeveloped countries suffer more. Some of the impacts are trans-boundary in nature where more than one country has to assemble for negotiation to have an amicable adaptation and mitigation option. In this case, the country that suffers the most, usually an economically deprived one, would have a prolonged waiting period to engage her neighbour country, a comparatively less poor one, to find a solution to the common problem. There are also cases where countries with negligible amount of GHGs per capita emission are suffering significantly, and the more prominent emitters, usually developed countries, are receiving relatively minimal effects. It is because the developed countries are

better prepared for the situation through availability of resources and technology to adapt to the adverse impacts of climate change. This disproportionate impact compounded with other subsequent disasters will have enormous pressure on the world's economic and social system, which, if not addressed adequately in time, may lead to an unprecedented disaster in the history of humanity.

## **NEPALESE CONTEXT**

As stated above, climate change corresponds to the statistical alteration of temperature and precipitation of an area or region due to anthropogenic interventions. The alteration may be either incremental or decremental. The extent of climate change can be estimated on global, regional and local scales. But data required for local and regional level assessment need to be collected from well-equipped hydro-meteorological stations established to cover variable land surface conditions like Terai, hills, valleys, and mountains including snow covered areas. Such coverage of hydro-meteorological networks is currently missing in Nepal. As a result, the role played by land-atmosphere interactions in generating convective rainfall over steep terrain and sustaining monsoon conditions is still poorly understood. Global scale change is based on data taken from a few stations, and therefore may not be reflective of the ground reality. Nevertheless, computer-based simulations or predictions are used to make an estimation of the future climate change scenario. The following paragraphs depict future likelihood of the climate change in Nepal on the basis of computer-based model analysis.

### **Temperature and Precipitation Change**

According to a report (MoENV, 2010a), the temperature trends in Nepal for the period of 1971-1994 has indicated a continuous warming at an average annual rate of  $0.06^{\circ}\text{C}$  which varied spatially as well as according to seasons. The pre-monsoon season (March-May) has showed the lowest warming rate of  $0.03^{\circ}\text{C}/\text{yr}$ , while the post-monsoon season (October-November) has showed the highest one of  $0.08^{\circ}\text{C}/\text{yr}$ . The General Circulation Models run with the SRES B2 scenario show the mean annual temperature to increase by an average of  $1.2^{\circ}\text{C}$  by 2030,  $1.7^{\circ}\text{C}$  by 2050 and  $3^{\circ}\text{C}$  by 2100 compared to a pre-2000 baseline. It has also mentioned results of another study which states that the mean annual temperature will increase by  $1.4^{\circ}\text{C}$  by 2030,  $2.8^{\circ}\text{C}$  by 2060 and  $4.7^{\circ}\text{C}$  by 2090 following the General and Regional

Circulation Models projections. The projections show higher temperature increments during winter as compared to the monsoon seasons. The precipitation projections show no change in western and up to 5-10% increase in eastern Nepal for winter. During the summer months precipitations are projected to increase for the whole country in the range of 15 to 20%.

## Impact of Climate Change

Nepal's contribution to the global annual GHGs emission is 0.025% (MoPE, 2004). The total GHGs emission from Nepal is estimated at 39,265 Gega gram (Gg) and per capita emission is 1,977 kg (MoEST, 2008) compared to the global average of 3.9 tons. Although its contribution to GHGs emission is negligible compared to the total global emission, Nepal is suffering significantly from increasing climate hazards in recent decades. The climate change impact scenario is such that Nepal has been recognized as a climate change hotspot internationally due to rapid glacial melting and associated consequences in the Himalayan region. Maplecroft (2010) has ranked Nepal as the fourth most vulnerable country in the world in the context of climate change. The same report has rated 16 countries at 'extreme risk,' with the South Asian nations of Bangladesh (rank 1<sup>st</sup>), India (rank 2<sup>nd</sup>), Nepal (rank 4<sup>th</sup>), Afghanistan (rank 8<sup>th</sup>) and Pakistan (rank 16<sup>th</sup>) among those with the most exposure to climate change, whilst Sri Lanka (rank 34<sup>th</sup>) is rated at 'high risk.'

The rise in mean annual minimum and maximum temperatures across the nation, and the unpredictable spatial and temporal variation of precipitation has clearly depicted the alarming situation of climate change. Due to the diverse topography and a varied range of ecological zones, the overall impact of climate change is likely to vary depending on geographical location. For example, rise in temperature in the Himalayan region results in rapid glacial melting in the Himal region (areas with snow), which results in an increase in discharge in snow-fed rivers causing river bank erosion in the Pahad region (mountains), and flooding in the Terai (southern flat land), and beyond (India). Thus, the consequences of the climate change are interwoven influencing significant areas, which sometime extend beyond national territory (trans-boundary issues). Nevertheless, this is an example where one has to think globally and act locally.

Generally, floods, droughts, debris flows, vector and water borne diseases, forest fire, and disruption of ecosystems are the major climate change impacts in the

Terai-Churia regions. In the Middle Mountains, the impact includes landslides, debris flows, flash floods, droughts, prevalence of insects and plant diseases, and forest fires. Rapid melting of glaciers, glacial lake outburst flood (GLOF), landslides, shifting and deterioration of habitats, biodiversity loss and ecosystem degradation are major climate change impacts in the High Mountains (MoENV, 2010b). Following a sector-wise approach adopted by MoENV (2010a) while preparing National Adaptation Programme of Action (NAPA), the perception-based impact of climate change is presented as follows:

### **Agriculture and Food Security**

Agriculture, where traditional methods are widely used, is quite vulnerable to climate change. Higher temperatures eventually reduce yields of desirable crops and increase pest invasion. Changes in precipitation patterns increase the likelihood of short-run crop failures and long-term production declines. Nearly 65% of the country's agriculture is rain-fed and any changes in rainfall patterns will definitely impact agriculture seriously. For example, shifting of rainfall timeline has caused traditional seeds not to germinate and yield effectively. Increased severity and frequency of flooding, drought, and aridity have resulted in loss of crops and livestock promoting inflation in food market. The droughts in Nepal for four consecutive fiscal years (2005 to 2009) have caused an increase in the average price of food products. Compared to the food inflation rate (4.04%) in the fiscal year 2004-5, the same has increased to 7.76, 7.04, 9.34, and 17.34 percent in the fiscal years 2005-06, 2006-07, 2007-08 and 2008-09 respectively (Shahi, 2012). Unprecedented floods, particularly in Terai, have eroded several hectares of fertile cultivated lands in some places, and have also deposited unproductive sand on agricultural lands in other places. Drought has caused reduction in river discharge resulting in water scarcity for irrigation. Decline in rainfall significantly through November to April has adversely affected winter and spring crops posing threat to food security particularly in the western parts of the country. All of these situations have served to weaken the food availability in the country and has affected the livelihoods of the population that are highly dependent on agriculture. A large number of populations already require food assistance and this number is expected to further increase due to climate change impact.

## Water Resources and Energy

Climate change will significantly increase the intra annual variability of stream flow (Agrawala et al., 2003). For example, a study by Chaulagain (2006) has shown that for a temperature rise of 4°C and a precipitation increase of 10%, the range of flow (i.e. the difference between the highest and the lowest flows) in the Bagmati River would increase from the present 268 m<sup>3</sup>/sec (i.e. from 7.3 m<sup>3</sup>/sec to 275.3 m<sup>3</sup>/sec) to 371.6 m<sup>3</sup>/sec (i.e. from 6.9 m<sup>3</sup>/sec to 379.6 m<sup>3</sup>/sec). Prolonged drought in several places will have an immediate impact on the availability of clean, hygienic drinking water, particularly in mid-mountain areas of Nepal. In addition, over exploitation of ground water has also been reported in some parts of Dun Valleys and northern Terai (Bhabar Zone) to cope with drought situations. Changes in discharge and increasing sediment load in rivers water have also threatened smooth functioning of hydro-power, which forms about 90 % of Nepal's electricity production. Assuming that 32% of the total hydropower potential in Nepal will be sourced from snowmelt and the rest from rainwater, the theoretical hydropower potential of Nepal will rise with a warming of 0.06°C/year by 5.7% by the year 2030. But, by the end of this century, it will decrease by 28% (Chaulagain, 2006). Micro-hydro projects in the hills and mountains have already suffered due to sudden reduction in river discharge. Similarly, prolonged cloudy days and increasing events of snowfall and hailstones have adversely affected solar power potential in the mountains (MoENV, 2010a). The increased incidences of forest fire have caused a serious threat to the availability of the fuel-wood resources, which is vital in the mountain and the hills.

## Climate Induced Disasters

Nepal faces various climatic hazards such as forest fires, floods, Glacial Lake Outburst Floods (GLOFs), landslides and debris flows resulting from its steep topography, ongoing mountain building process, highly fractured rocks, diverse climate, and intense precipitation. Out of these, GLOF has been a subject of concern for the last few decades (a GLOF is a sudden release of water following failure of the moraine dammed lake filled with melt water). Incidentally, the moraine dam of Tam Pokhari glacial lake in the Mt. Everest region breached on 3 September 1998 releasing about 18 million cubic meters of water that caused a catastrophic flood downstream (Osti et al., 2011). Beside Tam Pokhari, the GLOFs events that occurred since 1970 include Nare (in 1977), Nagma Pokhari (in 1980), Dig Tsho (in 1985), Chhubung (in 1991) as reported by Mool et al. (2001). GOLF's are not always confined within

national boundary. Sometimes, it becomes a trans-boundary issue. For example, the Zhangzhangbo GLOF of 1981 occurring in the Tibet Autonomous Region of China, caused damage also in the Sun Koshi valleys in Nepal. It destroyed the Sun Koshi Power Station and the Friendship Bridge at the Nepal-China border as well as two other bridges and extensive sections of the Arniko Highway. The loss totalled more than US\$3 million (Mool et al. 2001).

According to Bajracharya et al. (2007), glaciers in the Dhud-Koshi sub-basin of Nepal are retreating at unprecedented glacier retreat rates of 10 to 60m per year and, in exceptional cases, as fast as 74m per year have been recorded. During the 30-year period from 1970 to 2000, the loss of glacier area in the Tamor River sub-basin of Nepal was about 5.9% or 0.2% per year (Bajracharya et al., 2006). According to Bajracharya et al. (2007), “the fastest retreating glacier was the Imja glacier, with an average rate of 59m per year and a surprising 74m per year for the past half a decade. Of the twelve potentially dangerous glacial lakes listed in the Dudh Koshi sub-basin, two can be removed from the ‘dangerous’ list and four are more or less constant in size. The remaining six (Kdu\_gl 28, 350, 449, 459, 464 and 466) are growing and expected to eventually breach”

Extreme climate events such as heavy localized precipitation in the Shiwalik and Mahabharat range cause flash floods in small tributaries, which contribute to the flooding in the main river basins in the Dun Valleys and Terai. Such floods may deposit sand and debris on cultivated land; sweep away bridges, irrigation canals, drinking water infrastructures, hydropower plants, trails, and fertile land making people landless and homeless. Since low-income and marginalized people generally reside on the riverbanks in poorly constructed buildings, they face the greatest brunt of flooding incidents. Quoting the database of Ministry of Home Affairs, Government of Nepal for the period 1983-2005, Shakya (2007) has mentioned that on an average, 938 persons lose their lives every year due to different types of natural disasters in Nepal. The loss of lives due to flood and landslide alone is counted to be 303 persons per year. The economic loss due to different natural disasters on an average is nearly Rs. 1208 million per year. Although it is difficult to distinguish whether the disasters mentioned above are consequences of climate change or are results of natural process, general perception among stakeholders is that the frequency and extent of these events are in increasing trend; which implies a clear correlation between climate change and natural disasters.

## Forest and Bio-diversity

Rise in temperature, and fluctuation in rainfall have led to the shifting of agro-ecological zones, prolonged dry spells, higher incidences of pests and diseases, and spread of alien and invasive species of plants at an alarming rate. Some grass species are disappearing and new ones are emerging. Similarly, some bird varieties have disappeared. Fauna such as the snow leopard is said to be suffering from reduced habitats due to increased temperature. Increasing incidences of drought-driven forest fires have also resulted in the loss of forest resources including loss of species and wildlife habitat. There are also cases of early sprouting, flowering and fruiting in many plants, which alter the wildlives' food system. Decline of productivity of some herbal species like panch aunle (*Dactylorhiza hatagirea*), silajit (*Rock exedutes*), amala (*Imblica officianalis*), ritha (*Sapindus mukurosii*), timur (*Zanthoxylum armatum*), and bel (*Aegle marmelos*) have also been reported (MoENV, 2010a).

## Public Health

Some examples of direct effects of climate change impact on human health are increased heat stress, and loss of life due to floods and storms. Indirectly, change in climatic condition creates favourable situation for spreading many vector-borne and water-borne infectious diseases. A potential impact of climate change on health is especially on growing risk of malaria, Visceral leishmaniasis (VL), and Japanese encephalitis outbreaks with mosquitoes being the vector of these diseases. Although VL, also known as kala-azar in Nepal, transmission generally occurs in the Terai region, with an altitude of a maximum of 305m, Pandey et al. (2011) have reported the first case of VL from the non-endemic western hilly region (Doti district, elevation: 1,113 m above mean sea level) of Nepal. It clearly indicates that the disease is spreading to newer areas which were once considered to be safe from VL transmission. The haphazard dumping of solid waste in major cities have also adversely affected human health as it contributes to air and water pollution. The problems are even more acute in Nepal where a large section of the population, especially the rural and disadvantaged people, is deprived of effective health care.

## Urban Settlement and Infrastructures

Climate induced disasters have resulted in degradation in the quality of infrastructures such as roads, bridges, schools, health posts, water and energy supply. Designing

parameters adopted for water structures have to be revised as the assumed discharge fluctuation is not confined within the limit of expectation. Similarly, the amount of volume contraction and expansion of infrastructures due to temperature fluctuation also needs to be revised to adapt with the changing climate. Climate-induced migration has put a serious strain on the infrastructure and the provision of facilities in the urban areas. Open spaces on either side of the rivers, which were already hit by the impact of climate change in city areas, have been encroached making the rivers' physical and biological environment even more precarious. Many riverside settlements and historical places, considered to be safe during monsoon, are under the risk of flooding due to unprecedented flash floods and GLOFs. Climate proofing of important infrastructures like dams, embankments, canals and drinking water supply facilities have already become necessary. These problems have made planning of urban development exceedingly challenging.

## **National Economy**

As discussed above, impact of climate change has already been felt in almost all parts of the country, and in all development sectors and sub-sectors. Rapid melting of snow and glaciers in the Himalayas has posed a serious threat to the supply of freshwater for both irrigation and drinking in the downstream, and ultimately, though yet to be confirmed scientifically, it is assumed to convert the beautiful snow peaks into barren rocky mountains in the long run. Besides, it has also been observed that many species and ecosystems, already under stress from human encroachment and other activities, are failing to adapt to the new climatic conditions. In addition, food production is in decline and import of food products has been increasing to meet the demand. Likewise, although people are already suffering from a variety of climate-related health effects, countermeasures to address the problem are yet to be designed effectively. Similarly, climate proofing of major infrastructures like roads, bridges, dams, irrigation canals and water supply facilities to adapt to the change in climate is necessary. All of these losses, and countermeasures required to prevent further losses will put tremendous pressure on national economy requiring a significant percentage of GDP. Until now, there has not been any comprehensive study on economic loss and benefit of climate change in Nepal. Recently, a project entitled "Economic impact assessment of climate change in key sectors in Nepal" was initiated under the Ministry of Environment, Science and Technology with an aim of providing headline and sectoral estimates of the impacts and economic costs of



climate change for key sectors (agriculture and water sectors) in Nepal. Besides, a decision has recently been made to allocate national budget to address the climate related issues under separate heading enabling one to estimate the total government annual expenditure in the climate sectors.

## CONCLUSION

Global climate change has been recognized by scientists on the basis of climate data and also by the general public by observing changing pattern of climate and its variability in their own surroundings. Scientists have predicted GHGs concentration of 500 parts per million by 2100 if no mitigation measures are applied. Consequently, the global average temperature rise is also predicted to be more than 1°C than that of 1960 to 1990, and may be as much as 6°C higher by the end of this century. In case of Nepal, the General Circulation Models run with the SRES B2 scenario show the mean annual temperature to increase by an average of 1.2°C by 2030, 1.7°C by 2050 and 3°C by 2100 compared to a pre-2000 baseline. The precipitation projections show no change in western and up to 5-10% increase in eastern Nepal for winter. During the summer months precipitations are projected to increase for the whole country in the range of 15 to 20%. In the present context, the impact of climate change has already been felt in almost all parts of the country and in all development sectors and sub-sectors. Generally, floods, droughts, debris flows, vector and water borne diseases, forest fire and disruption of ecosystems are the major climate change impacts in the Terai-Churia regions. In the Middle Mountains the impacts are landslides, debris flows, flash floods, droughts, drying up of springs, prevalence of insects and plant diseases, and forest fires. Rapid melting of glaciers, glacial lake outburst flood (GLOF), landslides, shifting and deterioration of habitats, biodiversity loss and ecosystem degradation are the major climate change impacts in the High Mountain. All of these losses and countermeasures required to prevent further losses will put tremendous pressure on national economy despite the fact that Nepal's contribution to global GHGs emissions is almost negligible. This fact clearly highlights Nepal's position in UN conferences to lobby for more international funding to adapt to the changing climate.

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## CHAPTER 3

# Climate Change and Policy Perspective

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## BACKGROUND

Nepal being a mountainous, landlocked and one of the least developed countries is highly vulnerable to climate change. Adverse effects of climate change can be observed in receding glaciers, agriculture, water sources, forests and general health. In order to adapt with and mitigate the adverse impacts of climate change, Nepal must have appropriate climate change and environment policies, legislations and institutions to guide relevant national and local development instruments, and provide guidance in order to benefit from international instruments on climate change.

Development of forest management instruments dates back to 1960s and most of the environment related policies were introduced in the 1980s. The Sixth Plan (1980-1985) introduced a policy to conduct Environmental Impact Assessment (EIA) of major infrastructure projects and focused on integration of environmental aspects during the construction of large-scale projects. Since then, several policies have been formulated and various commitments have been made to promote the conservation and management of natural resources and the environment. Similarly, international commitments have also been made to address the environmental problems of global nature.

Nepal signed the United Nations Framework Convention on Climate Change (UNFCCC), a Convention that aims to stabilize greenhouse gas concentrations in the atmosphere, on 12 June 1992 and became Party in 1994. Many of the policies and institutional arrangements discussed in the next sections are Nepal's own initiatives and commitments to implement the applicable provisions of the Conventions and the Kyoto Protocol.

As impacts of climate change and related issues are discussed in other chapters of this book, this chapter focuses, inter alia, on policies, institutional arrangements and innovative initiatives in relation to climate change regime, including Mountain Initiative, Rio +20 and Climate Finance. The Interim Constitution of Nepal, 2007 states that state shall have the responsibility of raising the standard of living of the general public by fulfilling the basic needs of Nepali people. And by protecting the forest, vegetation and biodiversity, ensure their sustainable use and equitable distribution of the benefits derived from them. For the first time, the Interim Constitution of Nepal recognized the 'right to a clean environment' as a fundamental right (Article 16.1) of its citizens. The Constitution also has a provision for conserving at least 40% of the natural forest area of the country.

## **INSTITUTIONAL DEVELOPMENT**

The Government of Nepal (GoN) has made sincere efforts in the recent past, primarily through the Ministry of Environment, Science and Technology (MoEST) (former Ministry of Environment), to set up appropriate policy regime to facilitate the process and implementation of plans and programs related to climate change in Nepal (Devkota, 2011).

The Climate Change Council, constituted in 2009 and chaired by the Prime Minister, provides an overall guidance to national efforts in addressing climate change. The Council, a high-level coordinating body, will among others:

- Provide coordination, guidance and direction for the formulation and implementation of climate change-related policies and their integration with long-term policies and plans;
- Take necessary measures to make climate change a national development agenda;
- Initiate and coordinate activities related to additional financial and technical support to climate change-related programme and projects; and
- Initiate and coordinate activities for additional benefits from climate-change related international negotiations and decisions.

The MoEST functions as the secretariat of the Council. The Council is represented at political level by major sectors namely forests and soil conservation, agriculture, foreign affairs, finance, energy and irrigation, federal affairs, and local development agencies including the National Planning Commission. The Council is also represented by eight government-nominated independent experts. The Council has met nine times during the last two and a half years and has become instrumental in making climate change a national development agenda and has projected Nepal's position in global perspective as well.

The GoN established a Climate Change Coordination Committee in 2011 under the chairmanship of the Minister for Environment, Science and Technology to ensure coordination of activities, particularly those related to Pilot Programme for Climate Resilience (PPCR). Similarly, a Multi-stakeholder Climate Change Initiatives Coordination Committee (MCCICC) was formed in mid-2010 under the chairmanship of the Secretary, Ministry for Environment, Science and Technology with representations from government institutions, local government associations, academia, non-governmental organisations, and development partners to promote functional level coordination amongst the stakeholders and streamline activities to address the impacts of climate change.

The GoN has also established a Climate Change Management Division in the MoEST in 2010 with three sections: Climate Change Section, Climate Change Council Secretariat Section, and Clean Development Mechanism Section. Likewise, the Ministry of Forests and Soil Conservation has created REDD and Climate Change Cell to promote climate change related activities (MoEnv, 2011). Detailed information on REDD can be found in Chapter 6 of this book.

## **CLIMATE CHANGE POLICY**

The GoN issued the Climate Change Policy in January 2011. The vision of the policy is to spare the country from the adverse impacts of climate change by considering climate justice through the pursuit of environmental conservation, human development, and sustainable development – all contributing to a prosperous society. The policy provides different angles to climate change among which adaptation and mitigation are relatively common at both the national and local levels and justice is a new addition. The policy ensures that at least

80% of the total funds allocated for climate change reach local communities for conducting activities at the grass-root level.

The quantitative targets of the policy include:

1. Establishment of a Climate Change Centre for conducting climate change research and monitoring, and providing regular policy and technical advice to the GoN;
2. Initiation of community-based local adaptation actions as mentioned in the National Adaptation Programme of Action (NAPA) by managing financial resources by 2011;
3. Preparation of a national strategy for carbon trade in order to benefit from the Clean Development Mechanism by 2012;
4. Formulation and implementation of a low carbon economic development strategy that supports climate resilient socio-economic development by 2014;
5. Assessment of losses and benefits from climate change in various geographical areas and development sectors by 2013; and
6. Development of a reliable impact forecasting system to reduce the adverse impacts of climate change to natural resources and people's livelihood in vulnerable areas of the mountains, hills, Churia, and Terai.

The policy focuses, among others, on climate adaptation and disaster risk reduction, resilience and low carbon development path, and climate-friendly resource management to minimise impacts of climate change on human beings, livelihoods and ecosystems. It equally focuses on accessing climate finance, promoting research, technology development and transfer, and enhancing people's participation. Effective implementation of the policy is expected to open multiple windows to address climate change impacts.

Recent policies equally focus on renewable energies, approach to low carbon development, and carbon sequestration in forests. Green economy policy has been deemed important for Nepal (NPC, 2011). The three year National Development

Plan (2010-2013) has recognised potential threats posed by climate change to sustainability of development activities. It also emphasized the need to make all proposed development plans climate-resilient by incorporating measures to reduce climate risks. The National Planning Commission has also introduced climate resilient planning, disaster risk reduction planning, and poverty reduction initiatives (NPC, 2011).

## CLIMATE ADAPTATION

Nepal's contribution to global warming due to greenhouse gas emissions is statistically insignificant. However, Nepal has focused on various activities to adapt to climate change impacts. Some of the major initiatives are as follows:

### National Adaptation Programme of Action, NAPA

Nepal prepared its NAPA in 2010 to address the impacts of climate change. It prioritises urgent and immediate adaptation actions and also provides strategic direction for climate change actions by opening avenues for prioritising climate change adaptation into mainstream development planning processes. NAPA has given priority to key issues including community-based adaptation, adaptive capacity of vulnerable communities, community-based disaster management, glaciers lake outburst flood (GLOF) monitoring and disaster risk reduction, forests and ecosystem management, adapting to climate challenges in public health, ecosystem management for climate adaptation, and promoting climate smart urban settlement (MoEnv, 2010).

The NAPA document was prepared with the following objectives of among others:

- Assessing and prioritising climate change vulnerabilities and indentifying adaptation measures;
- Developing proposals for priority activities;
- Developing and maintaining a knowledge management and learning platform; and
- Also developing a multi-stakeholder framework of action on climate change.



An expense of US\$ 350 million has been estimated for implementation of the priority adaptation actions as included in Nepal's NAPA. As of September 2012, Nepal has accessed little financial resources from LDC Fund and bilateral development partners to implement few NAPA activities NAPA. Its implementation will depend upon approaches regarding capacity building, empowerment and engagement of local level organisations, and climate vulnerable communities and stakeholders.

## **Local Adaptation Plan for Action, LAPA**

In line with Nepal's Climate Change Policy 2011, and as a means of implementing NAPA and integrating adaptation options into development policy and planning processes, GoN approved the National Framework on LAPA in November 2011. Initiated in mid-2010, the LAPA was prepared through extensive consultations (GoN, 2011).

The LAPA will:

1. Enable communities to understand the uncertain future of climatic conditions and engaging them effectively in the process of developing adaptation priorities;
2. Promote to implement adaptation and climate-resilient plans that are flexible enough for responding to changing and uncertain climactic conditions; and
3. Inform sectorial programmes and catalyse integrated approaches between various sectors and sub-sectors.

The LAPA Framework ensures that the process of integrating climate change adaptation and resilience options from local-to-national planning is bottom-up, inclusive, responsive and flexible. The framework was developed on the basis of pilot projects implemented in ten districts to promote and ensure people's participation and ownership in adaptation involving climate vulnerable communities. Nepal has recently prepared 70 LAPAs to address climate change impacts at the local level and will shortly start their implementation.

## FINANCIAL ARRANGEMENTS

Nepal's Climate Change Policy 2011 has the following provisions for financing climate change related activities:

- Establishing a separate Climate Change Fund for implementing programmes related to climate adaptation and resilience, low-carbon development, risk identification, research, and development and utilization of technologies.
- Managing finances in the Climate Change Fund provided by GoN, bilateral and multilateral agencies, national and foreign individuals and organizations, and funds established under UNFCCC and programmes to support climate change activities; and
- Allocating at least 80% of the total budget of the Climate Change Fund directly to community level programs.

However, there is no clear definition of climate change expenditure in existing budgetary provision which makes it difficult to track whether the policy has been implemented properly. In a bid to track climate expenditure, NPC/UNDP conducted a study in 2011 which revealed that the value of budgeted climate change expenditure, at current prices, has increased almost three-fold in the past five years. Government's climate change planned expenditure contributed around 2.6% of the GDP in the previous year and has almost doubled in the past five years. Government's funding has decreased as a proportion of the total. The share of climate change expenditure at the local level is about 35-40% of the total climate change expenditure.

Climate Change funds are available at the global level. As a Party to the Climate Change Convention and the Kyoto Protocol, Nepal has the potential to access funds from LDC Fund, Special Climate Change Fund, Adaptation Fund, and newly established Green Climate Fund. Besides, Nepal has already accessed the Climate Investment Fund, Global Climate Change Alliance, and other bilateral funds to implement climate change activities.

## **MOUNTAIN INITIATIVE AND RIO+20**

Nepal, in collaboration with major development partners including the Mountain Partnership (MP), International Center for Integrated Mountain Development (ICIMOD) and other key stakeholders around the globe, will take a lead in communicating climate change related concerns of mountain countries at UNFCCC and other relevant platforms. It is committed to continuing efforts to bring major mountainous countries from across the world as an alliance for mobilising meaningful support and securing global attention on the situation of mountain people and ecosystems (MoEnv, 2012). The overall intended outcome of this effort is a global resolution on specific climate adaptation related instruments, mechanisms and programmes for the mountains. The GoN endorsed the Mountain Initiative in May 2010 and organised the International Conference of Mountain Countries on Climate Change in Kathmandu in April 2012 (MoEST, 2012). The Conference endorsed the Kathmandu Call for Action on the mountains and climate change, which provides mountain and mountainous countries opportunities to develop and implement action plan at country level. Call for Action also promotes the development of Programme of Work and influence international negotiations including on UNFCCC to focus on and give due recognition to the climate change in the mountains.

Nepal, along with other mountainous countries, also actively participated in including mountain issues in the Rio+20 document – the Future We Want. Nepal, through its status paper, strongly put forwards issues related to green economy and institutional framework for sustainable development with focus on special needs of mountain countries. Nepal urged, inter alia, to recognise the direct and indirect benefits derived from the mountains, incorporate the value of ecosystem services including mechanisms to compensate and reward mountain communities, improve markets for mountain ecosystem goods and services, and ensure access to financial resources to address the adverse impacts of climate change in the mountains. These concerns are partly or wholly recognised in the Rio+20 outcomes.

Article 4.8 of the UNFCCC has provisions to consider mountain issues. While implementing the provision, the article states that, the Parties shall give full consideration to what actions are necessary under the Convention, including actions related to funding, insurance and the transfer of technology to meet the specific needs and concerns of developing country Parties arising from the adverse effects

of climate change and/or the impact of the implementation of response measures, especially on countries with fragile ecosystems, including mountainous ecosystems. Nepal, in collaboration with other mountain and mountainous countries, could step forward to implement this provision.

Therefore, Nepal, during the negotiation processes on UNFCCC and other relevant forum, could inform about the impacts of climate change in the mountains, and call to include agenda for the mountains in the UNFCCC process in particular and relevant Conventions such as United Nations Convention to Combat Desertification (UNCCD) and Convention on Biological Diversity (CBD) and other international initiatives.

## **POLICY GAPS AND RECOMMENDATIONS**

Climate Change is one of the contemporary areas for timely intervention through innovative and visionary policies, legislations and methods of institutional strengthening. Some of the gaps identified in the existing policies are as follows:

- The policy describes the goals and objectives in detail, but misses to identify the main agents of implementation. In the absence of well equipped executers, it is highly likely that the policy implementation will face difficulty in realising its objectives. To facilitate and support the MoEST, an executing agency should be established to coordinate and implement smoothly.
- The policy identifies local communities as the stakeholders and earmarks at least 80% of the climate funds for the community level activities to be implemented by the communities themselves. However, these communities are regarded as passive beneficiaries instead of active partners in development and programme implementation. Clearly defined roles, rights, and responsibilities of the latter in the policy documents would have empowered local communities as active partners of development.
- There is a lack of concrete plan for the implementation of strategy and actions. The executing agency should develop a time-bound and resource-based plan of action to promote effective implementation.

- A large section of the policy document is dedicated to the establishment of funds and responsible entities at the central level, but there is very limited mention of the actions, plans, needs, and priorities for local communities. Hence, it will not be an exaggeration to say that the policy is centre-oriented with low inclination towards community needs.
- Climate change policy is expected to address climate variability, vulnerability, and projections as integral parts of climate change adaptation and impact mitigation measures. In its current state, the policy focuses neither on technical nor on community attributes - the two fundamental facets of a meaningful policy.
- The existing institutional arrangement with the MoEST as the main entity responsible for effective implementation of this Policy needs to be revised. The timely establishment of the Climate Change Centre will bridge the gap on data and information and help plan appropriate programmes and activities.
- In the absence of decentralized executing units at the district and village level, implementation of climate policy seems extremely difficult. Moreover, a policy requires a legal instrument for its onsite implementation. At present, the policy does not have supporting legislation to enable its implementation. Hence, institutional and structural restructuring of the concerned government agencies is required for effective implementation of the policy.
- Climate Change issues must be recognized by all the Ministries in their development activities. Climate resilient planning should be initiated in each sub sectors.
- As there is a significant gap to implement policy and climate adaptation activities, Nepal should promote activities to access funding by establishing climate change fund.
- The national level study on Economic Impact Assessments due to climate change in sub sectoral level (agriculture, water, forestry, health and others) is needed and only this study will allow the GoN to highlight both within Government and beyond, that climate change is an economic and development issue of high priority. It will also proceed one step further and model the efficiency of different policy options and identify climate compatible development pathways.

- A holistic approach needs to be applied for studying the impacts of climate change in different sectors consisting multidimensional parameters in different ecological zones and contexts.
- There should exist a nexus between the negotiations carried out at international level and the development needs of Nepal.
- Investment should be accelerated in Science and Technology, especially in Knowledge Triangle – research, education, and extension for the sustainable development of the country.
- Climate change is growing in importance as a significant new arena of global diplomacy at the very highest levels. At the same time, it is an opportunity to play a leading role in the international diplomatic arena as well. National institutions, namely National Planning Commission (NPC), Ministry of Finance (MoF), MoEST, MoFSC and other relevant Ministries, Departments, Civil Society, and the Academia need to enhance its knowledge of climate change diplomacy and climate finance where climate finance should be treated different from Official Development Assistance (ODA) with which they have traditionally been familiar.
- Finally, it is equally important to translate these policies into practice through legislative measures, and time has come to commence on climate legislation as well.

## **CONCLUSION**

In recent years, climate change has become a serious issue with multiple implications at global, regional and national levels. All countries, be it developed, developing or least developed, are facing adverse impacts caused by climate change. However, the Least Developed Countries like Nepal are most likely to suffer extensively. Lack of resources and capacity to adapt and mitigate these changes has made Nepal more vulnerable to climate change. In the mean time, Nepal has taken major initiatives at the policy level to address the impacts of climate change. The GoN has introduced policies and programmes to minimize the effects of climate change. The plan policies 2010-2013 (3 years) have certainly helped move ahead in addressing the likely impacts of climate change in each sub sector.

MoEST has been working against the negative impacts of climate change and has established Climate Change Management Division (CCMD). Similarly MoFSC has introduced REDD program. However, certain policy gap still exists in Nepal which has to be addressed efficiently. In spite of all good initiations in policy level in climate change sector, coordination in each layer and knowledge management among ministries, departments, civil society and academia is still a challenge. However, one major step taken by GoN the Mountain Initiative, 2009 has provided an opportunity for all mountain countries and development partners mainstream climate change into mountain development. It is a new agenda for addressing climate change in the mountains and urging mountainous countries to form a platform to work together, and in the due course, encourage Nepal to move ahead.

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## CHAPTER 4

# Adaptation to Climate Change: Status and Our Position

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## BACKGROUND

Presently, the issue of Climate Change has become one of the most prominent development agenda with one of the most complex negotiations in the world. The aim of this chapter is to explore the basics of adaptation, emerging adaptation issues, and its documentation in order to create a broader understanding of the adaptation issues among the negotiators and other professionals in Nepal.

## Mountain and Climate Change

Mountains have one of the most fragile environments on Earth. Mountains have a higher degree of sensitivity, greater exposure, and weak adaptive capacity compared to other ecosystems. At the same time, Mountains are one of the most important and largest repositories of biodiversity and water resources. They also provide ecosystem services to a large percentage of the economically deprived people both at upstream and downstream areas (ICIMOD, 2010). Nepal, being a mountainous country, is highly affected by climate change and climate extreme events (MoEnv, 2012). Hence, urgent actions to adapt to climate change impacts are pressing issues for Nepal.

## Adaptation

Adaptation is an adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial

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opportunities (IPCC, 2007). The process of adaptation is not new; throughout history, people have been adapting to changing conditions including natural, long-term changes in climate. It refers to changes in processes, practices, and structures to moderate potential damages or to benefit from opportunities associated with climate change. Adaptation is also the idea of incorporating future climate risk into policy-making and practices.

## **Adaptation in Nepal**

Nepal needs to maximise its efforts to streamline adaptation concerns in developing strategies and harmonising programmes and projects within government and non-government organisations. As a developing country, Nepal has also been raising concerns regarding adaptation to climate change in the international arena. The role has been further elevated once Nepal has assumed a lead role in LDC coordination and Mountain Initiatives.

Nepal has mobilised various institutional mechanisms and policies to assist adapting to climate change as well as to integrate adaptation concerns in the socio-economic development plans in the future (for details, please see chapter 3 on Policy Perspective).

## **OVERVIEW OF ADAPTATION PROCESS UNDER UNFCCC**

UNFCCC considers adaptation as one of the major intervention methods for moderating the impact of climate change. The major milestones created at various sessions of the Conference of the Parties related to adaptation are as follows:

- The COP7 (held at Marrakech in 2001), for the first time, formally recognised the problem of adaptation for developing nations leading to the formation of funding mechanisms.
- The Delhi Declaration from the COP8 in 2002 linked the participation of the developing world in emissions mitigation to implementing initiatives and funding on adaptation.

- At COP10 (held at Buenos Aires in 2004) programme of work on adaptation and response measures were discussed and at COP12 (held at Nairobi in 2006), work programme on impacts, vulnerability and adaptation to climate change were adopted.
- The COP13 (held at Bali in 2007) focussed considerably on adaptation to climate change and technology transfer to developing countries and LDCs. It also recognised the need for adaptation at all levels by mainstreaming efforts and environmental policies.
- At COP14 (held at Poznan, Poland in 2008), the most vital negotiations pertaining to adaptation centred on the Adaptation Fund. Although no agreement was reached with regard to “new and additional” resources or “innovative means of funding” for adaptation in developing countries, the Parties agreed to make the Adaptation Fund operational, providing developing countries direct access to support for adaptation.
- At COP16 (held at Cancun in 2010), Parties adopted the Cancun Adaptation Framework (CAF) as part of the Cancun Agreements and they affirmed that adaptation must be addressed with the same level of priority as mitigation. The objective of the CAF is to enhance action on adaptation, including adaptation through international cooperation and coherent consideration of matters relating to adaptation under the Convention. The CAF includes decisions on the establishment of the Adaptation Committee and also requested developed country parties to provide developing country parties with long term, scaled up, predictable, new and additional finance, technology and capacity building consistent with relevant provisions to implement urgent, short, medium and long term adaptation actions, plans, programmes and projects.
- The COP17 endorsed the scope of the Adaptation Committee with specific functions including providing technical support and guidance to the Parties, respecting the country-driven approach; strengthening, consolidating and enhancing the sharing of relevant information, knowledge, experience and good practices and promoting synergy and strengthening engagement of stakeholders. The Adaptation Committee met for the first time in early September 2012 in Bangkok.

## CHALLENGES AHEAD

Stern Report (2006) revealed that the economically deprived people and societies whose contribution to climate change has been minimal, are actually the ones most disproportionately affected by climate change. They have lost their employment options, livelihood assets, and their options for conducive future have been negatively affected. Climate change is already having negative impacts on development and ecosystems and poses an enormous challenge to Nepal's development processes. Most of the people in Nepal are highly dependent on climate sensitive resources such as agriculture to maintain their livelihoods and the current climate risks are adding to the existing challenges of tackling poverty and promoting human and ecosystem management.

Based on the principle of 'common but differentiated responsibility', and commitments made by developed countries to compensate the loss by climate change during various international forums, now it is time for the developing countries to raise concerns in various climate negotiation processes. The developing countries now need to consider 'procedural' as well as 'financial' concerns in a more systematic manner during the negotiation processes. Following are some specific concerns that Nepal may take further:

### Adaptation Financing

According to Article 4.4 of the UNFCCC, "developed countries are required to assist developing countries in meeting the costs of adaptation to the adverse effects of climate change". Different mechanisms of climate financing do exist. But, there have been concerns regarding their implementation process. The process of accessing funds is cumbersome and lengthy as individual countries have to go through intermediary 'implementing agencies'. There is a need for the process to be more direct and transparent.

The performance of the existing financing mechanism can be construed as far from satisfactory. Many have argued that developing countries have received only a fraction of the promised financial resources. The poorest countries and communities have received the least amount of financial aid on climate change related funds spent globally.

There have been global efforts to increase resources for combating the negative impacts of climate change. Developed countries agreed at Copenhagen, and confirmed at Cancun in 2010 to generate 100 billion USD each year by 2020 for climate adaptation and mitigation of climate change effects. The Green Climate Fund (GCF) is being institutionalized to facilitate this ambitious plan but issues related to fund-raising and its delivery process are still unclear. These issues include how the funds will be raised, how much fund is it likely to disburse, what would be the sustainable financing mechanisms, and who should contribute in what capacity.

There is a common consensus among the developing countries that adaptation funds should be raised according to the principle of common but differentiated responsibility for climate impacts, and the process for accessing fund should be reviewed to make the process efficient and effective. Developing countries also argue that adaptation funds should be additional to the Official Development Assistance (ODA).

Nepal government submitted its view on the financial mechanism (July 2012) of the Conventions and has requested to ease of process of accessing such financial resources to start actions without delay.

## **NAPA and NAPs**

National Adaptation Programme of Action (NAPA) addresses most urgent and immediate adaptation needs whereas National Adaptation Plan (NAP) will address medium and long-term adaptation needs in developing countries. Nepal has prepared NAPA in 2010 but implementation of adaptation actions identified by NAPA is still uncertain due to lack of adequate financial resources.

NAP formulation process is expected to start from LDCs after the adoption of the NAP preparation guidelines by COP18 at Doha in 2012 to identify medium and long-term needs and priorities for adaptation to climate change. There is no controversy over the principle need to develop more comprehensive NAPs that build on and go beyond useful experience of NAPA. There are, however, divergent views on whether a distinct process for the preparation of dedicated NAPs is the most suitable approach. Some countries fear that this could lead to just another preparation exercise of a document to meet an international requirement. There are also doubts whether such a uniform approach would be suitable and can be the most useful way of driving

the integration of adaptation into sectorial policies, poverty reduction strategies, etc. Some argue this might further lengthen the process of channelling resources to meet the urgent and immediate needs of the most affected communities in the LDCs.

Nepal's submission to UNFCCC in August 16, 2011 related to NAP clearly mentioned that the NAP process should be distinct and build upon the experience of NAPA preparation and implementation, and the process should not delay the implementation of NAPA priorities.

## **Adaptation Planning and Management**

The existing mechanisms are not sufficient to address contemporary challenges of climate change and we need a new set of planning and management tools that can integrate a longer term perspective of adaptation or resilience in climate change and development management. Climate change risk assessment, impact assessment and adaptive capacity assessment tools, among others, are required for better planning and management. Our biophysical settings and socio-economic complexities have to be considered while developing these tools and processes. Without proper planning, adaptation activities might result in negative consequences. Although developing countries have a wealth of indigenous knowledge to cope with a wide range of climate change impacts, they lack new knowledge, skills and technologies to moderate the impacts once they go beyond a threshold. So, international co-operation to address these concerns is imperative.

There have been commitments to support developing countries in capacity building, knowledge sharing and technology transfer regarding climate change. The role of Adaptation Committee (Decision 2/CP.17), for example, concerns with the provision of technical support and guidance to the Parties; methods to strengthen, consolidate and enhance the sharing of relevant information, knowledge, experience and good practices; promotion of synergy and strengthening engagement among various stakeholders; providing information and recommendations drawing on good adaptation practices; and considering information communicated by Parties during monitoring and review of adaptation actions. Nepal has been selected to coordinate LDC group for the years 2013-2014. Nepal could play a critical role in making Adaptation Committee more responsive to discharge its responsibility in support of developing countries in general and LDCs in particular.

## **Climate Friendly Institutions**

Besides funding, viable institutions and effective policy frameworks at the national and global levels are required to address the ever-compounding climate risks. Without them, progress in climate adaptation would invariably falter. Nepal is in the process of devising national and local level governance processes to address the challenge of climate change adaptation; however, international level governance processes also have significant impact in addressing adaptation.

There is a need for responsible international institutions such as the UN and other multilateral development banks to evolve and adapt themselves to climate change and foster broader long-term coordination with the most affected countries and communities. One instance would be to adequately incorporate climate change concerns into their lending strategies and make flexible approaches in order to access the fund for the developing countries.

## **An International Mechanism to Address Loss and Damage**

Parties have continued negotiations on the implementation of the programme of work on 'loss and damage' associated with the adverse effects of climate change including impacts related to extreme weather events and slow onset events. The work programme was established in Cancun decision and elaborated in the Durban decision (7/CP.17) with a view to making recommendations on loss and damage to the 18th meeting of the Conference of Parties. In Durban, the programme of work is organized around three broad thematic areas i.e. assessing the risk of loss and damage associated with the adverse effects of climate change; a range of approaches to address loss and damage associated with the adverse effects of climate change; and the role of the Convention in enhancing the implementation of approaches to address loss and damage (Climate Change Secretariat, 2011).

There were, however, substantial differences between developed and developing countries on the gravity of issues concerning risk assessment and risk management. Developed countries continue to emphasize on assessing loss and damage. In contrast, developing countries have been emphatic on the need to take steps to address loss and damage. This includes provision of technology and development of

institutional capacity supported with technical and financial assistance (TWN, 2012). Besides this, developing countries are also lobbying for inclusion of non-economic losses such as territory, ecosystems, cultural heritage, values, livelihoods, local and indigenous knowledge, and other socio-economic losses in the loss and damage programme of work.

## **WHAT CAN BE DONE**

It is important to mobilise new and additional funds and resources for adaptation to climate change. The very first step towards this would be to provide immediate funding for implementation of the NAPAs in LDCs. This will significantly contribute to bridge the differences between developed and developing countries and serve as a building block towards a long-term approach to adaptation within the context of a new and comprehensive agreement on climate change.

In the longer term, the Green Climate Fund should have sufficient amount with an innovative structure and governance that is transparent and inclusive. In addition to ODA, climate finance should consist of innovative and predictable sources of finance. The developing countries also need to have access to appropriate knowledge and technologies to promote climate compatible actions.

## **CONCLUSION**

The act of 'negotiation' is a process of reaching an understanding, resolving a point of difference, gaining advantage or finding agreement among stakeholders. In the UNFCCC talks, negotiation should be about consensus building. So, negotiation delegates should be aware of the government stand points, concerns of the developing countries, and possible trade-off of these concerns. The team should contribute to overcome the impasse and proceed further.

Preparation for the COP18 was continued in Bonn (May 2012) and Bangkok (August 2012). There have been some progresses such as National Adaptation Plans, capacity building and technology transfers in those meetings. But it was also felt that some countries had backtracked from what was agreed upon in 2011 December in Durban. So, debates are on-going. Nepal, with a more responsible role in climate

negotiation, has to take adaptation concerns strongly in coming COP and issues such as climate financing, capacity building and technology transfer have to be raised strongly to influence the negotiation and make decisions for our benefit.

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## CHAPTER 5

# Clean Development Mechanism in the Context of Climate Change Mitigation

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## INTRODUCTION

In the third session of the Conference of the Parties (COP) to the UN Framework Convention on Climate Change (UNFCCC) held in Japan in 1997, Parties adopted the Kyoto Protocol (KP). The Protocol set targets for industrialised countries (Annex-I) to reduce their greenhouse gas (GHG) emissions by an average of 5.2% below 1990 levels in the period 2008-2012, known as the first commitment period. Nepal accessed the KP and it came into force on 14 December 2005. The three market-based “flexible mechanisms”; Emissions Trading (ET); Joint Implementation (JI); and the Clean Development Mechanism (CDM) were designed in the KP to help reduce the cost of meeting these reduction commitments. Out of these, JI and the CDM are “project-based” mechanisms.

The CDM is one of the mechanisms defined in Article 12 of the Kyoto Protocol and is primarily intended to meet two objectives: (i) assisting non-Annex I Parties in achieving sustainable development goals; and (ii) assisting Annex I Parties in achieving compliance with their quantified emission limitation and reduction commitments. The CDM is managed by the CDM Executive Board and is under the guidance of, and accountable to the Conference of the Parties serving as the Meeting of the Parties (CMP) to KP. The CDM allows industrialized countries to invest in emission reductions. Between 2001 (first year of CDM project registration) and 2012 (end of the Kyoto commitment period), the CDM is expected to produce some 1.5 billion

tonnes of CO<sub>2</sub>eq emission reductions through renewable energy, energy efficiency, and fuel switching. Now, the developing countries (especially China and India) with larger economies are enjoying the benefits of CDM.

The LDCs have not benefitted significantly from CDM projects in the first commitment period (2008-2012) primarily due to methodological issues, and validation and verification procedures. The time taken and transaction costs involved in validation and verification also discouraged the LDCs that have little capacity to understand and interpret the fast changing decisions.

The CMP 6 in Cancun decided to introduce the concept of 'standardised baseline'. This is defined as a baseline established for a Party or a group of Parties to facilitate the calculation of emission reduction and removal, and/or the determination of additionality for CDM project activities, while providing assistance for assuring environmental integrity. It also requested the Executive Board to develop standardised baselines, as appropriate, in consultation with relevant DNAs, prioritising methodologies that are applicable to LDCs, Small Island Developing States (SIDS), and Parties with 10 or less registered CDM project activities as of 31 December, 2010. The standardized baseline is expected to reduce transaction costs; enhance transparency, objectivity and predictability; and facilitate access to the CDM as LDCs were experiencing them to be major barriers for promoting CDM projects. This concept of supporting the LDCs and other countries with 10 or less registered CDM projects would contribute to develop and improve methodologies and tools that are particularly suitable in under-represented areas.

The CDM allows emission-reduction projects in developing countries like Nepal to earn Certified Emission Reduction (CER) credits, each equivalent to one tonne of CO<sub>2</sub>. These CERs can be traded and sold, and used by industrialized countries to meet a part of their emission reduction targets under the Kyoto Protocol. The mechanism stimulates sustainable development and emission reductions, while giving industrialized countries some flexibility in how they meet their emission reduction limitation targets.

The Climate Change Policy of Nepal has mentioned about the CDM, GHGs emissions reduction and adverse impacts mitigation. The main goal of the Policy is to improve the livelihood by mitigating the adverse impacts of climate change, adapting

to it, and adopting low carbon emission socio-economic development path (MoEnv, 2011). The quantitative targets related to CDM are as follows:

- Preparation of a national strategy related to carbon trade in order to benefit from CDM by 2012; and
- Formulation of low carbon economic development strategy and its implementation in order to make socio-economic development climate-resilient by 2014.

One of the objectives of the policy is to reduce GHGs emissions by promoting the use of clean energy such as hydro-electricity, and renewable and alternative energies by increasing energy efficiency and by encouraging the use of green technology.

## **STATUS OF CDM IN NEPAL**

The projects related to renewable and non-renewable energy sources, chemical and manufacturing industries, construction, transport, mining and agriculture sectors, fugitive emissions from fuels, and production and consumption of halocarbons and sulphur hexafluoride are eligible under CDM. Other eligible projects include energy distribution and demand, metal production, solvent use, waste management, and afforestation and reforestation.

The CDM projects are to be approved by the host country Designated National Authority (DNA). In Nepal, the Ministry of Environment, Science and Technology functions as the DNA since 2005. Nepal falls among the category of CDM under-represented countries having less than 10 CDM projects registered with the CDM Executive Board (EB). As of July 2012, only 5 projects have been registered with the CDM-EB. These are related with micro-hydro and biogas. As of April 2012, DNA has already approved Project Design Documents (PDDs) and Project Idea Notes (PINs) of 15 and 3 CDM projects, respectively.

Nepal has followed two-step approval process for CDM projects. First, 'no objection letter' is issued by the DNA by evaluating and approving the PIN. In practice, MoEST forms the Technical Advisory Committee (TAC) to evaluate each PIN. Second, DNA approves the PDD of the CDM project. Inputs and suggestions

are collected from stakeholder consultation, TAC and Steering Committee (SC) before the approval of each PDD. Both PIN and PDD are also evaluated based on Nepal's sustainable development (SD) criteria to satisfy Article 12 of the KP. Once, DNA issues approval letter for PPD, the project proponent could register it with the CDM-EB.

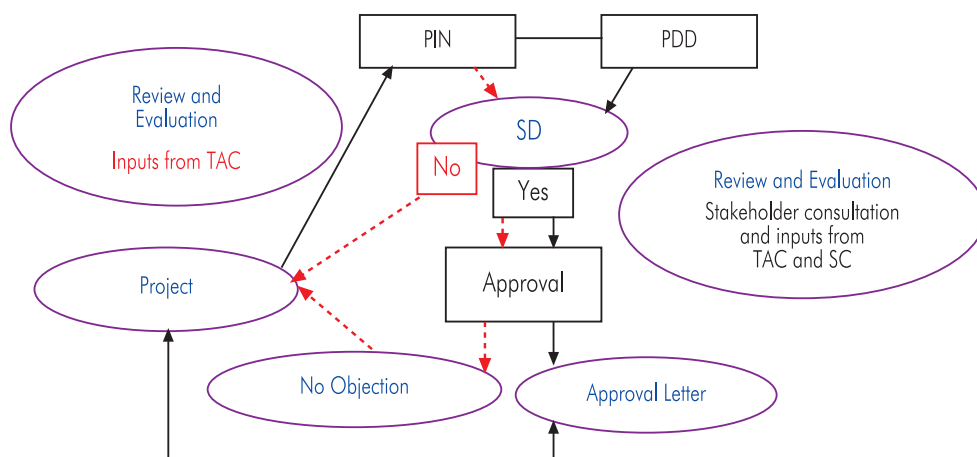


Fig. 5.1: Procedures for Approving CDM Project in Nepal

Nepal has high potential for CDM in terms of availability of untapped renewable energy such as hydropower, solar power, and high availability of biomass to be used as fuel. There are opportunities for switching of fossil fuel based generation to renewable energy based mechanical or electrical power, and fossil fuels to biomass based power generation or heat generation like use of biomass gasifiers. The solid waste management and waste water treatment for methane avoidance have also been other potential areas (Nandenpawar, 2011).

## Nepal's Concerns on CDM

Nepal has already raised concerns regarding CDM in different international fora including COPs and other related meetings. Nepal is of the opinion that CDM needs to be fundamentally restructured for better serving the sustainable development needs of the host country. Project-based activities should be limited to Least Developed Countries and other developing countries with minimal capacity to access benefits from CDM. Even in such cases, strong support for capacity building should be prioritized

to help countries quickly adopt sectoral, cross-sectoral and national approaches that help them move towards low-carbon development pathways. Nepal's views on CDM may be expressed as follows:

- CDM needs restructuring to accommodate all forestry activities that help in carbon storage and sequestration. At present, the scope of CDM in forestry sector is limited to only afforestation and reforestation activities. Emission reduction from the existing forests (which accounts for as high as 20% of the overall global GHG emission) is excluded from the domain of the CDM. This is of much concern to countries like Nepal who feel the need for it to be prioritised during climate negotiations.
- CDM registration indicated that the projects and credits are not equally distributed around encompassing weak economies, but are concentrated to a few rising economies. Hence, the LDCs should also get opportunities from CDM with regard to increasing share of projects and credits.
- A simple and efficient mode of project designing needs to be developed so that LDCs with limited technical and financial capacity can benefit from it. Complicated and time consuming project designing that require a lot of technical expertise, time and resources have been major impediments for concentration of CDM project and credits to a few countries.
- Proving additionality has been the biggest impediment in project designing and approval. Due to this provision, Nepal could not benefit from clean energy activities including hydropower projects for which it has great potential. There is a need to redefine the additionality criteria in such a way that all actions based on positive listing (e.g. hydropower, biogas, solar energy) would be considered additionality at least for LDCs and the project of LDCs be approved based on positive listing.
- Measurement, Reporting and Verification (MRV) process needs further simplification. The task commissioned by national experts must be recognized to optimise both the time and cost. In addition, the role of expatriates should be limited to re-validating the data generated by the national experts through a simple method.

## **CLIMATE CHANGE MITIGATION**

Climate Change mitigation is any action taken for reduction of the long-term risk and hazards of climate change to human life and property. A thorough understanding of future GHG emissions and their drivers, available mitigation options, mitigation potentials and associated costs, and ancillary benefits are especially important to support negotiations on future reductions in global emissions.

Similarly, Nationally Appropriate Mitigation Action (NAMA) concept has emerged based on the reasoning that all the countries, no matter whether developed or developing, should have a significant role to contribute in the efforts towards climate change mitigation. With the principle of common but differentiated responsibility and respective capability, the implementation of NAMA would be mandatory for developed economies with fixed targets while it would be voluntary for developing economies.

In the fourth assessment report, the IPCC estimated that what is needed for global warming to not exceed 2°C above pre-industrial era level was an emission reduction by developed countries to 25-40 percent below 1990 level by 2020, and a substantial deviation from business-as-usual path in parts of the developing world. So far, the mitigation targets that different countries have proposed as part of the Cancun Agreement fall well short of such aggregate reductions consistent with reaching the 2°C goal. There is, therefore, a significant gap between emissions expected from the pledges for 2020 and emission levels consistent with a 1.5°C and 2°C limit above pre-industrial era levels. However, the most recent scientific literature shows that it is technically feasible to reduce to the emission levels by 2020 consistent with 1.5°C and 2°C at a moderate cost (Schaeffer et al., 2011).

The Annex-I countries' reduction falls far short of what a number of Parties have called for: at least 45% reduction below 1990 level by Annex I Parties in aggregate by 2020, as part of a fair and necessary contribution to global efforts for stabilisation of greenhouse gas concentrations well below 350 ppm of CO<sub>2</sub>eq and to maintain global average surface temperature increment well below a 1.5°C rise over pre-industrial levels over a long-term. Over 100 countries, including Nepal, have called for a 1.5°C limit in temperature rise.

Achieving the temperature targets of the Cancun Agreements, such as limiting warming to below 1.5 and 2°C above pre-industrial, requires global emissions to stay within a certain budget between now and 2050. If emissions are relatively high in the first decades of this time period, this must be compensated by deeper reductions later on. Hence, by “overspending” the budget in the earlier years (until around 2020) both steeper emission reductions in later decades and a deeper absolute reduction level by 2050 is required (Meinshausen & Meinshausen, 2009). If reductions are delayed beyond 2020, the required emission reduction rates after the peak increase significantly and move beyond anything that can be regarded as feasible (Den Elzen & Hohne, 2010). Based on more complex calculations that included energy-economic feasibility aspects, both the IPCC AR4 (2007) and UNEP (2010) concluded that global emissions need to peak before 2020.

The CDM provision in KP provides opportunities for GHGs emission reduction through carbon trade between Annex I and non-Annex I Parties. However, the future demand for CERs is highly contingent on the international rules for carbon markets leading to price volatility and/or low offset prices. This might pose difficulties towards mitigation and to meet the objectives of the Convention from this mechanism.

## **Nepal's Concerns on Mitigation**

Nepal proposes that the long-term goal for emission reductions should be as follows:

- Global atmospheric greenhouse gas concentrations should be stabilized below 350 ppm.
- Global average surface temperature increase should be limited to below 1.5°C above pre-industrial levels.
- Global greenhouse gas emission must peak by 2015.
- Industrialized or developed countries whether or not they are a Party to the KP, should take the lead to commit themselves to absolute reduction in the emissions, as fulfilment of their historic responsibility.



- Annex I Parties, whether or not the Party to Kyoto Protocol, must reduce their emission by more than 45 percent of their 1990 levels by 2020, and 85 percent of their 1990 levels by 2050.
- Developing countries should also contribute to a global mitigation effort through nationally appropriate mitigation actions.
- NAMA should earn carbon credit.
- Sustainable development must be the spirit of the NAMA and it must be seen as a 'value added document' rather than something mandatory.
- Developing countries, except the LDCs, should also commit to at least 20-30 percent reduction in their GHGs emissions from business as usual in the context of enabling mechanism (technology, financing and capacity-building support) provided by developed country.
- LDCs should receive substantial and sustained investment in clean energy and energy efficient projects from developed countries.

## **CONCLUSION**

Nepal urges to set a GHGs reduction targets for 2050 along with mid-term targets for developed and some developing countries on the basis of principles mentioned in the Convention so as to prevent the threat of global warming. Nepal should advocate for a 1.5°C limit in global temperature rise (pre-industrial level). Although the mitigation is not our commitment, we should adopt low carbon emission and climate-resilient path for sustainable socio-economic development. Despite having high potential for developing renewable energy technologies, Nepal has not been able to tap the opportunities of CDM. The procedure of designing the projects and the process of validation/verification should be made simple and efficient so as to gain from the CDM. Nepal also needs to develop the in-country capacity in this regard. LDCs, mainly CDM under-represented countries like Nepal, require separate and preferential treatment to benefit from CDM.

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## CHAPTER 6

# REDD+: Issues and Challenges from a Nepalese Perspective

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## BACKGROUND

Vegetation and soil constitute the second largest reservoir of carbon after the oceans. It is estimated that forests and other terrestrial ecosystems have the potential to capture and store about 2.6 Giga Tons of carbon (GTC) per year; whereas, deforestation alone can release up to 1.6 GTC annually to the atmosphere (IPCC, 2007). Deforestation and land-use activities are estimated to account for almost one-fifth of global anthropogenic CO<sub>2</sub> emission; which indicates that change in forest land use patterns alone can significantly contribute in reducing global CO<sub>2</sub> emission. It is, therefore, important to understand the fact that forests can contribute as a source and a sink for carbon concentration in the atmosphere.

Carbon concentration in the atmosphere can increase either due to direct human activities or shrinking carbon sequestration capacity. Deforestation directly contributes to carbon release in the atmosphere whereas degradation activities contribute both ways- releasing carbon as well as losing Carbon sink capacity. The combined effect has resulted to increase in carbon emission to the atmosphere that has contributed in continuous increase in global temperature. This phenomenon provides sufficient evidence to appreciate the role of forests in climate change mitigation.

The sink capacity of the earth has been declining due to over exploitation of forests for consumptive goods and permanent conversion of forests to other non-forest land use. This has accelerated global warming and has posed serious threats to biodiversity and forest ecosystem. It is also important to understand that forest is treated as a gift and is overtly exploited to support rural livelihoods and other development activities. Therefore, deforestation activities in many developing countries are recognized as economic endeavours and associated environmental costs are unnoticed. In this context, abating deforestation in the developing countries is a challenge that cannot be addressed without appropriate incentive measures to compensate for the opportunity costs of deforestation.

Enormous amount of Carbon stocks have been stored in existing old natural forests in developing countries. If these forests are better protected and managed, then substantial amount of carbon stocks can be stored for long period of time. However, these forests are under continuous threat and possess high risk of carbon emission.

Recognizing the political economy of deforestation in these countries and associated risk of climate change, developed countries have expressed their willingness to compensate for abatement of deforestation and forest degradation activities in developing countries. As a result, issue of forestry has emerged as a high public interest agenda in all important climate change dialogues.

The 11<sup>th</sup> Session of COP to UNFCCC held in Canada can be recognised as the onset of the discussion on the scope of 'Reducing Emission from Deforestation' in Developing countries. This can be considered as the rudimentary stage which led to current REDD concept. Its scope was further elaborated in COP12 held in Nairobi, Kenya, where compensation for forest conservation was openly discussed. The COP13 held in Bali in 2007 considered including forest degradation issue in the REDD concept. The Bali Action Plan (BAP) provided further opportunity to discuss on the scope of considering forest conservation, sustainable management of forests and enhancement of carbon stocks along with deforestation and forest degradation issues of REDD. The COP13 resolution, in that sense, can be considered as a beginning of the present day REDD concept.

stocks, sustainable management of forests, and enhancement of forest carbon stocks. Inclusion of those three additional activities in REDD introduced REDD as REDD+.

The COP16 and COP17 held in Mexico and South Africa respectively further elaborated the methodological framework of reference level (RL) and measurement reporting and verification (MRV) and safeguard system on REDD+. Therefore, REDD+ concept is getting clearer and more comprehensible after subsequent COPs and confidence among the REDD participating nations has also increased over time.

Acknowledging the political economy of global deforestation, REDD+ initiatives need to be politically appreciated as a window of opportunity to mobilize public and private finance to increase investment in forest management interventions in developing countries through collaborative partnership with developed countries. However, the real success of REDD+ mechanism will largely depend on various internal and external factors. The internal factors include the effectiveness in controlling drivers of deforestation and degradation through effective forest law enforcement and good governance by respective developing countries. Whereas, establishing predictable carbon market, simple and executable REDD+ safeguards, easy access to technology, and financial resources are few but prominent external factors where developing countries expect moral support and good coordination from the developed countries.

## **SCOPE OF REDD+ IN NEPAL**

Agriculture and Forestry contribute more than one-third of the total GDP in Nepal where a quarter of the population is still under absolute poverty. More than 70 percent rural population depends on forests for various goods and services. Population growth, food insecurity, poverty and remittance economy have collectively put pressure on forests and wood products. Forest-cover change between 1978 and 1994 demonstrates that shrub land has increased by 5.6 percent per year and forest area has decreased by 1.7 percent per year (Acharya et al., 2009). The average rate of forest conversion to shrub land (5.6 %) is significantly higher than the deforestation rate (1.7 %) for the same period between 1978/79 to 1994. Though agents of forest degradation are not very clearly understood in Nepal, its monitoring, reporting and verification is important for carbon emission accounting.

According to the last National Forest Inventory (NFI), forest area is estimated about 5.8 Million ha, out of which about 4.2 million hectare is forest and the rest, 1.6 million ha is shrub land. The area occupied by the forested land (above 10 percent crown cover) is almost 29 percent of the total national territory. The Forests and shrubs cover 4.2 and 1.6 million ha respectively; and both constitute 39.6 percent of the total land mass of Nepal (DFRS, 1999). The Government of Nepal (GoN) has committed to maintain forest cover to 40 percent land mass of the country.

Project	Physiographic Region	Forest management Regime	Carbon Stocks (MT/Ha)
1. Terai Arc Land Scape*	Terai	State Forests Community Forests Protected Area systems	206.15 240 274.58
2. NORAD funded REDD+ piloting by ICIMOD/FECOFUN and ANSAB**	Inner Terai (Chitwan) Mid-Hills (Gorkha) High-Mountain (Dolakha)	Community Forests Community Forests Community Forests	257.39-298 166.97-221.77 168.27-231.35
3. REDD piloting in Collaborative Forest***	Terai (Banke-Mahara CoF Mahottari)	Collaborative Forests	197.13
4. Oli and Shrestha, 2009 (Desk review)	National	All regimes	57 (Average above ground bio-mass carbon)

Table 6.1: Status of Carbon stocks in different forest regimes (Gurung, M.B., 2010; ICIMOD et al., 2011; Mandal et al., 2012)

From Table 6.1, it is evident that the average growing stock value varies with forest regimes and across physiographic regions. Various studies indicate that the wood biomass value ranges from 81 to 172 m<sup>3</sup> Ha<sup>-1</sup> (Amatya et al., 2002) and the average biomass growth is estimated to range from 0.59 to 2.34 MT d.m. ha<sup>-1</sup>Yr<sup>-1</sup> (WECS, 2001). The average above-ground biomass carbon is estimated about 76 MTha<sup>-1</sup> for Terai forests, 37 MTha<sup>-1</sup> for the Middle Mountain, and 57 MTha<sup>-1</sup> as national average (Oli & Shrestha, 2009).

A recent pilot study on carbon stock baseline from the western Terai of Nepal shows that the estimated average forest carbon stock is about 231 MTha<sup>-1</sup>. The carbon stocked in trees above ground, below ground and Soil Organic Carbon (SOC) has been estimated about 68, 18, and 143 MTha<sup>-1</sup> respectively (Gurung, 2009). It

indicates that the stake of SOC is almost 60 percent of the total forest carbon stocks in Terai.

The planted forests occupy very small stake in national forest area. So far, more than 1.6 million hectare forest lands have been entrusted to 17,808 forest user groups benefiting 2.1 million local households (CFD, 2011). The degraded forests in the hills have been reported successfully restored. Study on forest cover and forest quality change in Dolakha and Sindhupalchok Districts reveals that there has been net gain of biomass but net loss of forest area in last two decades (HELVETAS/Nepal, 2011). The interesting observation from this study indicates that the net forest cover and biomass gain in Community managed Forests is more than in adjoining State regulated ones.

Evidence from REDD+ piloting activities in community forests (CF) demonstrates that the annual average forest carbon increment in piloting CFs is about 2.6 MT Carbon per hectare (ICIMOD et al., 2011). It indicates that there is net gain in carbon stocks enhancement in Community Forests of Nepal. Since many community forests are small in size (almost 50 percent are below 50 ha in size); it is expected that the transaction and implementation costs in these forests will be higher to participate in forest carbon market. In this situation, REDD+ may not prove to be low hanging fruit for many small size fragmented community forests; if they are not bundled at appropriate levels.

Nepal's share in global forest carbon market is expected to be very small compared to many other tropical countries; that holds substantial amount of forest biomass. Investment in forest management activities in Nepal is not adequate due to under financing from domestic source. So, carbon revenue could be one of the potential sources to support implementation of sustainable forest management activities in future, if appropriate measures can be effectively adopted to address drivers of deforestation and degradation in the country.

## **INSTITUTIONAL SET-UP FOR REDD+ IMPLEMENTATION**

To implement REDD+ initiatives in Nepal, Ministry of Forests and Soil Conservation (MoFSC) has formed a three tier organizational setup - apex body, REDD Working group, and REDD Cell. The Apex Body is the highest body formed under the



chair of Honorable Minister for Forests and Soil Conservation and is comprised of representative members from the GoN and civil society organizations. The composition is almost equal between GoN and N/GoN representatives. The main role of this body is to provide inter-ministerial coordination and cooperation for the implementation of REDD activities.

The second tier is REDD Working Group (RWG) chaired by the Secretary of the MoFSC. The main role of this entity is to guide overall REDD+ readiness process in the Center. Below this entity there is a third layer- REDD Forestry and Climate Change Cell. The REDD-Cell is under the MoFSC and functions as secretariat to deliver the decisions made by the Apex Body and RWG. Two separate loose forums- REDD stakeholder forum and expert committee- are also envisaged to make REDD process more inclusive, transparent and cost effective.

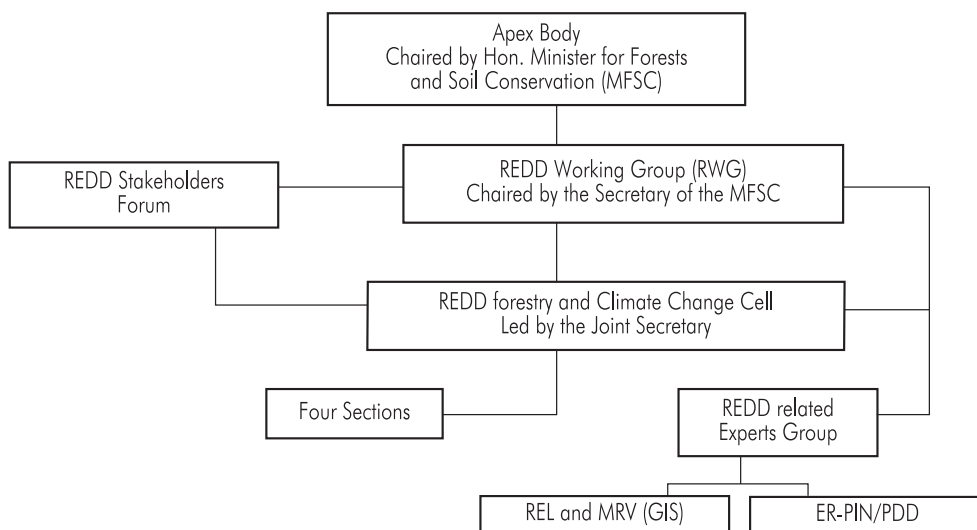


Fig. 6.1: Institutional arrangement of REDD+ in Nepal

## STATUS OF REDD+ READINESS

The REDD+ readiness process started with the preparation and submission of the Readiness Plan Idea Note (R-PIN) in 2008. After R-PIN approval, Nepal took initiatives to prepare a Readiness Preparation Proposal (RPP) with financial support from forest carbon partnership facility (FCPF) of the World Bank. The R-PP was submitted in April, 2010 and endorsed by FCPF 6<sup>th</sup> participant committee (PC) meeting to fund

implementation of this R-PP. Nepal signed an agreement with the World Bank on 31<sup>st</sup> March, 2011 to receive a grant of \$ 3.4 million for R-PP implementation. Out of the total projected cost, the FCPF grant will cover only 45 percent, and rest of the cost will be shared by bilateral donors (including but not limited to DFID, US-AID, Government of Finland, Switzerland and Japan) and the Government of Nepal.

Many NGO and CBOs are implementing various REDD pilot activities in the field. The knowledge and experiences from these pilot programmes are very useful in understanding the existing gaps in effective implementation of REDD activities. The pilot activities are basically focused in three important aspects of the REDD readiness process- local capacity building, preparation of forest carbon baseline, and benefit sharing mechanisms. REDD-Cell is currently involved in commissioning analytical studies to support in National REDD strategy development. It is expected that national REDD strategy for Nepal will be in place by early 2013.

## **ISSUES AND CHALLENGES**

Few key issues and challenges that may affect implementation of REDD+ in future are as follows:

- **Weak governance:** Illegal logging, corruption, trans-boundary leakages, and encroachment are few but serious allegations against forest administration. Lack of adequate capacity to enforce regulatory actions has increased risk and uncertainty to invest in REDD+ activities.
- **Capacity gaps:** The safeguard standards set in REDD+ accounting elements are very technical. The prevailing public and community institutions do not have the desired level of expertise to cope with these elements. Therefore, this gap between the desired level and existing level of capacity will be key bottleneck in implementing REDD+ at local as well national levels.
- **Forest fire:** Incidents of forest fire is increasing in recent years. Inability to detect forest fire immediately and weak communication to the concerned stakeholders has been responsible to releasing substantial amount of black carbon from forest fire in Nepal.

- **Unplanned and unpredictable deforestation:** Public infrastructure development activities such as rural access road, hydro-power, irrigation system, settlement program, and public offices inside the forests are mainly responsible for permanent conversion of much of the forest area.
- **Weak cross-sector coordination:** Forest Act and bylaws are contradicting with other sectoral Acts and Regulations – such as Mining, Local governance, and Commerce- which have motivated illegal activities in the forests which has accelerated forest degradation.
- **Data gaps and challenges-** Available activity and emission factor data are not consistent and comparable due to different methodology adopted by different national forest inventory in different time periods. This has created difficulty in establishing historical RL and establishing MRV system in Nepal. Data regarding major forest types and carbon densities in those forests are not available. So, estimation of opportunity costs in avoiding carbon emission in those forests in different physiographic regions is a big challenge. There is also a huge challenge in developing methodological framework to integrate local forest monitoring systems that has been in place for national MRV system for REDD+ implementation.
- **High transaction costs:** transaction costs in monitoring and verification in fragmented forests may reduce the economic incentive to participate in REDD+ mechanism. This issue is particularly pertinent in community managed forests.
- **Trade-off between accuracy and costs:** lack of adequate high quality activity and emission factor data has demanded high level of investment in forest inventory. But huge investment may not necessarily produce results with expected accuracy.
- **Complexity in Benefit sharing-** Establishment of effective, efficient, and equitable benefit sharing mechanisms in different forest regimes and at individual household level is quite challenging and complex. The methodological complexity in valuing the non-Carbon benefits has made the endeavour further complex and challenging.
- **High investment risk.** The demand size in voluntary market is small and compliance market is still very unclear. So, there is a high financial risk to invest in REDD readiness activities from internal public finances.

## CONCLUSION

Nepal is a signatory party to all three Rio conventions- UNFCCC, UNCBD and UNCCD. Therefore, all concerned sector policies and strategic plans have to be targeted to contribute in achieving thematic goals and objectives set by these three respective conventions. Since, global understanding about the multiple roles of forests in biodiversity conservation, sustainable land management, and climate change mitigation have already been well established, Nepal needs to adopt strategy to establish appropriate institutions and develop a practice to capture all potential non-carbon benefits of forests along with the carbon benefits from the REDD+ mechanism.

The national focal points to Rio conventions are struggling in preparing progress reports for different safeguard systems adopted by these conventions. This has created additional burden to meet different reporting requirement demanded by the secretariats of respective conventions and donors. Therefore, reporting burdens have created a sense of negative notion against positive aspects of safeguard systems - such as opportunity of financing, non-carbon benefits, etc. To appreciate positive aspects, there is a need of a strong operational coordination between the focal points in line with the emerging global initiatives to harmonize between different safeguard systems.

Nepal also needs to adopt improved forest management practices in all types of existing forests to contribute in global target of biodiversity conservation which is known as Aichi Bio-diversity Targets. Since, these targets would be highly influenced by forest management interventions adopted by different forest regimes in different forest types; there is a need of harmonization of those national targets in forestry sector strategy document.

It is obvious that there is no clear demarcation between mitigation action and adaptation in forestry. Any management intervention in forestry to enhance carbon sink or removal capacity will directly or indirectly enhance the resilient capacity of forests and local community to climate change impacts. In that sense, there is no clear demarcation where mitigation ends and adaptation starts in forestry. Therefore, mitigation and adaptation actions in forestry should be planned as mutually supportive actions rather than an alternative.

Nepal does not have big contiguous blocks of forests. Majority of the forests are fragmented and are managed under different forest management regimes. In this context, bundling of mosaic forest landscapes to a single REDD+ management units within the jurisdictional boundary would be more appropriate approach to develop REDD+ projects at sub-national level first rather than go for a national one. This step-wise approach will reduce transaction costs and will also help understand the methodological complexity of REDD+. In addition to that, it will also help share the risk associated with reversibility, permanence and price uncertainty among stakeholders involved in the carbon supply chain.

Since lack of adequate capacity and skill creates a critical barrier in effective, efficient and equitable implementation of REDD+ activities in Nepal; a multi-layer knowledge platform is crucial to support the entire carbon value chain. If such platforms are effective in making good deliberation to disseminate scientific evidence to the local actors, then it will substantially increase the success rate in adopting climate responsive forest management practices in the field.

It is also crucial to understand the complexity of governance in carbon financing because of two basic reasons. First, the future carbon price is unpredictable and carbon value chain steps are complex and not clearly understood. Second, opportunity costs of avoiding deforestation and degradation in developing countries is high. In this circumstance, formation of a multi-stakeholder entity to govern carbon revenue in center would be desirable. To further strengthen the issue of carbon financing, the potential role of local government in this entity could be a potential agenda for further discussion.

Nepal is investing substantial amount of financial resources in developing Reference Emission Level and MRV system from international consulting firms. However, there is a scope of utilizing data generated and maintained by local community Forests. If these data can be integrated to national MRV systems then it will reduce the monitoring cost and will help in establishing local ownership in the MRV process. For this purpose, establishment of a technical entity at the center would be extremely useful to facilitate integration of local data to the national MRV system. This body should be formed under the Ministry of Forests and Soil Conservation so that it can be interlinked with the national carbon registry unit under the same Ministry. For successful implementation of REDD+, coordination between relevant stakeholders and institutions at various levels should be enhanced. The emerging market of environmental services such as,

carbon, PES, biodiversity etc. has demanded improved supply capacity of public and private sector institutions. The existing capacity of the government institutions is not in position to meet the emerging public demand. Hence, it is recommended that Nepal should take prompt action to reform forestry sector institutions and its governing system to facilitate and regulate effective, efficient and equitable implementation of REDD+ in Nepal.

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## CHAPTER 7

# Gender Perspective in UNFCCC Process

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## BACKGROUND

It is an established fact that all humans will not be affected by climate change in a similar fashion. Those who are already the most vulnerable and marginalized experience the greatest impacts. Although they face the common challenge, their capacity to react, to adapt or to change will not be the same. Therefore, the differentiated impact demands consideration of differentiated policy, legislation and institution mechanisms. Studies have shown that climate change will impact women more adversely because of their social responsibilities and thus, international treaties need to formulate climate change policies through negotiations like UNFCCC ensuring that the implications for women are justifiably addressed. This is in view of the reality that negotiators may often decline to consider or assess the impacts of their decisions on different social strata, namely women and marginalized groups. Wamukonya and Skutsch (2001) suggest that among many gender angles related to the climate change convention and the instruments therein, mitigation activities, clean development mechanism (CDM), capacity building, technology transfer, vulnerability studies and projects for adaptation for the poor including majority of women, should be targeted.

In Nepal, despite the current laws, the ingrained social hierarchies regarding gender and caste leading to deep seated systems for organising life and structuring power relations have not changed. This has lead to inequality and exclusion of women and other marginalised communities from decision making, access to, and control over resources and other subsequent opportunities. Quantitative analysis has shown that



exclusions based on gender are pervasive and deep and cover all areas of domestic and public life. Increased trans-boarder economic migration in recent times has led to increase in women-headed households and to greater economic and reproductive burden on women resulting in their deteriorating health and economic status. Simulations for the Human Development Report HDR (2011) suggest that by 2050, “the global Human Development Index (HDI) would be 8% lower than the baseline in an “environmental challenge” scenario (12% lower in South Asia and Sub-Saharan Africa), and 15% lower in a more adverse “environmental disaster “scenario”.

Particulars	HDI	GDI	GEM	HPI
Nepal	0.509	0.499	0.496	35.4
Urban	0.630	0.618	0.527	20.7
Rural	0.482	0.471	0.474	38.2
Mountains	0.436	0.423	0.468	43.3
Hills	0.543	0.534	0.515	32.7
Terai	0.494	0.482	0.469	36.9
Eastern	0.526	0.516	0.516	33.7
Central	0.531	0.517	0.511	35.3
Western	0.516	0.511	0.488	33.2
Mid-Western	0.452	0.441	0.431	38.7
Far-Western	0.461	0.447	0.456	39.0

Table 7.1: Distribution of development indexes in geographic, Regional and urban/rural distribution of HDI, GDI, GEM and HPI. Source: NPC/UNDP(NHDR), 2006

According to Human Development Report’s new inequality-adjusted HDI, Nepal’s human development is almost one third lower than it would be if it were more equally distributed (HDR 2010). Despite the reported increase in HDI value by 8% from 0.471 in 2001 to 0.509 in 2006 (UNDP 2009), there are numerous differences based on ecological belts, rural and urban areas. The disparity between rich and poor, between different caste and ethnic groups has widened from 0.34% in 1995/96 to 0.46% in 2008/09. 95.5% of poor people live in the rural areas and the incidence of poverty in rural areas (28.5%) is almost four times higher than in urban areas (7.6%), and the poverty reduction rate in the rural areas (18%) is also slower than that in urban areas (20%) (CBS, 2009). The Table 7.1 demonstrates some of these inequalities.

Nepal is a signatory to many international human rights related conventions and declarations which call for the elimination of all forms of gender based discrimination - The Convention on the Elimination of all forms of Discrimination against Women (CEDAW), the Beijing Platform for Action (BPFA), 1995, the International Conference on Population and Development (ICPD), 1994, among others. The Millennium Development Goals (MDG, 2010) targets 100% literacy, drinking water facilities for all, reducing poverty incidence by up to 10%, and reducing maternal mortality to 281 deaths per 100,000; thereby promoting gender and social equality.

Acknowledging these facts, the Government of Nepal (GON) has been making significantly increasing commitments to gender and social equity, equality and the empowerment of women in its policies, plans and programmes. The Interim Constitution of Nepal 2007, for the first time made a special provision for 33% representation of women amongst the candidates for elections to the Constituent Assembly resulting in 32.84% of the seats to be held by women in the constituent Assembly. It has further declared for women to have rights to property, employment, food security, education, health, etc. and has provision for non-discrimination on the basis of gender, caste and ethnicity or any other basis. Special provisions for providing citizenship through lineage and 25% revenue discount for transferring assets to women has supported the upliftment of women's status.

The three year plan (2011) aims for inclusive development and has targeted programmes for women and other excluded groups to increase GDI to 0.592, to decrease poverty from 25.4% to 21%, to spend 17.3% of overall budget and 5% of VDC grant budget on women empowerment.

As a result of these initiatives, several policies, institutional provisions and affirmative actions are being made for the socio-economic and political advancement of women and the socially marginalised. This has resulted in an improvement in their status albeit not to the anticipated level, but the increasing impacts of climate change have further increased their vulnerability.

## **GENDER AND CLIMATE CHANGE**

Climate change is a phenomenon that creates an impact at a global scale. This impact is more pronounced in LDCs like Nepal, a nation characterized by low adaptive capacity and a high percentage of population dependent on agriculture

for their livelihood. This populace includes various vulnerable groups, among them, disproportionally large number of women. Studies illustrating differentiated impacts of climate change on women have to be conducted at all levels and sectors. As stated by Lambrou and Piana (2006) the need to conduct studies documenting contribution in household emission through the diverse roles of men and women from poor households has not been acknowledged in international climate negotiations or in the design of domestic climate policy instruments. Uncertain, extreme and unpredictable weather events have added challenges to development, especially for those communities which are already vulnerable to climate stresses. The major differentiated impacts are summarised in the following sectors:

- **Water and Energy:** Climate change could lead to reduced water availability and quality increasing women's drudgery. To illustrate this, women of upper Mustang and Olangchung areas work nearly 17 hours a day on average compared to 10.5 hours a day for men, the time spend on fetching water is one reason. Whereas in northern Kenya, the average distance travelled to fetch water has increased by 10 to 15 km. In addition, health and fuel-wood scarcity is making girls' and women's work more time-consuming, difficult, and prone to security risks (MoEnv, 2011). Similarly, changes in precipitation patterns could cause flooding and landslides during rainy seasons with negative impacts on agriculture and livelihoods, and increased risk of water-borne diseases. This will again put pressure on women and other marginalised communities in terms of time consumption, and health and well-being security.
- **Agriculture and Food Security:** The extended consequences of climate change on agriculture will disproportionately affect women, ethnic minority and the economically backward due to their greater dependence on agriculture and their lower ability to adapt. The negative impact on food production increases food insecurity for the vulnerable groups leading to malnourishment and malnutrition on one hand, and migration as coping mechanism adds more workload on the already burdened women on the other. This also limits the disadvantaged peoples' coping strategy, agricultural labour and income.
- **Forestry and Biodiversity:** The depletion of forest and biodiversity resources increases burden on women due to their responsibility of household

requirements and dependency on forest for their food, fuel wood, water, medicine and income. In Humla, depletion of forest resources has led to an average increase of six hours every three days spent on fuel-wood collection along with increased security risk as the remaining fuel-wood are on steep slopes. This example serves to depict the effects of climate change on women. It also has negative consequences for people dependent on forest for their survival, such as the Rautes (a forest dependent endangered indigenous group of Nepal).

- **Human Health:** Due to lower agricultural productivity, women are likely to face malnourishment as they are given the least preference while the family eats affecting their own and offspring health conditions. Moreover, increased work burden will lead to increased risk of uterine prolapse and other health complications for women. For low income populations, projected changes in climate by 2030 under a range of scenarios are expected to increase rates of mortality, principally due to increase in malnutrition and diarrhoeal diseases.
- **Disaster:** Since 1960, the number of weather related disasters has increased four folds globally and resulting economic losses have increased seven fold. Women, children and marginalised communities are likely to suffer more from such disasters as they have relatively less protection, and less information and recovery mechanisms. As numerous studies indicate that women bear the disproportionate burden of the costs of disasters, especially if their rights are not ensured and if gender, socio-cultural and political- economic inequalities within the context of gender relations and institutions are not addressed. This leads to more death of women than men during disaster because of lack of information, mobility, decision-making capability, access to resources and training, gender-based cultural norms and barriers, and high rates of male out-migration as expressed by Nellemann et al., 2011; Mehta, 2007. A recent study analyzing disasters in 141 countries demonstrates that the gender gap in life expectancy (in most countries women outlive men, except for India, Nepal and Bangladesh) becomes narrower due to the higher mortality of women in disasters (Nuemayer & Plümper, 2007) bringing our attention to the gender differentiated impacts of droughts and floods.

## NATIONAL INITIATIVES

Nepal's Climate Change policy targets improving livelihoods by mitigation and adaptation to the adverse impacts of climate change and adoption of low-carbon emissions in socio-economic development. Among its many objectives, the policy aims to:

- Ensure the participation of poor people, dalits, marginalised and indigenous communities, women, children and youth in the implementation of climate adaptation and climate-change related programmes; and
- Identify and document climate-friendly traditional techniques, indigenous skills and knowledge and their utilisation to make necessary improvements in other traditional techniques and skills.

Gender and social inclusion along with livelihoods and governance was taken as a cross-cutting theme during the NAPA preparation. Similarly, an examination of gender-differentiated climate change impacts found about women's larger engagement in climate sensitive sectors and that any degree of climate change increases their vulnerability (NAPA, 2010). The 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> and 8<sup>th</sup> profiles of NAPA take into consideration the vulnerable communities' participation for its courses of action without considering the different impacts and adaptive capacity of those specific groups. Both NAPA and the Climate Change Policy have mandatory provisions to disburse at least 80% of the available budget for activities at the local level to address the specific need of women and other vulnerable groups including indigenous groups.

However, even though LAPA and NAPA produced by the government consider vulnerability at the household level, they do not consider the different impacts and adaptive capacities of specific groups such as women and the marginalised despite the fact that these groups are differently impacted and they possess different adaptive capacities. The Nepal Climate Change Support Programme (NCCSP) has mentioned that climate change impacts are mostly making women and children more vulnerable and aims to address it by ensuring over 50% of the members of management committees to be represented by women and special adaptation programmes for women to increase their capacity so that they

respond better to uncertain climate change impacts. In other words, Nepal is making comprehensive effort to engage women during implementation of NAPA prioritised field level adaptation actions.

## **INTERNATIONAL RESPONSES AND WOMEN AT THE COPS**

The Gender aspect has generally been neglected in international policy analysis and responses to the challenges of climate change. Gender equity is not mentioned in the UNFCCC even though it is relatively well integrated into Agenda 21. It is only recently that some parties, in particular those from Annex II countries, have become aware of the necessity to include gender equality in the debates.

It was only with the clarification of the instruments of the Kyoto Protocol, especially the CDM, that gender aspects began to attract the interest of gender experts again. Since then, the analyses done from a gender perspective have focused exclusively on women in developing countries, where CDM projects are carried out and where there are active women's networks in the field. This is also true for all other instruments and articles of the UNFCCC and the Kyoto Protocol.

A shift in women's activities was achieved at COP11 in Montreal where a strategy paper was drafted to identify possible entry points for gender aspects in the climate change debate based on the following:

- Awareness raising and disseminating information via an exhibition booth,
- Women's meetings to build capacity and strategies on how to integrate gender, and
- A research workshop aiming to develop a future research agenda and initiate a gender and climate change network.

Parties to UNFCCC mandated the Least Developed Countries Expert Group (LEG) to provide technical guidance and advice on strengthening gender-related considerations and considerations regarding vulnerable communities within LDC Parties (decision 6/CP.16).

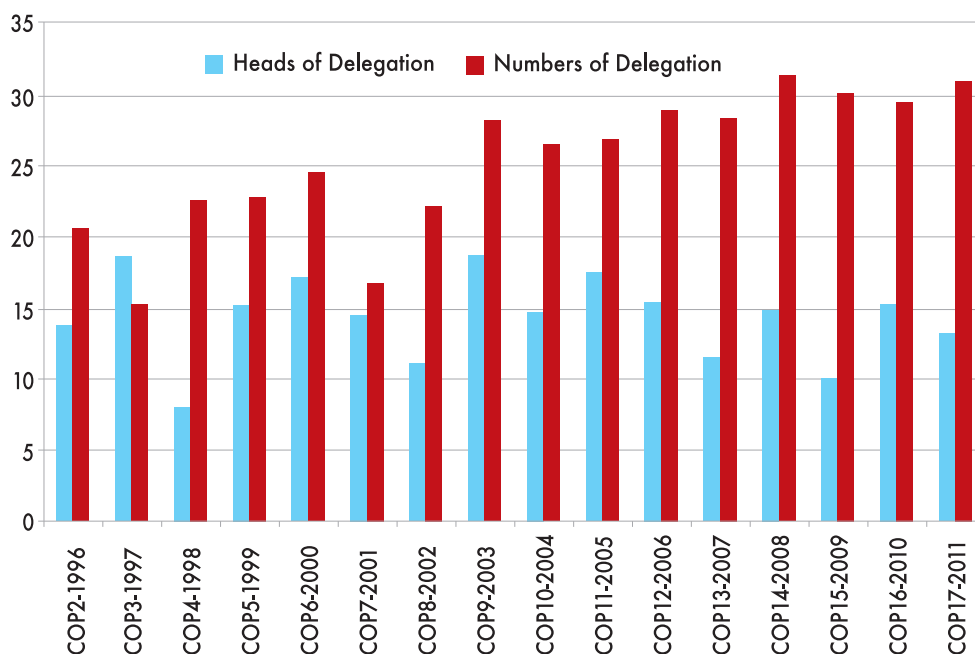


Fig 7.1: Share of women delegates at the COPs (Source: <http://www.gendercc.net/polices/conference>)

Shortly before COP17, the UNFCCC Secretariat granted the Women and Gender Constituency full status as an official NGO constituency within the UNFCCC process. The Parties and the UNFCCC Secretariat to the scientific community continue to present climate protection as a gender neutral issue despite considerable debate. The low representation of women hinders explicit women considerations; at the nine previous COPs examined, there were a total of 23 representatives explicitly representing women's organisations, half as members of the larger NGO delegation and the rest as small women's delegations as found by Rohr, U.(2006).

## CONCLUSION

New ways should be searched while integrating variables on gender into international negotiations for subsequent commitment periods; national regimes for mitigation and adaptation; and project activities under the Clean Development Mechanism and joint implementation requiring immediate as well as ongoing investments in research, networking and advocacy. Some of the sectors such

as health, disaster, agriculture, water and energy, forest, and biodiversity, etc. where gender and social issues are important in relation to the impacts of climate change should be considered as part of the climate change negotiations for the international and national climate change mechanisms to be gender conscious. A comprehensive gender analysis within climate protection instruments has not been given its due priority. Assessments do exist for instruments used in developing countries, mostly for examining the participation of women, and for determining how instruments have to be developed to bring benefits to women and men.

Budget allocation and funds should also be analysed from a gender perspective. Gender budgeting, an appropriate and well-developed instrument for gender analysis of cash flows, should be applied to climate change funds. Similar analyses and mechanisms should be put in place for the socially marginalised and disadvantaged communities.

Nepal as the coordinator of the LDC Parties has added opportunity to intervene through LEG to influence negotiations for ensuring policies, regimes and mechanisms and should seriously adopt the principles of gender equity at all stages - from research, analysis, agenda formation, design, till the implementation of mitigation strategies.

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## CHAPTER 8

# Climate Finance and Nepalese Perspective

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## INTRODUCTION

Climate finance has become an important agenda for discussion in the Conference of Parties (COP) under UNFCCC process. The Articles 4.8, 4.9 and 11 of the United Nations Framework Convention on Climate Change (UNFCCC) have made following provisions on financial support and technology transfer for developing and least developed countries as well (United Nations, 1992).

- During the implementation of the commitments, the Parties shall give full consideration to what actions are necessary under the Convention, including actions related to funding, insurance and the transfer of technology to meet the specific needs and concerns of developing country Parties arising from the adverse effects of climate change and/or the impact of the implementation of response measures, especially on land locked and transit countries (Article 4.8).
- The Parties shall take full account of the specific needs and special situations of the least developed countries in their actions with regard to funding and transfer of technology (Article 4.9).
- The Article 11 defines the financial mechanism for the provision of financial resources on a grant or concessional basis, including the mechanism for the transfer of technology. It functions under the guidance of and is accountable to the Conference of the Parties which decides on its policies, program priorities, modalities and eligibility criteria related to the Convention. Its operation is to be entrusted to one or more existing international entities.

Contextually, climate finance refers to the financial resources needed to assist developing countries mitigate and adapt to the impacts of climate change. Although developing countries have little or no responsibility for causing climate change, the evidences show that they are the ones most affected by and most vulnerable to its impacts because of their geography, high dependence on climate-sensitive resources, low adaptive capacity, high poverty rates, and vulnerable social, institutional and physical infrastructure. This implies that poor countries need huge investments to counteract the effects of climate change, to minimize the consequences of actual and expected changes in the climate (adaptation), as well as tackling the causes of climate change, such as, reducing greenhouse gas emissions (mitigation). Unless there is an international mechanism to avail financial supports to such investments, developing countries are most likely unable to create funds for such purposes from their internal resources and existing regular external assistance. Further inaction and apathy of the developing countries in designing and implementing adaptation and mitigation strategies towards low carbon development path and adherence to the high carbon intensive development model, will accelerate climate change risks. Developed countries, recognizing the above facts, have pledged to partner with developing countries in order to cope with climate change by providing necessary financial support. Nevertheless, the resources committed so far by these countries cover just 5 percent of the needs of developing countries, and that too do not always reach the most vulnerable (Massa, 2012).

Nepal supports the arguments presented by the developing countries in the international lobbying and negotiating tables. Through Mountain Initiative or submission to Rio+20, or attempts to influence the UNFCCC process, Nepal has always defended the right of (Least) developing countries to get support from developed countries for climate finance, capacity development, and technology transfer.

## **Need for climate finance**

The magnitude of climate finance required for developing countries for climate investment is determined by climate protection objectives. There has been wide agreement among international communities that global mean temperatures should not rise more than 2°C relative to pre-industrial level. To achieve this goal, global emissions will need to peak by 2020 and fall 50 percent from 1990 levels by 2050. The United Nations Development Programme (UNDP) estimates that an additional

US\$ 86 billion per year will be needed by 2015 for adaptation. The UNFCCC Secretariat's Investment and Financial Flows to Address Climate Change puts the total additional funding required to return greenhouse gas (GHG) emissions to 2005 levels between US\$ 200 and US\$ 210 billion in 2030 ([www.environment.gov.ki/](http://www.environment.gov.ki/)). At least half of that amount will be needed in non-Annex I countries. For mitigation in developing countries, approximately €55–80bn financing from developed countries would likely be required annually as additional fund during the period between 2010 and 2020 (an additional €10–20bn is required annually for adaptation). Within Asia and the Pacific, the least-developed countries (LDCs) alone would need US\$ 15 billion over the next decade, but until now only US\$ 66 million have been channelled to the region (Stewart, Kingsbury, & Rudyk, 2011) .

## UNFCCC and climate finance negotiations

Finance was one of the building blocks of the Bali Action Plan, which was adopted by the thirteenth Conference of the Parties (COP 13) in 2007. The plan sets out the mandate for the ongoing negotiations on long-term cooperative action under the UNFCCC, and states that negotiations are to consider “enhanced action on the provision of financial resources and investment to support action on mitigation and adaptation and technology cooperation.” Finance issues listed in the Bali Action Plan for further consideration include improved access to and the provision of new and additional resources; providing support for mitigation and adaptation; mobilizing public and private sector funding and investment; and identifying innovative ways to assist particularly vulnerable countries. The original deadline for completing these negotiations was set for COP 15 in Copenhagen, Denmark in December 2009. However, during COP 15, countries decided to extend the mandate of the Ad Hoc Working Group on Long-term Cooperative Action (AWGLCA) until COP 16 in Cancun, Mexico in November-December 2010.

As outlined within the 2010 Cancun Agreements, climate finance has been defined within the context of the UNFCCC negotiations. Much emphasis is given to climate finance as being ‘new and additional’, of it being ‘adequate and predictable’ and to defining the expected levels of international finance to be made available to developing countries over both short to medium terms. The major agreements reached at Cancun regarding finance are that: a) Governments will endeavour to make the provision of an agreed fast-start finance for developing countries approaching USD 30 billion

up to 2012 more transparent by regularly making information available on these funds; b) In order to scale up the provision of long-term financing for developing countries, governments decided to establish a Green Climate Fund (GCF) that will function under the guidance of, and be accountable to the Conference of the Parties (COP). The new fund will support projects, programmes, policies and other activities in developing countries using thematic funding windows (UNFCCC, 2012).

At COP17 in Durban, important progress was made on two fronts. First, the Durban Platform for Enhanced Action was established with the aim to produce a “protocol, legal instrument or agreed outcome with legal force” covering all countries by 2015, and to plan its execution including “mitigation, adaptation, finance, technology development and transfer, transparency of action, and support and capacity building”. Second, steps were taken, particularly in relation to transparency of climate finance, long-term financing, the GCF, the Standing Committee and the Technology Mechanism (Massa, 2012).

## **Sources of climate finance**

Funding for climate change comes from both public and private sources. Funding for non-Annex I countries under the UNFCCC is provided through the Global Environment Facility including the Special Climate Change Fund (SCCF), the Least Developed Country Fund (LDCF), and the Adaptation Fund of the Kyoto Protocol. The Special Climate Change Fund (SCCF) was established under the Convention in 2001 to finance projects relating to adaptation; technology transfer and capacity building; energy, transport, industry, agriculture, forestry and waste management; and economic diversification (<http://www.environment.gov.ki>). The Least Developed Countries Fund (LDCF) was established under the United Nations Framework Convention on Climate Change (UNFCCC) at its seventh session in Marrakech and is managed by the Global Environment Facility (GEF). This fund addresses the needs of the 49 LDCs, which are particularly vulnerable to the adverse impacts of climate change. As a priority, the LDCF supports the preparation and the implementation of the National Adaptation Programs of Action (NAPAs), which are country-driven strategies that identify the immediate needs of LDCs in order to adapt to climate change. The Adaptation Fund is a financial instrument under the UNFCCC and Kyoto Protocol and has been established to finance concrete adaptation projects and programmes in developing country Parties to the Kyoto Protocol in an effort

to reduce the adverse effects of climate change facing communities, countries and sectors. The Fund is financed with a share of proceeds from Clean Development Mechanism (CDM) project activities as well as through voluntary pledges of donor governments. The World Bank's Climate Investment Funds constitutes the largest multilateral funding sources for climate change in non-Annex I countries outside the UNFCCC. Funding for reducing emissions from deforestation and forest degradation in developing countries (REDD) is provided, inter alia, through UN-REDD and the World Bank's Forest Carbon Partnership Facility. Official development assistance (ODA) and bilateral initiatives also play a significant role in combating and adapting to climate change in non-Annex I countries (<http://www.environment.gov.ki>).

At the national level, there are six different channels through which climate finance might flow in Nepal. First, through creation of a national entity specifically for climate finance; second, through traditional official development assistance (ODA) channels; third, through new and additional public finance from industrialized countries fourth, through the emerging (but uncertain) carbon market; fifth, through private sector investment; and finally, through resources made available through the national budget (NPC/UNDP/UNEP/CDDE, 2011). Illustration 8.1 below depicts the actors and sources of climate finance in a summarized way.

As is clear from Illustration 8.1, the global climate finance architecture is complex: finance is channelled through multilateral funds – such as the Global Environment Facility and the Climate Investment Funds-- as well as increasingly through bilateral channels. In addition, a growing number of recipient countries have set up national climate change funds that receive funding from multiple developed countries in an effort to coordinate and align donor interests with national priorities. There is generally much more transparency about the status of implementation of multilateral climate finance initiatives than of bilateral climate finance initiatives. The proliferation of climate finance mechanisms has increased the challenges of coordinating and accessing finance (Nakhoda et al., 2011).

## Current issues of climate finance

Current issues of climate finance relate to the basic disagreements over three main issues relating primarily to mitigation finance: first, the necessity of credible and substantial developed-country commitments on public funding; second, the role of

private finance; and third, the institutions and governance structures to ensure equity and environmental effectiveness (Stewart, Kingsbury, & Rudyk, 2011).

The first and fundamental issue in the financing negotiations is the requirement for “new and additional” resources, or insuring that new funding for climate change is additional to ODA and existing contributions. Recipients of funds are adamant that additionality of funding be proven so that donors cannot simply shift ODA funds from an existing directive to climate change.

The second issue is the role of private finance. Developing countries are suspicious of developed countries using conjectured private finance flows as an excuse to avoid their financial responsibilities. There is some temptation for developed country leaders to assign as much of the responsibility as possible to private financial sources.

The third basic source of impasse concerns the institutions and governance structures for public and private finance. Developing countries are seeking to replace or reform existing multilateral institutions such as the World Bank administered Global

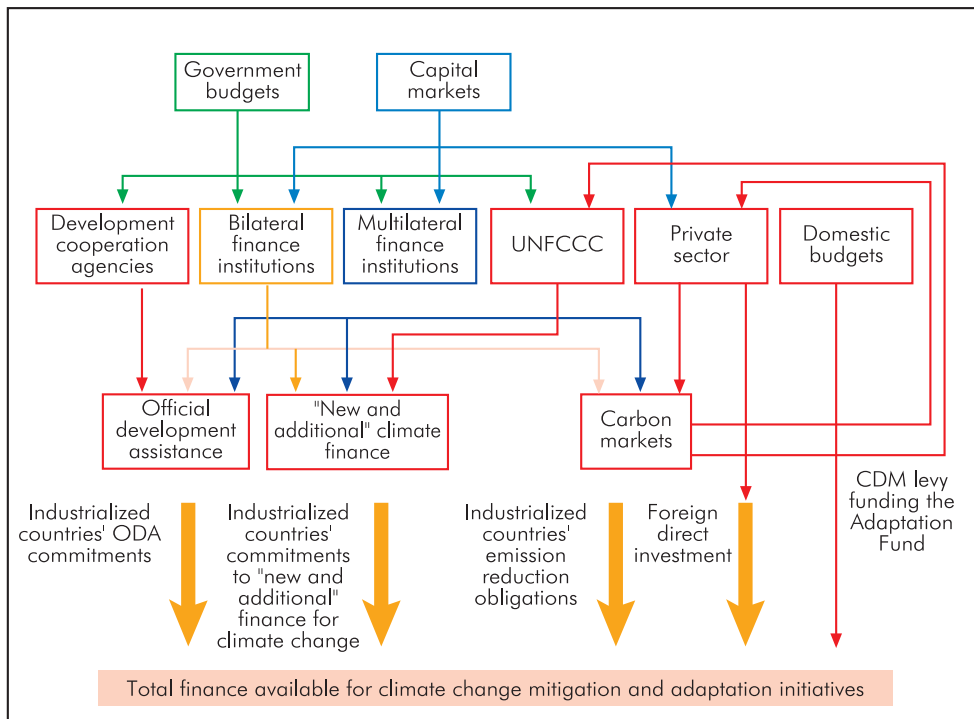


Fig. 8.1: Actors and sources of climate finance (Atteridge, A. et. al. 2009)

Environment Facility (GEF)—dominated by donor countries—in favor of new structures that give them significant decision-making power over cost sharing, conditionality, and disbursement and use of funds.

## Climate finance in Nepal

During the last five years, Nepal engaged in developing institutional setups (Climate Change Council, Climate Change Management Division in MoEST etc.), designing programs and plans (NAPA, LAPA, REDD+ etc.) and leading Mountain initiatives. The national activities are driven to a large extent by the international policy debate. In the Three Year Plan (2010/11 - 2012/13), Government of Nepal has given due recognition to Poverty Environment Initiative (PEI) and climate resilient planning. The 2009 Copenhagen COP meeting was a major milestone that saw a concerted national response climate change issues. Since then, Nepal has made significant efforts to win financial resources dedicated to climate change. Over the last five-year period, the shared climate change related expenditure in both total government expenditure and the GDP has increased continuously.

During the last five years, the annual expenditure in climate change related programs/activities constitutes around 1.3% to 2.1% of Gross Domestic Product (GDP) and 5.7% to 7.2% of Total Government Expenditure. The trend of data indicates that the share of climate change related budget allocations and expenditure as percentage of GDP and government expenditure are both increasing over the period (Table 8.1).

Some of the on-going and under-pipeline major program/activities include Scaling-up of Renewable energy program, Nepal Climate Change Program, Pilot Project for Climate Resilience (PPCR), Nepal Rural and Renewable Energy Program, Rural Energy for Rural Livelihood, Renewable Energy Project, Biogas Support Program, Improved Water Mill Support Program, Global Environment Fund Allocation for Nepal (Bio-Diversity, Climate Change and Land Degradation), Micro Hydro Power Development Fund, REDD Forestry and Climate Change, Energy Efficiency through Loss Reduction, and Kathmandu Sustainable Urban Transport. Nepal accessed about US\$ 40 million for NAPA implementation, including from LDC Fund, and accessed over US\$ 125 million from the Climate Investment Fund to implement programs related to climate resilient programs and the scaling up of renewable energies (Upreti, 2012).



Year	Climate change related budget	Total Government budget	Gross domestic product (GDP)	Climate change budget as % of Total Government budget	Climate change budget as % of GDP
2007/08	9,684,560	168,995,600	755,257,000	5.7	1.3
2008/09	15,128,490	236,015,897	909,309,000	6.4	1.7
2009/10	18,564,035	285,930,000	1,060,881,000	6.5	1.7
2010/11	25,631,913	337,900,000	1,219,116,000	7.6	2.1
2011/12	27,628,848	384,900,000		7.2	
Average				6.7	1.7

Table 8.1: Budgeted expenditure on relevant programs 2007/08 – 2011/12  
(Source: NPC/UNDP/UNEP/CODE (2011) Nepal Climate Public Expenditure and Institutional Review (CPEIR))

Major focus of Nepal is on adaptation rather than in mitigation. Near- future climate change activities will be guided by NAPA. Around 76% of the identified climate change related expenditure is related to the adaptation activities (Table 8.2).

Year	Total Annual Climate Change Budget in NRs. ('000)	Adaptation Budget % of Annual Climate Change Budget	Mitigation budget as % of Annual Budget
2007/08	9,684,560	74%	26%
2008/09	15,128,490	75%	25%
2009/10	18,564,035	78%	22%
2010/11	25,631,913	78%	22%
2011/12	27,628,848	75%	25%
Average		76%	24%

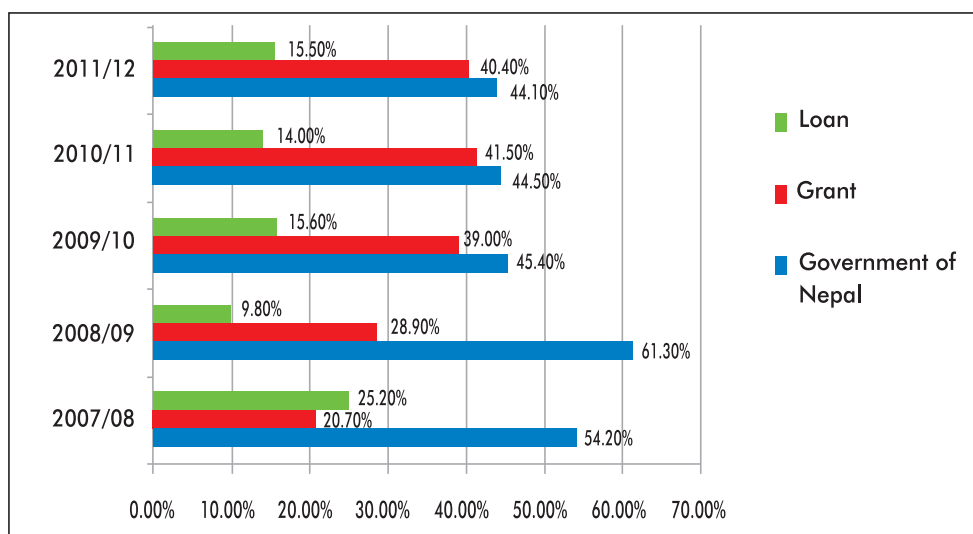
Table 8.2: Climate change budget: Mitigation Vs. Adaptation

(Source: NPC/UNDP/UNEP/CODE (2011) Nepal Climate Public Expenditure and Institutional Review (CPEIR))

More than half (55%) of the total government climate change expenditure comes from the donor support. The donor support in overall government expenditure is 25%

of the overall budget. During the last five years (2007/08 -2011/12), out of the total sources of financing, the share of grant component has increased by 100 percent (from 20.70 % to 40.40 %) whereas the share of the loan component has decreased rapidly by two fifth (from 25.20 % to 15.50 %) as shown in Figure 8.1. This is a healthy sign of fund management from Nepalese perspective.

Fig. 8.2: Source of funding: climate change programs 2007/8 to 2011/12 (%)



Source: NPC/UNDP/UNEP/CODE (2011) Nepal Climate Public Expenditure and Institutional Review (CPEIR)

There are 13 programs, with a total cost of US\$ 326 million, funded or in the process of being funded by donors. Out of this amount, approximately US\$ 225 million is grant and about US\$101 million is loan. The US\$ 36 million loan from Climate Investment Fund is for Pilot Project for Climate Resilience (PPCR) and US\$ 65 million is from ADB for Energy Efficiency through Loss Reduction project.

Among the government ministries, almost all the budget of Ministry of Environment, Science and Technology and around 50 percent budget of Ministry of Environment and Ministry of Irrigation are related to climate change. The program budget is increasing year by year.

## Nepal's concerns for climate finance

Through its recently published reports (in the context of Rio+20 and International Mountain conference in Nepal), Nepal has once again made it clear that it fully supports the view of LDCs regarding the climate finance issues and also calls for special support to the mountain countries. Following statements contained in the aforementioned government reports clearly show government position in this regard (MoEnv, 2012; NPC, 2011).

- There will be costs involved in making the transition to a low carbon, green economy in the pursuit of sustainable development. Some countries are better able to bear those costs than others, and are more resilient to changes.
- Sizeable investment will need to flow to the Green sectors as well as for “greening” other sectors in developing countries. While domestic resource mobilization will play a key role for many developing countries, access to new resources and international finance would be crucial for LDCs. There is also a need for greater synergy and complementarities between climate change funds and sustainable development financing.
- There is a need to provide access and finance to develop and transfer technologies, capacity building needs and new and additional funding mechanisms for meeting the costs of adaptation and sustainable development processes in mountain countries. Support for developing monitoring, forecasting and modelling of climate change impacts can help improve understanding for planning resilience-building measures.
- The most vulnerable countries, mainly LDCs, need to be supported and protected -- particularly small and land locked countries that must be provided access to appropriate financial and technical assistance. It is also important for citizens and communities from these countries to have access to new skills and jobs in emerging and developed economies.
- Developed countries must take concrete steps for providing additional financial support, transferring technology, reducing and cancelling debt, removing trade barriers and opening their markets, and building capacity in the LDCs for realizing the global sustainable development goals.

## CONCLUSION

Nepal, along with all LDCs' holds the view that climate finance must be "additional" to official development assistance, and cover the "incremental costs" of responding to climate change relative to the costs of development under business as usual circumstances. Nepal would like to see that agreement be reached on a comprehensive global framework for diversified financing that will include: 1) arrangements for credible developed country commitments on public and private mitigation finance for developing countries, as well as adaptation funding; 2) regulatory and governance mechanisms to ensure effective leveraging of public and private funds to achieve efficient mitigation; and 3) institutional reforms and structuring so that developing countries have a significant role in governance and considerable flexibility to achieve reductions that are funded externally as well as domestically.

Nationally, Nepal is committed to lead the NAPA and LAPA process ahead and increase the budgets for climate related programs and activities gradually utilizing both domestic as well as international funds. Further, Nepal is lobbying for special sub-regional, regional and international funds for improving mountain environment and ensuring ecological services to the people on a sustained manner. For instance, the Kathmandu Call for Action, which came out at the end of International Conference of Mountain Countries on Climate Change held from 5 to 6 April 2012 in Kathmandu, Nepal, has urged the development partners to support through the establishment of dedicated funding arrangements for the adaptation and mitigation programmes in mountain countries within the framework of UNFCCC and other sustainable development processes and build the resilience of communities, women and disadvantaged groups in particular, through a comprehensive and holistic approach at the local, national, regional and international levels in the spirit of enhanced global partnership.

Nepal has been selected to chair the Least Developed Countries (LDCs) Coordination Group for two years starting from 2013. The LDC Coordination Group, which has now 48 countries including Nepal, was formed in 2001 to raise the concerns of developing countries in a more coordinated approach during the climate change negotiation processes. As a chair of the Group, Nepal should, in the interest of LDCs, endeavour to strengthen voices for: a) availing

additional/dedicated financial support, b) getting committed funds disbursed, c) simplifying mechanism of support, d) building capacity of LDCs to access fund and its implementations, and e) predictability and adequacy of the assistance for NAPA and other program implementation.

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