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FINAL REPORT: NEPAL STUDY

ECOSYSTEMS, DEVELOPMENT, AND CLIMATE ADAPTATION
Improving the knowledge base for planning, policy and management

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I. BACKGROUND

Overview of Ecosystem and Development in Nepal

Situated at the centre of the Greater Himalayan range, Nepal exhibits a typical mountainous climate. Although the wider east-west stretch of the country typically falls within the Himalayan range, the narrower north-south stretch covers altitudes as low as 60m to as high as the height of Mt Everest, 8848m. Such short-range sharp altitudinal rise gives the country variable microclimatic and ecological zones including tropical (*Tarai* region), temperate (hills and mountains) and alpine (Himalayas). This feature supports the country's rich and unique biodiversity, many species are endemic to the country and are associated only with a certain micro-climatic zone. The low-lying southern plains, or the *Tarai* region, uniquely feature Terai-Duar Savannas and grasslands of WWF's Global 200 ecoregions, three Ramsar sites and World Heritage sites. The *Tarai* region is both an economically and ecologically important region. It is considered the 'rice bowl' or 'agricultural production-house' of the country. In ecological terms, the *Tarai* region's importance is due to the connectivity it gives to the Eastern Himalayas landscape that stretches across Nepal, India and Bhutan and hosts Asia's flagship species including Tiger and Asian Rhino and Elephant. To the north of the *Tarai* region are highlands that constitute hills, mountains and Himalayas. There are two Global 200 ecoregions – Broadleaf and Conifer forests and Alpine Scrub and Meadows – represented in this region. These ecoregions are repositories of globally important biodiversity, regionally important water towers, and unique mountain cultures and traditions that are intertwined with harsh living conditions in the mountains.

While Nepal is endowed with cultural, agriculture and biological diversity, it experiences chronic poverty which is more severe in rural areas than urban areas. Ranked 144th on the HDI (Human Development Index), the country has about 31% people earning less than $2 a day. A majority of poor people are concentrated in ecologically fragile areas and depend heavily on forests and land resources for livelihoods. Agriculture and foreign remittance continue to drive the country's GDP. However, with improved security brought about by the continued peace process and the gradual political stability in recent years

tourism has once again become an important source of national income. The existing tourism is entirely based on nature and culture, which is yet another significant pointer towards the importance of ecosystems goods and services in the country. After the end of the decade long conflict, the new government that came into power has set out its priorities for large-scale developmental projects – especially, hydropower and roads development.

Climate change impacts

Nepal's climate change predictions have been mostly based on models of climate change impacts on the Himalayas. However, given the country's varied geographic regions (as discussed above), possible climate change impacts go beyond those associated with glacial lake outbursts and declines in agricultural productivity. Among others, climate change may lead to frequent and intense landslides and soil erosion, shrinking wildlife habitats, biodiversity loss, and increases in the incidences of tropical diseases at higher altitudes. In recent times Nepal has actively raised its voice on climate change in various international meetings and organized the regional conference "From Kathmandu to Copenhagen" in September, 2009. The Government of Nepal also drew the attention of the world by organizing a cabinet meeting at Everest Base Camp.

Nepal's vulnerability to climate change is compounded by both socio-economic and environmental factors including increasing pressure on natural resources and land, population growth and governance. The main climate-related risks in the country are 1) impacts on people's livelihoods and economy from erratic and uncertain weather conditions; 2) increased natural hazards, including landslides, floods and Glacial Lake Outburst Floods (GLOFs); 3) negative consequences for key economic sectors like agriculture and hydropower. All of these impacts are likely to have long term consequences for the country's economy, food security, biodiversity and irreversible damage to ecosystem services and environmental flows.

Policy environment and adaptation

Nepal's broader environmental policies are guided by the country's five year development plan (FYP). The Tenth FYP (2002-2007) did not envisage emerging climate change issues and impacts for Nepal. However, the 3 YIP that came at a time when the armed conflict was resolved peacefully, emphasized and referenced climate change not only as a constraint to Nepal's development but also an opportunity that would be able to generate international financing to conserve the environment (specifically the forest sector) from provisions like carbon trading, reduction in climate change and payment for Environmental Services. The 3YIP also prioritized prevention of and relief from natural disasters, especially water-induced disasters. In a way, such reference to climate change has helped to give additional impetus to the implementation of broader environmental strategies and building national capacity for environmental management, which were prioritized by the Tenth FYP. The inclusion of climate change issues in the country's guiding developmental plan suggests that climate change has been taken as an underpinning issue for the Nepal's development.

Most of Nepal's important policies were put in place when climate change was not yet a major issue on the political agenda. Although climate-related disasters, forest fragmentation and food insecurity have been major highlights of the policy discourse in the country, climate change *per se* did not get a prominent mention in the policy documents until recently. In the last couple of years, some more policies which explicitly address climate change issues have been formulated, for example the National Strategy for Disaster Management in Nepal (2008), Climate Change Policy (2009) and the preparation of National Adaptation Plan of Action (NAPA) is currently underway. Alongside these developments, increased numbers of research and pilot projects on climate change have given impetus to policy shaping and mainstreaming of climate change into the country's developmental process. On the conservation side, Nepal was the pioneer country in South Asia to adopt landscape

level conservation. There are two transboundary conservation landscapes in the country, the Terai Arc Landscape (TAL) spreading across Nepal and India, and the Sacred Himalayan Landscape covering parts of Nepal, India and Bhutan and adjoins Tibet Autonomous Region. Nepal's conservation policies are considered the most people-friendly in Asia. Some of the protected areas, such as Kangchenjunga Conservation Area and Annapurna Conservation Area, are legally owned and managed by the people of these areas. As regards the water resources sector, Nepal Water Plan and Strategy has specified the piloting and implementation of Integrated Water Resources Management, which is likely to emerge as the main approach to managing water resources in the country. There are two rather outdated agriculture (1961) and forestry master plans (1972) in the country, which are currently under revision.

Given this policy environment in the country, climate change and specifically adaptation issues have very recently started to gain attention. With the formulation of the NAPA and increased climate change related research and activities in the country, adaptation might become one important area where government will put in efforts and resources. Unlike regular NAPA processes, Nepal's "extended NAPA" or "NAPA+" is comprehensive and has extended activities, goals and objectives. NAPA+ has undertaken an innovative approach to multi-stakeholder engagement and vulnerability analysis, moving beyond the regional and national consultation approach adopted under other NAPAs towards a framework that generates and incorporates meaningful inputs from a wide range of stakeholders including vulnerable communities themselves. Part of this approach involves the generation of LAPAs, Local Adaptation Plans of Action, through consultation with actors at local level (government agencies, civil societies and community groups).

II. DRIVERS OF CHANGE

Drivers that affect ecosystems

Analysis of various factors that affect environmental degradation has been quite commonly practiced in Nepal for formulating policies and programmes. Many participatory approaches to policy formulation such as those of community forestry and buffer zones used "problem tree analysis", "root causes analysis" or "threat analysis" methods to analyze interlinked factors of environmental degradation. Hence, assessing "drivers of change" for ecosystems and development is not an entirely new method in the environment and development sector. Many people interviewed at the beginning of this study said that some of the drivers of changes that were determined 30 years ago remain valid even today. For example, land use change patterns (forest cover change), population growth, natural disasters, forest fires and unsustainable harvesting of resources continue to be top drivers of environmental degradation. Two of Nepal's conservation landscapes, TAL and SHL, that initiated a structured analysis of root causes of ecosystem degradation have mentioned these drivers (TAL and SHL Strategic Plans). For instance, TAL Strategic Plan (2004-2014) lists 7 direct causes of biodiversity loss and environmental degradation which include forest conversion, uncontrolled grazing in forests, unsustainable timber harvesting, unsustainable fuelwood extraction, forest fires, Churia watershed degradation, wildlife poaching and human-wildlife conflict. At the workshop, participants discussed that many of these drivers continue to be major drivers that affect both mountain and Terai's ecosystems in Nepal.

The key drivers that affect ecosystems, as discussed by stakeholders during interviews and workshop are:

a) Over-exploitation of natural resources (closely linked to population growth and developmental pressures):
b) Spread of invasive species
c) Natural (and climate and human induced) disasters

d) Forest fires
e) Landuse and land cover change
f) Migration and urbanization
g) Biodiversity loss

The above drivers were mostly explained in the context of Nepal's underlying development pressures, policy environment and political instability. For instance, some interviewees said that although past drivers of ecosystem degradation have not changed much, what has changed is the intensity and scale of the impacts of each driver, particularly driven by civil war and political transition in the country.

Climate induced and non-climatic drivers

Workshop participants and interviewees identified climate-related drivers such as spread of invasive species, forest fires, migration and urbanization, natural disasters including landslides, floods and droughts, and low or high agricultural yields. The climate induced drivers in combination with non-climate induced drivers, such as developmental pressure (infrastructure/roads development), political instability and poverty, degrade ecosystems even more than what would have been exerted by environmental drivers alone.

Table 1. Manifestations that relate to Climatic and Non-Climatic Drivers

Drivers that affect ecosystems	
Climate induced Drivers	**Non-climatic Drivers**
1. Spread of invasive species	1. Policy drivers (policy formulation, documentation and implementation)
2. Migration and urbanization	2. Development drivers (Global market forces, infrastructure/roads development, Political transition, Corruption, Social insecurity)
3. Natural disasters (landslides, GLOFs)	3. Environmental drivers (Over exploitation of natural resources, forest encroachment, agriculture expansion and intensification, illegal logging, forest fragmentation, landuse change, biodiversity loss, unmanaged nature tourism)
4. Forest fires	
5. Low/high yield of agriculture	

Source: Stakeholders interviews (10-14.11) and workshop (16-17.11), Kathmandu

Climate induced Drivers:

1. Spread of invasive species: Although no specific research on the spread of invasive species owing to change in seasons or climatic variability has been undertaken, many stakeholders reported that their anecdotal field study indicates, and local people have increasingly communicated to them information about, the growth and spread of invasive species. This is particularly true in mountain areas where alien plant species have been found that compete with other regular species. Some of these alien species are also invasive. The growth of invasive species, *Mikania micrantha* (a weed called 'miles a minute'), has been a conservation challenge in Terai's protected areas and sensitive ecosystems. Any exact relationship of this species with climatic variability has not been established so far. However, stakeholders suggest that the rapid spread of this invasive species and many others that have been increasingly reported from both mountain

and Terai regions have something to do with changing climatic conditions. Some of the areas are experiencing changes in species composition and species disappearance too. The participants suggested that this might result in long-term ecosystem changes about which there has not been much research done.

2. Migration and urbanization: Migration from mountains to Terai's plains which leads to growth of urban centres in Terai was also one of the drivers that stakeholders thought are partly induced by climate change. In the recent past, people's migration was associated with armed conflict and employment. Nowadays people have been migrating to Terai regions from difficult terrains of mountains due to livelihood insecurity primarily caused by decline in agricultural productivity and increasing incidences of natural disasters. Mountain people often migrate to Terai region which has more employment opportunities due to good market linkages (roads) and higher agricultural productivity. Historically, migration from mountains to Terai was a normal phenomenon, however, during the interviews for this study, stakeholders said that previously people used to migrate to Terai in search for better living conditions but now people are migrating because they have been experiencing decline in mountain agricultural productivity due to changing weather patterns, soil erosion and increasing incidences of natural disasters. The unchecked migration has led to overcrowding in some places or creation of urban areas where there are least social services and facilities available.

3. Natural disasters: According to the workshop participants and interviewees, natural disasters in the recent decade have increased considerably which seems to be induced by changing climate conditions. In the past, frequency and intensity of landslides and floods were not so pronounced and it used to be primarily in places where forests and watershed were degraded.

4. Forest fires: Forest fire is also identified by interviewees and workshop participants as a driver of ecosystem degradation, which now seems to be more frequent than in the past. Every year, forest fire in Terai Region destroys ground vegetation including newly emerged seedlings, and some time large forested areas. Forest fires have always been identified in the past as one of the key drivers for forest destruction, biodiversity loss and environmental degradation in the country. But, in more recent times, the seriousness of the threat and frequency has increased tremendously in areas that have been experiencing extended dry season. In particular, in lowland Terai and inner valley or foothills of Churia, forests are becoming more susceptible to forest fires during extended dry periods.

5. Low or high agricultural yields: Among all others, this is the impact induced by climatic changes highlighted most by the interviewees and workshop participants. This is not clearly a driver for ecosystem degradation, but extreme fluctuations in agricultural productivity accelerate other drivers such as migration and forest conversion for agriculture. Extreme variation in temperature and rainfall has been causing agricultural productivity to fluctuate in both the mountain and Terai agro-ecological regions. In some mountain areas, agricultural yield has

increased but given the fact that mountains have limited arable lands, that is very minor positive change for a few communities. In the hills and Terai region, where agriculture is more intensive and mostly rain-fed, unpredictable weather patterns are making farmers more vulnerable. During the workshop and interviews, stakeholders said that agricultural productivity is perhaps the most raised issue by communities in their projects and programmes that relates directly to climate change.

Non-climatic drivers:

1. Policy drivers:

- *Formulation*: Policy formulation processes have often been reactive or project-based. Many of the projects formulate policy and plan documents in response to an existing situation or a problem rather than on need-basis. Due to this tendency of formulating isolated policies, many policies are in contradiction with each other and are shelved without any likelihood of implementation. Also, policy formulation and planning processes have not been very participatory in nature (with the exception of the Forestry Plan) and usually they do not have financial and implementation plans integrated into them, or accompanying them. This makes the policy documents look good on paper but they have no practicality for implementation. Another aspect to note about public policies in Nepal is that there has been a huge policy backlog created by long political transition and frequent changes in Government administration. Many policy documents have been awaiting renewal before implementation.
- *Content*: There is a rich set of policies and plans in the country, for example the forestry sector master plan, agriculture perspective plan, water plan and the current 3-year interim plan, which have strongly addressed natural resource management. However, most of these policies and plans are sector-specific and growth oriented and do not address environment in an integrated manner. They do not recognize the importance of integrated management of natural resources. In addition, an understanding of the integrated relationships between biodiversity and culture is often neglected by policies and plans. Traditional knowledge is mostly associated with local languages and therefore understanding issues from a biodiversity and cultural point of view is important. Some of the policies that are implemented through programmes such as Terai Arc Landscape (TAL), Sacred Himalayan Landscape (SHL) and Western Terai Landscape Building Programme have taken an ecosystem-based approach to natural resource management and address the value of culture and traditional knowledge.
- *Implementation*: Nepal has adopted many policies that are in line with international agreements including Nepal Biodiversity Strategy and Action Plan (NBSAP) and the Sustainable Development Agenda for Nepal (SDAN), but their implementation has been weak. There is a rich set of documented policies for almost all sectors but they have not been put into practice. Many times policy implementation depends on the individuals and therefore any change in the government usually leads to changes in how a policy is interpreted and implemented. In the last couple of decades Nepal has undergone frequent changes in Government administration and the transfer of staff which has meant that institutional memory in the government is very limited. This has often hampered proper implementation of policies. For some good policies there has been no implementation because that has not been supported by any legislation, and Government instability has primarily hindered discussions or passing of laws that would back up the implementation of those policies.

2. Development drivers:

- *Political transition*: The country is running on the basis of an interim constitution, which has a strong component of conservation and management of natural resources. However, due to current political instability, policies do not have a favourable environment for implementation. The volatile political situation has not only affected the implementation of policies but also local

level planning. There has been no presence of local government for the past one decade and local development planning has not functioned for several years now. Because of this, there has been a little or no delivery of services and support from the government for local level planning, which has particularly affected the management of forests and water resources. Political transition has also induced or accelerated and intensified the effect of other drivers. For example, forest encroachment, wildlife poaching, illegal harvesting and trade of natural resources have increased considerably in the past decade due to prolonged political instability.

- *Market forces and development pressure*: To a great extent global market forces and regional economic integration has affected Nepal's natural resources management, harvesting and trade of ecosystem goods and services. The interface between livelihoods and ecosystem goods and services is changing due to current patterns of consumerism and development which promote modern food habits and lifestyles. Previously people consumed millet and corn and conserved wild food crops but now the supply and production of non-traditional food are in demand in rural areas. People have been neglecting the use and conservation of traditional food crops and unsustainable consumer behavior is on the rise.

- *External financial resources*: There is no national or institutional mechanism to coordinate the utilization of financial aid received for natural resource management (NRM). The amount of financial aid flow into the country could be adequate for NRM if it was properly and wisely utilized and strategized for investment. There are policies and plans but they do not outline how much, where and how long financial resources are required for any specific action. Donors have more influence to channel the resources into projects and programmes and most often the government is only a recipient. However, there is problem within the system too. Government does not have the capacity to coordinate financial resources. NRM and corruption are closely related in the country and they cannot be looked at in isolation. In addition, the whole governance and political system in the country is rapidly changing. Previously it was entirely a top-down developmental process but nowadays, civil societies have become strong and they are in a position to challenge government decisions and channeling of donor money. Economic incentives from NRM have not been on the agenda in developmental discussions. However, this needs to be thought of seriously now because some of the institutions, for example, community forestry, cannot continue to be driven through voluntary participation of users alone. We need to devise mechanisms for the *equitable distribution of e*conomic incentives for community forestry user groups so that their institutions are strengthened. All the above factors and governance change may cause the nature and intensity of drivers to change in the next 50 years.

3. Environmental drivers:

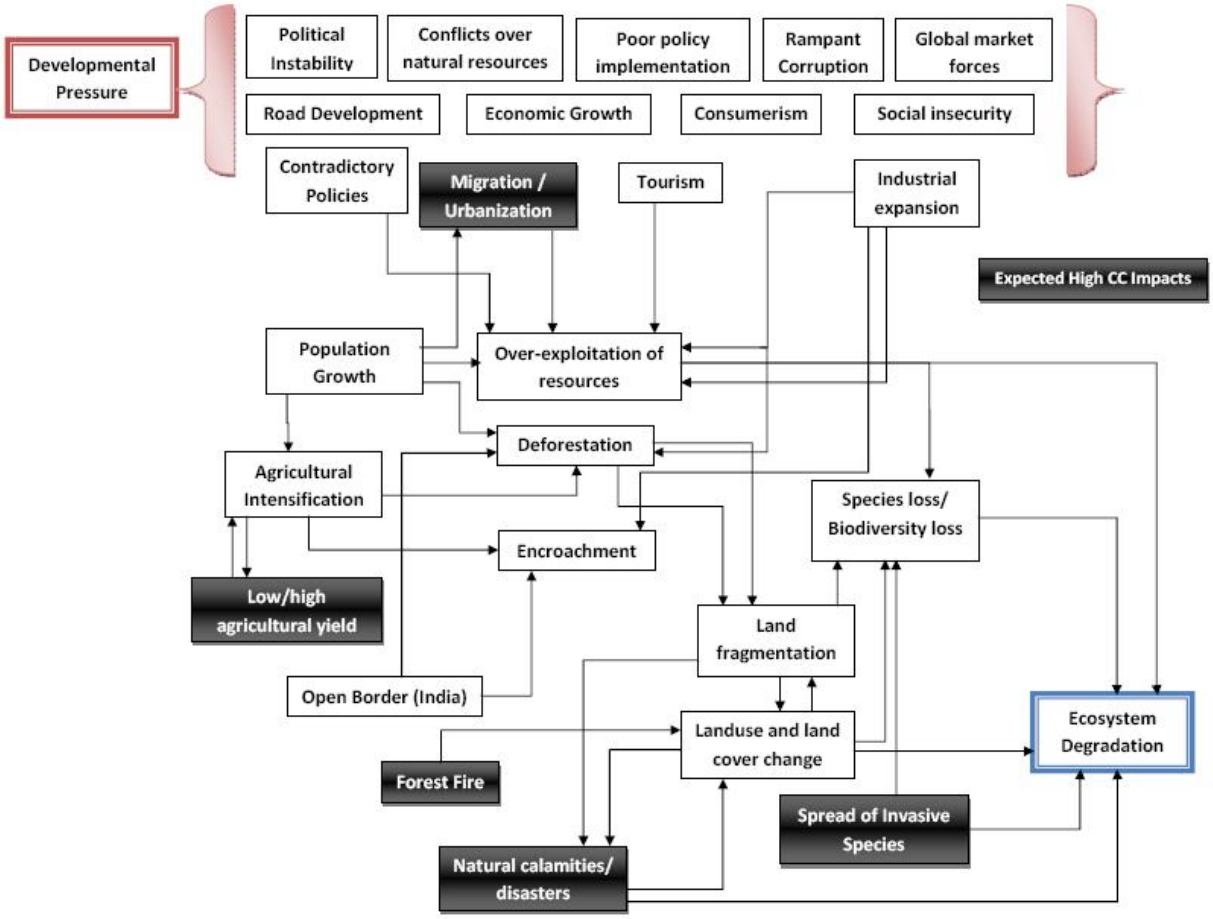
Some of the environmental drivers that were discussed by workshop participants are discussed under climatic drivers. Under this, only those drivers are mentioned for which there is no clear indication whether they are affected by climate change directly or not but which cause degradation of ecosystems. The cause and effect relationship of various environmental drivers are explained in Figure 1.

- *Over-exploitation of natural resources*: Over-use or harvesting of natural resources was cited as one of the main reasons for environmental degradation. Some of the workshop participants argued that the primary driver for over exploitation of natural resources is uncontrolled population growth whereas others thought it was because of unmanaged population and not "uncontrolled" population. In many parts of the country, people tend to use and harvest natural resources more than the production capacity of nature. For example, the over-harvesting of Non Timber Forest Products (NTFPs) and collection of sand from river beds are commonly observed activities that account for degradation of ecosystems.
- *Forest fragmentation/landuse change*: Forest fragmentation is also one of the main drivers that degrades ecosystem's health. Forest clearance, encroachment and expansion of agricultural lands into forests were cited as the major cause of forest degradation and fragmentation by the participants. In the last 5-6 years, forest encroachment, particularly in Terai forests, have been very rapid which has not only created a conflict between forest user groups and illegal settlers but also led to poaching of wildlife and collection of forest products. In some areas, forests have been cut for developing roads and in other areas agricultural expansion has caused to clear forest areas. Due to forest fragmentation some important ecological processes particularly those supported by ecological dispersal and environmental flows have been largely obstructed. For example, in Terai Region, before the restoration programmes were implemented, many mammal migratory routes were infringed by encroachment and illegal settlement. This resulted, on the one hand, in the decline of endangered species and on the other hand, reduction of water flows and other supportive ecological processes.
- *Biodiversity loss*: Many of the listed climate induced and non-climatic drivers account for the loss of biodiversity. For example, the spread of invasive species, overharvesting of forest products, pollution of rivers, poaching of wildlife or modern consumer behavior that does not preserve wild food crops – all can lead to biodiversity loss and therefore this was cited as one of drivers for degradation of ecosystem by the workshop participants.

Clusters of drivers identified during pre-workshop interviews and workshop day one

During the workshop, participants were presented with the result of interviews. The result was a mix of drivers of development and ecosystem degradation. The participants then added a few more factors and also discussed a cause and effect relationship between various factors and thus suggesting a few primary drivers of change. Their discussion has been summarized in Figure 1. Some of the drivers suggested by the participants, for example market forces, tourism, roads development fell under the underlying causes of poverty and natural degradation and therefore they have been grouped together into the category of "developmental pressure" and not as "drivers for ecosystem degradation".

Figure 1: Analysis of Drivers of Ecosystem Degradation



Source: Stakeholders interviews (10-14.11) and workshop (16-17.11), Kathmandu

During the workshop, participants chose to work on any three drivers that would affect ecosystem changes in the next 50 years and consider how that would manifest given a strong and weak governance system in the country. The three drivers selected included land-use change, roads development and natural disasters (floods). Participants did not want to work on climate change as a separate driver because they felt that although climate change intensifies the impacts of ecosystem drivers, they cannot predict how ecosystems or governance systems will react in the long-future. Given that Nepal is going through so many political, economic and environmental changes, it is difficult for them to figure out how climate change would impact a driver or a combination of drivers in future. Therefore, for simplicity of building future scenarios, participants focused on three key drivers of change but they did take into account climate change when assessing plausible futures.

III. GOVERNANCE SYSTEM

Clusters that group different elements of the governance system

General awareness of interviewees about the elements of a governance system was high and almost all the interviewees discussed governance by focusing on eight such elements. Some interviewees clustered them into four elements as well but the essence of discussion always revolved around those eight elements, including: participation; accountability; transparency; responsiveness; efficient and effective; equitable; consensus-oriented; and rule of law. These governance elements when clustered into four elements, as done by a few interviewees, consisted of accountability, transparency, participation and predictability.

During the workshop, participants agreed to the four clusters or elements of governance. However, some of the components such as institutions, resources, capacity and rule of law applied to all governance elements. Therefore the participants again clustered them into four but gave each a different label. This was done for the sake of simplicity in doing the group exercise. The four elements are:

1. Institutions and Networks (Government agencies, International climate change networks, donors, private sector organizations, civil society organizations and networks and academic and research institutions)
2. Capacity and resources (coordination with donors and funding agencies, monitoring mechanism, technical capacity, financial resources, mainstreaming approaches)
3. Plans, policies and strategies (3-year interim plan, livestock master plan, national water plan, Churia management plan, Forest Act, Environment Protection Act, Self Governance Act, etc)
4. Economic incentives (Payment for environmental services – PES, CDM, Reduced Emission from Deforestation and Degradation – REDD+)

Table 3: Elements of governance identified by interviewees and workshop participants

8 Governance Elements (identified by interviewees)	Clusters of 4 Governance Elements	Clusters of Governance elements (identified by workshop participants)
1. Participation	1. Participation (access to and ownership of resources and decisions)	1. Institutions and networks (refers to participation and transparency)
2. Accountability	2. Accountability (government answerable to public, clear responsibilities and objectives)	2. Capacity and resources (refers to accountability and predictability)
3. Transparency	3. Transparency (access to information, decisions and institutions, active civil society)	3. Plans, policies and strategies (refers to predictability)
4. Rule of law	4. Predictability (existence of laws, regulations and policies, equitable opportunities, interests of different groups are considered, wise use of resources)	4. Incentives (refers to predictability and transparency)
5. Equitable		
6. Efficient and equitable		
7. Consensus oriented		
8. Responsiveness		

Table 2. Qualitative scenarios for Nepal based on changes in drivers and governance by 2050

	Land-use change	Roads development	Natural disasters (floods)
Strong governance Small change in driver: **- Low land-use change;** **- Low level of road development** **- Low flood frequency and intensity**	"***Ecosystem Gain***" Forest expansion with good management; Intensive commercialization of forest products; Sustainable harvesting natural resources; Enhanced livelihoods; Poor people's access to forest resources increased; Increased industrialization	Ecotourism enhanced; Rural livelihoods affected by market inaccessibility; Limited accessibility; Government revenue decreased (from trading of natural resources); Local opportunities and options created	"***Relatively stable ecosystem***" Disaster level low; Sustained production; Secure livelihoods; Slow ground water recharge; not much change in the ecosystem than it is at present
Strong governance Large change in driver: **- High landuse change** **- High road development** **- High flood frequency and intensity**	"***Ecosystem Loss***" National landuse plans and policies in place; Increased landuse productivity; extensive commercialisation of ecosystem goods and services; increased market access; Improved access of agricultural resources to poor; Decreased forest area but good management; Agro-forestry well-practiced; Improved town planning	"***Ideal condition***" Healthy ecosystems; Eco-friendly roads; Coping capacity for sudden changes or shocks increased; Enhanced livelihoods; Good accessibility; More employment opportunities; Increased number of micro-enterprises; Social security; Increased eco-security	"***Secure livelihoods***" Adaptive capacity is high; Loss of life and property is minimum; Strong government support system in place; Rehabilitation plan in place; Post-flood management is good;
Weak governance Small change in driver: **- Low landuse change;** **- Low levels of roads development;** **- Low flood frequency and intensity**	No scientific management of resources (e.g. forests); Elite people are dominant over making decisions and access to resources; Increased corruption, impunity and poverty; Conflicting interest on landuse; Protection oriented rather than sustainable management (of forests and other ecosystem goods and services)	Ecosystem remains intact; Natural succession of ecosystem continues; Minimal livelihoods options	"***Uncertain livelihoods***" Weak preparedness; Unexpected loss of life and property; No rescue mechanism; Abnormal production patterns; Low level of awareness

Weak governance Large change in driver: **- High landuse change** **- High road development** **- High flood frequency and intensity**	"**State of Impunity**" Increased forest degradation and natural disasters; Increased conflicts and corruption; Increased migration; Market failure; Increased poverty and impunity; Forest and land encroachment	Degraded ecosystem; Tourism flow decreases (because of degraded ecosystems that impacts natural sceneries)	"**Insecure livelihoods**" Increased loss of life and property; Loss of natural resources; Low agricultural production; Ground water recharge is high

From the scenario building exercise, participants observed that strong governance and low level of change for all drivers might not necessarily always lead to an ideal future scenario. For example, when road development is considered, strong governance will result in keeping the ecosystem intact but low level of road development will impact market accessibility and hence impact people's livelihoods.

Some general messages obtained from the scenario building exercise are:

- If Governance is strong and there is small or low change in drivers, then ecosystems are normally intact as mentioned by two groups "ecosystem gain" and "relatively stable ecosystem". Low level of land-use change and strong governance could have all positive gains for both ecosystems and people such as improved livelihoods, sustainable harvesting of natural resources, increased accessibility to forests by poor people and so on. Interestingly, the "flood group" pointed out that if there are low levels of floods and strong governance, the condition would be good for the people but it would result in low ground water recharge. They explained that some floods are "healthy" and their occurrence does help maintain ecological processes. Strong governance and low levels of roads development would be good from ecosystem point of view but it would not be an ideal situation for people's livelihoods. Low levels of road development will reduce people's opportunities for market access. Interestingly this group also suggested that tourism would be higher if there is low level of roads development. The group explained that fewer roads will not degrade environment much and tourism (trekkers and hikers) will increase in mountainous country like Nepal where tourists would want to trek rather than travelling by bus. This may also mean controlled number of tourists and quality tourism. Increased roads may only increase the number of tourists but not the quality of tourism.
- A strong governance system and a large change in the drivers also gives a mixed message for different drivers. For example, even if there is a strong governance system, high land-use change would rapidly degrade ecosystem conditions. Although poor people will have increased access to resources and they practice good forest management, it will not be able to prevent increased commercialization of forest and agricultural products and thus resulting in decreases and fragmentation of forest areas. However, strong governance and high level of roads development and floods would be a much better future scenario. The future scenario will consist of development of eco-friendly roads, increase people's access to markets, enhanced livelihoods of people resulting in their increased adaptive and coping capacities, establishment of good flood management and response systems and minimum loss of life and property.
- A weak governance system and low levels of change in the drivers do not yield much in the way of favourable future scenarios. This scenario will have elite and rich people dominating

decision-making processes and access to resources, increased corruption, conflicting interests in land-use, protection-oriented forest management, unexpected loss of life and property, no rescue mechanisms, weak preparedness for floods and minimal livelihoods options.

- Weak governance and large changes in the drivers represent the most undesirable future scenario as two of the groups call this scenario "state of impunity" and "insecure livelihoods". This scenario will have most negative impacts on ecosystems, including increased forest degradation and natural disasters, increased conflicts and corruption, high migration rates, market failure, increased poverty and impunity, encroachment of forests, increased loss of life and property, loss of natural resources and low agricultural production. Even though there will be high level of roads development under this scenario, the tourism flow will decrease due to weak security, less tourism facilities and increased pollution.

Based on the scenario building, each team conducted a back-casting exercise analyzing the processes of change that need to occur for the two "desirable" scenarios (i.e. strong governance/small change, and strong governance/large change) to happen. The breakout groups analyzed this in terms of: Who changes and why? What changes and how? This analysis served as a basis to explore: 1) what change needs to happen in the governance system regardless of small or large changes caused by drivers; 2) what processes will be different in the case of small changes as compared to large changes. Comparing similarities and differences between both scenarios encouraged participants to consider the realities of dealing with uncertainty associated with how drivers will manifest into the future and the exact nature of the impacts. It also helped participants reflect on the changes and investments that need to happen regardless of small or large change in drivers in future.

Table 4. Similarities and differences between processes of change that need to occur for the two "desirable" scenarios

What are the differences between the governance changes in the two "desirable" scenarios?	
Small changes in Driver	**Large changes in driver**
Who? Lead government agency, Support agencies such as community organizations, bi- and multi-lateral agencies, private sectors, I/NGOs and civil societies	**Who?** Central government agencies, Judiciaries, Head of State, International communities and Aid Agencies, Service Providers and private sectors, Research and Development organizations, Civil society groups, Local government agencies (DDC-District Development Committees, VDC- Village Development Committees and RD-Regional Directorates)
Why? Livelihoods opportunities, better standard of living, economic security, community ownership and partnership, development of immediate adaptive response mechanism, proper landuse, financial sustainability, enhancement of tourism, increased investment opportunities, stable government	**Why?** Stable government, effectiveness and sustainability, financial sustainability, value to indigenous and local knowledge, environment policy integration, building better off communities, enhanced coping capacity, high investment in conservation and environment, healthy ecosystems, better standard of living and livelihood opportunity, enhanced awareness on environment and development, effective planning

What? Clear and well defined policies, sustainable management and controlled commercialization, clear and defined roles of institutions, micro-enterprise development	**What?** Proper environment assessment (EIA/IEA), market access, strong monitoring mechanisms, taxation at local level, cultural heritage preservation, coordination among line agencies, model village development, one village one product strategy, cooperatives and enterprises establishment, clear and defined roles of institutions in management, organizational reforms
How? Clear and defined institutional boundaries established, micro-enterprise development, put monitoring system in place, awareness on rights and responsibilities, ensure implementation of policies, build technical capacity, increase local participation, equitable resource sharing, effective revenue collection system, awareness raising activities	**How?** Integrated decentralized governance system, coordination among line agencies, effective revenue collection mechanism and revenue distribution system, budget planning and prioritization, national planning prioritization, incorporate local and indigenous knowledge into planning and management, establish rule of law, build responsible citizens, knowledge sharing dissemination and coordination, create enabling policy environment, increase international and national negotiation capacity, access to fair trade market, commitments from public and political parties, policies backed up by legislations, ensure implementation of policies with sufficient funds, build technical capacity, effective M&E system, establish reward and punishment system, increase awareness on rights and responsibilities
What are the similarities, i.e. what governance changes would be made in both "desirable" scenarios?	
Who? Lead government agency, Community based organizations and civil societies, International Aid Agencies, Private Sectors, I/NGOs and development organizations	**Why?** Stable government, enhanced livelihood opportunities, better standard of living, enhanced adaptive responses and capacity, increased investments and financial sustainability, proper landuse and planning, community participation
What? Clear and well defined policies and institutional responsibilities, monitoring mechanism, commercialisation and enterprises development, market access coordination among line agencies	**How?** Clear and defined institutional roles and responsibilities, awareness on rights and responsibilities, ensure implementation of policies, effective revenue collection, public awareness raising, coordination, access to information and knowledge, build technical capacity, increased local participation, effective M&E system

From the comparative analysis of small and large change in drivers, participants observed that there are certain differences in the two cases and so the level of improvements and engagement required in the system to deal with the changes. If there is larger change in the driver, governance system has to be more robust with a very well-coordinated management and coordination system in place. When there is only a small change in a driver, strong governance would mean coordination led by a designated agency at central government level with support from civil societies, developmental organizations, private sectors and donor agencies. However, if there is a larger change in a driver, the head of state, judiciaries and central government line agencies have to have good coordination and lead together with support from international

communities, civil society groups, private sectors and the role of research and development organizations also becomes crucial. In addition, when there is a larger change in a driver, governance will have to be strengthened in terms of establishment of effective M&E system, organizational reforms, implementation of decentralized system, ensuring implementation of policies, increasing technical capacity and negotiation skills, public awareness raising on rights and responsibilities and access to information and knowledge.

Some components of the governance system remain common to both the scenarios irrespective of small or large change in a driver. For instance, the need of a coordinating central level government agency, role and support of civil societies, donors, private sectors and developmental organizations are common to both the scenarios. Moreover, a stable government, improved livelihoods, enabling policy environment, coordination among line agencies, clear and defined roles of institutions, establishment of M&E system, public awareness on rights and responsibilities, mechanism for revenue collection and access to information and knowledge are the minimum set of components to make the governance system strong.

After the workshop participants discussed the four clusters of governance, they worked in two teams to describe how the governance system needs to change in order to integrate ecosystem based adaptation into policies and plans. The participants described the progression of each level as ranging from level 1 to level 4:

- ***Level 1***: "Do not know anything" state (discussion on integrated management of natural resources just initiated, no participation and ownership at community level, lack of resources)
- ***Level 2***: Identification state (ecosystem issues in general are addressed, initiation of capacity development)
- ***Level 3***: Implementation state (ecosystems are considered important to address, limited capacity, lack of funding)
- ***Level 4***: Integration of EBA state (ecosystem issues are fully addressed, ideal situation)

Table 5 below describes the results obtained from the teams' discussions. These discussions focused on integration of ecosystem and climate adaptation issues in general into the national development plan. The participants suggested that it would require a gradual shift for the country to first integrate ecosystem and then ecosystem-based adaptation into national level policies and plans. The levels are synthesized into 4 levels for each one of the 4 governance clusters identified by the participants.

Governance clusters	Level 1	Level 2	Level 3	Level 4
Institutions and networks	Government agencies: Low level of understanding on CC, No institutional set ups to explicitly deal with CC; Increased ratification of International conventions related to environment and CC; International donors have no particular focus on CC issues; Private Sectors have no understanding of CC issues; Civil societies do not have understanding of CC issues; Research and Academic Institutions do not focus on CC impacts study	Government agencies: Identification of CC issues, documentation ongoing, set up institution, implementation started at the project level, coordination amongst line Ministries is at the initial stage, endorsement of CC policy by the Government; Network support in indentifying issues and formulating CC documents at National and Local level, Increased participation in International Negotiations, Formation of Mountain Alliance Network; At donors' level, there is realization of CC impacts/adaptation measures, program design incorporating CC issues; Private organizations initiate partnerships with environment and other related public sectors and civil societies; Civil societies actively initiate partnerships and implementation of CC related activities; Research institutes initiate studies on CC impacts into socio-economic system and bio-physical environment	Government agencies: Implementation of NAPA and LAPA, resources and capacity are secured and mobilized, monitoring mechanism in place, mainstreaming of EBA into National Plan; International networks: Prioritized LDC issues in International Forum (COPs), lobbying by the networks to secure funds, International commitments to mitigate CC; Donors: Fund mobilization, donors interest on their own agenda; Private sector investments in green enterprises and eco tourism, reduced carbon footprint; Strong lobbying and campaigning at different levels by civil societies; Research and academic institutes provide scientific recommendations to mitigate/adapt CC impacts, influence National policy	Government agencies: Strong coordination efforts by the Gov. and work closely with civil societies, effective functioning of Government bodies, equipped with human and financial resources; Strong International commitments to mitigate CC, strong partnership with National Government; Donors: Strong financial and technical support on National prioritized CC issues; Strong Public-Private Partnerships (PPP) in place; Civil society organizations (CSOs) develop strong partnerships with Government line agencies; Strong scientific research base/knowledge established

Strategies, policies, plans, regulations and laws	Annual fiscal budget planning but no long term budget planning, Ratification of international Convention and multilateral environment agreements (MEAs), Policies formulation stage but no implementation, no economic incentive mechanisms for environmental conservation	Mines and minerals Act, Forest, Water, Irrigation, Electricity Acts and Regulations, Land reform policies, Ratification and awareness on (ILO, Kyoto, International tropical Trade on Timber Organization (ITTO), TRIPS, Concentration of Migration Species (CMG), WTO, UNDRIP), reactive policy formulation, project based policies, limited implementation of policies, conservation Areas owned by communities (Milke, Tinjure and Jaljale, Annapurna Conservation Area, Kangchenjunga Conservation Area)	LAPA, NAPA, Climate Change Policy (but no specific use of terminology ecosystem-based adaptation), National water plan, Churia management plan, Self Governance Act but decentralized implementation is not practiced, GATT and UNESCO active to conserve natural heritages, livestock master plan, Agriculture Perspective Plan and Forestry Sector Master Plans are revised, Country's National development plan (3-year Interim Plan) strongly addresses conservation of natural resources, policy formulation is bottom-up and needs based, community conservation areas generate own revenues for conservation and management	Land-use policy, Rural and decentralized energy policy and laws, Landscape management plans are fully implemented with adequate financial resources, CITES and RAMSAR implementation is strongly enforced, Species management plan implemented, Good coordination between government and civil societies for formulation of policies, integration of implementation and financial plan into a planning document, community conservation areas are financially sustainable, policies are strongly backed by regulations and laws, timely revision of policies and laws
Economic incentives	No economic incentives for conservation of natural resources, ecosystem goods and services are for free	Communities conserve natural resources but voluntarily, subsistence benefits only, community cooperatives set up, individual businesses, growth of middlemen and contractors	Revenue sharing mechanisms in place (community forestry user groups, buffer zones, conservation areas), communities get carbon credits, community cooperatives active and own businesses	Policies and regulations on PES established, REDD+ mechanism full developed and implemented
Capacity and resources	Absence of coordination among institutions; organizations doesn't address integration of environ./adaptation issues, Donor showed interest in Environmental management, No development of M&E	Coordination body is designated, roles and responsibilities identified, need of M&E framework for CCA realized, donor compact signed for integrated environmental management, projected based M&E initiated, start to realized the mgmt of environment, take	Roles and responsibilities clarified, capacity enhanced, functional system established for CCA integration, fast tracking of donor coordination, Integrated M&E, learning from M&E not integrated into program cycle, plan is there but lack of coordination, prioritization of	System fully functional with regular M&E, full donors harmonization, public audit of program and projects, capacity of community for self monitoring, human resources capacitated for implementation of plans,

	framework, unable to identify the relevant issues, can't foresee future environmental challenges, the benefit of ecosystem services not realized, Institutional awareness on CC issues low, curriculums don't include climate change, No resource allocation for environmental management, no understanding of mainstreaming approach, sector specific program implementation	initiatives for making environmental policy and plans, Increased in information flow from different media, communities hear about the CC issues, awareness raising materials produced and disseminated, start to allocate the financial resources for CCA, strategy for financial resource developed, mainstreaming becomes an integration agenda	budgeting still not clear, increase in no. of human resources to work on integrated CCA, No. of training, workshops, seminars and campaigns increased, knowledge mgmt platform created, increase in no. of knowledge products at national level, program based funding in place, sectoral investment priorities setup, Nepal secures fast track financing, environment mainstreaming into development, planning process starts to mainstream CCA, CCA mainstreaming guidelines developed specific to the circumstances in Nepal	Capacity to select best practices for integrated CCA and replicate appropriately, no need of external dependency, Information mechanism well established, Well developed knowledge mgmt system, Incorporate the CCA into curriculum, self sustaining mechanism such as PES, REDD, CDM in place, Development planning and process fully mainstream CCA

The governance system baseline for Nepal

Having done the analysis of the governance system in terms of integration of ecosystem based approaches and climate adaptation into national development planning, the two teams estimated Nepal's baseline for each of the governance elements. Based on the baselines for various components, participants then agreed on an average baseline for each governance element in Nepal.

Institutions and networks:

The estimated current baseline for institutions and networks in Nepal is at level 2. While there are a number of initiatives going on in the country, participants felt that much needs to be done to improve institutional coordination and partnership development of effective integration of ecosystem based adaptation into national policies and plans. At government level, documentation of CC issues is ongoing with initiatives taken to set up institutional arrangements for coordinating CC related issues and projects. Implementation has started at the project level but coordination amongst line ministries is at an initial stage. The government has taken steps to encourage implementation of the NAPA and a climate change policy has been prepared and is awaiting Cabinet endorsement. Nepal's participation in international negotiations has increased considerably, leading to greater awareness of CC issues and increased international networking. From the donors' side also there is increased support for CC related projects and programmes but there is still room for improvement in channelling resources to the right kind of activities and increased donor coordination is required.

Nepal's private sector is growing and so is their interest in environmental and CC related issues. This is particularly encouraging and if this interest is encouraged and harnessed in a timely manner this can lead to good public-private partnerships for addressing CC. Similarly, civil society organisations have also been actively initiating partnership activities and implementing activities. However, local level awareness on CC issues is still minimal and this needs to be addressed. Similarly, research and academic institutions have started to realize their roles in creating scientific knowledge and have just begun to conduct evidence-based research on CC impacts on socio-economic system and bio-physical environment.

Strategies, policies and plans:

Nepal is estimated to be at level 3 with a good set of documented policies and plans already in place, most of which strongly address environmental issues in the country. Some of the strategies and policies, including Forestry Policy, Landscape strategic Plans and National Adaptation Programme of Action, have been formulated through participatory and consultative processes. Nepal's guiding development plan, the 3-year Interim Plan, also strongly addresses the need for sustainable management of natural resources for improving people's livelihoods. As climate change is a recent addition to the national agenda, many of the policies and plans that were formulated in the past do not have CC as an integrated element of it. A few policies and plans have specifically included ecosystem based approaches to management of natural resources but many of them are limited to taking the approach of sustainable management of resources with the objective of poverty reduction. In terms of policy-making on climate change, Nepal has been moving very fast in the last 5 years. There has been an increased awareness in both Government and non-government sectors about climate change, which has facilitated the formulation of both the NAPA and Climate Change Policy. The big issue with the policies and plans is the implementation gap, overlaps and contradictions, and lack of coordination among government line agencies for implementation on the ground. Some good policies are not adequately backed up by laws and regulations and so they have been ineffective.

Economic incentives:
Nepal seems to be between level 2 and 3 in terms of economic incentives. Although not adequate, communities have been handed over the management of natural resources in many parts of the country. Community forestry, buffer zone management and the transfer of conservation areas into community ownership are some of the forward looking strategies that the government has taken up, and which has led to communities having a share of the revenue generated from the resources they manage. In many parts of the mountains and Terai, there are community based micro-financiers, businesses and cooperatives which are entirely owned, operated and managed by communities. Recently CDM and REDD+ initiatives have made the situation more optimistic for communities in managing their natural resources. There is only a handful of initiatives introducing economic incentives though. Still large areas of forests have not been handed over to the communities, illegal logging and encroachment continues in Terai forests, communities do not have the full capacity to extract benefits from the management of natural resources. They do not have sufficient start-up capital, lack skills in marketing, and communities are located in inaccessible and remote areas. Some of the successful programmes, like community forestry, still have a long way to go in terms of equity in revenue distribution. Payment for environmental services (PES) is still at its infancy and economic incentives for both the government and communities have not been maximised or optimised from the management of water, forests and land resources.

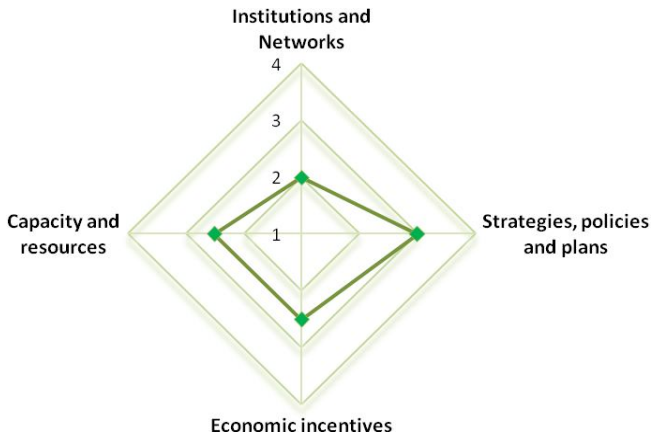
Capacity and resources:
Participants suggested that Nepal's baseline on capacity and resources is between levels 2 and 3. The country has a long history of common property natural resource management and people in the past have fought with the State to obtain management rights in places where community ownership was challenged. Community forestry, farmer managed irrigation systems and pastureland management, buffer zone management, and conservation areas are some of the examples where communities have a greater role in the management of natural resources. All these have greatly contributed to communities' awareness about management rights and their ability to manage resources. In terms of financial resources, economic incentives have not been optimally extracted from the management of natural resources. Nepal is the second richest country in water resources but its capacity to generate hydropower is the least in South Asia Region. Moreover, PES mechanisms and economic incentives from any of the natural resources sectors have not been institutionalized and whatever is running now is ad hoc. Traditional knowledge on natural resources at the level of communities is very high but it has not adequately been incorporated into policies and programmes. There is no incentive at the local level for utilization or promotion of traditional knowledge. Regarding climate change, there is a high level of awareness at the central level but at the district and community levels, capacity and awareness is low. Climate change has been a new buzz but both government and communities feel that they have already been adapting to climate changes, whether natural long term changes or human-induced changes. There are huge funds coming into the country from donors but there is no harmonization and coordination in this sector and as a result there is competition for accessing funds rather than strategically investing them. If some of the above gaps are addressed properly through institutions and policies, Nepal's capacity would be very high and the country would also be self-sustainable in terms of financial resources required to manage natural resources.

After the back-casting exercise and establishing the baseline, workshop participants thought that estimating the baseline helped them to assess what progress we need to make in integrating climate change adequately into projects and programmes. It is a tool that helps them analyse past achievements more objectively and try to see which direction the country needs to

go and how to integrate ecosystem and climate change issues into everyday programming and national level policies and plans.

The radar diagram below depicts the estimated current levels of integration of ecosystem and climate change into Nepal's plans and policies. This only represents the subjective assessment made by workshop participants and a few pre-workshop interviewees.

Figure 2: Radar plot showing Nepal's estimated baseline for four governance clusters



IV. BARRIERS AND OPPORTUNITIES FOR INTEGRATION

This section contains analysis of information obtained from pre-workshop interviews. The interviewees were asked in general about the barriers and opportunities for the integration of ecosystem based approaches and climate change into national policies and plans. According to them, there are both opportunities ("facilitating factors" as called by a few interviewees) and barriers for the integration of ecosystem based approaches to addressing climate change into policies and plans.

Although significant progress continues to be made, there are a number of barriers for the effective integration of ecosystem and climate change issues into national policies and plans. The key barriers are policy implementation and donor harmonization. Policy implementation is mostly associated with integration of ecosystem based approach and donor harmonization is associated with climate change programming in Nepal. Since there has been limited policy implementation, many interviewees found it difficult to make a judgment about whether the country's rich set of policy documents are practical or good. Without obtaining results from their implementation, it is difficult to assess the effectiveness and success of those policies. On paper they look good so far – apart from a few issues related to overlapping and contradictions. From the sectoral perspective, each policy seems to have been well-thought through, has been formulated with good intentions and addresses sustainable management of natural resources. Although many of them do not directly use the terminology "ecosystem-based", they do carry the essence of it and many policies have strong elements of sustainable management of natural resources for people's livelihoods and wellbeing. Hence, policy documents are not much of an issue in Nepal but their implementation is. For climate change there are a lot of activities happening at the national and local levels at present. Some of the recent developmental activities are not directly related to climate change but nowadays

it has become such a buzz that everybody is trying to relate to climate change in some way or the other. This is, in part, also created by a sudden influx of climate change aid that has come into the country. There has been hardly any record or knowledge of who is doing what and how much finance has been put into projects and programmes. There is no real system for tracking whether a climate change project is adopting a community based approach or ecosystem based approach or within which policy frameworks they have been designed. There was a general feeling among the interviewees that although the climate change threat in Nepal is very high, they can effectively deal with it provided there is good coordination between different groups and sectors, political stability, donor harmonization and rapid implementation of existing policies.

As regards the opportunities or "facilitating" factors, the existence of documented policies – as mentioned earlier – is the main opportunity. Increasing flows of financial aid for dealing with climate change is also a plus point for the country. Similarly, there is quite high awareness between national level government officials and there have been an increasing number of activities in capacity building for integrating climate change into environmental management and development which facilitates building in-country capacity and negotiation skills. Another notable opportunity for integration of ecosystem and climate change is that civil societies are active in Nepal which puts a good check and balance on the process and content of policies that are formulated and implemented. Several civil society networks, including those with a climate change focus, are vibrant networks that have a prominent role to play in integrating ecosystem and climate change into policies, plans and programming. The following table highlights some of the barriers and facilitating factors for the integration of ecosystem and climate change into policies and plans:

Table 6: Opportunities and barriers for integration of ecosystem and climate change

	Opportunities / facilitating factors	Barriers
1.	Policy documents	Limited policy implementation
2.	Active civil societies	Limited coordination between line agencies; overlapping institutional arrangements
3.	Donor support for climate change is high	No donor harmonization
4.	Awareness is high (at least at central level); Indigenous knowledge	Limited access to information and knowledge
5.	Policies look good in isolation	Conflicting policies when multiple policies are considered
6.	New forms of governance in the country which promote and encourage inclusion and equity	Political instability; frequent changes in government administration
7.	People-oriented policies	Economic incentives are not institutionalized at local level; natural resource sectors not fully optimized for economic development
		High climate vulnerability

Organizations' points of view and next steps

At the end of the workshop, participants shared thoughts on two days of work and also about what they intend to do next. While for many of them analyzing drivers of change was not a new tool, they found scenario building exercise a good tool to predict realistic future scenarios. Some also found the governance action matrix to be a useful exercise to check what needs to be done given the likely future scenarios. Apart from the workshop methodology and tools, participants felt that it was an opportunity for them to share ideas with each other in the light of current adaptation work they

were doing. One of the organization representatives said that since each organization has its own objectives, mandate and niche of work, they normally do things on their own but this workshop provided him with the opportunity to see what adaptation work others are undertaking and how ecosystem-based approach fits into their work. Having like-minded partner organizations represented gave them the benefit of discussing in-depth environmental issues and what they need to do currently so that they reach a desirable future. The participants also said that the results of this workshop will help them to assess the current situation (or baseline) and consider how they can achieve optimum integration of ecosystem based adaptation into their work. One participant suggested that we need to try these methods and tools at VDC and DDC levels as well to see how communities and authorities at local level perceive climate and ecosystem issues.

Overall, the participants were in consensus that the way they are approaching climate change issues in Nepal looks satisfactory so far. As one participant said, "It is not always a gloomy picture when we talk about climate change. Climate change is mostly discussed as negatively impacting development but as we see from our group exercises, there seems to be a lot that we can do. There are areas we can work and make a difference."

Participants also provided suggestions for improvements in the workshop methodology in future. A few said that the workshop objectives were not clear to them and it focused entirely on the national level. It would be good to see how this methodology can be applied at VDC, DDC and community levels. For future exercises, the concept of "drivers of change" has to be clearly defined. It was confusing to the participants whether to look for positive or negative drivers of change. Participants also commented on the time management of the workshop and said that there should be sufficient time for analysis of drivers, governance elements and conducting the scenario back-casting exercise.

V. KEY MESSAGES

This study helped to provide clarity on ongoing efforts and actions in integrating ecosystem and climate change adaptation issues into Nepal's policies and plans. The study took a modest approach with the use of participatory tools that encouraged the participants to explore and understand climate adaptation issues at their own pace and by learning from the work and experience of others. There are mostly two extreme approaches to discussing climate change adaptation and environmental management issues. One is mostly very technical and the other approach always takes it as a general topic for discussion. But, the approach taken in this study helped participants to structure their thoughts and ideas piece by piece and with more analysis so that it did not appear too technical or too general. Many participants realized that they themselves were a good repository of knowledge on climate adaptation and natural resource management but were still struggling to gain more and more "right" knowledge. This suggests that there is a need for development and conservation communities to come together more often and share knowledge in a common forum. This would greatly boost the formation of a knowledge bank that they are trying to build. Moreover, there was a general feeling that came from the participants that climate change adaptation is all about how the current work is being communicated. All the environment and development related work links to climate change in one or the other way. It is mainly about thinking through and clearly communicating how a particular piece of work or activity addresses long-term climate change. In Nepal there is a high level of awareness and great enthusiasm for climate adaptation at all levels but there is a need to harness this positive energy in streamlining the activities for mainstreaming environment and adaptation into policies and development planning.

The main outputs of this study are:

- Analysis of drivers of change – for both development and environment
- Four qualitative scenarios for Nepal that consider future changes in select drivers and the governance system
- A governance-action matrix that captures the processes of change that need to occur in the governance system of Nepal in order to apply a more integrated approach (including ecosystem-based approaches) to climate adaptation and national development processes
- Existing opportunities to advance in the process of integration, while recognizing and accounting for the existing and future challenges

The outputs of this study will hopefully be useful to inform current discussions on climate change issues ongoing in the country, as well as ecosystem management strategies and climate adaptation planning, for example, the National Climate Change Policy and the implementation of the NAPA. The outputs can also be used by different government and non-government actors working to support the adoption of more integrated approaches to climate adaptation and development in Nepal. At the end of the workshop participants mentioned different ways in which their organizations can continue to work to move one level further in the process. They emphasised better communication and knowledge sharing, continuing to explore no-regrets measures and support for ecosystems conservation and environmentally sound management of natural resources, promotion of mainstreaming of adaptation considerations into national policies and plans, and support wide stakeholder involvement and consultation. This will ensure coordination and complementarity of actions aimed at adaptation and environment management in relevant sectors to avoid maladaptation. It will also promote continued research into climate change impacts and vulnerabilities to narrow the gap between current knowledge and policymaking needs.

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