

Implementing the Adaptation Plan

Implementation of the adaptation plan bridges the gap between the vulnerability assessment and adaptation itself. Community ownership of implementation processes is ensured by participatory planning processes with the involvement of all major stakeholders and local leaders.

Integrating Adaptation into Local Development Plans

In order to effectively address the longer term impact of climate change, community and local level adaptation plans must be integrated into local, sectoral, and national development planning. As stated in the Local Adaptation Plan of Action framework, local bodies are the best entry point for this and will be requested to ratify the incorporation of

adaptation initiatives into local-level development planning, including adaptation options to address the vulnerability of ecosystem at the landscape level.

Mainstreaming Climate Change

All development projects are influenced by climate change. The Hariyo Ban Program encourages actors in Nepal’s development sector to assess likely climate impacts and review program opportunities and challenges provided by climate change, to ensure that conservation and development move forward in a balanced manner. Hariyo Ban works with sectoral line agencies at the district level to bring climate change issues into mainstream sectoral planning processes.

Step	Purpose	Tools used
Assess vulnerability and resilience at the landscape/ river basin level	To determine vulnerabilities of critical human and natural systems at the larger landscape level; develop and prioritize adaptation interventions and strategies.	Updated Flowing Forward methodology (background studies, participatory stakeholder workshop, and expert opinions, etc.)
Assess the underlying causes of poverty and vulnerability at the Village Development Committee level	To identify vulnerable wards, communities and ecosystems.	Power and resource mapping; class, caste and dependency analyses; gender, mobility, timeline, and wage analyses, threat analysis.
Climate change sensitization	To raise awareness about the impacts of climate change.	Hazard analysis / trend mapping; climate scenario visioning exercises; climate change awareness campaigns.
Climate vulnerability and capacity assessment	To identify climate vulnerable communities, households and individuals in wards and villages, and ecosystem vulnerability.	Hazard mapping; vulnerability mapping; resource mapping; hazard and risk impact analyses; differential vulnerability matrix; participatory well-being ranking; ecosystem vulnerability analysis; climate information analysis and scenario planning; community visioning exercise; service provider analysis.
	To identify adaptation practices and actions that will reduce vulnerability to current and future climate change.	Coping and adaptation options analysis; prioritization of adaptation options.
	To support resource exploration and the efficient mobilization of resources.	Adaptation partnership mapping.
Formulation of adaptation plan	To prepare an adaptation plan.	Policy analysis; analysis of service providers; best practice sharing.
Formulation of participatory monitoring, evaluation, reflection and learning plan	To prepare a monitoring plan whilst keeping in mind the following questions: Are achievements matching expectations? Are they the right achievements? Are we using the right methods? Are we operating on a large enough scale?	Needs mapping; service provider analysis; adaptation visioning exercises; rainfall trend analysis; reflection sessions; behavior change journals; hazard response force field analysis.

The Hariyo Ban Program is named after the famous Nepali saying ‘Hariyo Ban Nepal ko Dhan’ (Healthy green forests are the wealth of Nepal). It is a USAID funded initiative that aims to reduce the adverse impacts of climate change and threats to biodiversity in Nepal. This will be accomplished by working with the government, communities, civil society and private sector. In particular, the Hariyo Ban Program works to empower Nepal’s local communities in safeguarding the country’s living heritage and adapting to climate change through sound conservation and livelihood approaches. Thus the Program emphasizes the links between people and forests and is designed to benefit nature and people in Nepal. At the heart of Hariyo Ban lie three interwoven components – biodiversity conservation, payments for ecosystem services including REDD+ and climate change adaptation. These are supported by livelihoods, governance, and gender and social inclusion as cross-cutting themes. A consortium of four non-governmental organizations is implementing the Hariyo Ban Program with WWF Nepal leading the consortium alongside CARE Nepal, FECOFUN and NTNC.



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Hariyo Ban Program

Promoting Climate Change Adaptation in Nepal

Background

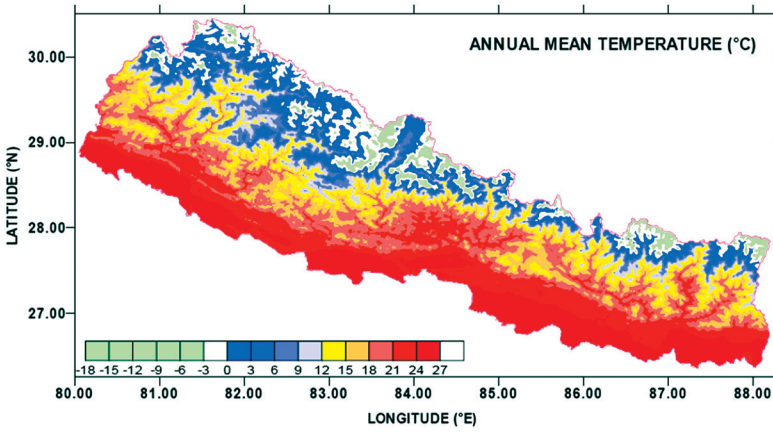
The Hariyo Ban Program climate adaptation component is designed to build on the experiences of the SAGUN¹ and SCAPES² programs managed by CARE and WWF; it also incorporates learning from other climate change adaptation initiatives around the globe. Hariyo Ban provides an excellent opportunity to better understand the nature of the climate change adaptation practices in poor communities. It also provides an opportunity to develop processes for community-led climate change adaptation that are rooted in locally appropriate institutions and linked to ecosystem services. In addition, the program will help to identify equitable and cost effective adaptation initiatives that will work in Nepal. In line with provisions made in the Government of Nepal’s Local Adaptation Plan of Action, the Hariyo Ban Program has piloted a number of tools which support the integration of sound ecosystem management and community adaptation to build climate change resilience of both people and natural systems.

This briefing paper focuses on the impact of climate change on Nepal’s poor; the impact of climate change on Nepal’s ecosystems; the integrated adaptation approach used by Hariyo Ban Program; and the adaptation strategies identified by the program that will increase community and ecosystem resilience.

Climate Change Today

Climate change³ is not just a distant threat but a clear and present danger – its economic impacts are already being felt. It is different from climate variability, which refers to short-term variations on the mean. Climate change affects many aspects of the climate, making rainfall less predictable, altering seasonal weather patterns, and increasing the likelihood of extreme weather events like high intensity storms, droughts, and hot or cold waves; and sudden glacial lake outbursts.

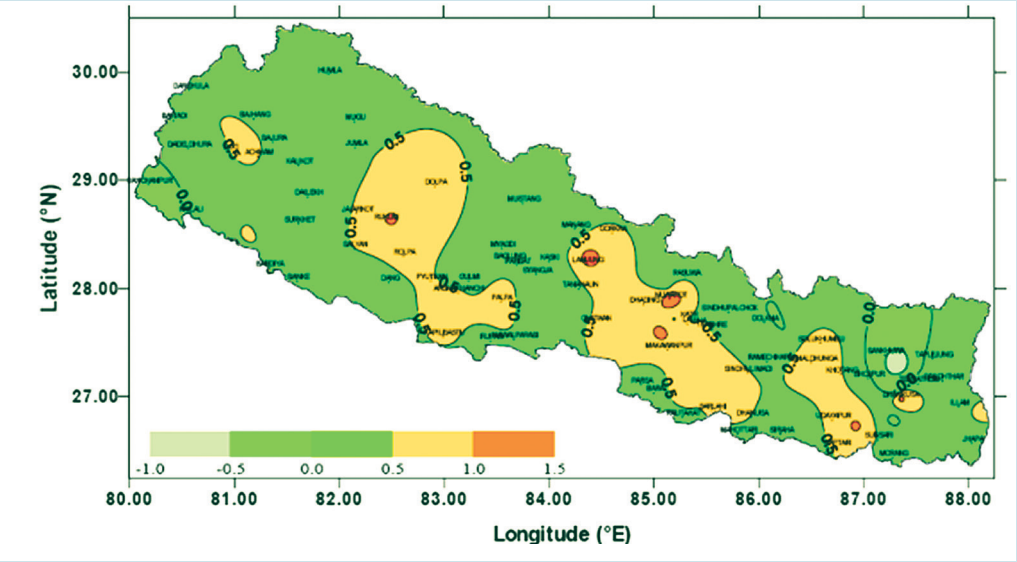
Temperature: Seasonal temperatures in Nepal are already increasing at a faster rate than the global average, and this trend is likely to continue. The mean annual temperature is projected to increase by an average of 1.2° C by 2030, 1.7° C by 2050 and 3° C by 2100 when compared to 2000 pre-baseline figure⁴. There is, however, also substantial seasonal and spatial variation in the projected temperature rise: winter temperatures show more of an increase than summer, with higher increases at higher altitudes.



Source: Department of Hydrology and Meteorology, Nepal

¹ Strengthened Actions for Governance in Utilization of Natural Resources (SAGUN) Program (2002-2006)
² Sustainable Conservation Approaches in Priority Ecosystems (SCAPES) program (2010-2014)
³ Climate change refers to any change in climate over time, whether due to natural variability or anthropogenic forces.
⁴ Ministry of Environment (2010). National Adaptation Plan to Climate Change, Kathmandu, Nepal . The projection was based on General Circulation Model run with SRES B2 Scenario.

Precipitation: Eighty percent of Nepal's annual precipitation falls during the monsoon season, which is expected to increase by 15 to 20 %, while winter rainfall is expected to decrease. Climate change is also likely to exacerbate the contrast between wet and dry seasons, a process that will culminate in rainy season downpours that are more extreme in both intensity and duration. In addition, higher temperatures, increased rates of evapotranspiration and decreased winter precipitation may increase instances of drought. Precipitation extremes are likely to be Nepal's most difficult and pressing climate change adaptation challenges.



Source: Department of Hydrology and Meteorology, Nepal

Climate Change Impacts

The impacts of climate change in Nepal are exacerbated by a combination of factors. These include the over-exploitation of natural resources, resulting in deforestation and forest degradation; the use of unsustainable farming practices; the haphazard construction of major infrastructure; rapid urbanization; poverty; air pollution; and growing energy demand. Nepal's low human development index rating and complex topography add to its vulnerability to climate change. Ongoing and projected changes in the climate are likely to have a range of impacts that will affect different sectors of the economy. Forestry and biodiversity are likely to be affected, as are agriculture, food security, water and energy, health, and urban/non-urban infrastructure. These changes will also increase the likelihood of climate induced disasters and will affect gender, caste, and ethnic groups in different ways.

Forestry and biodiversity: Forests, rangelands, wetlands, mountains and agro-ecosystems are affected by climate change in many different ways. The number of forest fires is likely to increase, as are incidences of forest die-back. The number of pests and pathogens, invasive species, and landslides are also likely to rise. Changes in climate will affect tree physiology, plant and animal phenology (timing of life cycle), forest growth, and biodiversity levels; these impacts will have knock-on effects on forest-dependent communities and society as a whole. Although the severity of these impacts will vary over different landscapes and ecosystems, change in period distribution and loss of species biodiversity can already be seen. In addition, ecosystem services (e.g. stabilization of slopes, provision of water supplies and other resources) are also affected in several areas of Nepal's forests.

Agriculture and food security: Higher temperatures and temperature variability have caused a shift in Nepal's agro-ecological zones and are leading to prolonged dry periods due to changes in rainfall patterns and exacerbated by high temperatures. High temperature and high intensity rainfall (a congenial environment for microorganisms) has also increased incidences of crop pests and livestock disease, resulting in productivity declines. Water scarcity, more erratic and intense rains, and flooding are taking a toll on the country's subsistence farming-based economy. Landslides and flash floods have already reduced the amount of land available for crops—a trend which is likely to continue into the future. Lowered levels of agricultural productivity pose a threat to food security in the country. Despite this gloomy prognosis, higher

temperatures will also create agricultural opportunities: fruit crops that thrive in a temperate climate such as apples can be grown at higher altitudes. With a moderate increase in temperature and precipitation, rice production could also increase across the country, as could wheat production in some western areas⁵.

Water resources and energy: Climate change impacts will also be seen in the water resource and energy sectors. The availability of water resources in terms of quantity (too much or too little), quality, and timing (seasonality) is likely to change significantly. This will affect agriculture, the energy sector, water supplies, and human health. It will also increase the likelihood of water-related disasters. Changes in river flow will have a direct impact on Nepal's hydropower projects, while increased incidences of forest fire pose a threat to the already diminishing fuel wood supply. On the positive side, biogas may operate at higher altitudes.

Human health: Climate change is also putting pressure on Nepal's over stretched health services by increasing the spread of infectious diseases. This is evident in the increase in the range, frequency, and severity of malaria, kala-azar, (black fever) and Japanese encephalitis cases (NAPA, 2010). In addition, climate change will decrease the potency and availability of medicinal plants, due to change in chemical composition⁶ and reduce the nutritional value of crops and pasture. Migration of communities due to extreme weather conditions has already started, and incidences of this are only likely to increase in the future.

Climate induced disaster: Nepal is extremely vulnerable to a range of hydro-meteorological hazards including floods, landslides, droughts, glacial lake outburst floods, debris flows, and events including extreme rainfall, and extreme hot or cold weather. Every year more than 1 million people are at risk from climate induced disasters in Nepal (NAPA, 2010).

Social impacts: Nepal's climate vulnerability is aggravated by its prevailing socio-cultural and institutional set-up. Although climate change will have differing impacts on specific groups of people, women, children and marginalized communities tend to have the lowest adaptive capacity. Any decline in the availability of water or firewood, or adverse changes in agricultural practices have a direct impact on the lives of women and other vulnerable groups.

Hariyo Ban Program Climate Change Adaptation Approach

Reducing the Threat of Climate Change by Promoting Adaptation Maplecroft (2011)⁷ places Nepal as fourth highest on its Climate Change Vulnerability Index. This vulnerability has led to greater hardships for many of Nepal's rural communities. On the current climate change trajectory, it is inevitable that climate change will continue to advance and have worsening impacts on Nepal's communities. It is therefore vital that urgent efforts be made to support communities and ecosystems to adapt to climate change. Time is running out. If we don't act now, future costs will be higher and impacts greater.

Adaptation initiatives require a context-specific analysis of vulnerability to climate change so that strategies can be developed that target the particular needs and priorities of stakeholders, particularly those from vulnerable groups. In line with its National Adaptation Program of Action (NAPA) on Climate Change, Nepal has adopted such an approach which incorporates meaningful inputs from a wide range of stakeholders, including those living in vulnerable communities and ecosystems. Despite this innovative approach to climate-vulnerability analysis and programming, significant capacity barriers have prevented initiatives from moving forward. As adaptation plans should be context and location specific, community level plans should first be formulated and then fed into the Local Adaptation Plan of Action framework, which allows for the identification of vulnerable wards, communities and households. As local programs are prepared by Village Development Committees or municipalities, the challenge here is to find ways to incorporate community level needs and adaptation options into village and municipal level plans. With this in mind, the Hariyo Ban Program is supporting vulnerable communities in the preparation, implementation and

monitoring of Community Adaptation Plans of Action. It is also assisting with the integration of community level plans and adaptation options into village or municipal level programs. This approach helps to ensure that the needs of women, the poor, and other socially excluded groups are better addressed, community ownership is enhanced, and implementation is fast, efficient and transparent. The process also helps communities to better articulate the climate related challenges they are facing, and to identify and prioritize community-based adaptation strategies.

The Hariyo Ban Program integrates two approaches to adaptation that are often thought of as quite separate, or even in opposition to each other: the Community Based Approach and the Ecosystem Based Approach. This integrated approach acknowledges both human rights and ecosystem principles⁸. It uses ecosystems to help vulnerable people increase resilience and adapt to climate change. At the same time, it recognizes that many ecosystems and the services they provide are themselves vulnerable to climate change, and identifies ways to build their resilience and avoid maladaptation⁹. In the Hariyo Ban Program, landscape, or river basin level vulnerability assessments are conducted using WWF's Flowing Forward approach¹⁰ which determines larger human and natural system vulnerabilities within the landscape. This information is used to inform community level vulnerability assessment and adaptation planning and integration into local development plans.

The Hariyo Ban Program makes the National Framework for Local Adaption Plans for Action¹¹ operational by supporting the development of community level adaptation plans and feeding them into the local level plans prepared by Village Development Committees and municipalities.

Preparing Local and Community Level Adaptation Plans

The Hariyo Ban Program aims to build the capacity of community groups (especially Community Forest User Groups) to take the lead in community adaptation planning. The adaptation plan preparation processes has the following stages: i) identification of vulnerable wards, vulnerable communities, and degraded areas; ii) sensitization of communities to the impacts of climate change; iii) assessment of climate vulnerability; iv) formulation of an adaptation plan; and v) preparation of a framework for participatory monitoring, evaluation, reflection and learning¹². The vulnerability assessment and adaption planning processes are presented in more detail in Table 1.



⁵ G. Malla (2008). Climate change and its impact on agriculture. The Nepalese Journal of agriculture and environment, Vol 9, June 2008.

⁶ Cavaliere, C. (2009). The effects of climate change on medicinal and aromatic plants, HerbalGram. 81:44-57. <http://cms.herbalgram.org/herbalgram/issue81/article3379.html?Issue=81>

⁷ http://maplecroft.com/about/news/ccvi_2013.html

⁸ Girot Pascal et al. (2012). Integrating community and ecosystem based approaches in Climate Change, ELAN Network.

⁹ An adaptation action that may give short term benefits, but ultimately leads to increased vulnerability to climate.

¹⁰ Updated guidance manual on the Flowing Forward approach currently in preparation by WWF.

¹¹ GON (2011). National Framework on Local Adaptation Plan of Action. Government of Nepal, Ministry of Environment, Singha Durbar.

¹² CARE (2012). Participatory Monitoring, Evaluation, Reflection, Learning for Community Based Adaptation: A Manual for local practitioners.