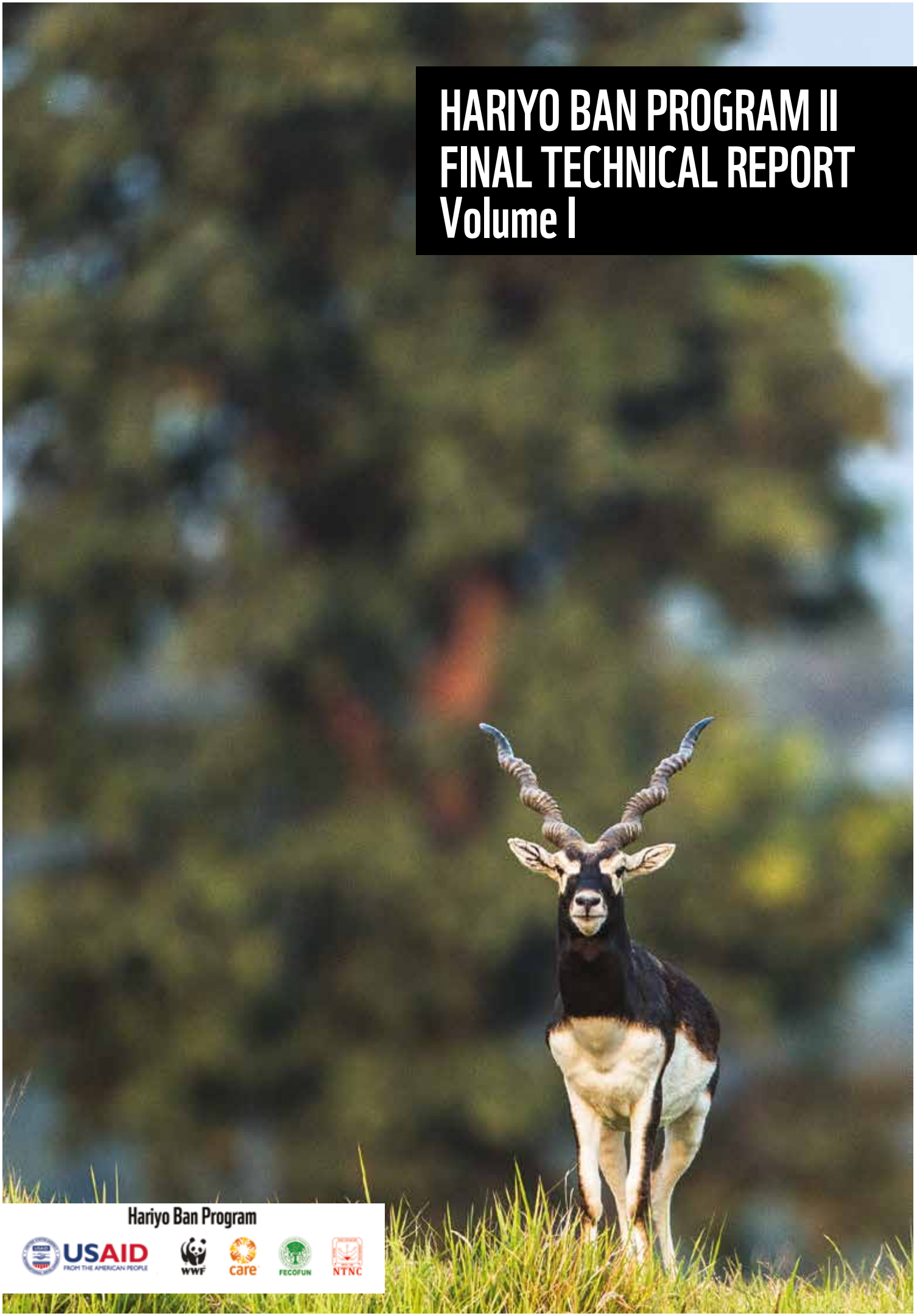
HARIYO BAN PROGRAM II
FINAL TECHNICAL REPORT
Volume I



Hariyo Ban Program

USAID FROM THE AMERICAN PEOPLE WWF care FECOFUN NTNC

This final technical report for Hariyo Ban Program, Phase II is submitted to the United States Agency for International Development Nepal Mission by World Wide Fund for Nature (WWF) Nepal in partnership with CARE, the Federation of Community Forest Users Nepal (FECOFUN), and the National Trust for Nature Conservation (NTNC), under Cooperative Agreement Number AID-367-A-16-00008.

Citation
Please cite this report as: WWF Nepal. 2021. Final Technical Report of the Hariyo Ban Program, Phase II. WWF Nepal, Hariyo Ban Program, Kathmandu, Nepal.

Cover Image © WWF Nepal, Hariyo Ban Program/Samir Jung Thapa

Production coordination: Santosh Pudasaini, WWF Nepal

October 2021

Uttari weeding cauliflowers planted with Hariyo Ban Program support in Pumdibhumdi, Kaski

CONTENTS

Padma Sunar, with the wildfire management tools provided by Hariyo Ban Program, Parkitole Baitada CFUG, Kanchanpur

ACKNOWLEDGMENTS

We would like to thank the many people who have played a wide range of roles in the Hariyo Ban Program during its second phase. Our deep appreciation goes to the many Nepal government officials who collaborated with the Program in several ministries and their departments, at federal, provincial, and local levels. They include the Ministry of Forests and Environment (MoFE), Ministry of Federal Affairs and General Administration, Ministry of Urban Development, and Ministry of Women, Children and Senior Citizens. While there are too many people to name individually, special thanks go to members of the Hariyo Ban Steering Committee and Working Group, and in particular to the Chairs of Project's Steering Committee, Dr. Bishwa Nath Oli and Dr. Pem Narayan Kandel as well as to the Program's focal points in MoFE, Dr. Krishna Prasad Acharya, Dr. Sindhu Dhungana, Prakash Lamsal and Shiv Wagle who provided immense support to strategically align the Program with the Government of Nepal (GoN) priorities and facilitated Program's implementation at federal, provincial, and local levels.

Hariyo Ban worked with several community-based organizations (CBOs) and community members including many women and many poor and marginalized people. CBOs included community forest user groups, buffer zone community forest user groups, conservation area management committees, leasehold forest user groups, cooperatives, community-based anti-poaching units, water user groups, women's groups, eco-clubs, farmers' groups, coordination committee members for local adaptation plans and sub-watershed management plan implementation and female community health volunteers. We also worked with networks and associations, including district and local chapters of the Federation of Community Forestry Users Nepal (FECOFUN), community forest coordination committees, and the National Network of Community Disaster Management Committees. Local communities, CBOs, and their networks were the backbone of the Program, and many of the results are due to their hard work, inspiration, and resilience.

We partnered with a number of local, national, and international nongovernmental organizations (NGOs) and private-sector organizations, which played a major role in Program implementation in many different ways at different levels. Several universities and other academic, training, and research institutions provided inputs for developing new knowledge and innovation, and for building capacity in traditional and new approaches. Many consultants made important contributions including assessments, evaluations, capacity building, policy inputs, and field work. Other donor-funded projects in the forestry, climate change, development, and humanitarian assistance sectors were important collaborators.

We are extremely grateful to the United States Agency for International Development (USAID) for funding Hariyo Ban and for technical guidance and financial support. Special thanks go to Mr. Netra Sharma (Sapkota), AOR (USAID Project Manager) for the Program, and Mr. Christopher Dege and Dr. Karl Wurster, Alternate AORs for the Program, for their continued technical, organizational, and management support throughout the life of the Program.

Hariyo Ban would not have been successful without the consortium partners, who over nearly ten years developed mutual trust and collaboration, working and learning together as we planned and produced Hariyo Ban's results and achievements. While it is not possible to name everyone here, we are especially grateful to Dr. Ghana Gurung in WWF Nepal who chaired the Program Management Committee and provided overall coordination for WWF's part of the Program; Shiv Raj Bhatta, who provided field coordination; and Ravi Pratap Singh and Kritika Bista, who provided operational oversight. Purna Bahadur Kunwar, Rupendra Ghale, Prahlad Khadka, and many other WWF-Nepal and WWF-US staff undertook program implementation and provided important technical and operational support. Thakur Chauhan and Dev Raj Gautam played key roles in overseeing and implementing Cooperative for Assistance and Relief Everywhere (CARE)'s activities. Ganesh Karki, Bharati Pathak, Bhim Bahadur Khadka, Birkha Bahadur Shahi, Thakur Bhandari, and other members of FECOFUN's Central Secretariat provided valuable leadership, and Suvas Devkota and Dr. Sita Aryal coordinated implementation of FECOFUN's activities. Dr. Siddhartha Bajra Bajracharya, Deepak Kumar Singh, Sarita Jnawali, Megh Dhoj Adhikari, Sikshya Adhikari Rana, Santosh Bhattarai and Bishnu Singh Thakuri, of the National Trust for Nature Conservation (NTNC) played key roles. Many other staff members of the consortium partners made valuable contributions, and we thank everyone for their commitment and their hard work.

Our special thanks go to Rajendra Lamichhane, Kanchan Thapa, Jagannath Joshi, Jagadish Chandra Kuikel, Sabitra Dhakal, Manorama Sunuwar, Gupta Bahadur KC, Sunil Shakya, Prasan Karmacharya, Shova Shilpakar, Suman Dhakal, Kapil Khanal, Ineej Manandhar, Amit Pradhan, Anita Adhikari, Dibya Karki, Kanti Adhikari, Gita Bham, Bidit Shah, Shailesh Bhattarai, Puran Prasad Chaudhary, Kailash Bishwakarma and everyone else on the Hariyo Ban core staff, a very dedicated and visionary team that worked long hours and went the extra mile working with the consortium to achieve Hariyo Ban's results. Judy Oglethorpe and Santosh Pudasaini deserve special acknowledgement for their untiring efforts from the beginning to bring the report to this stage.

Last but not the least, we would like to extend our heartfelt thanks to all honest, dedicated, and hardworking forest and watershed dependent communities, community forests and bufferzone user group members, cooperatives, women's groups, local NGOs and individuals who trusted us and helped us to implement the Program successfully in the field during the very challenging times of global history due to COVID 19 pandemic as well as natural calamities and socio-political uncertainties in Nepal.

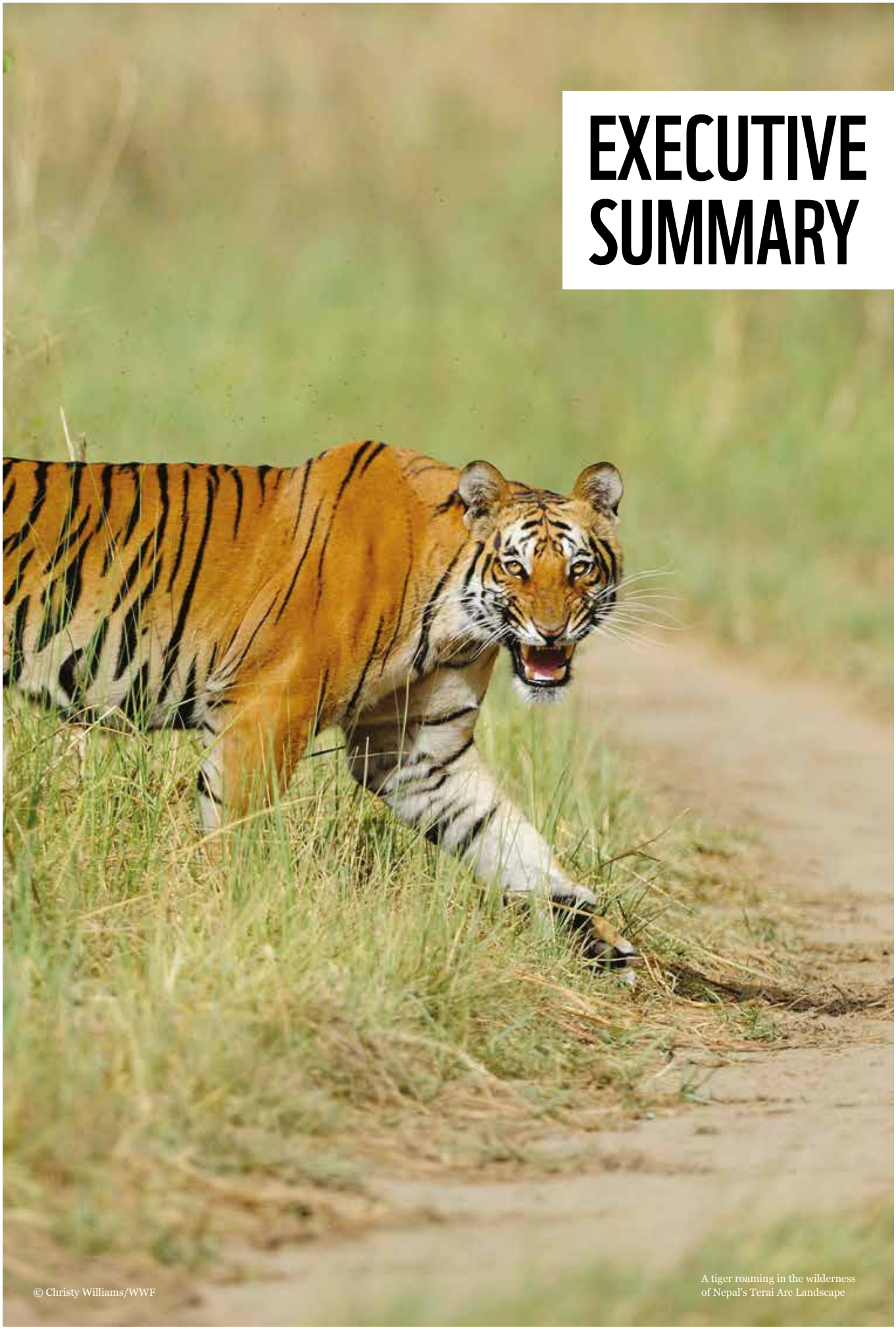
SHANT RAJ JNAWALI, PHD, CHIEF OF PARTY
SANDESH SINGH HAMAL, DEPUTY CHIEF OF PARTY

ACRONYMS AND ABBREVIATIONS

BZCFUG	Buffer Zone Community Forest User Group
CAMC	Conservation Area Management Committee
CAPA	Community Adaptation Plan for Action
CARE	Cooperative for Assistance and Relief Everywhere
CBAPU	Community Based Anti-Poaching Unit
CBO	Community Based Organization
CCA	Climate Change Adaptation
CFDG	Community Forest Development Guideline
CFOP	Community Forest Operational Plan
CFUG	Community Forest User Group
CHAL	Chitwan-Annapurna Landscape
CLAC	Community Learning and Action Center
COVID-19	Coronavirus Disease 2019
CSO	Civil Society Organization
CWES	Child and Women Empowerment Society
CWT	Combating Wildlife Trade
DCC	District Coordination Committee
DFID	Department for International Development
DFO	Division Forest Office
DHM	Department of Hydrology and Meteorology
DIARP	Differential Impact Assessment and Response Planning
DNA	Deoxyribonucleic Acid
DNPWC	Department of National Parks and Wildlife Conservation
DoFSC	Department of Forests and Soil Conservation
DPRP	Disaster Preparedness and Response Plan
DQA	Data Quality Assessment
DRR	Disaster Risk Reduction
DSCWM	Department of Soil Conservation and Watershed Management
EWS	Early Warning System
F	Female
FECOFUN	Federation of Community Forestry Users Nepal
GBV	Gender-Based Violence

GESI	Gender Equality and Social Inclusion
GoN	Government of Nepal
ha	Hectare
HH	Household
HPPN	Hydropower Promoters' Network
HVC	High-Value Crop
HWC	Human Wildlife Conflict
ICA	Institutional Capacity Assessment
ICB	Institutional Capacity Building
ICCA	Initiatives for Climate Change in Asia
ICIMOD	International Centre for Integrated Mountain Development
IGA	Income Generating Activity
ISWMP	Integrated Sub-Watershed Management Plan
IUCN	International Union for Conservation of Nature
km	Kilometer
LAPA	Local Adaptation Plan for Action
LCPV	Lake Cluster of Pokhara Valley
LDCR	Local Disaster and Climate Resilience
LDCRP	Local Disaster and Climate Resilience Plan
LHFUG	Leasehold Forest User Group
LI-BIRD	Local Initiatives for Biodiversity, Research, and Development
LRP	Local Resource Person
m	Meter
M	Men
M&E	Monitoring and Evaluation
MCA	Manaslu Conservation Area
MEL	Monitoring, Evaluation, and Learning
MESMaN	Marshyangdi Ecosystem Services Management Network
MoFE	Ministry of Forests and Environment
MoFSC	Ministry of Forests and Soil Conservation
NA	Not Applicable
NAP	National Adaptation Plan
NCCSP	Nepal Climate Change Support Program
NGO	Non-governmental Organization
NIRBSAP	National Integrated River Basin Strategy and Action Plan
NP	National Park
NRM	Natural Resource Management
NRs	Nepali Rupees
NTFP	Non-Timber Forest Product
NTNC	National Trust for Nature Conservation
PES	Payments for Ecosystem Services
PHPA	Public Hearing and Public Auditing
PITT	Performance Indicator Tracking Table
PVSE	Poor, Vulnerable, and Socially Excluded
PWBR	Participatory Well-Being Ranking
RECOFTC	Regional Community Forestry Training Center for Asia and the Pacific
RM	Rural Municipality
SAGUN	Strengthened Action for Governance Utilization Nepal
SCAPES	Sustainable Conservation Approaches in Priority Ecosystems
SERVIR-HKH	SERVIR-Hindu Kush Himalaya
SGP	Small Grants Program
SWC	Social Welfare Council
SWCC	Sub-Watershed Coordination Committee
TAL	Terai Arc Landscape
US	United States
USD	US Dollar
USAID	United States Agency for International Development
USG	United States Government
WCCB	Wildlife Crime Control Bureau
WOO	Windows of Opportunity
WWF	World Wide Fund for Nature

EXECUTIVE SUMMARY



© Christy Williams/WWF

A tiger roaming in the wilderness of Nepal's Terai Arc Landscape

This is the final report of the second phase of the Hariyo Ban Program. “Hariyo Ban” means “green forests” in Nepali. Hariyo Ban was a United States Agency for International Development (USAID)-funded initiative implemented by a consortium comprising World Wide Fund for Nature (WWF) (lead organization), Cooperative for Assistance and Relief Everywhere (CARE), National Trust for Nature Conservation (NTNC), and the Federation of Community Forestry Users Nepal (FECOFUN). The first phase of the Program (Hariyo Ban I) ran from 2011 to 2016, and the second phase (Hariyo Ban II) from 2016 to 2021.

Hariyo Ban Program II goal was to increase ecological and community resilience through improvement of biodiversity conservation, sustainable management of forests and watersheds, and reduction of climate change vulnerabilities in two conservation landscapes of Nepal - the Chitwan-Annapurna Landscape (CHAL) and the Terai Arc Landscape (TAL). Building on the first phase of the Program (Hariyo Ban I, 2011 to 2016), the second phase ran from 2016 to 2021. The specific objectives of the five year program were to

- Improve the conservation and management of Government of Nepal-identified biodiverse landscapes – CHAL and TAL
- Reduce climate change vulnerabilities in CHAL and TAL

Besides components on biodiversity conservation and climate change adaptation, the Program had cross-cutting themes on market-based livelihood opportunities, gender equality and social inclusion, and governance.

The main theory of change of Hariyo Ban II was as follows: "If stakeholders are better able to conserve and benefit from biodiverse natural resources and adapt to climate change in a manner that diversifies livelihood options, improves gender equality and social inclusion, and promotes good natural resource governance, then people and ecosystems in the target landscapes will be more resilient."

The main beneficiaries of the Program were local communities and groups in the two landscapes, with a focus on poor, vulnerable, and socially excluded (PVSE) people, including users from natural resource management (NRM) groups and their networks, women, Dalits, Janajati and Indigenous peoples, and local resource persons (LRPs). The Program also partnered with federal, provincial, and local governments in the two landscapes, as well as with nongovernmental partners, the private sector, and media.

The Program worked in two very contrasting landscapes. CHAL covers 32,090 square kilometers (km^2) and occupies all of the Gandaki river basin in Nepal. This highly diverse landscape ranges from the tropical lowland of Terai, 200 meters (m) above sea level on the Indian border in the south, to mountains over 8,000 m high in the Annapurna range and the cold, dry trans-Himalayan region to the north, bordering the Republic of China. It is drained by several major rivers and contains six protected areas. About 35.5% of CHAL is covered by forests. It is home to over 4.5 million people of diverse ethnicities, cultures, and religions, and many rural communities are dependent on natural resources for their livelihoods and well-being. Rapidly expanding infrastructure development including hydropower projects, local roads, highways, and new urban settlements will play a major role in shaping the landscape in years to come.

HARIYO BAN II THEORY OF CHANGE

If stakeholders are better able to conserve and benefit from biodiverse natural resources and adapt to climate change in a manner that diversifies livelihood options, improves gender equality and social inclusion, and promotes good natural resource governance, then people and ecosystems in the target landscapes will be more resilient.

TAL is a low-lying transboundary landscape spanning between Nepal and India. The Nepal portion covers 24,710 km^2 and stretches from the Bagmati River in the east to the Mahakali River on the western Indian border, taking in part of the Churia range in the north and the low-lying Terai in the south. It overlaps with CHAL in the Barandabhar complex, which includes Chitwan National Park. TAL is home to several endangered or vulnerable wildlife species including the one-horned rhinoceros, Bengal tiger, Asian elephant, and blackbuck. TAL has over 7.5 million people representing more than 45 ethnic groups and Indigenous communities; nearly 20% live below the poverty line, and many in rural areas are dependent on forest resources. Rapid population growth in parts of the Terai, expanding infrastructure development including expansion of the east–west highway, and future construction of an east–west railway will shape TAL over the next few decades.

Hariyo Ban employed a landscape and river basin approach to tackle threats to biodiversity and climate vulnerabilities of people and nature. Interventions were guided by the government's 10-year landscape conservation strategy and action plan in each landscape. In TAL, the Program focused interventions in key protected area complexes to restore and conserve corridors and critical habitats, control wildlife crime, establish original assemblages of herbivores, and reduce human-wildlife conflict (HWC), working to promote climate adaptation for people and nature, improve socioeconomic conditions, and strengthen local stewardship of forests and watersheds. In CHAL, it consolidated interventions to improve both biophysical and socioeconomic conditions in critical catchments and north–south corridors with a major focus in three sub-river basins (Seti, Marshyangdi, and Daraundi) to maintain or restore natural processes, ensure upstream-downstream linkages, and promote climate adaptation for people and nature, working closely with local groups.

Globally, Nepal is among the countries most vulnerable to climate change, which is advancing rapidly in the Himalayas. It has globally recognized biodiversity, and its ecosystems provide key ecosystem services to Nepal's people. Hariyo Ban operated in a rapidly changing political, economic, and social context in Nepal. During the five years of Phase II, there were major floods in the Terai. Nepal held local and national elections in 2017, government was restructured, and the coronavirus disease 2019 (COVID-19) pandemic began in 2020. In the previous 20 years, the country went through a 10-year Maoist insurgency; became a republic, with the termination of the monarchy; experienced a major earthquake; and saw the adoption of a new constitution. These events had profound effects that will continue to shape the social, economic, and political setting in the country and the two landscapes for decades to come.

Hariyo Ban was in a remarkable position to provide support as Nepal rolled out the new constitution and restructured government. The Program collaborated with and supported all three levels of government (federal, provincial, local) to formulate a range of policy documents, providing inputs from its previous work which were in many instances incorporated into local government plans. The Program also helped build capacity of new local government units in it's two landscapes through trainings.

BIODIVERSITY CONSERVATION

Hariyo Ban identified threats and climate vulnerabilities to biodiversity, ranking threats to focal species, corridors, biodiversity-important areas, protected areas, sub-river basins, and landscapes. Key threats to biodiversity include unsustainable harvest of natural resources, wildlife poaching and illegal trade, encroachment into forest lands, degradation of habitats due to encroachment of invasive alien plant species, and poorly planned infrastructure. Erratic rainfall, flash floods, prolonged droughts, forest fires, and landslides are among the many climate hazards that impact biodiversity in both landscapes. Result chains (theories of change) were developed to identify threat causality and aid decision-making about where to intervene along the chain and tackle priority threats. Four complexes in TAL and three sub-river basins in CHAL were identified as working sites, spread across 15 districts. Provisions for land and water corridors, sound river basin management, and climate refugia were incorporated into climate-smart landscape approaches to facilitate species conservation and continuation or restoration of ecosystem functions. Curbing wildlife trade was a strategic focus in Hariyo Ban II, tackling poaching and illegal wildlife trade strategically in core areas and along identified trade routes in both landscapes.

Hariyo Ban tackled priority threats in partnership with the Government of Nepal (GoN), local communities, and other stakeholders. Since forest-dependent communities are key stewards of biodiversity, governance and gender equality and social inclusion (GESI) were mainstreamed across the component to improve community forest management and ensure active participation and benefits for marginalized people. The Program had a major focus on improving local livelihoods through establishment of market-based enterprises and skill-based training to increase employment opportunities outside forests, with the aim of reducing poverty and unsustainable pressure. The first phase had built much capacity to tackle threats, and the second phase capitalized on this. When the policy environment was a significant limiting factor, Hariyo Ban supported GoN in improving it. The Program also worked to enhance understanding of focal species, ecosystems, and landscapes to inform and improve management. Linkages with local governments helped leverage financial resources, and NRM groups' revolving funds established in the first phase played a useful role in promoting market-based livelihood options.

Key results[1] in the biodiversity conservation component–many of them achieved through partnerships–included significant increases in tiger and rhino populations in TAL, re-establishment of herbivore assemblages in certain TAL protected areas, 970,524 hectares (ha) of biologically significant areas under improved natural resource management, and 50,826 ha of biologically significant areas showing improved biophysical condition. Six transboundary corridors in TAL have evidence of large mammal dispersal in the past 10 years, and a newly designated Ramsar site, the Lake Cluster of Pokhara Valley, is under management. HWC-prevention measures benefited 646 households; 415 community-based anti-poaching units' capacities were

1 All results are for Phase II unless stated otherwise.

Tiger numbers increased from 198 to 235 between 2013 and 2018

Rhino numbers increased from 645 to 752 between 2015 and 2021

Blackbuck numbers in Shuklaphanta National Park increased from 28 to 150 between 2012 and 2021; the population is now viable

Large herbivore assemblages re-established —rhino, wild water buffalo, swamp deer, and blackbuck reintroduced within their former ranges in TAL

415 community-based anti-poaching units capacitated and engaged in gathering information

3,996 people from nonconventional sectors including 769 customs and postal officers, and 2,968 transportation workers trained/ sensitized in combating wildlife trade

Forest cover in CHAL increased by 13% over the past 10 years

970,524 ha of biologically significant areas placed under improved natural resource management

enhanced and mobilized; and unconventional partners, such as customs, postal, and transportation workers, received training in combating wildlife trafficking. The Green Road Engineering Training Manual, supported by Hariyo Ban, is being used to train local government engineers in sound practices; the Wildlife Friendly Linear Infrastructure Guideline (in the approval process in 2021) will help reduce wildlife impacts of linear infrastructure; the effectiveness of wildlife crossings and underpasses on main roads was studied for future application; and guiding fences reduced wildlife drownings in the Sikta irrigation canal.

LIVELIHOODS

The livelihoods work in Hariyo Ban II supported a large number of people living in buffer zones, conservation areas, and corridors in order to improve their lives, including forest-dependent poor people, women, Dalits, and marginalized people. The program catered to people from a wide range of socioeconomic situations by supporting small and medium scale enterprises for block planting of high-value crops (HVCs) and non-timber forest products (NTFPs), and large-scale ecotourism enterprises. Economic benefits were improved for 30,270 people living in critical parts of the landscapes as a result of enterprises supported by Hariyo Ban, and communities earned Nepalese rupees NRs 149.7 million (USD 1,352,064[2]). The Program also supported vocational training for 389 forest-dependent youth; 68% of them subsequently found employment, 40% started their own businesses, and many reported reduced dependencies on forests.

CLIMATE CHANGE ADAPTATION

The Program's approach to adaptation integrated community and ecosystem adaptation as well as disaster risk reduction (DRR). It focused on poor, vulnerable, and socially excluded communities and used improved ecosystem services to help them increase their resilience and adapt to climate change. Recognizing that many ecosystems and the services they provide are themselves vulnerable to climate change, the Program worked to build their resilience. Since adaptation does not take place in a vacuum, Hariyo Ban mainstreamed it into other Program components to make them climate smart.

The component worked at multiple scales to accommodate natural processes and the three tiers of government. At the community and municipality levels, Hariyo Ban used bottom-up planning with communities, local governments, and other partners to assess local vulnerability, and design and implement adaptation plans. The process took into account differential vulnerability of women, senior citizens, poor people, and marginalized groups, and focused on community forests, municipality wards, and sub/micro-watersheds, with interventions that often covered several sectors. Support to integrate and mainstream adaptation and DRR in local-level planning processes was a major thrust, particularly after federal restructuring and election of local governments. Adaptation plans prepared in the first phase

2 Exchange rate: USD 1 = NRs 110.70 (average of five years: July 2016–March 2021).

50,826 ha of biologically significant areas showed improved biophysical condition

Fire insurance scheme expanded to all 77 districts

30,270 people living in critical parts of the landscapes had improved economic benefits, and communities have earned NRs 149,673,494 (USD 1,352,064)

Climate Adaptation interventions in Phase II directly or indirectly reached 151,075 beneficiaries

Supported in implementation of 78 LAPAs and eight ISWMPs

Supported Climate-smarting of six protected area management plans

Supported in development of National Integrated River Basin Strategy and Action Plan

were revised to align with the restructuring of local bodies, and new adaptation plans were prepared at the municipality level; plans were mainstreamed into local planning processes to ensure ownership and sustainability and to leverage funding. The plans were primarily implemented in corridor bottlenecks and degraded forest areas of the Seti sub-river basin and Barandabhar corridors, contributing to conservation by protecting water sources, stabilizing slopes, and reducing impacts on downstream human as well as ecological communities.

At larger scales, work on vulnerability assessment, resilience building, and adaptation was undertaken for protected areas, corridors critical for species movement, and landscapes. The Program supported mainstreaming of climate resilience building and adaptation in the implementation of GoN's TAL and CHAL strategies. Hariyo Ban invested significantly in capacity building as a prerequisite for implementation of adaptation plans, mainly through training, orientation, and exposure visits.

Climate adaptation interventions in Phase II directly or indirectly reached 151,075 beneficiaries (75,840 males and 75,235 females). The Program supported implementation of 78 local adaptation plans of action and eight integrated sub-watershed management plans, as well as the updating of six protected area management plans to include climate-smart components, with GESI-friendly tools and technologies that focused on reducing vulnerability and drudgery of women and marginalized people. It developed and promoted a differential impact assessment and response planning framework and helped to form and strengthen 19 disaster management committees. Hariyo Ban supported preparation of an approach paper on Integrated River Basin Management by the Department of Soil Conservation and Watershed Management (DSCWM), which became the basis for initiating formulation of National Integrated River Basin Strategy and Action Plan (NIRBSAP) by Ministry of Forests and Environment (MoFE) and National Planning Commission. Flood hazard mapping in collaboration with the Department of Hydrology and Meteorology (DHM) in the Seti sub-river basin helped inform local and provincial governments about areas with highest flood risk along the Seti River.

121,008 people supported using climate information or implementing risk-reducing actions to improve resilience to climate change

91 drinking water schemes and **26 irrigation schemes** supported

19 disaster management committees formed and strengthened

GOVERNANCE

The governance theme focused on two broad areas: building capacity of NRM group institutions, improving their internal governance; and improving policy and enabling environment to better conserve biodiversity and adapt to climate change. There was a strong focus on mainstreaming governance interventions with the Program's biodiversity, climate change adaptation, and livelihood work. The Program also helped build NRM groups' capacity to mobilize internal funds and leverage resources from other sources and expand the negotiating space with other stakeholders to promote accountability and engage in policy advocacy. Well-established groups mobilized to strengthen the capacity of emerging groups. Capacity building of women, Dalits, and marginalized people were scaled up to promote their meaningful

75% of 387 natural resource management groups with improved capacity and/or performance

NRs 68.5 million (USD 618,497) leveraged by 125 NRM groups from the federal government, local government/ ward offices, DFOs, and NGOs for conservation, adaptation, and group management purposes

representation and leadership. In support of this work, existing governance tools were bundled so that they could be applied effectively as a package.

Key governance results included 291 NRM groups with improved capacity and/or performance. NRM groups have greater capacity to advocate with their elected local government representatives for support and services; and NRs 68.5 million (USD 618,497) was leveraged by 125 NRM groups from federal government, local government/ward offices, division forest offices (DFOs), and NGOs for conservation, adaptation, livelihood improvement, and group management purposes. More than 60 plans, policies, regulations, and administrative procedures related to biodiversity and climate change were formulated and/or implemented at the local, province, or federal level with support from Hariyo Ban.

GENDER EQUALITY AND SOCIAL INCLUSION

The Program adopted two broad approaches: GESI mainstreaming in Hariyo Ban's two result areas to ensure that they actively benefited and empowered poor and marginalized people and women; and GESI stand-alone initiatives that went beyond the two components to tackle specific GESI issues in Nepali society where Hariyo Ban had a comparative advantage to take action. The GESI theme also collaborated with the governance theme, for example in ensuring active participation and benefit sharing by women and by poor and marginalized people in NRM groups. The Program developed GESI mainstreaming guidelines in Nepali and English, and all frontline consortium staff members and partners received orientation on the guidelines. The Program annually measured progress on GESI actions through the GESI Report Card and assessed GESI outcomes periodically. Thirty-four new community learning and action centers (CLACs) were formed and mobilized in Phase II, and 61 existing CLACs were given further support, including capacity building of women and marginalized leaders to tackle GESI issues.

Representation of women in executive positions in Hariyo Ban-supported NRM groups increased from 45% to 50% during the second phase, and the proportion of leadership positions in community management entities filled by a woman or member of a vulnerable group increased from 72% to 87%. Over 3,000 people were trained in GESI leadership, including men and decision-makers, and 117 anti-gender-based violence (anti-GBV) networks were created to tackle GBV issues at the local level. FECOFUN plans to scale this out in the other 77 districts of Nepal. The rate of incidence of GBV and other harmful social practices was reduced locally as a result of GESI interventions; initiatives against practices such as early child marriage and *chhaupadi* (isolation of menstruating girls and women) are now being scaled out at the local level.

Improvement in social inclusion and governance of NRM groups resulted in more equitable benefit sharing from natural

More than 60 plans, policies, regulations, and administrative procedures related to biodiversity and climate change formulated and/or implemented at the local, province, or federal levels

102 community-level institutions capacitated to promote the use of leaf bags for vegetable production and yam farming in sacks by poor and vulnerable farmers

34 new CLACs formed and mobilized in Phase II; and 61 existing CLACs given further support

117 anti-GBV networks created to tackle GBV issues at the local level

3,064 people trained in GESI leadership, including men and decision-makers

Representation of women in executive positions in Hariyo Ban-supported NRM groups **increased from 45% to 50%**

Blackbuck at Hirapurphanta

resource management, which ultimately helped improve the livelihoods of women and marginalized people.

OVERARCHING ACTIVITIES

Hariyo Ban II had a Small Grants Program (SGP), which aimed to ensure innovation, capacity building, applied research, innovative science and technology, piloting of new approaches/tools, and filling of gaps in regular programs, focusing on ecological and community resilience building in CHAL and TAL. The SGP had four major components: (i) student research grants, (ii) civil society organization grants (CSO) and private-sector grants, (iii) government agency grants, and (iv) disaster response and management grants. One hundred eighty-eight students in Phase II received support for academic field research. Government agencies received 30 grants to build capacity, review and formulate policy, and fill critical gaps in the program budget, and CSOs and private-sector organizations received 30 grants.

The Program's communications strategy aimed to enhance the understanding of key audiences about threats to biodiversity conservation and the importance of climate change adaptation. The Communications Unit focused on documenting and communicating Hariyo Ban's results, impacts, and learning; raising awareness on key issues to promote good practices; and enhancing communication skills of field staff, implementing partners, community members, and media personnel.

A monitoring, evaluation, and learning (MEL) approach was an integral part of the Program, which has been guided by the principles of results-based management to improve overall program effectiveness through adaptive management. The MEL approach closely followed the elements embedded in the development hypothesis and the theories of change. MEL was instrumental in improving Program performance and institutional accountability through periodic monitoring of field implementation and institutional monitoring of implementing partners, grantees, and consortium partners. Evidence of change was collected, informing the Program team, consortium partners, and USAID on performance

monitored through Program indicators. MEL activities included field monitoring; midterm and final evaluations; review, reflection and learning; documentation; data acquisition and management; and performance reporting.

LEARNING

Hariyo Ban's multi-sectoral nature and integrated approach equipped it well to deal with the complexity it faced. The complementarity of consortium partners enabled innovation, flexibility, and breadth of operation at multiple scales. Partnerships across sectors and at multiple scales were essential for Hariyo Ban's success, but they took time to establish and grow. Government ownership and leadership were essential; there were tremendous opportunities to work with new local governments, although capacities needed to be strengthened. Community partnerships worked best when communities led the implementation of activities; active community involvement in design, planning, and implementation of interventions ensured they owned the process and interventions were directly relevant to them. Policy support should be provided to both government and civil society organizations to ensure development of pragmatic policies, with government demonstrating accountability and CSOs facilitating citizen inputs. It was a challenge to reconcile landscape and jurisdictional scales; while ecological processes work at multiple scales including landscape, river basin, critical watershed, and corridor, government works at district, province, and municipality levels. A 10-year time frame was valuable for partnerships but short for producing tangible conservation results at the landscape and river basin levels.

The following biodiversity conservation lessons were learned: climate-smarting biodiversity conservation approaches was critical to risk management; effort was needed to maintain active and vibrant community based anti-poaching units (CBAPUs); capacity building of non-traditional partners (customs, postal, and transport personnel) to combat wildlife crime needed to be tailored to their convenience; and HWC relief funds required a reliable replenishment source and should be accompanied by preventive efforts.

Livelihoods lessons found that multiyear technical and financial support was important for the success of small-scale enterprises; medium-scale and large-scale enterprises required early stakeholder engagement and sound business practices for long-term success; enterprises needed to meet the requirements and preferences of the private sector; and follow-up support was needed for skill-based training.

Climate change adaptation lessons revealed that while benefits of working at the watershed scale were clear, encouraging local governments to invest in long-term ecological and adaptation processes was challenging. Stakeholder engagement and establishment of watershed institutions at different levels were challenging but resulted in successful integrated watershed management. Setting up payments for ecosystem services (PES) schemes required a lot of effort and continued to be challenging, particularly due to the absence of a formal policy framework; in complex situations, it may be easier to develop simpler incentives schemes. Special focus on differential impacts of climate change was key to building resilience of the most vulnerable people.

Governance lessons identified that capacity building of many local groups was key for their success. Support for policy advocacy was a powerful process to influence policymakers. The reflective approach led to greater inclusion but had challenges; since the voluntary process required transparency and accountability from executive committee members. Some NRM groups dropped out when their leaders faced difficult questions from users during the institutional capacity assessment (ICA). Scaling up capacity building by mobilizing mature groups to help other groups was successful at the municipality level, providing a good opportunity for FECOFUN to replicate successful governance approaches.

GESI lessons found that CLACs were an effective mechanism to organize and empower women and marginalized people to ensure their rights. Promotion of GESI in community NRM groups is effective, though there are limitations, including the risk of excluding some vulnerable people if they are not members of the group. Engaging decision-makers and male champions is often a critical step to ensure success. GESI mainstreaming in key partner organizations made GESI implementation more effective across the Program.

CHALLENGES

Hariyo Ban II faced many challenges, including external factors such as harmonizing the work of the Program with the new federal system and coping with the COVID-19 pandemic. Also, there were extremely high expectations for Phase II on the part of the government and the public, which the Program had to manage. The lower budget of the Hariyo Ban II meant the Program had to stretch funds to complete its work in the two landscapes. Staff turnover during the latter part of the Program had a significant impact on field implementation.

Biodiversity and livelihoods challenges included difficulty documenting evidence of the linkages between improving market-based livelihoods and enhancing biodiversity conservation, as well as challenges sustaining the component's achievements under changing threat dynamics. The climate change adaptation component faced the difficulty of working in a policy gap because the National Adaptation Plan (NAP) with its long- and medium-term climate change adaptation (CCA) strategies and actions had not yet been endorsed and rolled out by government. Unclear communication, coordination, and joint working mechanisms across the tiers of government and the lack of an integrated watershed management unit in the local governments were some additional problems. Lack of a comprehensive policy on PES made it difficult to scale out sustainable financing mechanisms for integrated watershed management.

The GESI theme found it challenging to bring the perspectives of women and marginalized people to district-level forums. Due to out-migration of youth and men from rural areas, women are taking on more responsibility for forest management, but they are still not fully trusted to engage in biodiversity conservation activities. While CLACs have been crucial in enhancing access

of women and marginalized people to natural resources and benefit sharing, not all CLACs can continue these social transformation efforts, as they lack financial resources and capacity to mobilize on their own. Governance challenges included the need to harmonize forest and conservation policies across the three tiers of government to reduce gaps and inconsistencies; the need to mainstream the NRM groups' institutional capacity-building process in relevant government agencies' regular plans to ensure replication and sustainability; and the lengthy time involved for policy advocacy.

SUSTAINABILITY AND LEGACY

Much of Hariyo Ban's work was designed with a view of promoting sustainability; for example, through the huge amount of capacity building the Program undertook to continue the work once the Program's technical assistance ended. The Program worked towards ecological sustainability by ensuring its interventions were embedded in sound ecological approaches, planning for both current and future conditions, including climate change. The promotion of democratic stewardship and leadership by local communities in many of the Program's interventions and tangible and equitable benefits for community members that improve lives and build resilience have helped create social sustainability. Capacity building for enhanced governance has helped ensure effective functioning and long-term sustainability in a range of local NRM institutions. Hariyo Ban worked on sustainable financing mechanisms for several of the approaches it supported to enable them to continue and scale out beyond the life of the Program. Engaging with all three tiers of government has enhanced sustainability by creating a more enabling policy environment.

The Program's legacy encompasses results and achievements that were innovative; had local, regional, national, and/or global significance; added value; and presented opportunities to scale up. The legacy will play a significant role in sustaining and upscaling Program results and impacts. Major legacy items have been documented in policy documents, reports, publications, and/or video.

CONCLUSION

In its five years of operation, Hariyo Ban II made great strides building resilience of ecosystems and people in the two landscapes. By the end of the Program, implementation of the second TAL Strategy and Action Plan (2015–2025) was well underway, and the first CHAL Strategy and Action Plan (2016–2025) were rolled out. The Program was largely successful in implementing planned activities; it attained and, in some cases, exceeded the majority of targets set in its MEL plan: 78% of targets were fully achieved or exceeded, 14% had 90%–99% achievement, 6% were below 90%, and reporting of one target was canceled, as it was no longer relevant in the changing context. Working across several different sectors and having an integrated approach across its components enabled Hariyo Ban to deliver impacts over a range of result areas at different scales. The Program adapted when the government was restructured, able to work closely with local municipalities as well as provincial and federal governments; it also adapted its way of working during the COVID-19 pandemic. Much of the Program's work was geared toward ensuring that partners and stakeholders could continue and scale out successful approaches once the Program closed.

INTRODUCTION

© Shayasta Tuladhar / WWF Nepal

A rhinoceros roaming in the Chitwan National Park

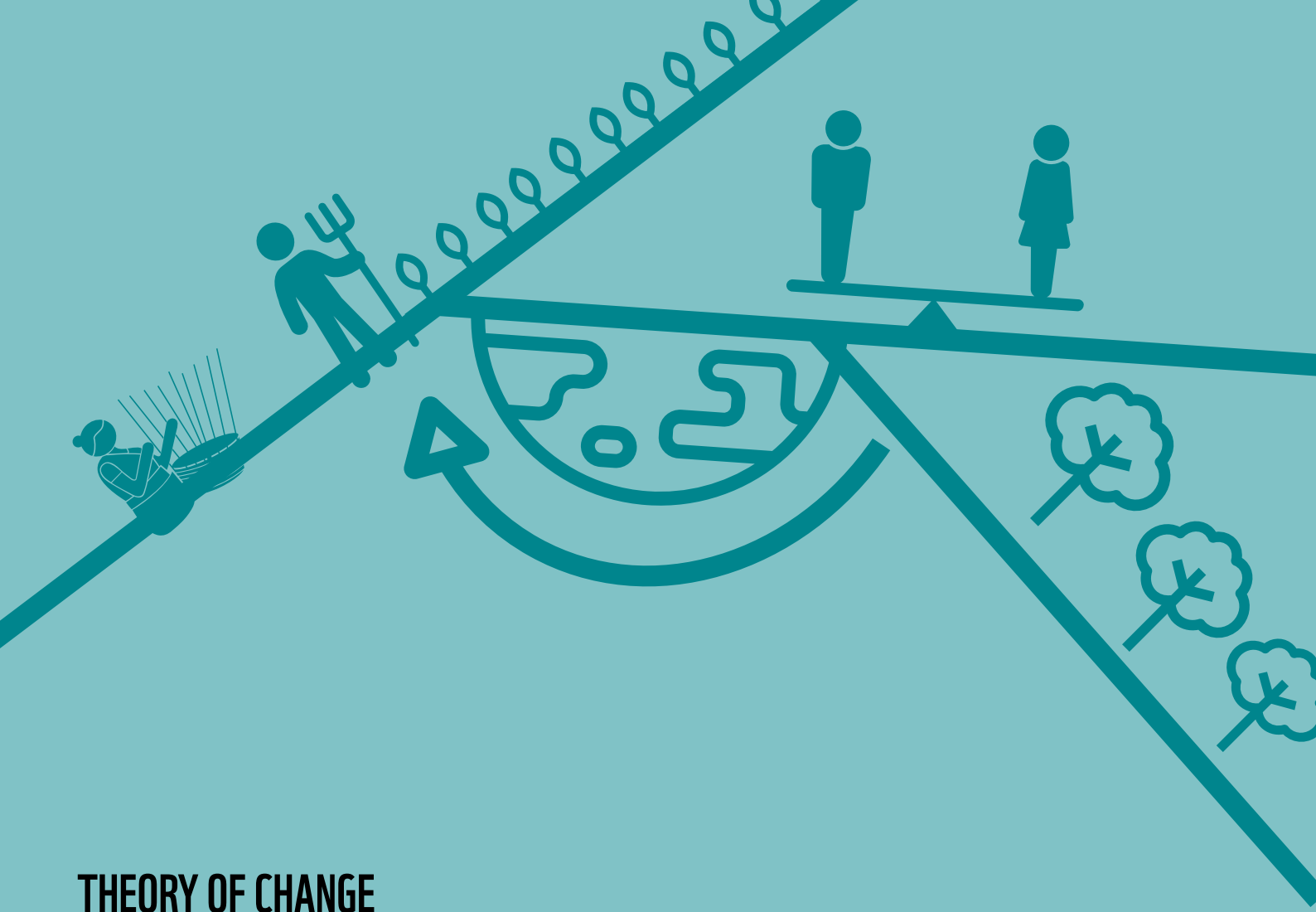
HARIYO BAN II GOAL

Increased ecological and community resilience in CHAL and TAL

OBJECTIVES

Improve conservation and management of GoN-identified biodiverse landscapes – CHAL and TAL

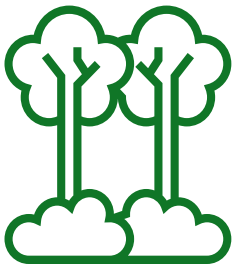
Reduce climate change vulnerabilities in CHAL and TAL



THEORY OF CHANGE

HARIYO BAN II

If stakeholders are better able to conserve and benefit from biodiverse natural resources and adapt to climate change in a manner that diversifies livelihood options, improves gender equality and social inclusion, and promotes good natural resource governance, then people and ecosystems in the target landscapes will be more resilient.



This is the final report of the second phase of the Hariyo Ban Program (also referred to as Hariyo Ban II or the Program; "Hariyo Ban" means "green forests" in Nepali). Hariyo Ban was a United States Agency for International Development (USAID)-funded initiative implemented by a consortium comprising World Wide Fund for Nature (WWF) (lead organization), Cooperative for Assistance and Relief Everywhere (CARE), National Trust for Nature Conservation (NTNC), and the Federation of Community Forestry Users Nepal (FECOFUN). The first phase of the Program ran from August 2011 to December 2016 and the second phase from July 2016 to July 2021. The Program worked in two priority landscapes with high biodiversity value: Terai Arc Landscape (TAL) and Chitwan-Annapurna Landscape (CHAL). It had two components—on biodiversity conservation and climate adaptation—and cross-cutting themes on market-based livelihood, gender equality and social inclusion, and governance.

BENEFICIARIES, STAKEHOLDERS, AND PARTNERS

Hariyo Ban II worked closely with federal, provincial, and local governments; nongovernmental partners; local communities; private sectors; and media. Main beneficiaries, stakeholders, and partners included the following:

Local communities and groups

The Program focused on poor, vulnerable, and socially excluded (PVSE) people including users from natural resource management (NRM) groups and their networks, Dalits, Janajati and Indigenous peoples, and LRPs. NRM groups include community forest user groups (CFUGs); buffer zone community forest user groups (BZCFUGs); buffer zone user committees; conservation area management committees (CAMCs); leasehold forest user groups (LHFUGs), and women and youth groups.

GoN agencies

At the federal level, the Program worked with MoFE and its departments, river basin management centers, protected areas (national parks, conservation areas, buffer zones), and Ministry of Federal Affairs and General Administration, Ministry of Infrastructure Development (Department of Roads). It worked with postal and customs authorities at strategic locations. At the provincial level, it worked with governments in Gandaki, Sudurpaschim, Bagmati, and Lumbini, specifically with soil conservation and watershed management offices, division forest offices, district coordination committees (DCCs), and government line agencies at district level. At the local government level, it worked with two metropolitan cities, four sub-metropolitan cities, 44 municipalities, and 58 rural municipalities in 15 districts in CHAL and TAL.

Furthermore, activities related to wildlife poaching and trade control and addressing human-wildlife conflict, policy level and out scaling of governance interventions were implemented beyond HB working areas in 49 districts and 74 local governments.

Nongovernmental and intergovernmental organizations

The Program worked with various research institutions, 40 NGOs, and many CSOs; Local Initiatives for Biodiversity, Research, and Development (LI-BIRD); FECOFUN provincial, district, and local chapters; Association of Family Forest, Nepal (AFFON), and the International Centre for Integrated Mountain Development (ICIMOD).

Academic institutions

The Program also worked with a number of academic institutions including Kathmandu University and Institute of Forestry, Pokhara.

Private sector and media

Partners included Organic Certification Nepal, Lightning and Atmospheric Research Center, Artha Institute, Organic Valley, Kisan Agro Mart Pvt. Ltd, cooperatives, the Nepal Forum for Environmental Journalists, and women journalists from all provinces.

OPERATING ENVIRONMENT

Nepal has a rich diversity of plant and animal life resulting from the highly varied physiographic and climatic conditions and its location at the crossroads of the Indo-Malayan and Palearctic biogeographic regions (Ministry of Forests and Soil Conservation (MoFSC) 2014). The country has three main ecological zones running south to north: the flat plains of the Terai in the south, the mid-hills in the center, and the high mountains and Trans-Himalayan region in the north. In 2015, the country had more than 44% forest and other wooded land cover (Department of Forest Research and Survey 2015). The two landscapes where Hariyo Ban worked have a combined population of over 11 million people, and many depend on forests for resources and ecosystem services. Nepal has a strong community forestry tradition that developed over several decades to improve local livelihoods and forest health, with strong support from civil society organizations and government, and with donor projects such as the USAID-funded Strengthened Actions for Governance in Utilization of Natural Resources (SAGUN), and support from the United Kingdom's Department of International Development (DFID), Swiss Agency for Development and Cooperation, and Government of Finland. More recently, Nepal adopted a landscape approach to conservation, promoting management of forests, ecosystems, and species at appropriate scales and enabling landscape linkages. Landscapes have been supported by several donors, including USAID through the Global Conservation Program, Sustainable Conservation Approaches in Priority Ecosystems (SCAPES), and the Hariyo Ban and PAANI programs.

Nepal is among the most vulnerable countries in the world to climate change.[3] Erratic precipitation and rising temperatures have increased risk of hazards such as droughts, floods, landslides, high winds, and uncontrolled forest fires, with impacts on people, forests, biodiversity, agriculture, livestock, energy, human health, tourism, habitation, and infrastructure (MoFE 2019). The Government of Nepal and donors have launched many climate adaptation programs, including Hariyo Ban and Initiatives for Climate Change in Asia (ICCA), both funded by USAID, and the DFID-funded Nepal Climate Change Support Program (NCCSP).

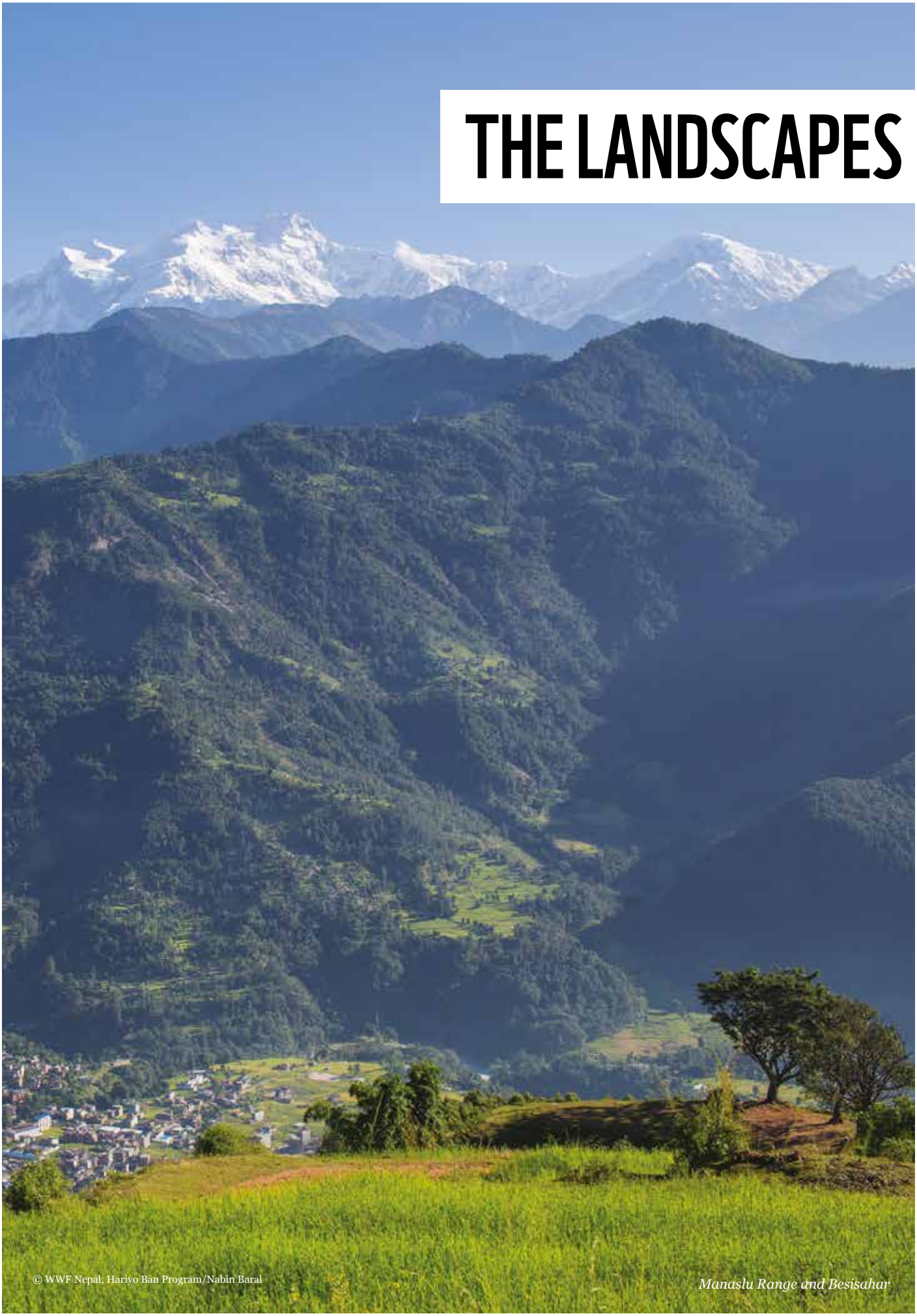
Both phases of Hariyo Ban operated in a rapidly changing political, economic, and social context in Nepal. Except during 2020, there was extensive out-migration of men from rural areas for employment, resulting in a declining local labor force and changes in the roles of rural women. Nepal still has strong social inequalities and discrimination against socially excluded groups and women. Rapid infrastructure development has caused adverse environmental impacts in many areas. During Phase I, the second constituent assembly was elected in 2013, a mega earthquake occurred in 2015, and the new constitution went into effect a few months later. During Phase II, Nepal held local and national elections in 2017, the government was restructured, and the coronavirus 2019 (COVID-19) pandemic began in the country in 2020 causing severe damage to human life as well as national economy. These events had profound effects that will continue to shape the social, economic, and political setting for decades to come.

The protracted election process in 2017 caused many delays for Hariyo Ban. On the positive side, the restructuring of government, and election of new local representatives (for the first time in 14 years) presented some good opportunities. After the elections, the Program made good progress working with the newly structured government at multiple levels. It contributed to the updating or formulating of several acts and regulations, helping make them environment and people friendly. Hariyo Ban collaborated with local and provincial governments in the working landscapes in joint planning, implementation, capacity building, and resource sharing, with endorsement and implementation of several plans it had helped prepare (e.g., local adaptation plans for action (LAPAs), integrated sub-watershed management plans (ISWMPs), the Integrated Lake Basin Management Plan of the Lake Cluster of Pokhara Valley (LCPV), and periodic development plans of local governments).

However, in January 2020, the impact of the COVID-19 pandemic started, and the Program's field-level implementation was put on hold during a three-month lockdown. The resurge of the pandemic in Nepal in 2021 had serious impacts for close-out of the Program. Although Hariyo Ban was able to meet its objectives and targets successfully by adjusting some of its interventions and its implementation modality, the pandemic posed serious implications for the sustainability of Program results. The social, economic, and environmental impacts of the pandemic have been devastating, especially on the tourism, industrial, and informal sectors, which provide large-scale employment. Government institutions and community members focused on mitigating the immediate impacts of the crisis rather than on longer-term development, conservation, and climate adaptation initiatives. As part of its sustainability plan and exit strategy, Hariyo Ban put in significant efforts in convincing the three levels of government to continue to invest in implementation of policies, strategies, and plans that were developed with support from the Program.

3 https://reliefweb.int/report/world/global-climate-risk-index-2020.

THE LANDSCAPES



© WWF Nepal, Hariyo Ban Program/Nabin Baral

Manaslu Range and Besisahar

HARIYO BAN WORKING AREAS

Hariyo Ban employed landscape approaches to tackle both threats to biodiversity and climate vulnerabilities of people and nature. Interventions were guided by the government's 10-year conservation strategy and action plan in each landscape. In TAL, we focused our interventions in key areas to restore and conserve corridors and critical habitats and establish original assemblages of herbivores, working to build climate resilience for nature and people. In CHAL, we consolidated our interventions to improve biophysical conditions in critical catchments, north–south corridors, and sub-river basins in order to maintain or restore natural processes, ensure upstream-downstream linkages, and promote climate resilience, working closely with local groups. In both landscapes, the Program worked to improve socioeconomic conditions and strengthen equitable local guardianship for biodiversity. Working landscapes are shown in Figure 1.

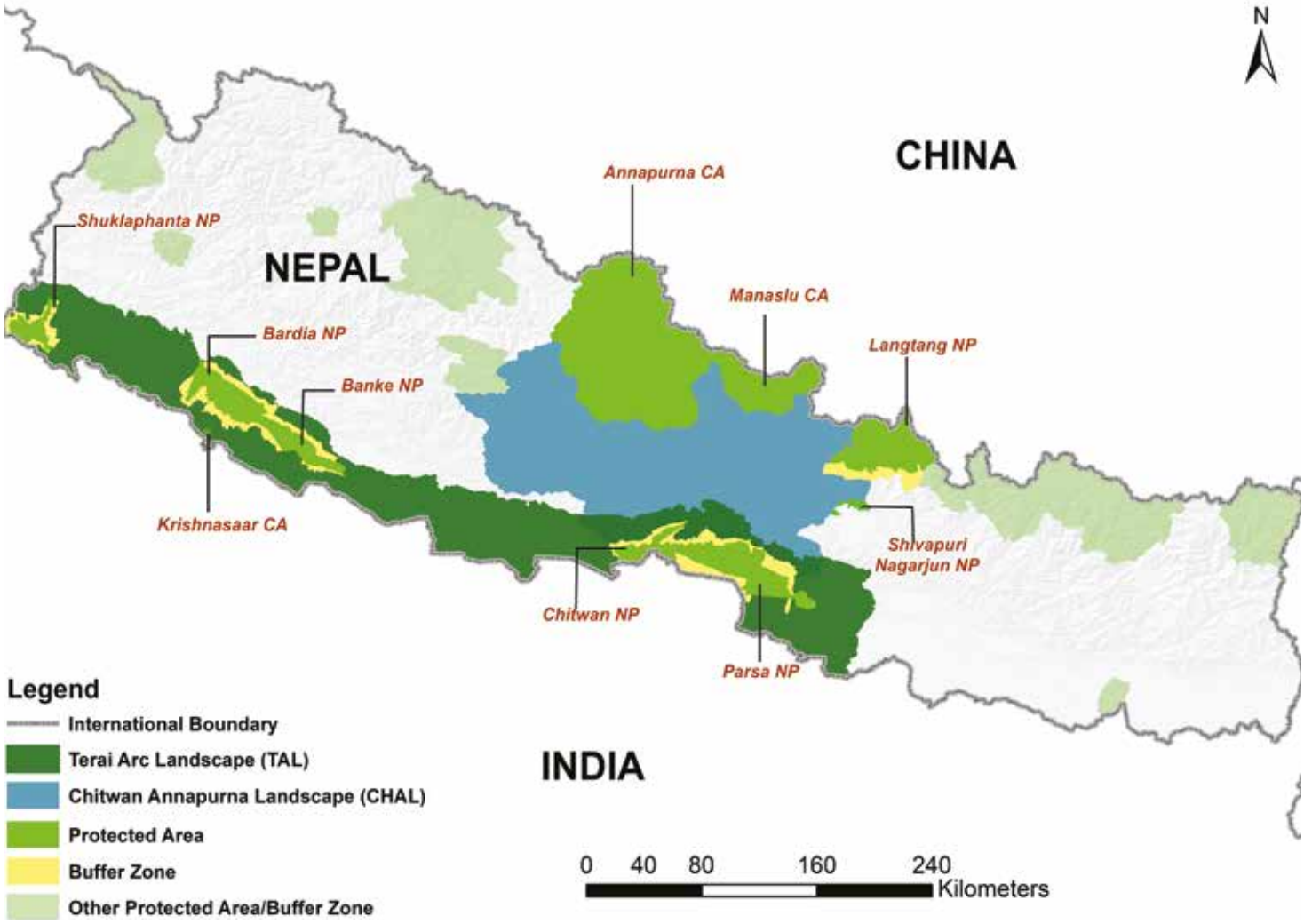


FIGURE 1: HARIYO BAN PROGRAM WORKING AREAS

Source: WWF Nepal, Hariyo Ban Program

HARIYO BAN II WORKING AREAS IN THE LANDSCAPES

- 8 protected areas
- 1,352 community forests
- 29 leasehold forests
- 1 protected forest
- 2 metropolitan cities
- 4 sub-metropolitan cities
- 46 municipalities
- 56 rural municipalities
- 15 districts

CHITWAN-ANNAPURNA LANDSCAPE

CHAL covers 32,090 km² and occupies all of the Gandaki river basin in Nepal. This highly diverse landscape ranges from the subtropical lowland of Terai, 200 m above sea level along the Indian border in the south, to mountains over 8,000m high on the Annapurna range and the cold, dry trans-Himalayan region to the north, bordering the Republic of China. The landscape is drained by several major rivers (Figure 2). Protected areas include four national parks (Langtang, Chitwan, Parsa, and Shivpuri-Nagarjun), and two conservation areas (Annapurna and Manaslu). About 35.5% of CHAL is covered by forests, of which 29% is managed by communities as community forest. Around 17% of the landscape is covered by grassland, 1% is wetland, and 21% is agricultural land (MoFSC 2015a).

FIGURE 2: MAJOR SUB-RIVER BASINS IN CHAL

Source: MoFSC (2015a)

Figure 3 shows 21 biodiversity-important areas in CHAL. The landscape is home to over 100 species of mammals, including rhino, tiger, and elephant in the south; snow leopard and brown bear in the north; and red panda, pangolin, musk deer, and clouded leopard in between. The landscape has more than 500 bird species and more than 3,430 plant species, including 100 endemics.

CHAL is home to over 4.5 million people of diverse ethnicities, cultures, and religions (WWF Nepal 2013a). Remittances from employment are the major source of household income (46%), followed by agriculture, tourism, salaried jobs/services, and wage labor. People are still heavily dependent upon forests and ecosystem services for their livelihoods and well-being. Inequality persists in the region in terms of both income and access to natural resources and public services, particularly land, forests, and capital.

CHAL is a new landscape for Nepal, and Hariyo Ban Phase I undertook several assessments to increase knowledge of it. In 2015, GoN developed the first CHAL Strategy and Action Plan (2016–2025).

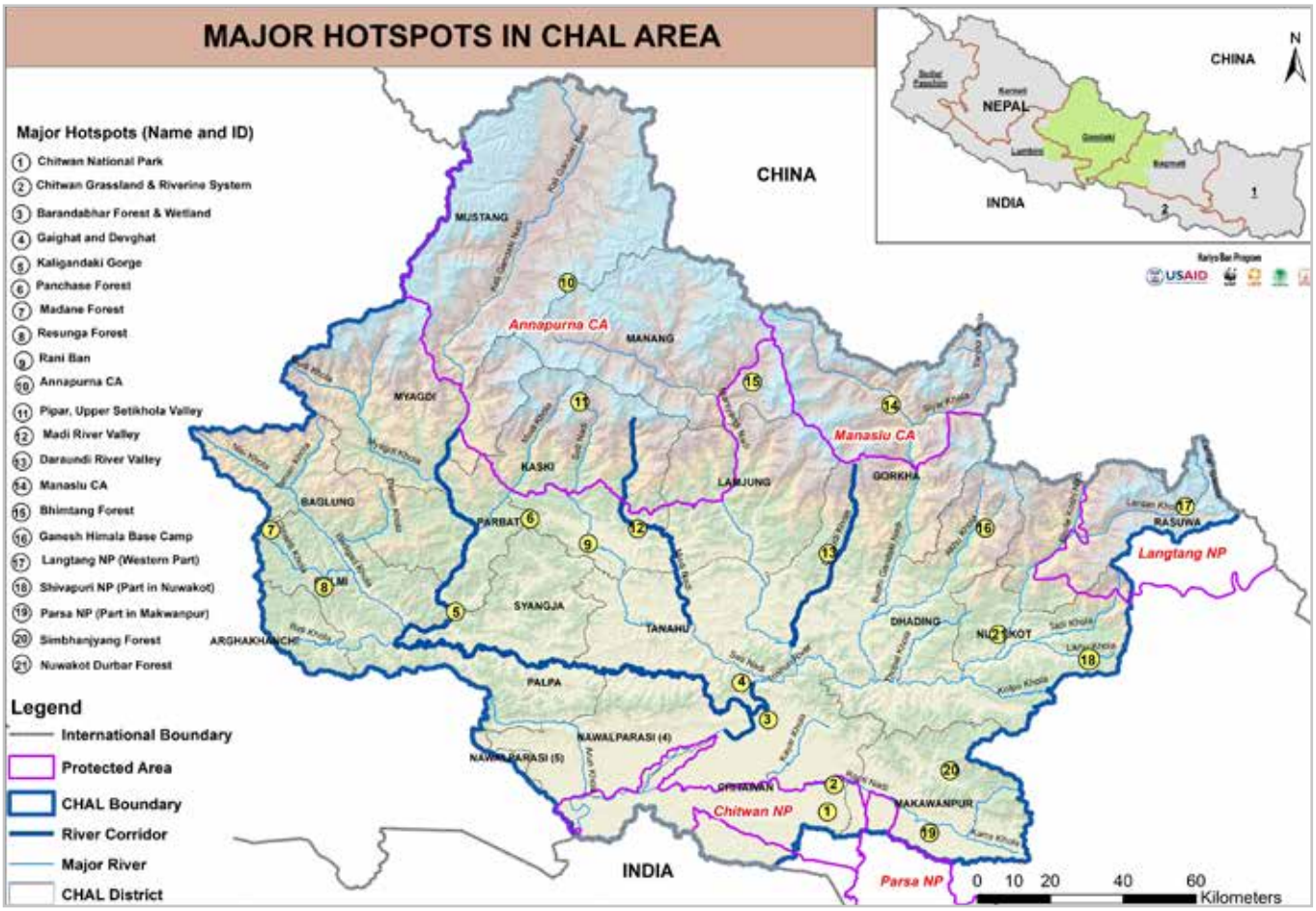


FIGURE 3: BIODIVERSITY-IMPORTANT AREAS IN CHAL

Source: MoFSC (2015a)

DEEPEST GORGE IN THE WORLD

CHAL contains the deepest terrestrial gorge in the world, where the Gandaki River cuts through the Himalayan range on its way to the low-lying Terai.

Table 1 shows the main biodiversity threats and climate vulnerabilities identified in CHAL. In its efforts to tackle these threats and vulnerabilities, the Program adopted a river basin/watershed approach at multiple scales in CHAL, focusing on three sub-river basins (Seti, Marshyangdi, and Daraundi in both phases), as well as working in key north–south corridors and biodiversity-important areas (Figures 3 and 4). The first phase supported development and implementation of community adaptation plans for action (CAPAs) and LAPAs in areas thought to be particularly vulnerable, and also supported the updating of the Manaslu Conversation Area (MCA) Management Plan to be climate smart. In the second phase, the Program continued development and implementation of LAPAs and updating management plans Dhorpatan and Koshi Tappu lie outside TAL and CHAL for Chitwan National Park, Banke National Park, Dhorpatan Hunting Reserve, Parsa National Park, Koshi Tappu Wildlife Reserve, and the Blackbuck Conservation Area to be climate-smart and use GESI-friendly technologies.

TABLE 1: THE MAIN BIODIVERSITY THREATS AND CLIMATE VULNERABILITIES IN CHAL

BIODIVERSITY THREATS AND CLIMATE HAZARDS	MAIN CLIMATE HAZARDS AND IMPACTS FOR PEOPLE	MOST CLIMATE-VULNERABLE SOCIO-ECOLOGICAL UNITS
Poaching and illegal trade	Landslides	Subtropical broadleaf forests of the Churia hills
Invasive species	Riverbank erosion	Semi-desert coniferous forests of the trans-Himalayan region
Agricultural expansion	Floods	Wetlands and spring sources in the Churia range
Unsustainable harvesting of natural resources	Droughts	Migratory birds
Forest fires	Declining agricultural production/ food insecurity	Gharial in the low lying Terai
Overgrazing/open grazing	Invasive species and diseases	Upland agriculture and upland irrigated rice in the middle mountains
Human-wildlife conflict	Depleted livelihood resources	Seti and Rapti sub-river basins
Flash floods		Rural settlements on steep slopes
Prolonged drought		Local roads across the landscape

Source: MOFSC (2015a)

© Karun Dewan/WWF Nepal

Hariyo Ban Program supported several river dependent communities in TAL in conserving rivers using Indigenous knowledge

TERAI ARC LANDSCAPE

TAL is a transboundary landscape extending over 900 km from the Bagmati River in Nepal in the east to the Yamuna River in Uttaranchal in India in the west. The Nepal portion covers 24,710 km² and stretches from the Bagmati River to the Mahakali River on the western Indian border, taking in part of the Churia range in the north and the low-lying Terai in the south, and overlapping with CHAL (Figure 1). In this report, TAL refers only to the Nepal portion unless stated otherwise. TAL covers part of the Terai Duar Savanna and Grasslands ecoregion and is home to several endangered or vulnerable wildlife species including one-horned rhinoceros, Bengal tiger, Asian elephant, blackbuck, swamp deer, Gangetic dolphin, and gharial; and tree species such as Bijaysal (*Pterocarpus marsupium*). About 54% of TAL is covered by forests, with 5% grassland/shrub land, 1% wetland, and 35% agricultural land; there are six protected areas and three Ramsar sites linked by forest corridors. North–south corridors link protected areas in Nepal and India.

TAL supports a culturally diverse population of over 7.5 million people with over 45 ethnic groups and Indigenous communities (Central Bureau of Statistics 2011; MoFSC 2015b). Even though the region is regarded as the food basket of the nation, food production has not kept pace with the demands of a growing population. The average area of farmland per capita is declining, landlessness is on the rise, and nearly 20% of the population lives below the poverty line (MoFSC 2015b). As a result, there is much out-migration, and remittances are a major source of income, followed by tourism, agriculture, service jobs, and wage labor.

The main threats and vulnerabilities in TAL are shown in Table 2. Hariyo Ban focused its interventions in four conservation complexes (Chitwan-Barandabhar, Banke-Kamdi, Bardia-Karnali, and Shuklaphanta-Brahmadev), each comprising protected areas, critical corridors, and other biodiversity-important areas including wetlands of international importance (Figure 4). In Phase II, overall interventions in TAL were guided by the TAL Strategy and Action Plan (2015–2025) (MoFSC 2015b); Hariyo Ban worked to reduce major biodiversity threats and reduce climate vulnerability in people and nature while supporting forest-dependent, marginalized communities, especially women, Dalit, Indigenous people and Janajati, to develop alternative livelihood opportunities and participate in local decision-making.

TABLE 2: THE MAIN BIODIVERSITY THREATS AND CLIMATE VULNERABILITIES IN TAL

BIODIVERSITY THREATS AND CLIMATE HAZARDS	MAIN CLIMATE HAZARDS AND IMPACTS FOR PEOPLE	MOST CLIMATE-VULNERABLE SOCIO-ECOLOGICAL UNITS
Large infrastructure development	More severe floods and hailstorms	Vultures, dolphin, and gharial
Drought	Increasing drought	Leasehold forests
Floods/changes in river courses/river water diversion	Rising temperatures	Parsa National Park
Landslides	Declining agricultural production/ food insecurity	Urban areas
Poaching and illegal trade	Loss of infrastructure	Rural settlements
Human-wildlife conflict	Increase in forest fires	Rural and some national roads
Illegal harvesting of forest products		Irrigation systems
Encroachment		
Illegal fishing with poison		
Overgrazing		
Invasive species, pests, and diseases		

Source: MoFSC (2015b)

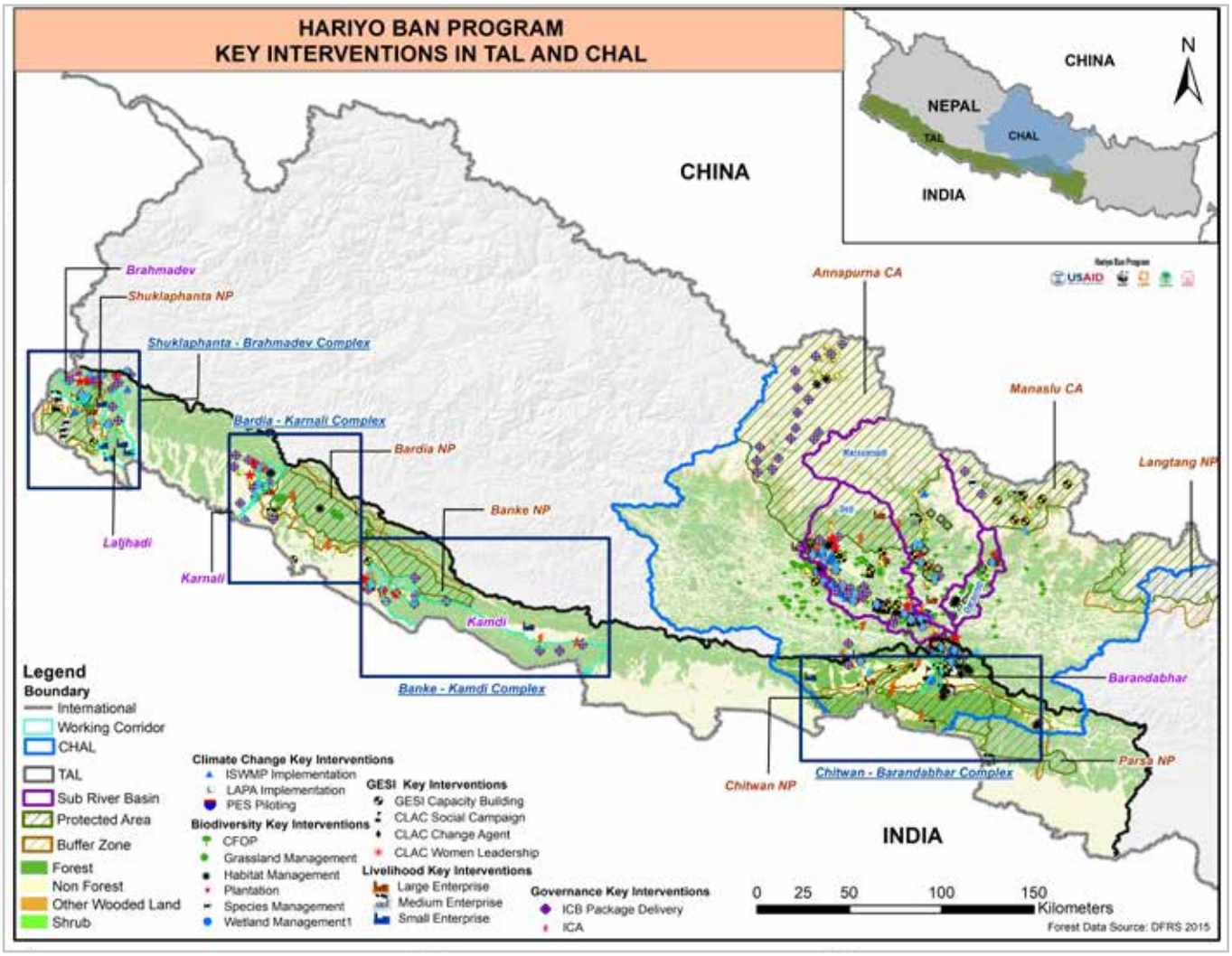
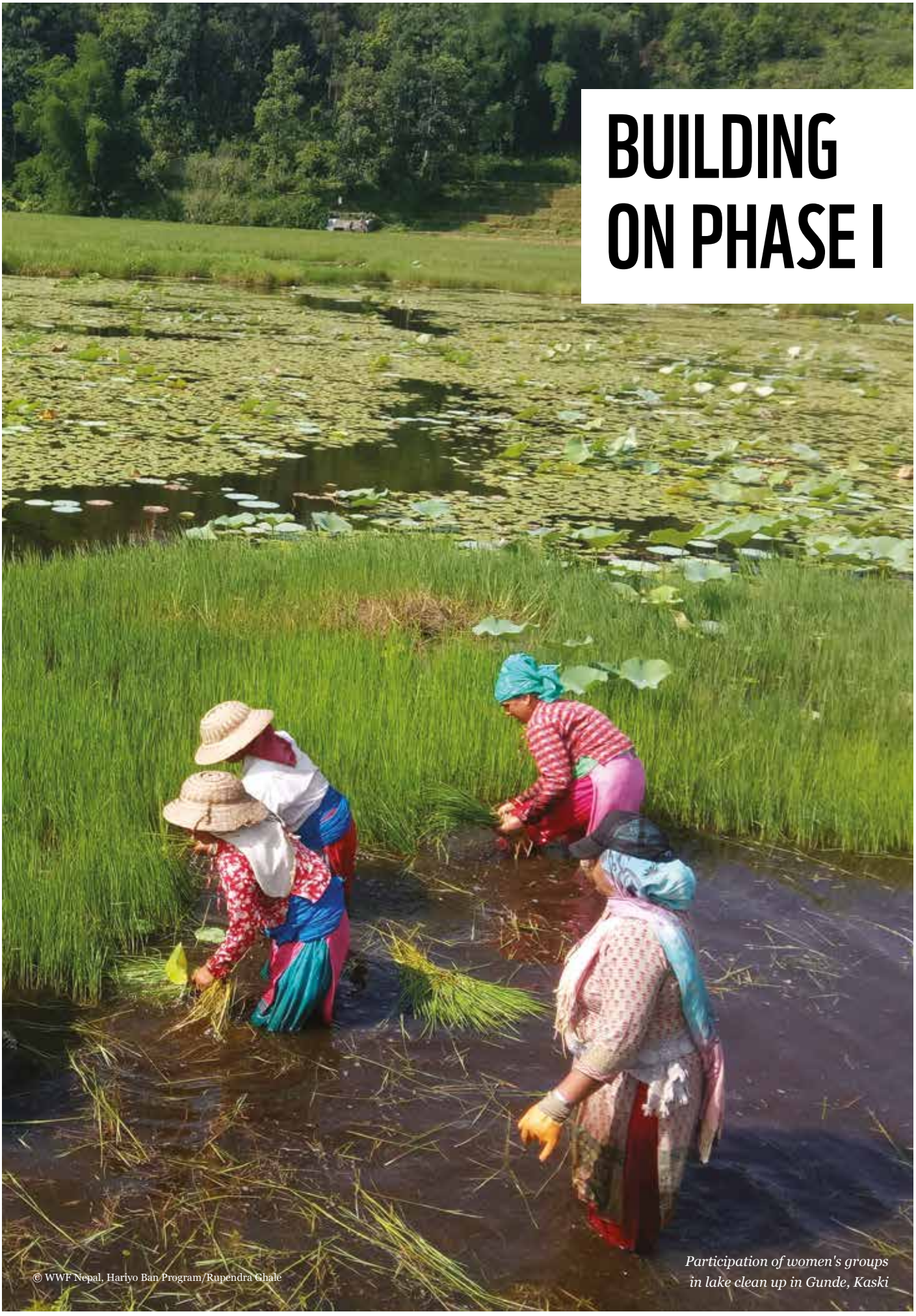


FIGURE 4: HARIYO BAN II KEY INTERVENTION AREAS IN CHAL AND TAL

Source: WWF Nepal, Hariyo Ban Program

BUILDING ON PHASE I



© WWF Nepal, Hariyo Ban Program/Rupendra Ghale

Participation of women's groups in lake clean up in Gunde, Kaski

Hariyo Ban II's strategic approach was to support effective implementation of the newly developed CHAL Strategy and Action Plan and the second TAL Strategy and Action Plan, building on the results of Hariyo Ban's first phase to consolidate and upscale earlier accomplishments, and to apply learning and recommendations from Phase I.

APPLYING LEARNING

Heeding a key lesson and recommendation from Phase I, rather than spread efforts thinly over a large geographic area, the second phase focused on strategic locations with greatest threats to biodiversity and greatest climate vulnerability. We applied many Phase I lessons in the individual components. For example, our learning from establishing a new population of blackbuck in part of their historical range was used in reestablishing the original large mammal assembly in Chitwan National Park. The initial learning from PES pilots from the sustainable landscapes component in Phase I led to integrating this initiative in policies of local government. In climate adaptation, approaches to tackle differential vulnerability were institutionalized through development and application of the Differential Impact Assessment and Response Plan (DIARP) Framework, which was integrated into all LAPAs implemented in Phase II, and expanded to selected model community forests and ISWMPs. Building on lessons from CLACs, in Phase II a "post-CLAC" approach provided strategic support to CLAC members who were actively pursuing leadership and social transformation agendas. Learning from the limitations of the governance tools when they were not fully integrated, in Phase II the Program developed a comprehensive institutional capacity-building package that brought together managerial, technical, and governance competencies of NRM groups.

SCALING UP AND SCALING OUT

While consolidating achievements of Phase I, the Program scaled up several types of successful interventions by expanding the geographical coverage and/or population reached and contributing to policy formulation using learning and evidence from Hariyo Ban interventions to create an enabling environment for the general use of these approaches. Scaling out included adopting new ways of working to be more effective. For example, CBAPUs were organized into clusters linked through a network along the corridor/complex, river basin, or trade route; working together enabled them to be more effective than when working in isolation. Green enterprises were scaled by promoting large-block planting instead of scattered sites; promoting value addition through processing of raw materials; establishing marketing links; and linking enterprises with the Prime Minister Agriculture Modernization Program to expand their scope. The campaign on GBV for NRM groups expanded rapidly through the CFUG network across the Hariyo Ban working areas. LAPA and ISWMP implementation were scaled up by increasing resource leverage from local governments and community institutions. A model community forest networking approach that promotes effective implementation of the Community Forestry Development Guideline 2014 has potential for scaling up through FECOFUN's network over 22,000 CFUGs in the country. Hariyo Ban II provided financial and technical assistance to support over 60 policies, regulations, and plans at the three levels of government.

BENEFICIARIES

Hariyo Ban II continued to work with the same broad groups of beneficiaries as in Phase I, though there were fewer beneficiaries because of the increased focus on smaller areas. The biggest change was adapting to work with the new government federal structure and many new government agencies at different levels.

PROGRAM STRATEGY AND IMPACTS

© WWF Nepal / Kamal Thapa

Red panda distribution extends across 40 districts and 12 protected areas in Nepal.

THEORY OF CHANGE

BIODIVERSITY COMPONENT

If critical habitats and dispersal corridors including biodiverse watersheds are conserved, threats to and climate vulnerabilities of ecosystems and species are reduced, NRM institutions (government and non-government) are inclusive and accountable, and community stewardship for conservation is developed, then conservation and management of TAL and CHAL will be improved.

BIODIVERSITY CONSERVATION

STRATEGIC APPROACH

Hariyo Ban identified threats to biodiversity along with the climate vulnerabilities, ranking threats at the level of focal species, corridors, biodiversity-important areas, protected areas, sub-river basins, and landscapes. Results chains were developed to identify threat causality and aid decision-making about where to intervene along the chains to tackle priority threats (WWF-Nepal 2016). Intervention sites were consolidated in biodiversity-important areas, and provisions for land and water corridors, sound river basin management, and climate refugia were incorporated into climate-smart landscape approaches to facilitate species conservation and continuation or restoration of ecosystem functions. Curbing wildlife trade was a strategic focus in Hariyo Ban II, tackling poaching and illegal wildlife trade strategically in core areas and along trade routes in both landscapes. Hariyo Ban tackled priority threats in partnership with GoN, local communities, and other stakeholders.

Since forest-dependent communities are key stewards of biodiversity, governance and GESI were mainstreamed across the component to improve community forest management and ensure active participation and benefits for marginalized people. The Program had a major focus on helping improve local livelihoods through establishment of market-based enterprises and through skill-based training to increase employment opportunities outside forests, with the aim of reducing poverty and unsustainable pressure. The first phase enhanced capacity to tackle threats, and the second phase built on this. When the policy environment was a significant limiting factor, Hariyo Ban supported GoN in improving it. The Program also worked to enhance understanding of focal species, ecosystems, and landscapes in order to inform and improve management. Linkages with local governments helped leverage financial resources, and NRM groups' revolving funds established in Phase I played a useful role in promoting market-based livelihood options.

RESULT 1.1: THREATS TO TARGET SPECIES REDUCED

A. Conservation, research, and monitoring of focal species (fauna)

In Phase II, the Program focused on conservation of 20 focal species (16 faunal, 4 floral), including tiger and rhino, whose populations both grew over the course of Hariyo Ban. Advances were made in small mammal conservation focusing on red panda and pangolin in the high mountains and mid-hills. Rhino, blackbuck, swamp deer, and wild water buffalo were reintroduced into parts of their former ranges as a strategy to reduce climate risk and non-climate threats (see Table 1 and 2). In addition, efforts were made to conserve two threatened floral species, Bijaysal and Champ, in their natural habitats.

i. Pangolin Conservation

Pangolins in Nepal are under threat from poaching and illegal trade, given the huge market for pangolin body parts in countries like China. Hariyo Ban supported a national survey on the distribution of Nepal's two pangolin species that revealed pangolin presence across 43 districts (the Chinese

RIVER CONNECTIVITY IN CHAL

Aquatic biodiversity is considered one of the best indicators of watershed health. A river connectivity study assessed the impacts of dams and weirs by comparing the fish assemblages in the dammed Marshyangdi River and free-flowing Budhi Gandaki River in CHAL–two tributaries of the Trishuli River. The study found that the Marshyangdi had seven fewer species of fish, and also lower fish abundance than the Budhi Gandaki, suggesting that impaired connectivity of the Marshyangdi to the Trishuli River downstream, and changes in habitat conditions due to dam construction, are resulting in lower diversity and abundance of cold-water fish species. The study also collected DNA of the main fish species and stored it at the DNA facility in NTNC's molecular laboratory.

KEY SPECIES RESULTS

Tiger numbers increased from

198 to 235

between 2013 and 2018 (close to Nepal's internationally declared target of 250 animals by 2022, the next Year of the Tiger).

Rhino numbers increased from

645 to 752

between 2015 and 2021, and since 2011 there have been seven occasions of 365-day periods of zero rhino poaching in Nepal.

Large herbivore assemblages were reestablished — rhino, wild water buffalo, swamp deer, and blackbuck reintroduced within their former ranges in TAL.

All corridors in TAL are functional with regard to large mammal dispersal.

Bijaysal was conserved in over

45 km^2

in TAL.

Red panda is estimated to be present in nearly

10,000 km^2

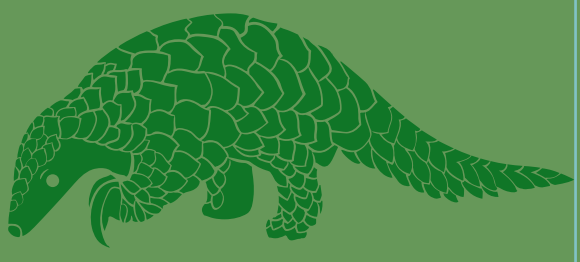
across 24 districts in Nepal.

Blackbuck numbers in Shuklaphanta National Park (NP) increased from

28 to 150

between 2012 and 2021; the population is now viable.

Pangolins are estimated to be present in 43 districts in Nepal; habitat suitability is estimated at 20,750 km^2.



A second generation of wild water buffalo was born in Chitwan National Park following reintroduction.

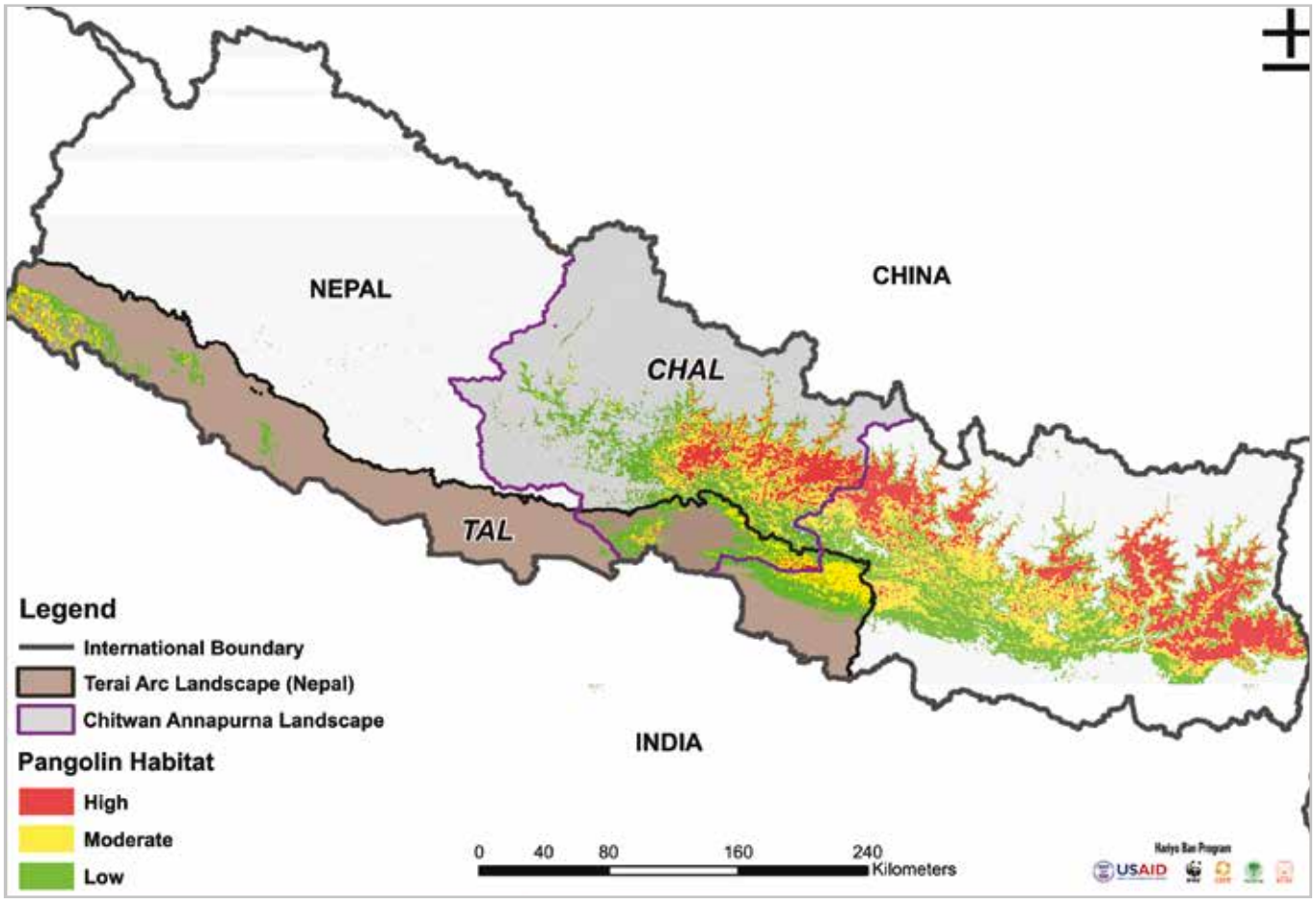


FIGURE 5: AREAS WITH POTENTIAL HABITAT FOR PANGOLIN IN NEPAL (AREAS WITH HIGH POTENTIAL ARE SHOWN IN RED)

Source: Suwal et al. (2020)

pangolin in 40 districts and the Indian pangolin in 21 districts) (Suwal et al. 2020). The survey identified areas with potential for pangolin conservation in CHAL (Figure 5). Results were used to produce a national guideline for monitoring pangolins in Nepal (DNPWC 2019). The Program also supported the government in preparing a Pangolin Conservation Action Plan (2018–2022), the first for these species in Nepal. This Plan was prepared under the overall leadership of the MoFE with technical and financial assistance from the Hariyo Ban Program. The MoFE is committed to effective implementation of the plan to conserve pangolins, including curbing illegal trade of pangolins and their parts and products.

ii. Red Panda Conservation

The red panda has very specific habitat requirements and is vulnerable to climate change and land use change. In Phase I, Hariyo Ban supported a survey of red panda distribution in Nepal and community-based red panda conservation in the buffer zone of Langtang National Park. Outputs from this, as well as action research, were used to produce a protocol for community-based monitoring of red panda (MoFSC 2016). In Phase II, the Program provided technical support to the government to prepare the Red Panda Conservation Action Plan (2019–2023). Recent work based on the national survey data estimated that the red panda currently occupies 9,622 km^2 out of 22,544 km^2 of potential red panda habitat in Nepal (Figure 6, Thapa et al. 2020). It is projected that about 33% of its habitat will be lost by 2050 and about 56% by 2070 due to climate change; an estimated 1,052 km^2 will provide climate refugia for the red panda in CHAL (WWF-Nepal 2020a). Both studies identified priority areas for red panda conservation where there is a need to address site-level threats and vulnerabilities to the red panda. Poaching ranks as the highest threat to this species. These studies and plans were prepared under the leadership of the MoFE with technical and financial assistance from the Hariyo Ban Program. The MoFE and conservation stakeholders in Nepal are committed to effective implementation of these plans to conserve Red Panda and their habitats, including curbing illegal trade of Red Panda and their parts and products.

iii. Tiger Conservation

Tiger conservation has been topping the focal species conservation during both phases of the Hariyo Ban Program. The Program supported GoN's commitment in the global tiger recovery program with a target of doubling the tiger number to reach 250 individual animals by 2022. Strategic interventions such as contribution to the national tiger surveys, habitat management including corridor restoration, mitigation of human-tiger conflicts, mobilization of CBAPUs along the

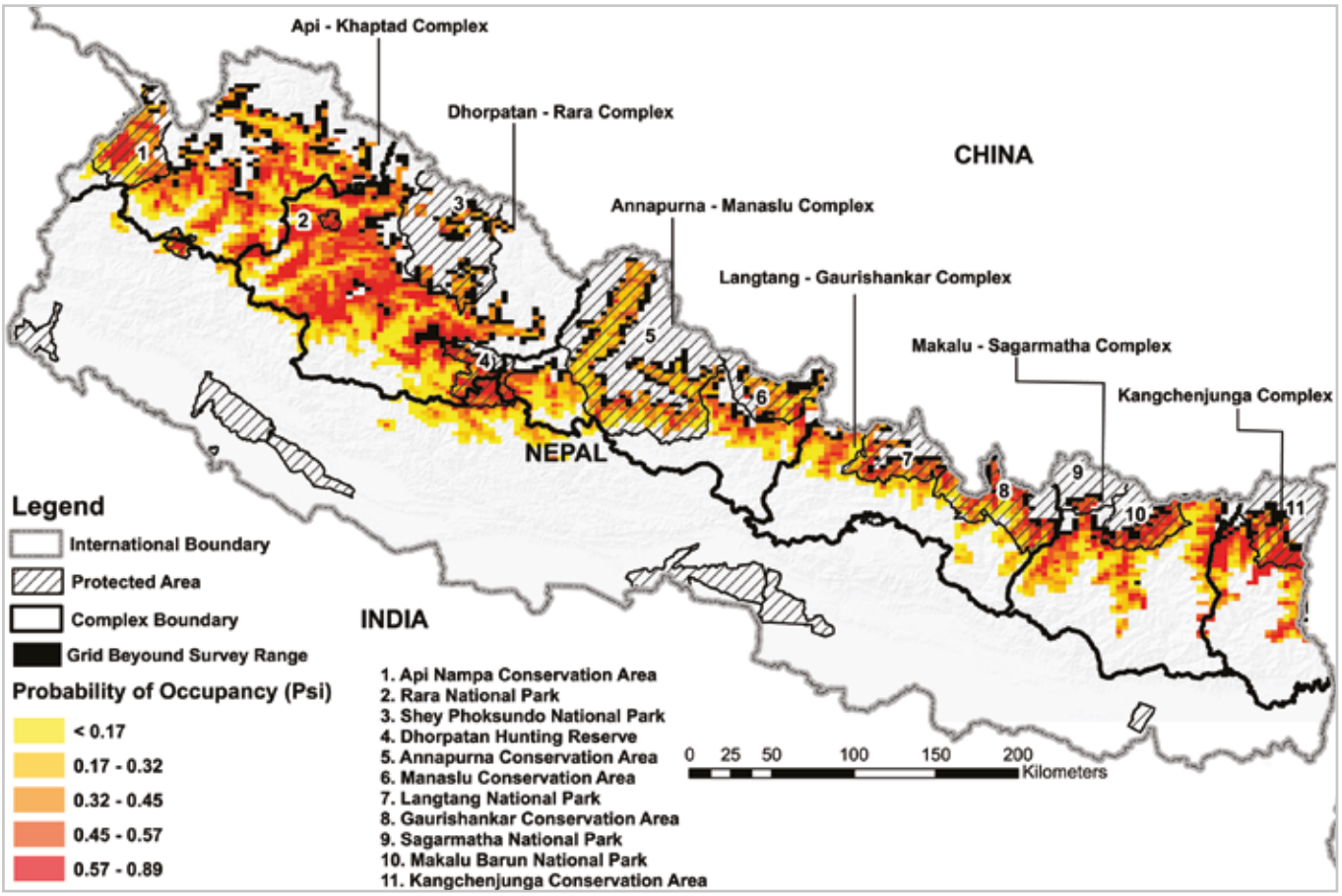


FIGURE 6: SITE-SPECIFIC VARIATION IN RED PANDA OCCUPANCY ALONG THE MID-HILLS AND HIGH MOUNTAINS OF NEPAL

Source: Thapa et al. (2020)

core areas, buffer zones, and corridors of TAL were provided by the Program. Support was also provided to anti-poaching activities in core areas and disrupting the illegal wildlife trade strategically in core areas as well as along the identified trade routes in both CHAL and TAL (these strategic interventions are described in subsequent sections). With improvement in biophysical conditions, protection measures, and conducive policy environment, the 2018 tiger census showed a 93% increase in tiger population, and all the six transboundary corridors in TAL have evidence of tiger dispersal in the last 10 years (2011-2021).

iv. Rhino Conservation

Greater One-horned rhinoceros (or rhino) is the most enduring emblem of Nepal's rich biological heritage backed by the commitment of GoN to conserve the species for now and future generations. The Hariyo Ban Program supported the GoN towards managing and maintaining the three viable populations of rhino. Strategic interventions included contribution to conduction of national rhino census and rhino carrying capacity assessment, habitat management including corridor restoration initiatives, mitigation of human-rhino conflicts, and mobilization of CBAPUs along the core areas, buffer zones, and corridors of TAL. Support was also provided to anti-poaching activities in core areas and disrupting the illegal wildlife trade strategically in core areas as well as along the identified trade routes in both CHAL and TAL. With improvement in biophysical conditions, protection measures, and conducive policy environment, the rhino count in 2021 showed ~41% increase in rhino population between 2011-2021. The present population size of 752 individuals is close to the historical population size of 800 recorded before the 1950s in TAL. Corridor restoration initiatives have complemented in managing rhino populations as metapopulation along with Shuklaphanta-Dudhuwa and Bardia-Katerniaghat Complexes in western part TAL as well as along the Chitwan-Parsa-Valmiki Complex in eastern TAL. There has been evidence of rhino dispersal between transboundary protected areas of Nepal and India in these complexes.

v. Other Faunal Species Conservation

Besides tiger, rhino, pangolin, and red panda, Hariyo Ban Program supported in conservation of other 12 faunal focal species (snow leopard, common leopard, elephant, gharial, dolphin, blackbuck, blue bull, wild water buffalo, swamp deer, musk deer, bear, and rhesus monkey) with field level conservation actions, research and monitoring, and support in policy measures such as conflict mitigation strategies and species conservation action plans. Significant work included redefining the subspecies status of musk deer, restoring the herbivore assemblages (blackbuck, swamp deer, wild water buffalo, and rhinoceros) in TAL, preparation of species-specific (leopard and elephant) conflict mitigation strategies, monitoring guideline for pangolin, action research

for mitigation of human primate (rhesus monkey) conflict in CHAL, and conservation action plans for a suite of focal species (pangolin, wild water buffalo, bear, blackbuck). So far, out of 50 research papers published highlighting Hariyo Ban contribution, 26 publications have focused on building the knowledge base of the focal species in TAL and CHAL.

vi. Recreating Herbivore Assemblage

The ranges of many large herbivore species have been reduced in Nepal, and several species with small, isolated populations became vulnerable to stochastic events such as disease outbreaks and climate hazards, including flooding. In addition, the species were no longer fulfilling their combined ecological functions. Restoration of species assemblages is a flagship initiative for the government. Hariyo Ban supported several species reintroductions: rhino to Bardia National Park (2016–2017), blackbuck to Shuklaphanta National Park (NP) (2012–2015), wild water buffalo to Chitwan NP (2017), and swamp deer in Chitwan and Bardia NPs (2016–2017). No casualties occurred during translocation, indicating safe capture and good field logistics. After translocation, efforts focused on conservation of the translocated animals in their new areas. However, a setback occurred in 2017 when a flash flood on the East Rapti River in Chitwan resulted in mortalities of some wild water buffalo and swamp deer.

In Phase II, the reintroduced rhinos were monitored. In Babai Valley in Bardia NP, five rhinos died of natural causes and three were born; by 2020 there were six animals (three males and three females). Habitat management was recommended, and Hariyo Ban II supported grassland management (64 ha), maintenance/construction of water holes, and fire line maintenance (82 km). The translocated rhinos in Shuklaphanta NP are performing well, although there have been a few cases of human-rhino conflict, particularly in the south. Seventeen rhinos (three males, nine females, five of unknown sex) have been recorded, along with the birth of one calf.

The blackbuck reintroduced to Shuklaphanta in 2012–2015 have reached a viable population level (150 individuals: 48 males, 64 females, 38 fawns) (Figure 7). All management actions were guided by the site-specific Blackbuck Conservation Action Plan (2016–2020), and a second action plan has been drafted in 2021 incorporating learning from the initial years. Ultimately, the plan is to release them from the enclosure into the park. Based on the success in Shuklaphanta, the government is planning to establish a third blackbuck population in Chitwan.

Reintroduction of wild water buffalo and swamp deer produced mixed results. Swamp deer were seriously affected by the 2017 flash floods, and there are no plans to restock. Wild water buffalo recovered well after the flood, with regular grassland and wetland management and animal health monitoring. In mid-2021 there were 13 animals, and this small population needs to be augmented with more individuals to increase its viability. The government allocated resources to expand the enclosure and provide adequate space for foraging and movement to higher ground in case of floods, to make management of the species more climate-smart.

vii Support for wildlife resilience to climate change

The Program supported installation of solar water pumps in Lalmati, in the Babai Valley, and east Chisapani in Bardia NP to supply drinking water for wildlife, particularly during the

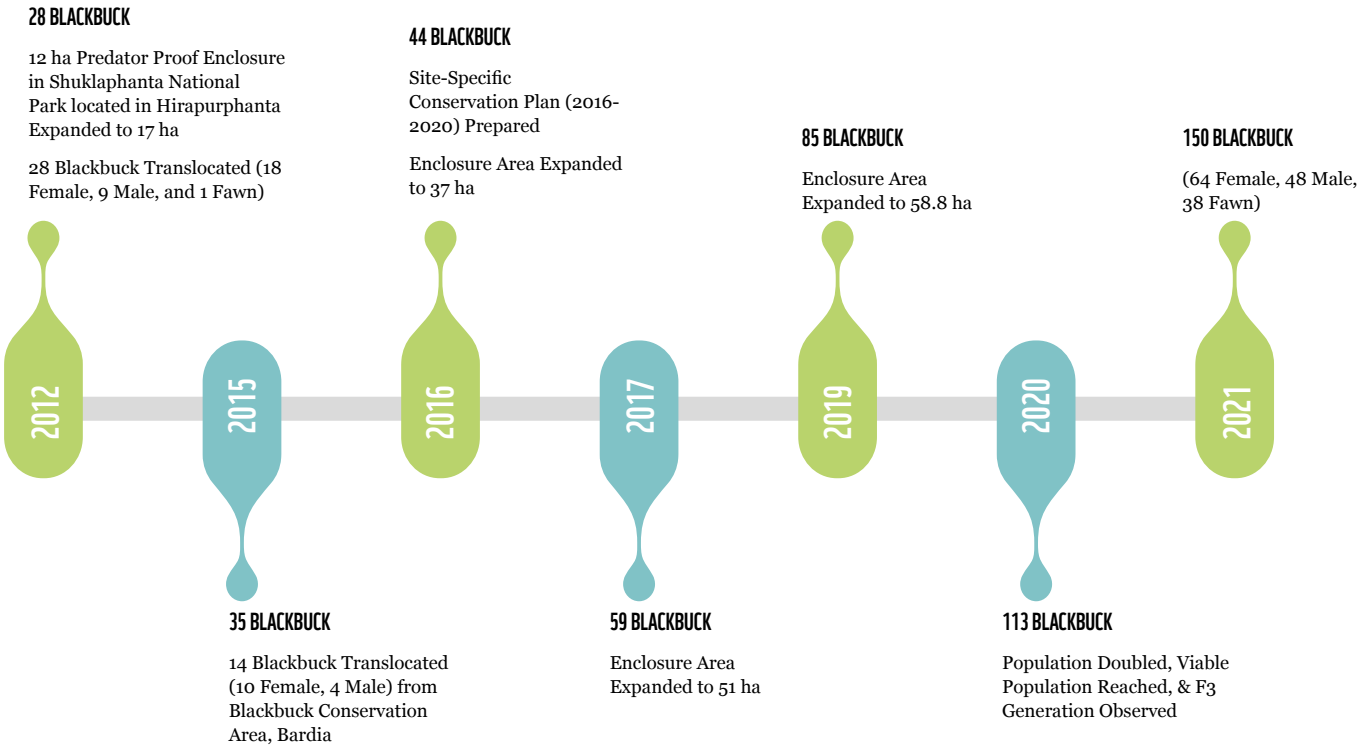


FIGURE 7: TIMELINE FOR BLACKBUCK REINTRODUCTION AND MANAGEMENT IN SHUKLAPHANTA

Source: WWF Nepal, Hariyo Ban Program

© WWF Nepal, Hariyo Ban Program/Rupendra Ghale

Champ plantation

© WWF Nepal, Hariyo Ban Program

winter and the hot, dry season. The Program used relief funds to rescue 13 rhinos from Chitwan National Park, after they were carried downstream in a flood to neighboring Valmiki Tiger Reserve in India—an excellent example of transboundary cooperation between the two countries facilitated by government officials at the local level. Activities to build blackbuck resilience are outlined in the Small Grants Program (SGP) section below.

viii. Wildlife disease research and control

Wildlife disease is a concern not only for conservation, but also for livestock and people, as some diseases can be transmitted both to and from wildlife. Hariyo Ban invested in building national capacity to identify and treat diseases in wildlife and also to handle wildlife forensics to help combat illegal wildlife trade, by supporting an upgrade to NTNC's existing laboratory in Chitwan to become a full-fledged molecular diagnostics laboratory. The facility can be used by government, conservation practitioners, individual researchers, and students and provides access to cheap and relatively easy tools that analyze deoxyribonucleic acid (DNA) data. Eight organizations and 11 individual researchers have undertaken molecular research in the laboratory so far, and five peer-reviewed papers have been published on DNA analysis. There are plans to scale up the DNA work in future. Genetic screening of some Hariyo Ban focal species has been conducted, including of musk deer, pangolin, and swamp deer. Work on surveillance for diseases such as foot and mouth disease in livestock, canine distemper, anthrax, and elephant endotheliotropic herpes virus has also been done. This is the only forensic laboratory dedicated to wildlife genetic research and disease surveillance in the country.

B. Conservation of floral species

i. Conservation of Bijaysal and Champ

Conservation of tree species such as Bijaysal and champ was a high priority for Hariyo Ban. Work on these species helped raise their profile and scale up initiatives from the local to the national level. Bijaysal is excessively harvested for medicinal use of its bark and handicrafts from its wood, and lopped for livestock forage. It has a very restricted distribution in Nepal, with patches in western TAL and Kapilvastu. It is listed as a protected plant species in Nepal (Department of Forests 2018) and as near threatened in the International Union for Conservation of Nature (IUCN) Red List (Barstow 2017). The government endorsed Nepal's first Bijaysal Conservation Action Plan (2018–2022), the preparation of which Hariyo Ban supported. Phase II helped implement priority activities including habitat management in 20 community forests (~4,664 ha) in the Shuklaphanta-Brahmadev and Bardia-Karnali complexes. NRs 875,000 (USD 7,904) was leveraged

ONE HEALTH

Hariyo Ban supported the upgrading of NTNC's existing laboratory in Chitwan to be a fully-fledged molecular diagnostics laboratory to diagnose wildlife diseases and undertake wildlife forensics work. With certain upgrades in the future, it will be able to isolate emerging zoonoses in wild animals, and can play an important role in preventing future global human pandemics as well as disease transmission between wildlife and livestock. In parallel, the Program has supported the drafting of a new National Wildlife Health Strategy and has built capacity in this field. The work on combating wildlife trade also reduces the risk of zoonoses.

from local government and community forest user groups to continue Bijaysal conservation. The Program also worked with the Department of Forests and Soil Conservation to conserve the largest single patch of Bijaysal (12 ha) in Kapilvastu. These local-level actions backed by the Species Action Plan are expected to ensure sustainable use and conserve the species in Nepal. Champ is a native tree with valuable timber. In Nepal it is threatened by unsustainable harvesting and illegal logging.

Champ conservation in CHAL focused in the Seti sub-river basin, working in close coordination with the division forest offices. During the past nine years, over 329,000 seedlings have been planted in Kaski, Tanahun, Gorkha, Syangja, and Lamjung by 51 CFUGs, 12 LHFUGs, and five individual farmers in 218 ha of bottleneck area in the Seti corridor. Seedling survival rate was fair, at over 50%.

ii. Other Floral Species Conservation

Besides champ and Bijaysal, the Hariyo Ban Program has supported the conservation of other two floral focal species (Sati Sal and tree fern) with field level conservation actions and action research work. Research work focusing on population assessment, assessing the conservation threats, and mapping of tree fern was focused in the hotspot areas in CHAL. The Hariyo Ban Program focused on conservation of Sati Sal in the eastern part of TAL in the first phase.

C. Biodiversity monitoring in the context of climate change

The Program commissioned action research that contributed to conservation of focal species, looking at species distribution, habitat use, and carrying capacity. In Phase I, the Program established a series of long-term terrestrial plots along the altitudinal gradient in the Gandaki basin and collected baseline data to monitor the impacts of climate change on species, habitats, and people. Phase II undertook the first periodic five-year biodiversity data collection. Seventy-seven species of mammals, 337 species of birds, 232 species of butterfly, 49 species of herpetofauna, and 366 species of flora were recorded in the permanent plots with development of comprehensive faunal and floral data sets. This was complemented by a river connectivity study in CHAL .

D. Reducing human-wildlife conflict

While expanding wildlife populations are conservation successes, they can also aggravate human-wildlife conflict (HWC). Serious impacts of HWC occur in the mountains, mid-hills, and Terai, and include loss of human life and injury, loss of livestock and property, and crop damage, as documented in studies such as Acharya et al. (2016) and Chhetri et al. (2019). People may kill wild animals in retaliation. HWC can cause significant hardship; the Program's baseline survey in five working districts found that of more than 500 households surveyed, 64.5% reported an average financial loss of USD 88.69 per year in 2016–2017 (WWF-Nepal 2018), a very significant amount for poor households. At the end of the Program, the loss per year per household had been reduced to USD 62.16. Hariyo Ban worked both on preventive measures to avoid conflict and on mitigating measures to reduce impacts when conflict does occur. Interventions ranged from policy provisions to field actions in order to facilitate community resilience.

Preventive measures: Hariyo Ban II supported tested measures such as cultivation of crops undesirable to wildlife and predator-proof corrals recommended by conflict prevention/mitigation action plans and action research. Improved predator-proof corals in both CHAL and TAL significantly reduced economic loss from livestock depredation by predators, mainly common leopard in the Terai and the mid-hills and snow leopard in the high mountains. For example, 121 households in conflict hotspots in CHAL that suffered about USD 1,700 of damage during the three-year period 2017–2019 received support that reduced their HWC losses to zero. A study undertaken among 181 households provided with predator-proof corrals in TAL revealed that average annual cases of livestock depredation decreased from 33 to 16 following the construction of the corrals. Eight conflict leopards were safely captured using traditional traps

POWER FENCING AGAINST THE HIMALAYAN BLACK BEAR

Almost 5 km of power fence was installed around the village of Prok in MCA during Phase I to guard against crop damage by Himalayan black bears and monkeys. The fence proved very effective against bears but but was less effective against primates. Nonetheless, community members felt safer and started cultivating fields adjacent to the forest that they had previously left fallow. They no longer needed to guard their fields during the nighttime when black bears are most active in raiding crops. In many places, poor fence maintenance over time was a major reason for failure of HWC control. However, in Prok, a committee was formed to undertake maintenance under the ownership of the local community, as a result of which fencing measures were still effective at the end of the Program. The committee leveraged about NRs 200,000 (USD 1,807) from the rural municipality for maintenance work.

at hotspots in Tanahun district and released in their natural habitat in Tanahun (2), in Chitwan National Park (2), and at various animal facilities in the country (4).

The Program also supported people in planting crops that are unpalatable to wildlife. For example, 47 households in Banpale CFUG, Kaski, in the Seti River corridor planted 6,600 lemon trees on 12 ha as an alternative crop to minimize primate damage. However, prevention of damage by primates is generally hard to tackle. The Human-Primate Mitigation Project, supported by the Program's Small Grants Program, tested various mitigation measures in CHAL hotspot areas, but unfortunately none was promising enough to replicate at a larger scale.

Hariyo Ban also supported awareness programs focused on wildlife behavior and preventive measures for conflict species such as leopard. In Phase II, 122 awareness events reached 4,440 CFUG members and schoolchildren in the Seti, Marshyangdi, and Daraundi sub-river basins. Furthermore, HWC awareness was also raised through CLACs, reaching 825 people in TAL.

Mitigating measures: Hariyo Ban provided support to three types of HWC relief funds; a fourth is operated by the government. All the relief funds are complementary to one another, and they have been operating well. In Phase I, the Program supported the establishment of a national-level rapid-response HWC relief fund managed by NTNC, which provides relief funds (ex-gratia) for livelihood activities to families who lose members or suffer injury in HWC. During Phase II, 75 people tragically lost their lives or were injured by wildlife in conflict hotspots in 13 districts. Nearly 450 victims and family members directly benefited from the fund. Since this fund does not cover crop damage or loss of property, Hariyo Ban piloted innovative models of HWC relief funding at the regional level (in the Seti River corridor) and community level (in the buffer zones of Bardia and Chitwan National Parks) for these purposes.

The Seti River Basin Relief Fund was established collectively by 116 CFUGs with initial support of USD 16,000 from the Program, covering 14,000 households in Kaski and Tanahun districts. By 2020, 63 households had received a total of NRs 300,975 (USD 2,719) for crop damage. FECOFUN has scaled out this scheme in the Marshyangdi sub-river basin based on learning and experience from Seti; the FECOFUN district chapter and local government allocated NRs 750,000 (USD 6,775), and a mechanism to manage the relief fund is in place. The Program also supported rapid relief funds in the Bardia and Chitwan buffer zones, benefiting 100 households. Both HWC management models were presented to local governments in CHAL and TAL for possible incorporation in their annual planning.

In addition, Hariyo Ban II partnered with Artha Institute (a private company) to pilot a wildlife damage insurance scheme in Mirgakunja, a high-conflict buffer zone area of Chitwan National Park. Funds were leveraged from the local government (Ratna Nagar Municipality), which paid the insurance premiums. The scheme covered death, injury, and damage to property, livestock, and crops, insuring 666 people

KEY RESULTS IN REDUCING HUMAN-WILDLIFE CONFLICT

Preventive measures such as alternative crops and predator-proof corals reduced HWC for **301** affected households in CHAL and **345** HHs in TAL.

7,936 people in TAL and CHAL have increased awareness of wildlife behavior and preventive measures.

Over **75** families with a member who experienced loss of life or injury due to HWC received rapid relief funds from the National Relief Fund established in Phase I.

The Seti River Basin Relief Fund provided relief to **63** households for crop damage.

A wildlife damage insurance scheme was piloted engaging private sector in Mirgakunja, a high-conflict buffer zone area of Chitwan, and scaled out in Bardia.

in 149 households with an annual premium of around NRs 4,870 (USD 44) for an average household. A family who lost a member in a wild elephant attack immediately received NRs 1 million (USD 9,033) in relief support. Major benefits of insurance schemes like this include quick payment of compensation, less paperwork, and a wide range of insurance options. However, continuation of the insurance scheme is challenging since households cannot afford the premiums. On a positive note, this effort has been scaled out in Bardia NP, incorporating design and learning from Chitwan. The governments at federal and provincial levels are exploring alternatives to their existing wildlife relief compensation scheme based on the mechanism and results shared. The government has already made provision to engage private sectors (insurance companies) in providing compensation to the affected families through 2021/2022 FY budget.

HWC policy support: Conflict with common leopard is widespread across the country, and elephant conflict is severe in the Terai. Hariyo Ban supported the government in the development of human-elephant and human-common leopard conflict management strategies and plans for Nepal.

E. Combating poaching and illegal wildlife trade

Poaching is a major threat to wildlife in Nepal, and the country is both a source and a transit route for illegal wildlife trade. Hariyo Ban II made a major effort to combat poaching and illegal wildlife trade. Poaching and illegal wildlife trade also increase the risk of emerging zoonotic diseases like COVID-19, and their control is a high priority.

Poaching of wildlife for domestic use is limited primarily to deer species for bushmeat, while other species are poached and smuggled abroad for their trophies, body parts, and hides. The long, porous northern and southern borders and the large market centers for wildlife in China encourage illegal trafficking, which needs to be tackled at multiple levels. Nepal has made extraordinary strides in controlling poaching of large mammals. Only ten rhinos were lost to poaching during the 10 years of the Hariyo Ban Program, compared to 12 animals in a single year in 2009-2010, thanks to the combined efforts of the government, communities, and conservation organizations. Poaching of tigers has been minimal in TAL-Nepal compared to TAL-India. Hariyo Ban helped tackle illegal wildlife trade on several fronts, working with traditional and non-traditional stakeholders. This included mass awareness raising; facilitation of coordination at local, national, and transboundary levels; capacity building and mobilization of local communities; and work with non-traditional partners such as the customs and transport sectors.

Community-based anti-poaching units: In Phase I, Hariyo Ban mobilized CBAPUs in critical parts of the landscapes to patrol their forests, share information on illegal activities, and rescue orphaned and problematic animals. In Phase II, the Program built on this work to increase surveillance at the grassroots level, organizing CBAPUs into clusters to make them more effective, with regular cluster- and

KEY RESULTS IN ANTIPOACHING AND CONTROL OF ILLEGAL WILDLIFE TRADE

415 community-based antipoaching units were capacitated and engaged in gathering information.

3,996 people from nonconventional sectors including **769** customs and postal officers and **2,968** transportation workers were trained/sensitized in combating wildlife trade.

Seven WCCB district cells in Surkhet, Bajhang, Kailali, Gorkha, Kaski, Mustang, and Kathmandu were supported in institutional capacity building and mobilization.

272 women journalists were trained in CWT and produced media programs and articles reaching national and regional audiences.

39,617 people were reached in other outreach events.

Mass awareness using traditional music

© WWF Nepal, Hariyo Ban Program

© WWF Nepal, Hariyo Ban Program/Nabin Baral

Anti-poaching youth mobilization campaign, Surya Patuwa, Bardia

sub-cluster-level meetings. These helped promote networking and provided a platform to share experiences, information, ideas, and learning, as well as developing local approaches to shared challenges. Innovative spatial monitoring and reporting tool (SMART) technology was introduced more widely for community patrolling of corridor forests, as had been done in Kamdi corridor for forest guards and CBAPU members. Mobilization of CBAPUs in the two landscapes has helped with controlling poaching and illegal trade; for example, the DFO in Kaski took action against eight people who were convicted of deer poaching based on information passed on by CBAPU members. CBAPUs' contributions are recognized nationally each year in Nepal on March 3, National CBAPU Day.

Working with non-traditional sectors: Analysis of seizure reports indicated that wildlife consignments were mainly being trafficked via land routes in Nepal. Major trade routes and trade hubs were identified in Hariyo Ban Phase I. In Phase II, the Program sensitized 2,968 drivers and support staff on these routes, distributing information materials and posting hoarding boards. In an effort to tackle smuggling across international borders, training was provided to 769 customs officers and postal personnel on wildlife crime and their roles and responsibilities in reducing it. A training manual was also prepared.

Wildlife Crime Control Bureau: Nepal's Wildlife Crime Control Bureau (WCCB) comprises enforcement agencies and operates at multiple levels. Hariyo Ban II supported institutional capacity building and mobilization of WCCB district cells in Surkhet, Bajhang, Kailali, Gorkha, Kaski, Mustang, and Kathmandu, with capacity building for 702 WCCB members.

Other government officials: Training events strengthened the capacity of 109 government officials from park authorities and division forest offices, to investigate wildlife crime, covering national and international contexts of poaching and wildlife trade legislation as well as investigative tools and processes for combating wildlife crime. The events were facilitated by retired judges, the Forest Directorate, and officials from the District Attorney's Office and the High Court. In addition, 320 government and community forest guards were trained on HWC, combating wildlife crime and climate adaptation.

Sensitization and mass awareness: Recognizing the value of the media to reach the general public with messages about curbing wildlife crime, Hariyo Ban II trained journalists in Nepal in combating wildlife trade (CWT). Since women comprise only 25% of the 7,500 journalists in Nepal, and very few of them were reporting on environmental issues, the Program partnered with the NGO Sancharika Samuha, a forum of women communicators, to do this. A total of 272 women took part, coming from all seven provinces and representing radio, television, online, and print media. CWT was widely covered by leading media outlets after the training. These journalists are very likely to carry on investigating and reporting on wildlife crime, raising awareness among the general public including decision-makers, policymakers, academics, and students.

Hariyo Ban also undertook other mass awareness work aimed at the general public and more specific audiences. It supported street dramas, and capacity-building and sensitization workshops for NRM groups, students, and local government authorities on legal aspects, with 9,006 participants. The Program also focused on domestic and international airports and border crossings, installing digital display boards and posters in 12 airports; civil aviation records showed 9,978,000 passengers in these airports in 2018–2019.

The Program also mobilized folk singers. Wildlife crime stories were set to music by Gandharbha, a traditional singer playing the sarangi (a traditional instrument). The songs were relayed through social media and radio stations targeting local communities, commuters, and people in bazaar areas along the Birgunj-Rasuwaghadi Road, reaching at least 6,000 people. The audiovisuals are available on YouTube.[4]

F. Policy engagement

The Program supported the government in developing climate-smart, conservation-friendly, pro-poor, and GESI-sensitive policies, legislation, strategies, and plans (see Annex 2). This included formulation and revision of five priority species conservation action plans. The government will continue Hariyo Ban-supported species conservation work including reestablishing herbivore assemblages after Hariyo Ban II ends.

4 https://www.youtube.com/watch?v=pRzZBYlGKwY&list=PLVhfNuPfNaqNMv90yopKTIrEQCgKv36O-.

RESULT 1.2: THREATS TO TARGET LANDSCAPES REDUCED

Building on the results from the first phase, Hariyo Ban II focused on reducing threats and vulnerabilities (see Table 1 and 2) in critical habitats in order to restore and conserve biodiversity and improve ecosystem services for people. This included promoting climate-smart management of key grasslands and wetlands, critical forest corridors in TAL, and biodiversity-important areas, climate refugia, critical watersheds, and north–south corridors in CHAL. The Program also worked on reducing environmental impacts of poorly planned large infrastructure development. Interventions were linked with the climate change adaptation component through work in LAPA and ISWMP sites. Overall, land use-land cover analysis shows a 13% increase in forest cover in CHAL and a slight decrease in forest cover—0.5%—in TAL between 2011 and 2020, which Hariyo Ban likely contributed to, along with many partners. Decrease in forest cover in TAL could be due to large-scale conversion for large infrastructure projects (irrigation canals, transmission lines) and forest encroachment in the landscape (WWF-Nepal 2021).

A. Critical habitat management

Habitat Management interventions were focused to reduce threats and vulnerabilities to critical habitats that include corridors, forests, grasslands, and wetlands.

i. Corridors

Securing and maintaining ecological connectivity is crucial for landscapes to function effectively. In TAL and CHAL, Hariyo Ban supported improved management of 970,524 ha of critical habitat in corridors and core parts of protected areas. Six TAL corridors are functioning, with evidence of dispersal of species such as tiger and elephant. Occupancy of suitable TAL habitat by tigers almost doubled in the past 10 years, from 37% in 2009 to 68% in 2018.

A study commissioned by Hariyo Ban (WWF-Nepal 2013b) indicated that stepping-stones or hotspots in corridors provided refuges for a large number of mammals such as tiger, leopard, and pangolin in lowland areas; leopard, pangolin, and red panda in the mid-hills and high mountains; and leopard and snow leopard in the high mountains. In Phase II, the Program invested in facilitating the connectivity of these stepping-stones with strategic threat and vulnerability reduction.

ii. Forests

Much of the forest in corridors, buffer zones, and sub-river basins is managed by local communities. Previously, a major limitation for community forests had previously been delays in renewing their five-year community forest operational plans (CFOPs). Hariyo Ban supported district forest offices and CFUGs in renewing 318 backlogged plans covering 21,531 ha in TAL corridors and Daraundi, Marshyangdi, and Seti corridor bottleneck areas. These CFUGs are now well positioned to

KEY RESULTS IN LANDSCAPES AND HABITATS

Forest cover in CHAL increased by 13% over the past 10 years.

970,524 ha of biologically significant areas were placed under improved natural resource management.

50,826 ha of biologically significant areas showed improved biophysical condition.

Six TAL corridors were functioning with evidence of large mammal dispersal in the past 10 years.

26 perennial water sources were conserved.

Three existing sub-watershed plans were revised; five new plans were prepared; and eight sub-watershed plans were implemented with Hariyo Ban support.

Integrated Lake Basin Management Plan of Lake Cluster of Pokhara Valley (2018–2023) was supported in its development and implementation.

318 community forest operational plans were renewed and implemented with Hariyo Ban support.

Fire insurance scheme was expanded to all 77 districts.

continue forest management and conservation, contribute to corridor functionality, and address critical climate change issues beyond the Hariyo Ban period.

In order to improve and scale up community forest management approaches in critical corridors and other areas while ensuring benefits for people, Phase II worked with stakeholders to develop a model community forest (CF) approach. This promotes sustainable management of forests through effective implementation of CFOPs, ensures that user groups are inclusive and accountable, and promotes economic empowerment of forest users through use of forest products and forest-based enterprises. There is a special focus on building leadership and ensuring equitable benefit sharing for forest-dependent poor, women, Dalit, and marginalized groups. The Program supported 12 pilot model community forests, one in each landscape complex in TAL and each sub-river basin in CHAL. These early-adopter model community forests are intended to develop into learning centers for neighboring community forests, hence helping to scale up the approach in blocks of community forests within key parts of the landscapes. Model community forests are described in more detail in WWF-Nepal (2019a).

Hariyo Ban II continued to tackle threats from uncontrolled forest fires and livestock grazing. Work on forest fires included piloting insurance schemes covering human injury and death; FECOFUN has expanded insurance coverage across the country in all 77 districts using its own resources as part of a nationwide forest fire campaign. Planting of high-value tree saplings in corridors and on private land was supported for corridor restoration and to provide additional food security and income for forest communities, facilitating connectivity and also improving the biophysical condition of critical habitats.

Through the Small Grants Program, Hariyo Ban II collaborated with the United Kingdom Aid-Funded Policy and Institutions Facility to support the Forest Research and Training Center in MoFE to revisit ecosystem and forest mapping in Nepal. There was no reliable data on spatial distribution of ecosystems in Nepal; available information dated back to the 1970s when Dobremez (1976) identified Nepal's ecosystems based on altitude, bioclimatic regime, and vegetation type, classifying 118 ecosystems and 198 vegetation types. The new assessment complements Hariyo Ban's ongoing efforts to map critical habitats (grassland, forest, wetland, and high-altitude rangeland) in CHAL and TAL. Results will be available in the next two years.

iii. Grasslands

Grasslands play a crucial role in maintaining large herbivore assemblages and predator guilds including tiger and leopard species. However, grasslands across TAL and CHAL are shrinking due to encroachment of woody perennials, invasion of alien plant species, and frequent fires, and this loss is exacerbated by climate change. At the same time, knowledge of grassland management is inadequate, especially given the changing conditions.

Hariyo Ban supported management of critical grasslands in the four complexes in TAL with the aim of enhancing prey populations and large herbivore species such as rhino. It also supported establishment of long-term research on grassland ecology, identifying optimum mowing regimes to enhance nutritional quality of grass for wildlife including tiger prey populations. Results demonstrated the importance of regular mowing; plots that were mowed four times a year had higher levels of nitrogen (crude protein) and phosphorus, essential nutrients for herbivores. Ungulates favored the frequently mown plots, and deer tended to prefer larger plots (60 m x 60 m) over smaller ones to reduce the risk of predation. Recommendations from this research will guide optimum management of floodplain grasslands and wetland habitats.

iv. Wetlands

Phase II provided support for wetland management in several sites, including improved management of aquatic

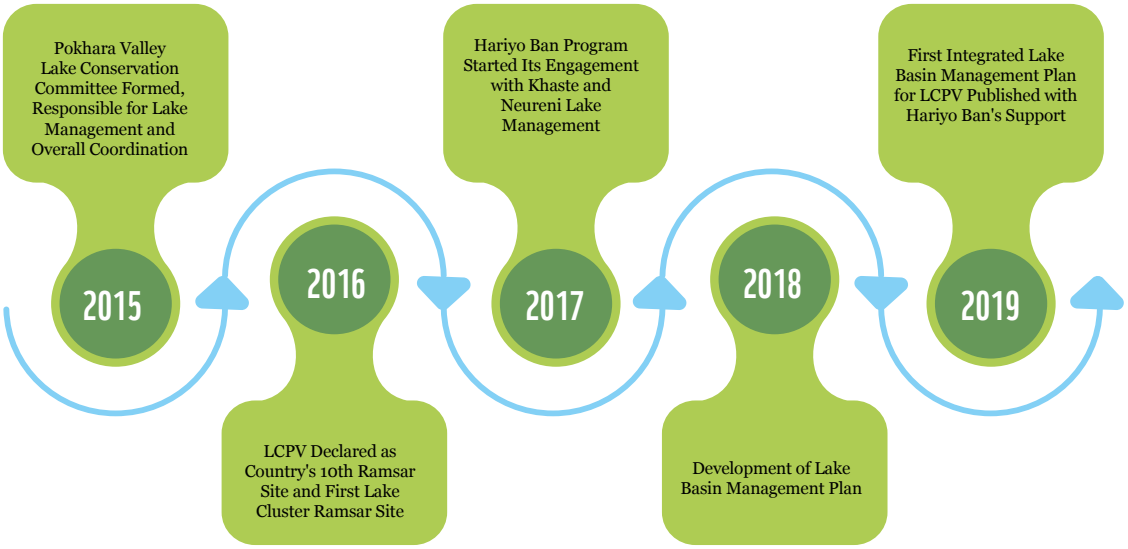


FIGURE 8: TIMELINE FOR DEVELOPMENT AND MANAGEMENT OF THE LAKE CLUSTER OF POKHARA VALLEY AS A RAMSAR SITE

Source: WWF Nepal, Hariyo Ban Program

© WWF Nepal, Hariyo Ban Program/Rupendra Ghale

Khaste Lake restored

habitat and 26 perennial water sources for water supplies, and management support to various Ramsar sites including Beeshazari Lake in Chitwan and the LCPV. The latter was declared as Nepal's 10th Ramsar site in 2016, following much preparatory work by many stakeholders. In Phase II, Hariyo Ban supported the government to develop the National Ramsar Strategy and Action Plan (2018–2024) and collaborated with stakeholders to produce the government-approved Integrated Lake Basin Management Plan of Lake Cluster of Pokhara Valley (2018–2023) (Figure 8). A major threat to the lakes in the Pokhara Valley is siltation, accelerated by inappropriate land-use practices and more intense rainfall due to increasing climate variability. Extreme and unpredictable weather events also cause challenges for LCPV communities.

The Program supported various interventions in LCPV across seven of the nine lakes, with a focus on Khaste and Neureni Lakes. Here, it worked in the upstream catchments to reduce sediment entering the two lakes and hence increase their life spans by supporting tree planting and restoring degraded forest land; promoting changes in agricultural practices from annual to perennial crops such as coffee and cardamom; and supporting greening of rural roads and small-scale erosion-control measures. Through its collaboration with the Khaste-Neureni Lake Management Committee and local stakeholders, Hariyo Ban support has helped bring about a dramatic change in the health of the lakes. It also supported construction of an information center providing education on the lakes and good land management practices, which has been visited by approximately 300 people a month.

For other lakes, erosion control measures have continued in Andheri Khola in the upper Phewa catchment to reduce siltation. The willow trees planted along Phewa Lake in Phase I are providing shade and dyke protection as well as enhancing the aesthetic value of the lake; in Phase II, this was replicated in Khaste-Neureni, Gunde, and Maidi Lakes. Fish farming support in Gunde, Khaste, and Maidi Lakes is helping conserve the lake ecosystems and provide economic benefits to the lake beneficiaries. Spring sources including recharge zones in and around the watershed of the LCPV have been mapped, and to date, 799 ha has been managed through LCPV wetland restoration initiatives, which will ultimately lead to improved biophysical condition. The provincial government, including other agencies (Pokhara Metropolitan City and its ward offices, bankers, shareholders of cooperatives of lakes, and other stakeholders engaged in lake cluster conservation and management), has leveraged over USD 295,500 to implement priority conservation activities in the lake cluster. The Program has worked to build capacity in LCPV communities to adapt to the adverse impacts of climate change through training and technical support.

B. Payments for ecosystem services

Phase I supported the initiation of two pilot PES schemes in the Phewa and Marshyangdi watersheds in CHAL, and Phase II has continued that support. The schemes aim to reduce sedimentation in Phewa Lake and Middle Marshyangdi Dam through erosion control activities by stakeholders in the upper parts of the watersheds, which are paid for by downstream users. The Phewa scheme is described here, and Marshyangdi is described in the climate adaptation section.

The Pokhara Metropolitan City Office is coordinating the process in Phewa; a management committee has been formed that operationalizes and enhances coordination. Hariyo Ban supported study visits to Chilika Lake in India and the PES site in Marshyangdi for members of the Phewa Watershed Ecosystem Management Board and stakeholders from the watershed. The Program also supported a lake-cleaning campaign and planting of cardamom to retain sediment in Phewa. The Phewa Management Board collected funds from the service receivers (around USD 3,800). More than 500 hotel entrepreneurs have received green stickers, a proxy indicator showing their attitude and commitment to soil erosion-control measures adopted by upstream communities.

Monkey using the arboreal bridge

C. Reducing threats from infrastruture development

Poorly planned linear infrastructure and dams are an emerging threat to both human and ecological communities in Nepal. Linear infrastructure—including roads and irrigation canals—is being built without considering safety standards, creating serious impacts on people, wildlife, and habitats. Sometimes these structures traverse protected areas, critical corridors, and watersheds. Impacts include loss of farmland and water sources, landslides, siltation and flooding, wildlife roadkill and drowning in irrigation canals, and habitat loss and fragmentation. Hariyo Ban has supported the government in promoting environmentally sound infrastructure, including facilitation of the process to develop the Wildlife Friendly Linear Infrastructure Guideline (Figure 9). The Guideline covers roads, railways, transmission lines, and irrigation canals through planning, designing, construction, and operation. In late 2020, the Guideline was under review by MoFE to include the latest developments in design mitigation measures from around the world to make it more robust.

Poorly planned rural roads without adequate design for surface water management and slope protection have resulted in slope instability and high sedimentation rates downstream in many parts of the mountains and mid-hills. Hariyo Ban supported the Department of Roads to prepare a green road engineering

KEY RESULTS IN INFRASTRUCTURE

Green Road Engineering Training Manual supported by Hariyo Ban is being used to train local government engineers in sound practices.

Wildlife Friendly Linear Infrastructure Guideline will reduce wildlife impacts of linear infrastructure.

Wildlife crossings and underpasses were successfully piloted on main roads.

Guiding fences reduced wildlife drownings in Sikta irrigation canal.

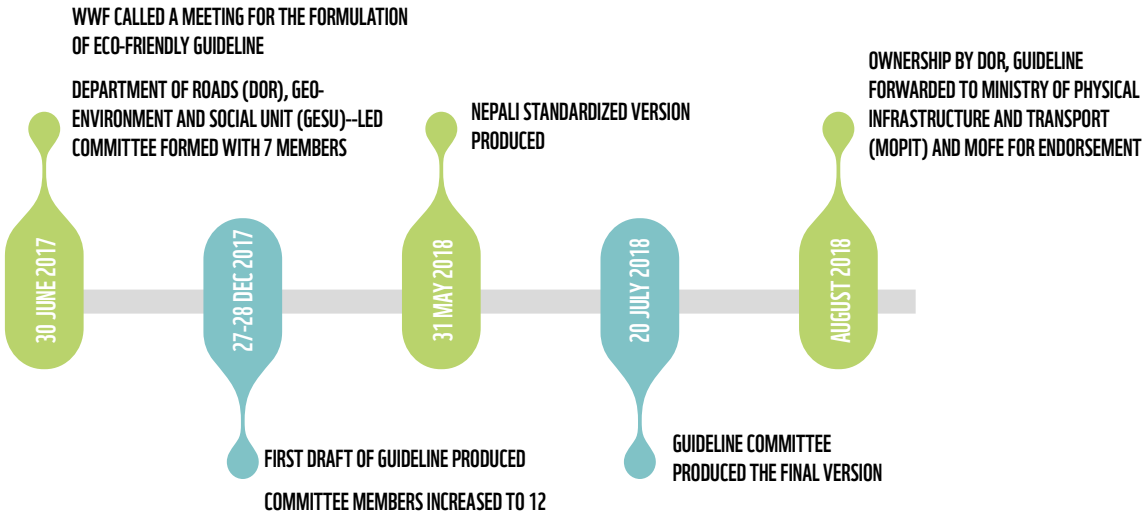


FIGURE 9: TIMELINE FOR DEVELOPMENT OF THE WILDLIFE FRIENDLY LINEAR INFRASTRUCTURE GUIDELINE

Source: WWF Nepal, Hariyo Ban Program

training manual, which has been endorsed and used for building capacity at the local level, including for training of local government engineers in CHAL.

In an effort to reduce roadkill, Hariyo Ban piloted six canopy bridges for arboreal species in the most roadkill-prone locations along the east–west highway traversing Banke National Park. Camera-trap monitoring revealed four species frequently used the bridges to cross the road: Indian grey langur, rhesus macaque, Asian palm civet, and a mouse species. The Program also supported the Department of Roads in assessing the effectiveness of the first four wildlife underpasses constructed in Nepal, on the Narayanghat-Mugling highway; the underpasses were used by 15 mammal species and four bird species. This successful approach can be replicated when expanding or upgrading other roads that cut through critical wildlife corridors and national parks. The Program also piloted guiding fences along a stretch of the Sikta Irrigation Canal in Banke National Park to guide wild animals to safe crossing points. Incidences of drowning appear to have been reduced significantly (nine animals drowned in 2015 before installation and none after 2015). This approach is being planned for replication in the Babai River secondary irrigation canal in Bardia NP by WWF.

RESULT 1.3: MARKET-BASED LIVELIHOOD ALTERNATIVES DEVELOPED AND PROMOTED

The livelihoods work in Hariyo Ban supported a large number of forest-dependent people in critical corridors, buffer zones, and conservation areas to improve their lives, including poor people, women, Dalits, and marginalized people, with the intent of simultaneously reducing pressure on forests. The Program catered to people from a wide range of socioeconomic situations by supporting small-scale enterprises including skill-based training; medium-scale enterprises for block planting of high-value crops (HVCs) and NTFPs; and large-scale ecotourism enterprises.

A. Small-scale enterprises

Small-scale enterprises focused on forest-dependent communities, particularly poor and marginalized families with limited livelihood opportunities, by diversifying their options and increasing their income. This was expected to reduce their dependency on the forests. Revolving funds established in NRM groups in the first phase of Hariyo Ban were monitored during the second phase; results from the Seti and Marshyangdi sub-river basins and Chitwan-Barandabhar complex showed that households (many of them women-led) using the revolving funds were growing vegetables and rearing goats, buffaloes, poultry, and pigs to get quick returns on their investments. The Program provided technical and managerial training for small-scale individual-level enterprises; to scale

KEY RESULTS IN LIVELIHOOD SUPPORT

30,270 people living in critical parts of the landscapes had improved economic benefits as a result of enterprises supported by Hariyo Ban, and **communities have earned NRs 149,673,494 (USD 1,352,064).**

389 forest-dependent youth received vocational training; 68% subsequently found employment, 40% started their own businesses, and many reported they were using the forest less.

993 households received support for small-scale enterprises such as livestock rearing, vegetable farming, and clay jewelry making, which reduced forest dependency and encouraged participation in conservation activities.

Medium-scale enterprises based on high-value crops and non-timber forest products such as coffee, tea, cardamom, and honey **benefitted 1,951 households** and in many cases resulted in improved environmental practices.

171 households benefited from support for homestay enterprises based on nature tourism, providing strong incentive for conservation.

IMPROVING LIVELIHOODS AND EMPOWERING WOMEN

In Tanahun district, Parvati Sunar and other women from 26 poor Dalit families in Bhanu Municipality-3 used to collect firewood from the nearby Deurali community forest. The forest lies in an important north–south biodiversity corridor, and firewood collection was a key threat. Hariyo Ban provided the group with a loan through the revolving fund to make traditional clay jewelry. Bhanu Municipality and the Sall Family Foundation provided funds to construct a community building where the enterprise is based, and the group prepared a business plan. The group is now selling jewelry to buyers from Kathmandu and Pokhara. With the increased income, women are able to send their children to school, and their standing in the community has grown dramatically. They no longer collect firewood, and are protecting the forest around them.

Clay jewelry

up the vegetable farming, the Program helped establish two vegetable collection and selling centers in Jhalari, Kanchanpur, and Thakurbaba Municipality.

Vocational training for forest-dependent youth continued in Phase II; of the 389 youths trained, 68% found employment and 40% started their own businesses after the training. Those who were subsequently employed reported that they were using forest products less, mainly due to increased farm and non-farm income, along with a shift from firewood to other types of household cooking energy such as biogas (38%) and liquid petroleum gas (54%). The attitude of trainees toward conservation also changed: they were becoming role models in their communities, motivating their peers to conserve natural resources. In addition, the Small Grants Program supported 45 forest-dependent people to establish and strengthen small enterprises in CHAL. They received training in entrepreneurship development, accounting, and business plan preparation. Their enterprises were registered and were reported to be running smoothly. Income is typically used for business expansion and meeting household expenses, especially for children's education and medical care.

B. Medium-scale enterprises

Medium-scale enterprise support focused on block planting of high-value crops and NTFPs, involving groups of farmers or CFUGs in a particular location for economies of scale in processing and marketing. Training was provided in entrepreneurship development and business plan preparation, ensuring that enterprises were sustainable and, where possible, climate smart. Support was provided to strengthen and scale up the enterprises, and covered plantation management, value addition, organic certification, and market linkages.

Coffee: Organic coffee plantation was established in three locations, with macadamia nut and avocado as shade trees. Plantations were all on private land that was either fallow or being used for cereal crops like rice. The coffee helped decrease

LIVELIHOODS AND CONSERVATION LINKAGES: THE CASE OF BARANDABHAR FOREST CORRIDOR

A survey of approximately 1,200 households in the Barandabhar corridor examined the linkages between livelihood support and conservation. Income from livelihood activities supported by Hariyo Ban helped improve livelihoods of poor households, and reduced forest dependency:

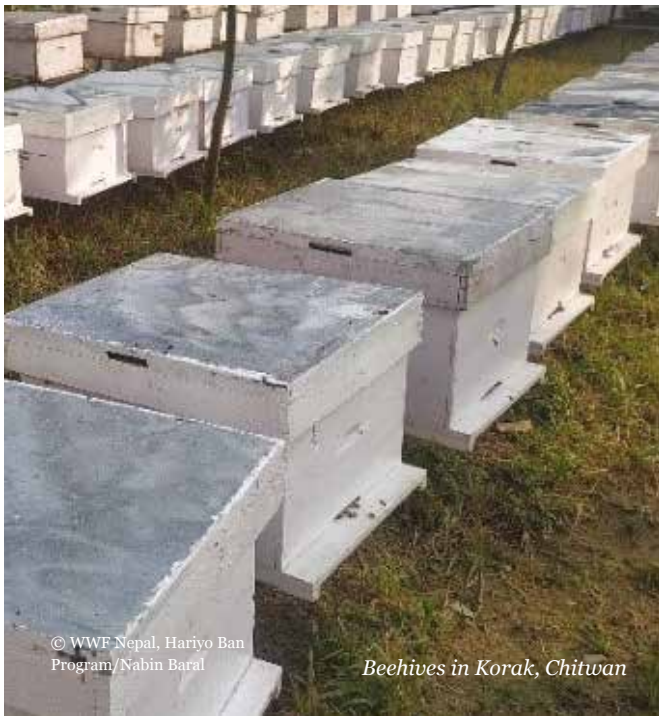
- Annual income increased significantly in households receiving Program support for livelihood interventions compared with households that were not supported.
- Many households were also receiving remittances and had other forms of income.
- Increase in incomes resulted in households moving from firewood to liquid petroleum gas and biogas for cooking energy.
- Livestock numbers increased, but grazing decreased due to an increase in stall-feeding, and dependency on community forests for fodder decreased.
- Households reported that their use of fuelwood, timber, forage, and fodder from community forests declined slightly from 2010 to 2019. However, collection from private plantations increased.
- Wildlife numbers and wildlife movement increased.
- Wildlife damage to livestock and assets declined, but crop damage increased.
- Livelihood support and provision of revolving funds at the community level encouraged community members to participate in conservation activities such as tree planting, control of forest fires, and prevention of illegal extraction of forest resources and wildlife poaching.
- Overall, biodiversity threats declined in Barandabhar Forest Corridor.

Source: Hariyo Ban Program (2020b)

forest dependency, directly benefiting 438 households. The plantations increased vegetation cover and helped reduce soil loss/erosion from plantation areas, hence reducing sedimentation in the Phewa Lake. Coffee income helped the farmers switch from firewood to gas for cooking, hence reducing local pressure on forests.

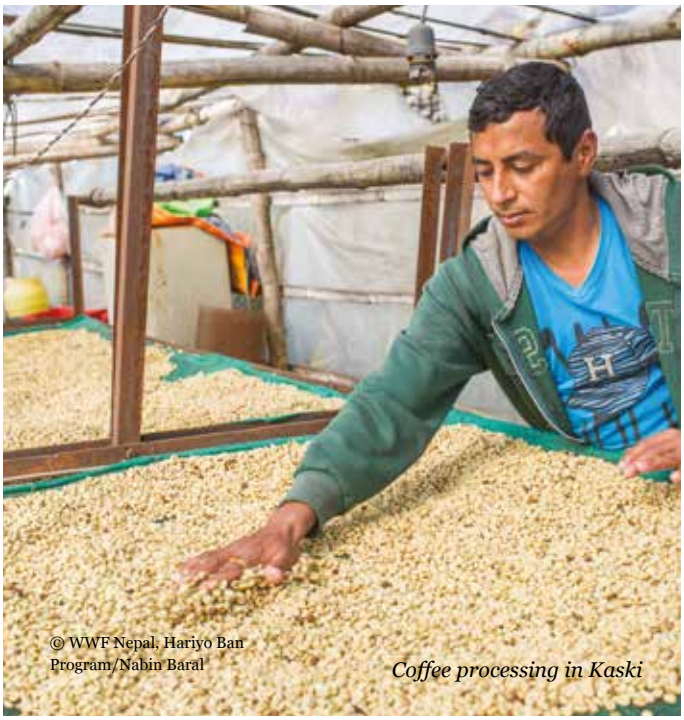
Honey: Hariyo Ban II promoted honey enterprises in selected communities in partnership with local government and the private sector. In Korak, Rapti Municipality, Chitwan, a butternut (*chiuri*) honey enterprise focused on youth and Indigenous communities in eight CFUGs is helping households earn income and reduce pressure on forests. The people planted butternut saplings for pollen, acquired beehives, and received training in technical aspects and entrepreneurship. A honey-collection center was built in Korak with financial support from Hariyo Ban and other partners. In 2020, the communities produced 30,840 kg of butternut honey worth NRs 9 million (USD 83,581), which they sold on the local market. Honey production also created job opportunities for youth, reduced women's workloads, and reduced pressure on the natural resource base; communities used to collect firewood and poach wildlife, but they have stopped doing that. Elsewhere, Hariyo Ban supported a honey enterprise in Sirdibas in MCA, which started production in 2020, though the COVID-19 crisis disrupted expansion and strengthening of the enterprise.

Cardamom: Cardamom is a high-value crop native to Nepal. It can increase income and employment for forest-dependent youth and poor communities, reducing pressure on forests and decreasing human-primate conflict (cardamom is not palatable to monkeys). Hariyo Ban II supported the scaling up of an existing cardamom enterprise initiated by NTNC in Annapurna Conservation Area in Madi Rural Municipality, Kaski district, providing dryers and irrigation facilities.



© WWF Nepal, Hariyo Ban Program/Nabin Baral

Beehives in Korak, Chitwan



© WWF Nepal, Hariyo Ban Program/Nabin Baral

Coffee processing in Kaski

© WWF Nepal, Hariyo Ban Program/Nabin Baral

Broom grass

Sixty-seven households produced six tons of dry organic certified cardamom in 2020, generating NRs 3,600,000 (USD 32,520). Elsewhere in Kaski, the Program supported upscaling of cardamom production; income is being utilized to pay forest guard salaries and control illegal activities in community forests.

Broom grass: Flowers of native broom grass are tied in bundles to make sweeping brooms, which are used all over Nepal. For this enterprise, 353 ha of steep degraded slopes in four leasehold forests in Gaighat bottleneck area, Tanahun, and one community forest in southern Kaski district were planted with broom grass as part of the Seti corridor restoration. Previously, the slopes were slashed and burned for low-productivity farming. A recent survey showed that 69 poor households produced 17,250 brooms in 2020 that sold in the local market for NRs 862,500 (USD 7,791). The additional income helped meet basic household needs including education and medical care. Broom grass leaves are used to stall-feed livestock. Incidence of forest fire, soil erosion, and landslides are decreasing, and wild animals are now sighted more frequently.

Cinnamon: Cinnamon is a native plant commonly used as a spice in Nepal, particularly the leaves and bark. It is also sometimes used as fodder for livestock, and the timber is used to make furniture. Planting cinnamon helps restore forests and provides good income for forest users. In one of the critical bottleneck areas of the Seti corridor, 83,850 cinnamon seedlings were planted in 24 ha of communal and private lands.

Wool weaving: Women from user groups in Barandabhar corridor community forests were previously dependent on selling firewood from the forest. They received hand looms and training in carpet weaving. They started weaving carpets and earning money by selling them; this created alternative income and reduced the need to sell firewood.

Tea: A tea cooperative was established in Bhadaure in the upper Phewa catchment, on the site of a previous tea plantation. Organic tea produced on 2 ha in Bhadaure is sold in the local market. Tea is a long-term crop with low inputs; it helps retain soil and creates good habitat for small mammals and birds.

Bel (golden apple fruit) juice: The Mountain Tanahun Community Bel and Fruit Processing Enterprise in CHAL is an initiative of six CFUGs in Myagde Rural Municipality. In the first phase, 16,000 bel (*Aegle marmelos*) saplings were planted, and a business plan was prepared to establish the bel juice enterprise. Hariyo Ban continued support in Phase II, strengthening and upgrading the enterprise, which has earned around NRs 289,200 (USD 2,612) annually. Through engagement in the enterprise and outreach, community members have gained enhanced understanding of the importance of the forest and its conservation.

Madal: Madal is a traditional double-headed drum used by Nepali musicians. A drum-making enterprise was developed by a poor and marginalized forest-dependent Badi community in Kailali district in western TAL. The Program facilitated the formation of a management committee, business plan preparation, and skill training. Links were developed between the enterprise and two CFUGs, which provide khamari (*Gmelina arborea*) wood on a sustainable basis for making madals. The Badi community is being economically empowered through sustainable use of a forest product.

C. Large-scale enterprises

Hariyo Ban Program supported ecotourism development across 10 sites in TAL and CHAL with a focus on homestays with local families. Support included training in hospitality management, nature guiding, and cookery; development of tourism facilities and attractions; and production of information and educational materials. Homestay businesses directly benefited 171 households. Data from nine sites indicates 11,635 national and international visitors came between July 2019 and June 2020, generating NRs 7.3 million (USD 65,698) for 124 households. The income supports households in meeting basic livelihood requirements and educating their children. Support has also been leveraged from local and provincial governments, which supported Kulung homestay in the construction of foot trails, a community house, and a Magar cultural museum in the village.

Lockdown during first and second waves of the Covid-19 pandemic seriously impacted green enterprises due to restriction of mobility, lack of raw materials, and lack of demand for services and products. A rapid assessment was conducted to identify impacts and possible measures to support and strengthen the enterprises. Based on recommendations from the assessment, the Program supported recovery and strengthening of 10 highly impacted green enterprises, including revision of business plans to integrate coping mechanisms, addition of cold storage capacity, enhanced market linkages, equipment and machinery support, and safety and protective equipment. This helped revive the enterprises.

Homestay in Bhadaure

THEORY OF CHANGE

CLIMATE CHANGE ADAPTATION COMPONENT

If local, subnational, and national stakeholders are able to conduct participatory climate vulnerability assessments, prepare integrated local adaptation and sub-watershed management plans, and mainstream into local development planning processes, and if national and subnational policies and plans incorporate climate change vulnerability reduction measures as an integral part of development planning processes to prepare and implement climate-smart development plans, then participatory climate change vulnerability reduction practices will be institutionalized that will lead to climate change vulnerability reductions in TAL and CHAL.

CLIMATE CHANGE ADAPTATION

STRATEGIC APPROACH

The climate change adaptation component aimed to reduce climate change vulnerability (see Table 1 and 2) in CHAL and TAL. The Program's approach to adaptation integrated community and ecosystem adaptation as well as disaster risk reduction. It focused on poor, vulnerable, and socially excluded communities and used improved ecosystem services to help them increase their resilience and adapt to climate change. Recognizing that many ecosystems and the services they provide are themselves vulnerable to climate change, the Program worked to build the resilience of these systems. Since adaptation does not take place in a vacuum, Hariyo Ban mainstreamed this work into other Program components to make them climate smart.

The Program's adaptation component worked at multiple scales to accommodate natural processes and the three tiers of government. At the community and municipality levels, Hariyo Ban used bottom-up planning with communities, local governments, and other partners to assess local vulnerability and design and implement adaptation plans (mainly LAPAs and ISWMPs). The process took into account differential vulnerability of women, senior citizens, poor people, and marginalized groups, and focused on community forests, municipality wards, and sub/micro-watersheds, with interventions that often covered several sectors.

Support to integrate and mainstream CCA and DRR in local-level planning processes was a major thrust, particularly after federal restructuring and election of local governments. Adaptation plans (LAPAs and ISWMPs) prepared in Phase I were revised to align with the restructuring of local bodies, and new adaptation plans were prepared at the municipality level; plans were mainstreamed into local planning processes to ensure ownership and sustainability and to leverage funding. LAPAs and ISWMPs were primarily implemented in bottleneck and degraded areas of the Seti sub-river Basin and Barandabhar corridor, contributing to conservation by protecting water sources, stabilizing slopes, and reducing impacts on downstream human as well as ecological communities. A cascading training approach was rolled out as well as training for direct beneficiaries to build capacity of stakeholders from national to local levels, and a large amount of outreach was done.

At larger scales, vulnerability-assessment, resilience-building, and adaptation work was undertaken for protected areas, corridors critical for species movement, and landscapes. The Program supported mainstreaming of climate resilience building and adaptation in the implementation of GoN's TAL and CHAL strategies.

Hariyo Ban prepared a resilience framework and methodology for measuring resilience for Program use. It provided policy inputs including support to prepare an approach paper on integrated river basin management by DSCWM, which became the basis for MoFE and the National Planning Commission's NIRBSAP. Flood hazard mapping in collaboration with DHM informed disaster preparedness and rescue plans of local governments.

Climate adaptation interventions in Phase II directly or indirectly reached 151,075 beneficiaries (75,840 males and 75,235 females).

RESULT 2.1: PARTICIPATORY CLIMATE CHANGE VULNERABILITY REDUCTION MAINSTREAMED INTO GOVERNMENT PLANNING PROCESSES

Hariyo Ban supported mainstreaming of CCA and DRR into government planning through LAPAs, ISWMPs, and periodic plans. Training, workshops, and engagement with local, provincial, and federal governments created an enabling environment for integration and mainstreaming of not only CCA-DRR, but also biodiversity conservation, GESI, and governance. The leveraging of resources for implementation of CCA-DRR integrated plans was given high priority, and by December 2020, NRs 118.9 million (USD 1.1 million) had been leveraged from local governments and line agencies in Hariyo Ban working areas for the implementation of the LAPAs, ISWMPs, and other plans supported by the Program, demonstrating the degree of interest and ownership of local governments and line agencies. In the course of this mainstreaming and implementation work, Hariyo Ban coordinated and collaborated with various stakeholders.

A. Support to PES piloting

In addition to the Phewa PES scheme outlined in the Biodiversity Conservation section, Hariyo Ban supported PES piloting in the mid-Marshyangdi watershed in Lamjung district starting in 2013. This initiative focuses on retaining sediment in upstream areas to reduce sediment deposition in the reservoir and damage to the turbines of the Middle Marshyangdi hydropower plant and is the first of its kind in Nepal. Besides reducing the operating cost of hydropower generation, it helps build resilience of local communities and ecosystems in the upstream watersheds. The Program facilitated the institutionalization of the PES mechanism, including establishment of the Marshyangdi Environmental Services Management Network (MESMaN), a network of upstream service-providing CFUGs; the Hydropower Promoters' Network (HPPN), a network of five service-receiving hydropower projects; and the District Technical Management Committee (DTMC), the mediating/facilitating body. A PES basket fund[5] mobilization guideline was developed and subsequently approved by DCC Lamjung; now local governments are developing their own guidelines. A memorandum of understanding was developed between MESMaN and HPPN, facilitated by DTMC. With the restructuring of the GoN, the Program then worked with Marshyangdi Rural Municipality and Besisahar Municipality to help develop a municipality guideline on basket fund mobilization; MESMaN institutions were established with local groups at the rural municipality and municipality levels; and the local government made a commitment to allocate budget to support implementation. This has strengthened the mechanism and helped ensure sustainability of PES initiatives in the Marshyangdi sub-river basin. Policy decisions by Marshyangdi Rural Municipality may stimulate other local, provincial, and federal governments to come up with a comprehensive PES policy.

B. Support to the local government planning process

The advent of stronger and more accountable local government units following the 2015 constitution and elections provided an opportunity for Hariyo Ban to help mainstream climate adaptation and DRR, building on its existing work with stakeholders. The Program organized coordination and sharing meetings with all local governments in its working areas at the beginning of each fiscal year to build common understanding of activities to be implemented. These helped promote mainstreaming of CCA-DRR from LAPAs and ISWMPs into the local government planning process; several local governments incorporated CCA-DRR activities in their annual plans and budgets, including Myagde Rural Municipality, Kalika and Besisahar Municipalities, and Pokhara Metropolitan City. Further support for local governments came at a sub-watershed scale, with a coordination meeting with the chief of the Chure Terai Madhesh Conservation Development

5 Basket Fund is a fund managed by DTMC and spent to conserve/manage upstream areas of the watershed. Financial support received from any organization including local governments is deposited in Basket Fund's bank account.

KEY RESULTS IN INTEGRATING CLIMATE ADAPTATION INTO PLANNING PROCESSES

Implementation of 32 CCA- and DRR-integrated LAPAs and eight ISWMPs was supported.

Climate-smarting was supported for six protected area management plans.

A differential impact assessment and response planning framework was developed and implemented.

Development of National Integrated River Basin Strategy and Action Plan was supported.

A payment for ecosystem services scheme in the Marshyangdi watershed was institutionalized, with approved PES Guideline.

INTEGRATION OF VULNERABILITY ASSESSMENT IN GREEN ENTERPRISES

Concerned that climate change could affect the sustainability of some of green enterprises, the Program facilitated climate vulnerability assessment and response planning for bel juice, coffee, nettle powder (sisnu), cardamom, and madal enterprises. For example, bel fruit is collected in six community forests that are vulnerable to forest fire during the dry season. The Program initiated awareness raising about forest fire management in the communities, as well as fire line construction and removal of dry biomass that could fuel uncontrolled fires.

The Program learned lessons from these experiences. While incorporation of vulnerability assessment at the value chain analysis or initial enterprise planning stage is the best option, attracting adequate attention for the assessment at this stage can be challenging because of the focus on business planning. Vulnerability assessment can also be retrofitted when the enterprise is running, taking advantage of the practical knowledge and experience of the enterprise. The climate response plan should be considered a live document and should be mainstreamed, implemented, and reviewed on an annual or biennial basis so that the enterprise can adapt to ongoing change.

Overall, climate vulnerability assessment and response planning were valuable inputs to the enterprises and are strongly recommended. They should be incorporated in any future guidelines and manuals for enterprise development produced by government or other agencies; this would help scale up the approach and help avoid investment in enterprises that are likely to fail because of climate change.

Board's Program Implementation Unit in Chitwan and the Division Forest Office in Chitwan to share information and plan joint interventions in the Khageri Khola sub-watershed. Regular sharing meetings were conducted with the Soil and Watershed Management offices in Lalitpur and Tanahun; the Federal Watershed Management Resource Centre, Kulekhani; the Basin Management Centre for the Gandaki River; and local governments and other stakeholders for scaling up/out CCA interventions including integrated watershed management.

Besides these meetings, the Program regularly supported, encouraged, and engaged with local governments on mainstreaming CCA-DRR, biodiversity conservation, GESI, and governance approaches in their policies and plans. For example, the Program provided technical support for the preparation of master plans for Thakurbaba Municipality in Banke and Bheemdatt Municipality in Kanchanpur, and for Myagde Rural Municipality (Tanahun)'s periodic plan.

Hariyo Ban conducted training in CCA-DRR, LAPA mainstreaming and implementation for elected members of local governments and stakeholders. A total of 11,362 people including 5,731 women participated in the training, learning about causes and impacts of climate change, climate-induced disasters, and risk reduction and adaptation measures.

C. Engagement in higher-level government planning and policy formulation

Hariyo Ban coordinated with the Ministry of Internal Affairs and Law in Gandaki Province and the United Nations Development Program on the preparation of a province-level disaster risk reduction/management policy and strategic action plan by sharing Hariyo Ban approaches and learning.

The Ministry of Forests and Environment endorsed the revised LAPA Framework in 2019; this framework integrates learning from the Hariyo Ban Program such as CCA-DRR integration, differential impact assessments, and responses. The DIARP Framework developed by the Program was acknowledged by MoFE as an important document for effective implementation of the revised LAPA Framework. The Program supported the rollout of DIARP in coordination with local governments.

D. Capacity building of GoN technical staff

The Program twice provided training on sub-watershed management planning, following the government's Sub-watershed Management Planning Guideline of 2016. Trainees included 33 GoN officials from the then-Department of Soil

Conservation and Watershed Management and District Soil Conservation Offices, Department of Forests and Soil Conservation (DoFSC), Basin Management Centers (Gandaki and Mahakali), Federal Watershed Management Resource Center (Kulekhani), Soil and Watershed Management Offices, and DoFSC's Building Climate Resilience of Watersheds in Mountain Eco-Regions Project, Dadeldhura. Fourteen Hariyo Ban staff also received the training, which included theory sessions followed by practical field exercises and presentations. The training covered best practices in ISWMP planning including climate vulnerability assessment, differential impact assessment and response planning, GESI, and governance aspects. Most of the trainees subsequently went on to apply their training as they participated in preparation of ISWMPs.

Hariyo Ban also supported capacity building of 758 local government representatives, including 249 women, on CCA-DRR themes; this contributed to a greater understanding of the need to mainstream watershed management as well as CCA-DRR measures in their regular planning process and interventions.

E. Engagement with policy-makers

The Program continued to engage with policymakers at various levels in order to enhance their knowledge of climate adaptation and community-based conservation linked with policy provisions and improvements that were needed. Consultation meetings were organized with locally elected officials to discuss climate change and its impacts, adaptation and mitigation measures, community awareness on biodiversity, water resources depletion, livelihood and forest-based enterprises, and local governments' roles in policy formulation. Seventy-seven people participated in consultation meetings, including 30 people who represented the local governments of Makwanpur, Gulmi, and Tehrathum districts.

As part of its work engaging with policymakers to improve policy frameworks, the Program also organized visits for 17 federal policymakers to several project sites to raise their understanding of climate change adaptation and community-based biodiversity conservation.

During engagement with government agencies and other influential stakeholders, Program staff highlighted the vulnerability of poor, vulnerable, and socially excluded men and women, and its causes. Participants/beneficiaries of the activities, particularly on mainstreaming of CCA-DRR in local policies and planning processes, were selected to ensure inclusive representation. At the end of each activity, public auditing of expenses was carried out to ensure transparency and good governance.

F. Climate change impact monitoring at scale

Hariyo Ban initiated long-term climate change impact monitoring for biodiversity and communities in the Gandaki river basin through 12 permanent terrestrial plots in Phase I. The plots are in areas that are projected to be either vulnerable or resilient to climate change in the long run. Automatic weather stations were installed at selected locations, and baseline ecological and socioeconomic information was collected in a series of surveys by teams of experts. In Phase II, baseline biodiversity data collection was completed. Future monitoring of the plots should identify climate-induced changes to the forest ecosystems and species, as well as impacts on nearby human communities by observing climate-induced changes in ecosystem services, agriculture practices, water resources, and local livelihoods. For example, the plots can be used to track species shifts to higher altitudes and cooler places as climate change advances, including the upper tree limit. The Program has ensured that the baseline reports and data will be readily available in the future to aid periodic monitoring and analysis, and a paper was being prepared on this work at the time the Program ended. WWF-Nepal will continue its engagement with long-term monitoring of the plots after the Program ends, in collaboration with NTNC, Institute of Forestry, other institutions, and local and provincial governments.

River embankments protecting agriculture land and settlement in Lamjung

RESULT 2.2: COMMUNITY READINESS TO ADAPT TO AND BENEFIT FROM CLIMATE CHANGE INCREASED

In Phase I, Hariyo Ban supported the preparation and implementation of many LAPAs, CAPAs, and ISWMPs. With the government restructuring, there were new opportunities for mainstreaming adaptation plans and leveraging support at the local-government scale of operation. Therefore, in Phase II, the Program built capacity in local governments and focused on LAPAs, local disaster and climate resilience plans (LDCRPs) (plans of local municipalities), and ISWMPs in selected critical corridors/bottleneck areas and sub-river basins. In addition, the Program also supported in the updating of protected area management plans and CFOPs to make them climate smart. Hariyo Ban supported policy formulation and subsequent implementation, working with three levels of government.

The Program supported activities like awareness raising, tree planting, river/stream bank protection, construction of conservation/recharge ponds, and water source protection. GESI and governance, as the cross-cutting issues, were integrated by the formation of inclusive institutions. Effective targeting of poor, vulnerable, and socially excluded households and groups was ensured through specific programs like the promotion of GESI-friendly tools and technologies. Model community forests incorporated DIARP.

In order to build future capacity, school and university students received training in CCA-DRR resilience building. The Program provided technical support to the Institute of Forestry, Tribhuvan University, to integrate climate change mitigation and adaptation as well as wildlife biodiversity conservation, livelihoods, and GESI into the Bachelor of Science and Master of Science forestry curricula. This will help ensure that future generations of foresters in Nepal will carry forward these approaches and help scale them up.

A. LAPA implementation

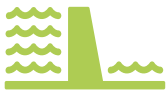
LAPA preparation and implementation were major parts of Hariyo Ban's CCA component. Building on investments in Phase I, Phase II supported scaling up implementation of 78 local adaptation plans including integration of DIARP in 20 LAPAs. Overall, this support benefited 26,823 households including 14,094 Janajati households and 3,809 Dalit households vulnerable to climate change and disasters. In order to support a systematic balance of activities that complemented local government financing, the Program funded LAPA activities in four categories: (i) awareness-raising, capacity building, and governance (10% of the budget); (ii) climate-adaptive/resilient livelihoods activities responding to differential impact, and GESI activities (20%); (iii) small-scale construction/adaptation technology/DRR infrastructure (60%); and (iv) planning, monitoring, review and reflection, and sharing learning (10%). A total of NRs 95.3 million (USD 860,987) was leveraged from local governments and other line agencies and NRs 18.9 million (USD 171,192) was contributed by local communities through labor or cost-share

KEY RESULTS IN COMMUNITY ADAPTATION

121,008 people were supported to use climate information or implement risk-reducing actions to improve resilience to climate change.

Supported implementation **of 78 LAPAs and eight ISWMPs,** reducing climate vulnerability and disaster risk for poor, vulnerable, and socially excluded people, communities, and settlements.

91 drinking water schemes and **26 irrigation schemes** were supported.



New or improved measures to reduce flooding, riverbank erosion, and landslides were supported in **83 sites.**

11,362 people trained in climate change adaptation and DRR.

28 adaptation plans specifically addressed the differential impacts of climate change and disasters on women and vulnerable people.

Local institutions for sustainable watershed management were developed through multi-stakeholder engagement in integrated sub-watershed management.

IMPROVING AGRICULTURE AND FOOD SECURITY THROUGH LAPA IMPLEMENTATION

The Program supported 3,675 farmers in the implementation of adaptive and commercial farming practices and techniques to increase productivity and build resilience. This included beekeeping, improved goat shed management, and organic kitchen gardening/vegetable farming.

To help overcome the effects of the increasingly erratic weather patterns affecting farming practices, the Program provided training and support for climate-smart vegetable farming; this included use of organic pesticides and liquid organic fertilizer, and plastic tunnels (greenhouses) for off-season crops. For example, 70 households in Pumdi Bhumdi, Pokhara-22, that received support for plastic tunnel farming produced 28,000 kg of tomatoes in six months in 2020 and made NRs 1.9 million (USD 17,706) in sales. Most of them used their income for children's education and household expenses. An additional 18 households from Kristinachnechaur, Kaski, earned NRs 300,360 (USD 2,713) from the sale of tomatoes, spinach, beans, and cauliflower produced in tunnels.

A total of 2,217 households benefited from the construction of irrigation canals in 18 sites to provide more reliable water supplies for climate-resilient farming in light of increasingly erratic rainfall.

Three farmers' groups in Farm Tole (Banke) whose fields are vulnerable to recurring floods received training in mushroom farming, undertaken in raised sheds near their houses. In light of their strong interest and success, mushroom farming has been scaled out to another 20 farmers' groups in the area.

The Program supported the establishment of an agro-ecological farming demonstration plot in Myagde Rural Municipality-3 to promote climate-smart organic farming. Capacity building of the lead farmers, ward chairperson of Myagde Rural Municipality-3, and head of Agriculture Section of Myagde Rural Municipality was carried out by organizing exposure visits for them to three model sites, where they observed the farm and learned about the importance of organic farming, farmer-friendly farming techniques, coordination mechanisms with local governments, and market linkages. After the visit, the participants prepared an action plan and translated their learning into practice.

for LAPA implementation. The wide range of LAPA activities reflects the many ways people are vulnerable to climate change in Nepal, varying by locality and group of people. The following box provides examples of interventions in agriculture and food security.

Water was also a major focus in LAPAs. Small-scale construction activities were carried out as part of a package of interventions under LAPAs, LDCRPs, ISWMPs, and NRM plan such as community forest operational plans (CFOPs) to conserve and manage water for household use and irrigation. This included 54 water-source protection activities (catchment protection, source improvement, and water distribution), which benefited 3,505 households, as well as irrigation pond construction in Mustang and construction or improvement of several recharge/conservation ponds. Poor, vulnerable, and socially excluded people gained better access to clean drinking water in several municipalities through these activities.

Hariyo Ban support to LAPAs was closely coordinated with local governments, beneficiaries, and stakeholders. In all districts where the Program supported LAPA implementation, it held meetings and workshops with LAPA/local disaster and climate resilience (LDCR) committee members and others to facilitate the institutionalization of adaptation planning, monitoring, review and reflection, and learning. These were valuable not only for mainstreaming and scaling up adaptation and DRR in the regular planning process of local governments but also for strengthening synergies and collaboration for resource leverage. LAPA/LDCR committee members were accountable for and monitored LAPA/LDCRP field activities. In Raptisonari-5 they also assessed vulnerable

COVID-19 Response

LAPA/LDCR committees played an important role during the COVID-19 pandemic. "The LAPA/LDCR committee was mobilized to discuss how to plan and respond to the pandemic. The committee provided a platform to gather and act promptly. Later, we formed different committees at municipal and ward levels to respond to the emerging situation."

Karna Bahadur Hamal, Mayor, Krishnapur MP, Kanchanpur

sites and households before handing over material support to differentially impacted groups. The Program also undertook regular follow-up with CFUGs implementing LAPA activities. There is strong ownership of LAPA implementation by local governments and communities, and many have demonstrated commitment to continue and maintain LAPA interventions after Hariyo Ban support ends, including small-scale infrastructure.

LAPA work was complemented by the establishment of a CCA-DRR learning center; demonstration and promotion of climate-smart, time and energy-saving GESI-friendly tools, technologies, and practices; and engagement of youth (particularly students) in building capacity of communities on CCA-DRR. A total of 4,144 students and teachers received training in CCA-DRR, and over 400 undergraduate and postgraduate university students in Tribhuvan, Kathmandu, and Pokhara universities were trained in climate change and resilience building through online training. We anticipate that this will help mainstream climate change adaptation in Nepal in the future as the next generation of professionals carries the work forward and scales it up. High school students, youth, and teachers led campaigns to promote activities such as tree planting, landslide treatment, plastic pond construction, off-seasonal vegetable farming, and cleaning and maintenance of drinking water sources. They prepared action plans to sensitize communities on CCA and DRR, and some have put their plans into action. For example, students cleaned up the areas around drinking water sources and maintained the water supply system in Shivadhunga Tole of Pokhara-21; now people can access clean and sufficient drinking water.

Model Site Development for Building Climate Resilience: As part of its integrated approach applying elements from all its components and themes in one place, the Program developed a model site for LAPA implementation where it could build local resilience through integrated activities and learn about best practices and encourage their scaling up. The Program selected Parki Tole in Bedkot Municipality-4, Kanchanpur, which was highly vulnerable because of high flood risk and the low socioeconomic status of its Dalit community. Hariyo Ban supported activities on social mobilization, climate change adaptation, disaster risk reduction, livelihood improvement, GESI, and governance in close collaboration and coordination with Bedkot Municipality and Baitada CFUG. Resilience-building activities included construction of an embankment on the Chaudhar River to reduce flood risk; income-generating activities such as piggeries for poor families and moong dal farming; biogas installation with elevated toilets to reduce disease risk after flooding; bamboo and sissoo planting to strengthen an embankment and help prevent flooding in the settlement; construction of a multipurpose community building that can serve as an emergency shelter; and a campaign against caste-based discrimination and child marriage.

Five leading women farmers received training on high-value crop production and vegetable farming. They built plastic tunnels and produced off-season vegetables: cucumbers, bitter gourd, bottle gourd, and tomatoes. Their households consumed some of the vegetables and sold the surplus. Kalasha Okheda reported, "From the money we earn selling vegetables we can buy wheat and rice. This farming technique has enabled us to earn even during difficult times in the COVID-19 lockdown."

Protection from recurring floods; improved livelihoods from climate-smart income generation activities; improved health and sanitation; awareness about their rights and entitlement to benefits through the CFUG and local and state government; and enhanced capacity for social mobilization have cumulatively helped this community become more resilient to climate-induced hazards and have greater adaptation capacity due to improved, climate-smart livelihoods and greater inclusivity in the CFUG. The involvement of the local government and the CFUG and the proactiveness of community members are all seen as pillars for sustainability. People from neighboring communities, other wards in Bedkot Municipality and surrounding municipalities, local government, and CFUG executive members have visited the demonstration site and interacted with the local community; a brief was prepared on the demonstration site. Local government officials have expressed commitment to scale the approach out in similar communities.

Safety net measures: The Program piloted safety net measures by supporting poor and vulnerable families to take out health and livestock insurance in the beginning of Hariyo Ban II. Seventy-eight families in Baunnelek Jukepani CFUG, Pokhara-21, took out health insurance for two years, and 19 households made claims, receiving NRs 67,000 (USD 605) for medical expenses. Puran Sarki, one of the beneficiaries, said, "I got a NRs 5,000 (USD 45) discount on my wife's treatment for a nerve condition. I realize the importance of health insurance. Since it is a very good scheme, I'll renew it and will also encourage my neighbors to do the same." However, the number of households purchasing health and livestock insurance without Hariyo Ban support has not increased as expected, as most households did not have any problems during the insurance period. For poor households, the cost of

premiums appear to outweigh the risk of future health-care costs and livestock losses in light of their many other needs.

Support for local government: The case of Thakurbaba Municipality: In collaboration with Regional Community Forestry Training Center for Asia and the Pacific (RECOFTC, The Center for People and Forests), Hariyo Ban provided technical and facilitation support for the preparation of Thakurbaba Municipality's Strategic Master Plan. The municipality then prepared its annual program and budget based on the master plan. In light of this experience and learning, RECOFTC published a guideline to help local representatives in other municipalities prepare their periodic plans (RECOFTC 2020). Hariyo Ban also supported the preparation and implementation of disaster preparedness and response plan (DPRP) at the municipal level as part of the master plan roll out.

Hariyo Ban collaborated with the USAID-funded Paani Program to conduct training on CCA, DRR, and a flood early warning system (EWS) in Thakurbaba and Madhuban Municipalities, for upstream and downstream people in the lower Karnali who had been flood victims in previous years. Differential impacts of climate change were given due consideration in the training. This helped increase understanding of the importance of upstream-downstream linkages and collaboration in flood risk reduction. At the end of the training, an action plan was developed for an EWS in Thakurbaba and Madhuwan Municipalities.

B. ISWMP Implementation

ISWMPs are prepared by local communities and other stakeholders in the sub-watershed. They contain actions to achieve a sustainable and healthy sub-watershed through sustainable use of watershed natural resources with appropriate land uses, strengthening upstream-downstream linkages, and promoting sustainable livelihoods and measures to reduce climate hazards like landslides and floods, along with conservation, GESI, and governance measures.

The Program supported the implementation of eight ISWMPs in Phase II. Three were revised following support in Phase I, and five new ones were prepared following the government's Guideline on Sub-Watershed Management Planning 2016 (Table 3). Hariyo Ban facilitated, supported, and collaborated with local, provincial and federal governments, organizations, local communities (upstream and downstream communities), community forest user groups, and other relevant stakeholders (e.g., CBOs) to prepare ISWMPs. The ISWMP planning process is outlined in Figure 10.

These plans integrated CCA, DRR, biodiversity conservation, GESI, and governance activities and were endorsed by the then district soil conservation offices and respective local governments. Institutional mechanisms for effective watershed management were put in place, establishing and strengthening 23 sub-watershed and micro-watershed coordination committees to mobilize local communities to implement the

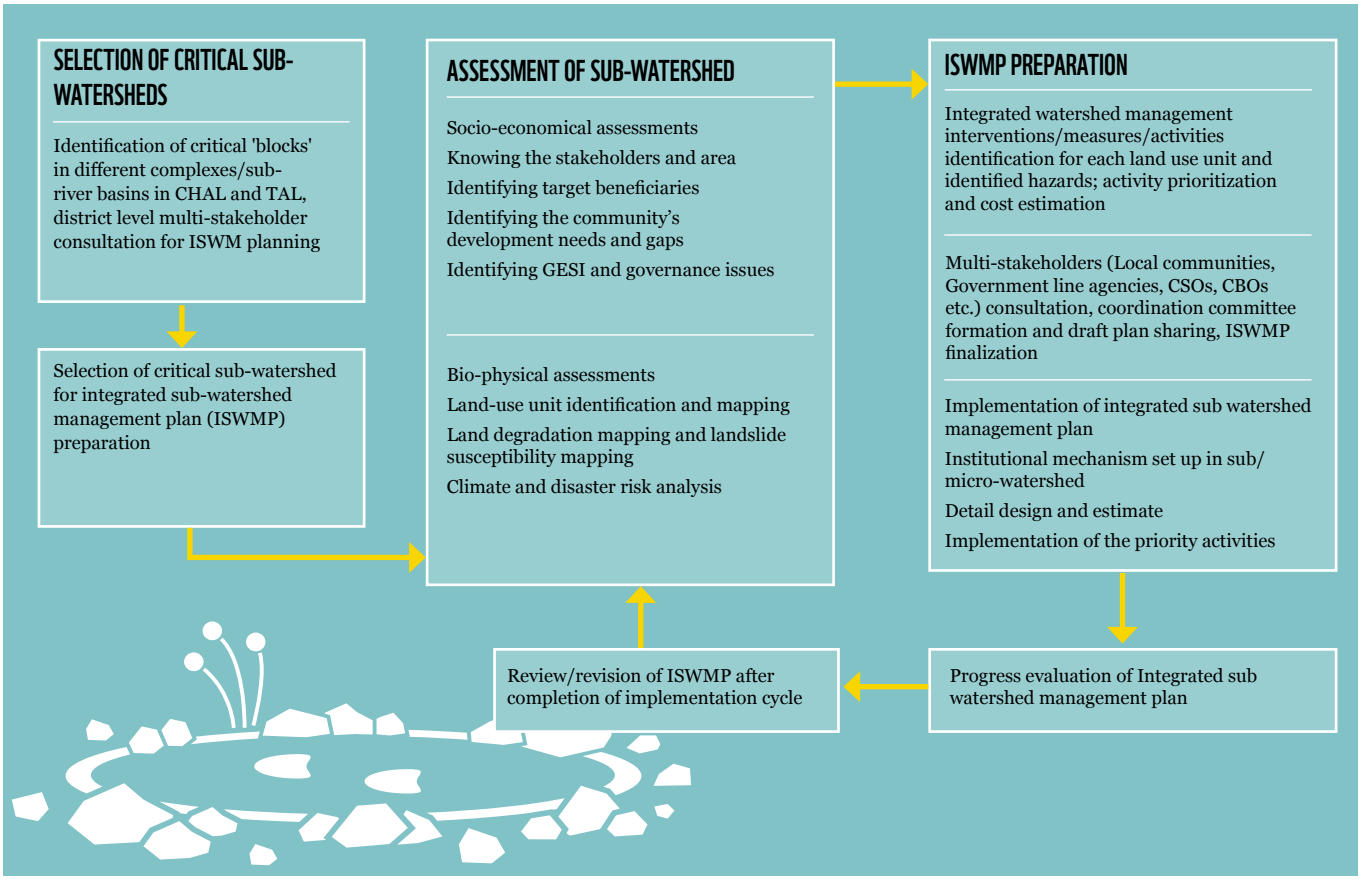


FIGURE 10: INTEGRATED SUB-WATERSHED MANAGEMENT PLANNING FRAMEWORK

Source: DSCWM (2016) adopted by Hariyo Ban Program adding initial step for critical sub-watershed selection

TABLE 3: ISWMPS SUPPORTED BY HARIYO BAN IN PHASE II

PHASE I ISWMPS REVISED AND SUPPORTED	NEW ISWMPS
Tallo Harpan Khola, Kaski	Phusre Khola sub-watershed, Kaski
Kyangdi Khola, Tanahun, and Syangja	Khageri Khola sub-watershed, Chitwan
Dhand Khola, Tanahun	Khudi-Marshyangdi sub-watershed, Lamjung
	Pantura Khola sub-watershed, Dadeldhura
	Radha Khola sub-watershed, Kanchanpur

ISWMPs in collaboration with local NRM groups and local governments. One of the sub-watershed-level committees (Khageri Khola sub-watershed conservation committee) was registered as an NGO in Chitwan, an important step in the process to gain recognition for sub-watershed-level people's organizations. Various institutions formed at the district and local levels for PES piloting were mobilized and strengthened to implement the Khudi-Marshyangdi ISWMP. The extended Seti sub-river basin level coordination committee was reorganized by adding representatives from sub-watershed coordination committees and CFUGs.

ISWMP activities have benefited 30,700 people vulnerable to climate change and disaster (50% of them female). A total of NRs 23.5 million (USD 212,715) was leveraged from local governments and other line agencies and NRs 3.9 million (USD 35,660) was contributed by local communities through labor or cost share for ISWMP implementation. ISWMP adaptation activities included river/stream bank protection, landslide treatment, degraded land rehabilitation, and recharge/conservation ponds construction, water source protection, adaptive livelihood support, and networking of sub-watershed coordination committees. Bioengineering techniques were applied in small-scale construction. The box above illustrates the major work of the ISWMPs.

EXAMPLES OF ISWMP RESULTS

- Construction of embankments in critical riverbanks and stream banks helped reduce flood risk for 2,024 vulnerable households.
- Construction of dams to harvest runoff helped recharge groundwater through infiltration, and the impounded water was often used for irrigation and as a water source for wild and domestic animals.
- Water source protection in 37 places improved drinking water access for 2,084 households.
- Support for eight irrigation systems benefited 340 farmers.
- Construction of eight recharge ponds helped 474 households secure water for multiple purposes; for example, six recharge/conservation ponds in the upper Khageri Khola sub-watershed have 8,932.12 m^3 storage capacity, increase underground water recharge and soil moisture content, enhance biodiversity conservation, make drinking water available for wildlife, and have the potential to provide for drinking water, irrigation, and recreation.
- Improved biophysical condition of 1,633 ha delivered benefits including protected water sources, stabilized slopes, protected stream banks and riverbanks, rehabilitation of degraded lands, and enhanced soil moisture.
- Vulnerable communities received livelihood support, including support for alternative livelihoods such as honey production, and support for improved livestock practices and commercial vegetable farming.

Capacity building in support of ISWMP work included training for government technical staff in ISWMP implementation and orientation and sensitization on conservation, CCA, and DRR. Community forest members received training in skills ranging from fire management to documentation and account keeping. Several review and reflection meetings, planning meetings, and exposure visits were organized, and workshops were held on upstream-downstream linkages and institutional strengthening, bringing together upstream and downstream dwellers to enhance their understanding of the issues and enabling them to take ownership of the plan and its activities. Cross-site visits were organized; for example, members of Ichhakamana Rural Municipality (RM) and other stakeholders visited the Khageri Khola sub-watershed to share achievements, experience and learning in scaling up effectively integrated watershed management activities. Gita Gurung, chairperson of Ichhakamana RM, and her team appreciated the progress made and committed to allocating resources for scaling up watershed management activities.

Hariyo Ban organized learning sharing events on the implementation of ISWMPs in Khudi Marshyangdi, Khageri Khola, and Phusre Khola sub-watersheds. These included panel discussions with representatives of key stakeholder groups including government officials at the district, city, municipality, division, and basin levels; community representatives; and other stakeholders. The events were video recorded, and a documentary, *Jaladhaar Sarokar*, was produced and broadcast; it was also used for more targeted outreach.

A major challenge for watershed work is the lack of legitimacy of sub/micro-watershed institutions due to the lack of updated GoN policy on watershed management. Even the Khageri Khola sub-watershed conservation committee, a registered NGO, has challenges with its long-term sustainability. GoN is preparing the Integrated River Basin Strategy and Action Plan and has initiated an amendment of the Soil and Watershed Conservation Act 1982. Based on learning from integrated watershed management, Hariyo Ban provided suggestions on institutional provisions at the sub-river basin, watershed, and sub-watershed levels for both policy documents, which would give rights and authority to sub-watershed institutions in the future.

The Program has focused the attention of various stakeholders on the value and challenges of integrated watershed management and natural resource management; the need for packages of activities to tackle climate and disaster risk, biodiversity conservation, and GESI and governance issues; the importance of coordination and collaboration among different stakeholders; and the formulation of plans and policies for watershed and natural resource management.

Sediment retention and stream protection in Mulsyangdi Stream, Khageri Khola

C. Other field-level adaptation activities

Greening in Mustang: The Program supported the greening inititive in the trans-Himalayan region in the northern Kaligandaki sub-river basin in Mustang. Greening in this cold desert is a pilot initiative to maintain landscape functionality, creating climate refugia, and promoting sustainable use of resources in the long term. Building on local indigenous knowledge, the activity supported age-old practices of nurturing native tree species. Block planting was carried out in 13.3 ha in Ghami, Tsarang, and Kakighang. The tree survival rate was 60%–80%, which is very good considering local weather conditions. Sporadic visits by blue sheep suggest that ground coverage was improving gradually. This is also an indication of improved biophysical condition.

Roadside greening: Hariyo Ban supported the Lamkichuha Municipality, Kailali, to plant shade trees along 10 km of roadside; the municipality and BAFER Nepal (its managing partner for the work) has since continued it. This program is a part of government's initiatives of developing green cities at the municipal level and provides shade, reduces local temperatures, sequesters carbon, and provides bird habitat. 85% of the seedlings are reported to have survived and growing well in the area.

D. Collaboration with other organizations and projects

ICIMOD: Through CARE Nepal, Hariyo Ban collaborated with ICIMOD's Himalayan Adaptation, Water and Resilience (HI-AWARE) Project on climate adaptation in the Gandaki basin. This included analysis of CCA and DRR issues and adaptation options in Myagde Rural Municipality in Tanahun and Kalika Municipality in Chitwan; results were used to prepare LDCRPs for the two municipalities. Based on the field experience and learning, a manual was published by HI-AWARE to guide adaptation decision-makers to identify and prioritize adaptation solutions and to ensure participation and consensus building in planning (Banerjee et al. 2020).

Hariyo Ban also collaborated with ICIMOD's SERVIR-Hindu Kush Himalaya (HKH) Project team to apply Hariyo Ban's innovative approaches and tools (e.g., forest fire insurance) and SERVIR HKH's Climate Resilient Forest Management System products (forest fire risk data/information) in an integrated way for better results in natural resource management and resilience building. Activities included the development of a forest fire risk map by ICIMOD and scaling up forest fire insurance (as well as wildlife attack insurance) by FECOFUN to all 77 districts for the 2021 fire season, with radio jingles encouraging people to report death and injuries to their local FECOFUN chapter.

Nepal Climate Change Support Program Phase 2: NCCSP2 aims to increase the resilience of climate-vulnerable communities to existing as well as future climate-related shocks and stresses. It had planned to pilot climate-resilient integrated sub-watershed management planning and implementation in a critical sub-watershed with provincial and local governments and asked Hariyo Ban Program to share its experience in planning and implementation of integrated sub-watershed management. This was done through a virtual meeting with the NCCSP2 team, whose members expressed strong interest in using Hariyo Ban's methodologies. This is a great opportunity to scale up Hariyo Ban's approaches to climate-resilient sub-watershed management in the future.

E. Addressing differential impacts

Climate change and disasters have greater impacts on some people, households, and communities than on others, depending on their level of exposure and sensitivity and their capacity to respond. CCA and DRR efforts are much more effective if we take into account the existing socioeconomic context and the differential nature of impacts. It became clear during the implementation of early adaptation plans that there was a need to assess differential impacts and develop response plans for them because some particularly vulnerable people, households, and communities were not being helped through existing adaptation plans.

In 2019, MoFE approved the revised national framework for Local Adaptation Plans for Action. It recognizes the differential nature and extent of climate change impacts and varying adaptive capacities of different communities, households, and individuals. Emphasis was placed on plans and programs that respond to differential impacts experienced by women, adolescent girls, senior citizens, people with disabilities, and ultra-poor and vulnerable communities such as disaster-affected communities. The revised LAPA Framework integrated learning from Hariyo Ban including CCA-DRR integration and inclusion of differential impact assessment and responses. This is an important way to scale out the Program's approaches across Nepal. However, the revised LAPA Framework does not include any tool or procedure to identify differential impacts and responses to them.

Hariyo Ban finalized a DIARP Framework incorporating learning and experiences from field-level application. Both the English and Nepali versions of the Framework were prepared for publication and wider sharing to encourage replication of the practice beyond Hariyo Ban. MoFE has acknowledged this framework as complementary to the revised LAPA Framework it endorsed in 2019. This recognition from MoFE helps to scale up one of Hariyo Ban's pioneer works in CCA. A learning brief titled *Responding to differential impacts: Lessons from Hariyo Ban Program* (Jamarkattel et al. 2019) was also published for broader audiences. Applying the framework, the Program supported the integration of DIARP in 20 LAPAs, three ISWMPs, and four CFOPs and also supported the development and implementation of package-based response plans to tackle differential impacts in these communities, in coordination with local governments.

Promoting time- and energy-saving tools, technologies, and practices for women: Women are particularly vulnerable to climate change because it often increases their workloads. LI-BIRD and Hariyo Ban conducted a study to identify climate-smart, time- and energy-saving

TACKLING DIFFERENTIAL IMPACTS: SOME SITE-LEVEL EXAMPLES

Helping adolescent girls stay in school: Climate change-induced heavier rainfall and more prolonged droughts and dry spells are resulting in higher runoff and lower infiltration and underground water recharge. This causes drying of water sources and scarcity of water for drinking and washing. Women and girls are having to walk further for water, spending more time and effort; there is also less water available for household purposes. Sufficient water is essential for menstrual hygiene, and water scarcity, lack of girl-friendly toilets in schools, especially in rural areas, and lack of access to sanitary pads make adolescent girls feel uncomfortable about going to school when they are menstruating. When they miss school, they get lower grades, have a greater likelihood of dropping out of school, and ultimately have fewer economic opportunities. In order to improve menstruation hygiene and increase school attendance, the Program helped Gangamilan Secondary School, Ghermu Marshyangdi Rural Municipality-5, Lamjung, improve its water situation, including protection of the water source to ensure a more reliable supply. As part of the DIARP package, the Program supported training in sanitary pad making for girl students and lady teachers; at the same time, they learned about menstrual hygiene and the importance of water conservation.

Helping poor people make emergency trips safely after heavy rain: During extremely heavy rainfall, footpaths and small bridges on the upstream shores of Phewa Lake are submerged. Poor Janajati and Dalit people living in these vulnerable areas have to use small wooden boats to cross the lake to the eastern shore for health and other services, including medical emergencies, as they do not have access to roads. However, these boats frequently capsize during bad weather, and many people have lost their lives. Vulnerable communities included this issue in the Phusre Khola sub-watershed DIARP. Hariyo Ban provided life jackets for 33 vulnerable households (including two Dalit and 28 Janajati), whose members now use them to cross the lake safely when commuting to Pokhara city.

Reducing labor for blacksmiths and reducing forest degradation: The Program supported the modernization of a blacksmith workshop in Marshyangdi Rural Municipality-5, Ghermu. Follow-up visits revealed that this had helped reduce physical workloads; and since it reduced firewood consumption, it also reduced carbon emissions and was protecting the forest. The ward chairperson was keen to scale out the good practices in the rural municipality by integrating them in its GESI policy and mainstreaming them in periodic/annual plans and programs.

technologies and practices for women. In collaboration with local governments, they identified five sites in the midhills and inner Terai[6] to demonstrate packages of these adaptation technologies and benefits, bringing together local solutions and scientific knowledge through action research with technical assistance from LI-BIRD. Poor and marginalized people were prioritized in the delivery of support through these packages.

Successful GESI-sensitive tools, technologies, and practices included tools that can be easily used by women and reduce their workloads, such as corn shellers and farm rakes for tasks traditionally undertaken by women; home gardens, which women can tend near the house, with the diversity of crops to improve household nutrition; plastic tunnels with drip irrigation, which reduces water consumption and hence labor; plastic ponds nearby, which make walking long distances for water unnecessary; graywater collection, which reduces household water consumption; easily maintained animal sheds; labor-saving and more productive cultivation of yams using sacks; and easier seedling production using leaf bags. Yam cultivation in sacks and seedling production in leaf bags are local solutions.

6 Kristinachnechaur and Phumdi-Bhumdi in Kaski; Myagde in Tanahun; Dahakhani in Chitwan; and Kamdi in Banke.

© WWF Nepal, Hariyo Ban Program/Nabin Baral

River bank sand vegetable farming in Geta, Kailali

The Program coordinated with LI-BIRD to prepare a booklet in Nepali on successful GESI-sensitive tools, technologies, and practices for dissemination beyond the demonstration sites. Some of the GESI-friendly tools were scaled out early in Phase II, including in model CFUGs in Kailali, Lamjung, Syangja, and Kaski, and beyond. Training events were conducted, cross-learning visits were organized, and local governments and NRM groups were encouraged to promote successful approaches. An assessment of the effectiveness of this work was carried out in the last year of the Program (CARE Nepal 2020). Major findings included the following:

- Climate-smart, women-friendly, time-saving tools and technologies played an important supportive role in building the adaptive capacity of poor and vulnerable farmers.
- They saved women's time and energy and reduced their workloads and drudgery.
- They promoted more efficient use of land and water resources and greenery.
- The tools used for for vegetables and other food production helped supplement nutrition for PVSE households.

A Hariyo Ban-supported study on climate adaptation strategies of women and marginalized groups in the high mountain area (NTNC 2018) found that communities are using indigenous practices to adapt, though these are often insufficient to cope with extreme climate stresses. Along with indigenous practices, modern technology can make these communities more resilient. Apples now grow in Upper Mustang due to the changing climate, and selling dried apples has become an important source of income for women. However, conservation of the product is a challenge in these remote areas. The Program supported two solar-powered apple dryers for mothers' groups in Mustang to reduce workloads for 23 women. The Program also supported the maintenance of a micro-hydro plant in Charang, Mustang, which supplies electricity to 508 households. Women can now use electricity to cook rice and boil water, improving the efficiency of their work and reducing workloads and indoor air pollution while also reducing consumption of fuelwood, carbon emissions, and impacts on the local forest.

RESULT 2.3: CLIMATE-RELATED RISKS TO PEOPLE AND ECOSYSTEMS REDUCED THROUGH DISASTER RISK REDUCTION AND MANAGEMENT EFFORTS

With the aim to reduce climate-related risks to people and ecosystems, and complementing the work in Results 2.1 and 2.2, under this result area, the Program worked with several partners to incorporate science- and technology-based approaches to help tackle disaster risk and management, such as flood hazard mapping and agro-advisory services. Hariyo Ban undertook disaster management interventions including capacity building and mobilization of disaster management committees and supported DRR advocacy at provincial and local government levels. The Program also provided support for relief or recovery for specific disasters including floods, COVID-19, and the 2015 earthquake. Hariyo Ban developed a resilience framework for the Program along with a resilience measurement methodology, which is used to see how different Program interventions affected resilience.

KEY RESULTS IN DISASTER RISK REDUCTION AND MANAGEMENT

7,975 people with improved capacity to recover from disasters

19 disaster management committees formed and strengthened

A. Resilience Framework

Hariyo Ban developed a Resilience Framework to guide its work in this field and translated it into Nepali (CARE Nepal 2018). It then developed a resilience measurement methodology, which was refined and tested in the Khageri Khola sub-watershed in Chitwan district to generate evidence of how Hariyo Ban-supported interventions such as LAPA/ISWMP implementation, market-based livelihood support, and biodiversity conservation interventions helped reduce stakeholder vulnerability and increase resilience.

HARIYO BAN'S RESILIENCE FRAMEWORK

The Framework defines resilience as "the ability of vulnerable and poor people, households, communities and ecological systems to absorb shock, maintain functions in the face of external stresses, and adapt, recover, and evolve to deal with future shocks, stresses and impacts."

THEORY OF CHANGE

If the drivers of vulnerabilities, threats and risks in human and ecological systems are reduced, and if the capacities and assets of individuals, households, communities and ecosystems to deal with various shocks, stresses and uncertainty are built and supported, and if these actions are supported by an enabling governance, policy and institutional environment, then resilience is increased.

RESULTS OF RESILIENCE MEASUREMENT ASSESSMENTS IN RAPTI SONARI RURAL MUNICIPALITY AND KHAGERI KHOLA SUB-WATERSHED

Resilience measurement carried out in LAPA and ISWMP implementation sites mainly assessed beneficiaries' perceptions in focus group discussions and key informant interviews; secondary data and information were also used. Results indicated that the overall resilience of communities and ecological systems has moderately increased. Of the four main strategies that Hariyo Ban applied to build community and ecosystem resilience, Rapti Sonari scored highest in building assets (physical, natural, human, social, and financial) (6.4) and building capacities (6.4), followed by tackling vulnerabilities and threats. The lowest score (3.7) was in creating an enabling environment. Khageri Khola scored highest in tackling vulnerabilities and threats (7.1), followed by building assets (6.6), building capacity (6.3), and creating an enabling environment (5.9).

The fact that "creating an enabling environment" scored lowest in both places indicated Hariyo Ban's effort in this strategy needed to be greater and that this effort might take longer than the other strategies. Comparing the two approaches, the use of the integrated watershed management planning framework enabled the Program to build the resilience of both people and ecosystems in Khageri Khola, while the use of the government's LAPA Framework in Rapti Sonari-5 had a much narrower approach, moderately improving the resilience of people vulnerable to climate but with few activities to increase the resilience of the ecological system. The ISWMP Framework was built on a more thorough assessment of vulnerabilities, risks, and threats, with analysis of underlying causes of shocks, stresses, and uncertainties in integrated socio-ecological systems. The study highlights the need for a robust methodology to assess ecological system resilience that measures parameters of ecosystem health like status and trend of biodiversity, forests, land productivity, and groundwater regime and does not rely merely on people's perceptions. While it appears that Hariyo Ban increased the resilience of communities and ecological systems to selected threats and vulnerabilities, the contributions of other stakeholders are just as important, and often it is difficult to determine attribution.

Construction of embankment in Khahare Khola to protect downstream settlement from flash floods and sediment deposition

B. Support for DRR, disaster preparedness, and response

Hariyo Ban supported the establishment of disaster learning centers in Chitwan, Tanahun, and Kaski. The learning center in Myagde Rural Municipality in Tanahun is fully owned and operated by the rural municipality; 468 people from various institutions and groups have visited it, and an introductory video was prepared to promote it. The rural municipality allocated NRs 200,000 (USD 1,807) to upgrade the center. Broader communication about DRR and CCA was done through radio jingles that broadcast messages through an extensive network of community radio called the Association of Community Radio Broadcasters Nepal. Three hundred fifty community radios broadcast the jingles to an estimated audience of around 44,000 people.

Building on its work with CLACs in Phase II, Hariyo Ban built capacity in CLACs on CCA and DRR issues, recognizing that CLAC members can play an important role in DRR and adaptation.

As mentioned under Result 2.2, the Program supported the preparation of Thakurbaba Municipality's DPRP, guided by the municipality's master plan. The Small Grants Program provided support to prepare DPRPs for additional 15 municipalities. Technical support was also provided to the District Administration Office, Tanahun, to review its district-level disaster preparedness and response plan.

C. Flood hazard mapping

In consultation with DHM, Hariyo Ban supported flood hazard mapping in the Seti sub-river basin, including the Madi watershed (Figure 11), and results were shared with local and provincial governments in the sub-river basin. The results were useful for strengthening and upgrading hydro-meteorological stations for the early warning system in the Seti sub-river basin and for preparing CCA-DRR plans and DPRPs in flood-

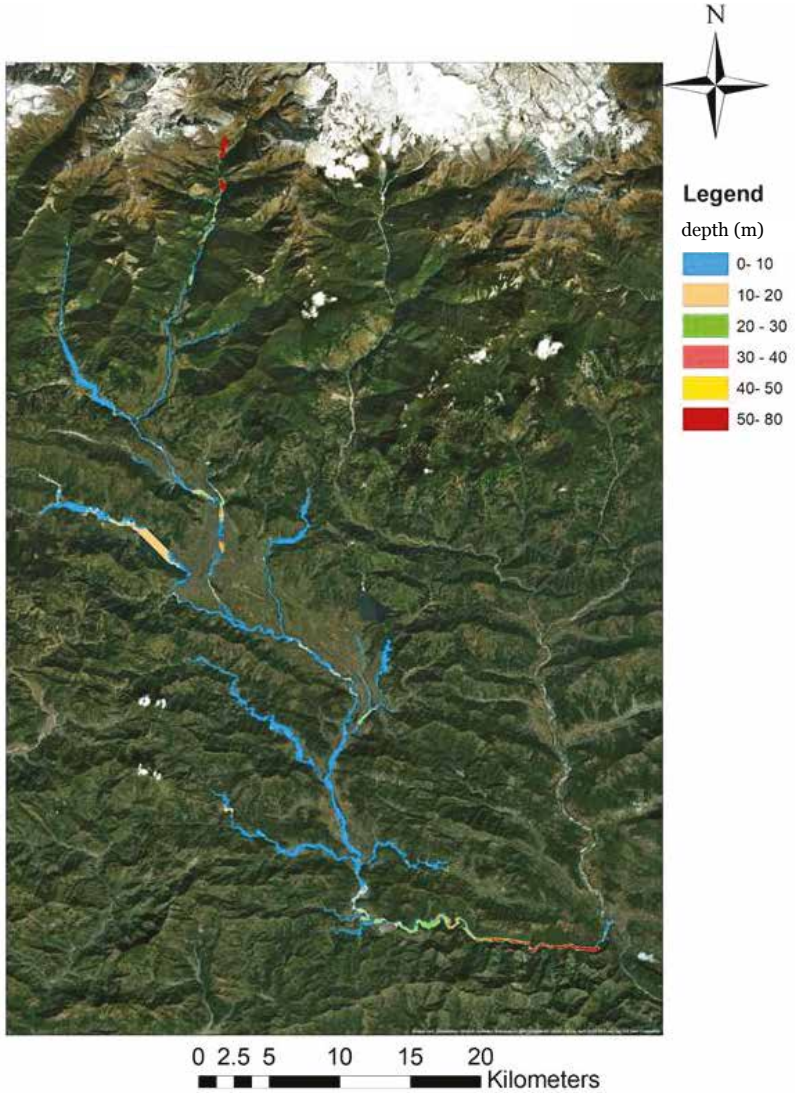


FIGURE 11: FLOOD INUNDATION MAP OF THE SETI SUB-BASIN INCLUDING THE MADI WATERSHED FOR RETURN PERIOD OF 50 YEARS

Source: CARE Nepal (2019a)

prone areas identified in the report. The Ministry of Internal Affairs and Law in Gandaki Province prepared preparing a provincial-level DRR strategy and action plan and found the study findings valuable. Further discussions were held with the ministry and local governments to share the findings and raise their awareness of potential flood areas so that they could develop and implement DPRPs.

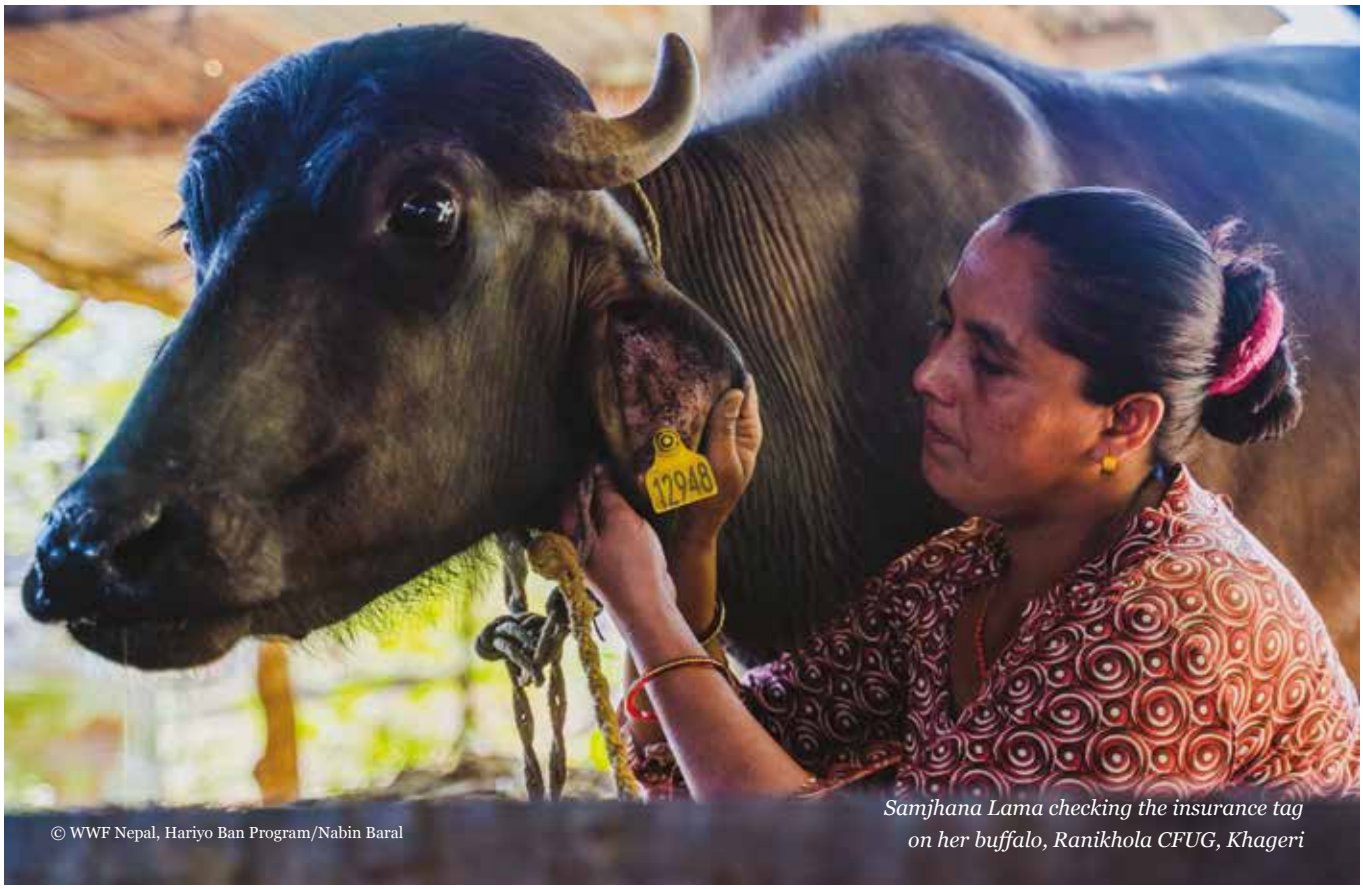
The Program distributed 1,000 copies of a poster on early warning systems and agro-advisory services. For wider outreach, they were distributed to local governments, NRM groups, and other technical offices, and they were displayed on notice boards of government offices and in heavily trafficked public places. The poster provides information on a variety of sources, links, and toll-free contacts for updated information for preparation and response to any disaster. It encourages the use of agro-advisory services and safety-net measures like crop, livestock, and health insurance.

D. Agro-meteorological advisory services

In the absence of weather information, farmers used to follow traditional farming calendars. However, in recent years, irregular weather patterns due to increased climate variability resulted in lower productivity or even crop loss. To address this, Hariyo Ban II supported the piloting of agro-meteorological advisory services in the Banke district. The Program disseminated biweekly bulletins and SMS messages on agro-met information in 2019 and 2020, completing a full cropping cycle. The Program coordinated with SAMARTHYA (Promoting Inclusive Governance and Resilience for Right to Food), a program supported by the Danish International Development Agency and led by CARE Nepal, to initiate farmer-responsive agro-met services. The work included training on an agro-met model and various applications and technology for the model implementation, in collaboration with the National Farmers' Group Federation and LI-BIRD. After the training, regular weekly discussions were held in three farmers' groups in Duduwa Rural Municipality-5, Banke. A local *aviyanta* (campaigner) was selected and mobilized to facilitate agro-advisory services in the three groups, raising their awareness of different weather conditions, agro-practices, and pests in cash and food crops, based on information available through the namis.gov.np site. Farmers reported feeling happy and excited about the benefits they received from the service.

E. Support for disaster relief and recovery

Hariyo Ban provided support following various disasters during Phase II. This included providing relief materials for flood-affected households and rescue materials to district disaster management committees/district emergency operation centers. As part of the Small Grants Program support for DPRPs for 15 municipalities, Hariyo Ban helped incorporate response, mitigation, and preparedness measures to address COVID-19 and similar pandemics in the future. The Program also supported response work by some of the municipalities in the early months of the pandemic; now they have mobilized their funds for this. Building on the green recovery and reconstruction work in Phase I after the 2015 earthquake, in the early years of Phase II, Hariyo Ban supported recovery and reconstruction in Gorkha, one of the most affected districts. Activities included training, workshops, exposure visits, trail improvement, and livelihood support, covering all four stages of disaster risk management.



Samjhana Lama checking the insurance tag on her buffalo, Ranikhola CFUG, Khageri

The Hariyo Ban Program adopted specific strategies to make the governance approach more effective in Phase II and to scale up Phase I achievements and best practices.

GOVERNANCE

STRATEGIC APPROACH

Governance is a key element in the theories of change for both components of Hariyo Ban. In order to achieve the Program's objectives, wildlife corridors and biodiversity-important areas must be legitimized with sound management/operational plans and effective community engagement and reward; river basin and water catchment management must be effectively planned and implemented in a participatory, pro-poor, inclusive manner, with sustainable institutions and financing mechanisms; and sound GESI and governance practices must be mainstreamed throughout both components. In order to support this, the Governance theme focused on two broad areas: (1) building the capacity of user group institutions and improving their internal governance; and (2) improving the policy and enabling environment for user groups and other stakeholders to better conserve biodiversity and adapt to climate change.

The Program adopted specific strategies to make the governance approach more effective in Phase II and to scale up Phase I achievements and best practices. There was a strong focus on mainstreaming governance interventions with the Program's biodiversity, climate change adaptation, and livelihoods work; as part of this, NRM groups were bundled together in working units/sites rather than being scattered. Well established groups were mobilized to strengthen the capacity of emerging groups. The Program built NRM groups' capacity to mobilize internal funds and leverage resources from elsewhere and expand the negotiating space with other stakeholders to promote accountability and engage in policy advocacy. Capacity building of women, Dalits, and marginalized people were scaled up to promote their meaningful representation and leadership. In support of this work, existing governance tools were bundled so they could be applied effectively as a package.

KEY RESULTS IN GOVERNANCE

75% of 387 natural resource management groups have improved capacity and/or performance as a result of Hariyo Ban support.

NRM groups have a greater **capacity to advocate** with their elected local government representatives for support and services.

NRs 68.5 million (USD 618,497) was leveraged by 125 NRM groups from the federal government, local government/ ward offices, DFOs, and NGOs for conservation, adaptation, and group management purposes.

More than 60 plans, policies, regulations, and administrative procedures related to biodiversity and climate change were formulated and/ or implemented at the local, province, or federal levels with support from Hariyo Ban.

102 community-level institutions were capacitated to promote the use of leaf bags for vegetable production and yam farming in sacks by poor and vulnerable farmers.

GOVERNANCE RESULT 1: INSTITUTIONAL CAPACITY OF USER GROUPS IMPROVED

INTEGRATED INSTITUTIONAL CAPACITY ASSESSMENT TOOL

The program developed an integrated Institutional Capacity Assessment (ICA) tool for NRM groups covering five institutional capacity areas: group management; forest and natural resource management; financial management; livelihoods improvement management; and managing coordination linkages (CARE Nepal 2017). The tool has 25 indicators in these capacity areas based on major provisions of the Community Forest Development Guideline (CFDG) and other conservation-related guidelines. The ICA tool covers the methodology for assessing current strengths, identifying areas for improvement, developing improvement plans, tracking progress and capturing learning through review and reflection, and reassessment. The tool uses symbols (different sizes of the moon) to document the current status of groups, which is easy for both literate and non-literate users to understand. The Program followed a rigorous process including consultation with related ministries, departments, NRM groups and other stakeholders.

i. Institutional capacity building process

In Phase II, the Program placed major focus on building the institutional capacity of NRM groups and ISWMP and LAPA committees, and on scaling out this effort. NRM groups were generally selected in geographical areas where governance could be integrated into the Program's biodiversity and climate adaptation work. For NRM groups, 415 groups were selected in priority areas in the landscapes (362 CFUGs, 12 BZCFUGs, nine LHFUGs, and 32 CAMCs). Forty-three LRPs received training in the integrated institutional capacity assessment (ICA) tool and conducted ICAs with the groups; 7,992 people (3,786 women and 4,206 men) participated. Baseline results showed that of the 415 groups, 203 (49%) had "active"[7] capacity status, 187 (45%) were "medium,"[8] and 25 (6%) were "weak."[9]

The Program developed institutional capacity-building (ICB) packages based on a reflective approach[10] and trained consortium partner staff, staff of implementing partners, LRPs, and resource persons from effective groups [11] to facilitate the use of ICB packages in the groups. The groups produced improvement plans in priority fields, and follow-up events were conducted to track and document progress. Review and reflection workshops were held at the working unit level and the landscape level to share achievements, good practices, and challenges among NRM groups, local governments, government agencies, and other stakeholders. These review and reflection events were key to promoting mutual accountability between regular members and executive members of NRM groups, as well as between NRM groups and local governments/other government agencies; at these forums, stakeholders agreed on future courses of action.

Reassessments were carried out in 387 NRM groups; the remaining 28 NRM groups dropped out, as they did not complete the ICB process. The average overall capacity scores for the 387 NRM groups increased from 69% to 78%, with average increases in all five institutional capacity areas. Seventy-five percent of the groups improved their overall performance scores, and 33.5% of the original medium and weak NRM groups moved to a higher performance rank, as shown in Figure 12. Figure 13 shows results by type of group.

CFUGs: One hundred sixty-three of 180 CFUGs maintained their active status, and 165 CFUGs in the medium and weak categories moved up in rank. The trend of improvement in all five capacity areas showed that many of these CFUGs were actively adopting the ICB process. Continued use of the reflective approach is necessary to maintain this trend. FECOFUN has already started to scale out this approach and aims to reach all district chapters and CFUGs.

CAMCs: Out of four initially active CAMCs, one maintained its active status, and eight shifted from medium to active. One medium group fell into the weak category. This was the first time that any of the 22 CAMCs had carried out a participatory well-being ranking. The result is a remarkable achievement considering that compared to CFUGs, CAMCs cover large geographical areas, and executive committee members and

7 Active—group performance score is 75 to 100.

8 Medium—group performance score is 50 to 74.

9 Weak—group performance score is less than 50.

10 Reflective approach—reflection; action; reflection; action … continue.

11 Well established group local resource person—selected from the NRM groups that had high scores/performance in five overall institutional capacity areas.

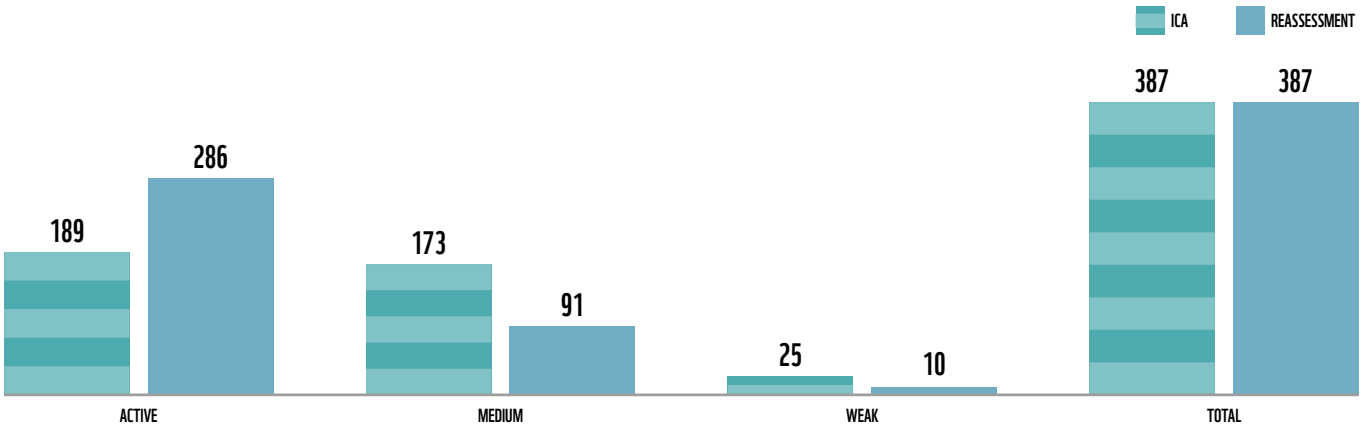


FIGURE 12: CHANGE IN GROUP PERFORMANCE STATUS FOR 387 GROUPS THAT COMPLETED THE ICB PROCESS

users come from scattered locations, so was challenging to conduct regular meetings, as well as review and reflection sessions.

BZCFUGs: Out of 12 BZCFUGs, five groups improved their institutional capacity and moved up in rank. However, one active and one medium group dropped to the weak category. Compared with other regimes, it was more difficult for BZCFUGs to take this process forward and improve their institutional capacity.

LHFUGs: Of the eight LHFUGs, five improved their institutional capacity, and at the final assessment all were in the active category. Though not all ICA indicators apply directly to LHFUGs, they benefited from practices such as inclusive committee formation, record keeping, livelihood improvement plan preparation and implementation, and coordination with stakeholders. Results in each capacity-building area are discussed below.

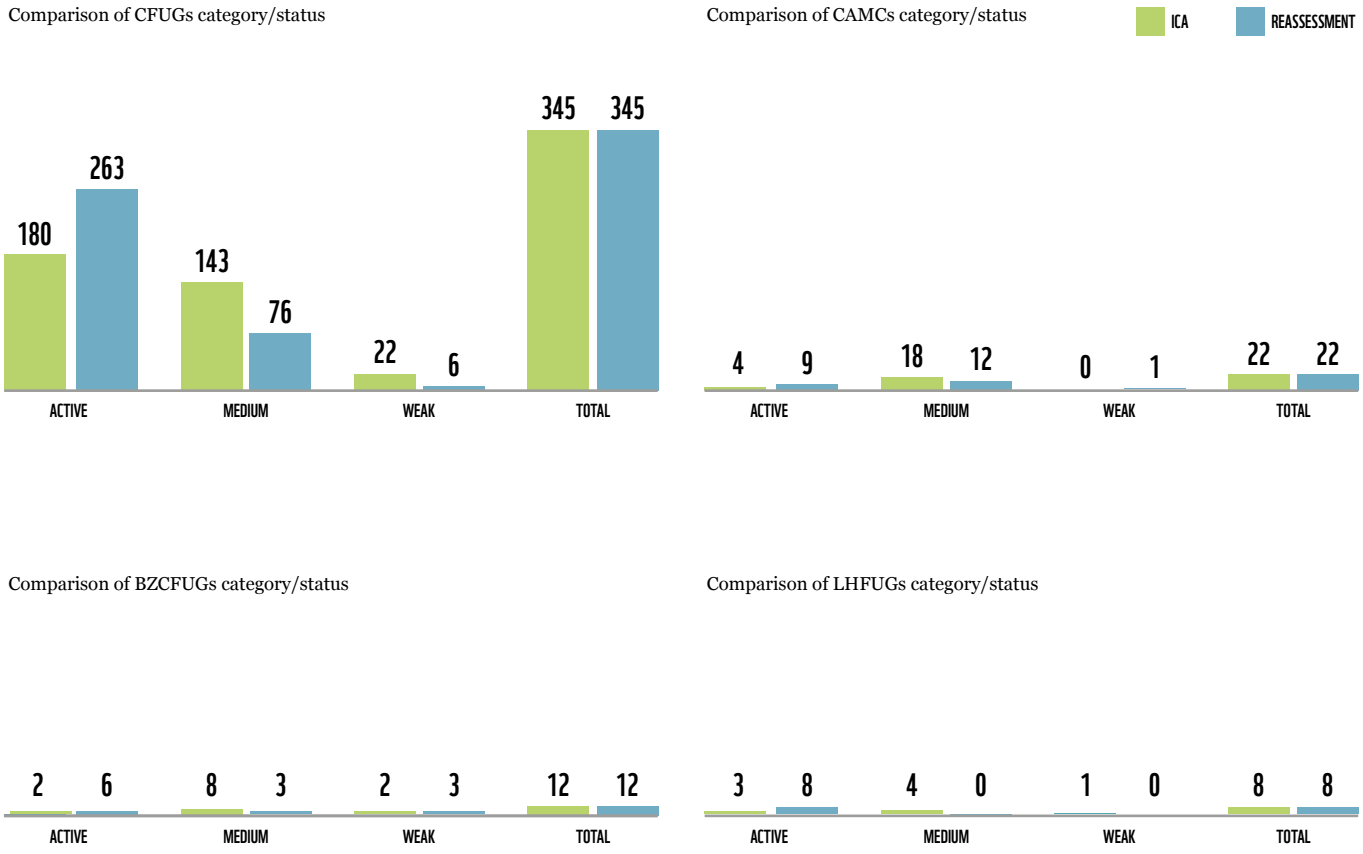


FIGURE 13: CHANGE IN GROUP PERFORMANCE STATUS OF NRM GROUPS

ii. Group management capacity

Improvements in group management capacity were demonstrated by various indicators of group functioning as well as executive committee members' accountability in those 387 NRM groups. This included increased frequency of meetings, executive members' attendance, users' participation in executive committee meetings, review of previous meeting minutes, decisions/information-sharing mechanisms, public hearing events, regularity of group general assemblies, annual planning, and subcommittee formation and mobilization. Specifically:

- Women's representation increased in group executive committees (from 45% to 50%) as well as in the key positions of chairperson and secretary (40% to 46%).
- Representation in leadership positions of women and marginalized people combined increased from an average of 72% to 87% (all women from 40% to 46%; marginalized women from 23% to 38%; marginalized men from 32% to 41%).
- One hundred forty-eight groups (38%) formed and mobilized subcommittees for activities such as poaching reduction, GBV reduction, livelihood monitoring, financial management, and financial monitoring, with defined roles and responsibilities for the users involved. This helped promote better forest protection, conservation, and utilization as well as CCA, improved livelihoods, GESI, and improved governance practices.
- Fifty-one CFUGs developed and endorsed internal GESI policies based on their constitutions and the CFOP, setting an excellent example for other groups.

Forest and natural resource management capacity: Many groups revised their CFOPs timely in close coordination with DFOs and ensured users' active participation in different stages of this process. Some also revised plans for CCA and ecotourism activities. Many of the revised plans were then implemented. Results included the following:

- Of the 387 NRM groups involved in the ICB process, 201 groups (191 CFUGs and 10 CAMCs) renewed their operational plans within the ICA and reassessment period.
- Eighty-two percent of NRM groups implemented annual activities in their plans that directly contributed to biodiversity conservation.
- While none of the groups have a separate written internal policy about equitable benefit sharing of resources, nevertheless they still practice it, mainly providing timber and other forest products at subsidized rates to members in the medium, poor, and ultra-poor well-being classes, and sometimes free of cost for ultra-poor households.
- Fifty-three groups initiated forest-based enterprises such as bel juice, *lapsi*, and clay pot production.

Financial management capacity: Most of the groups had good financial management practices in place, including maintaining separate income and expenditure ledgers and supporting documentation. Many groups established financial monitoring subcommittees for internal auditing, with external auditing done by qualified auditors for groups with annual income above NRs 50,000 (USD 452). Most groups shared their audit reports with their users during general assembly meetings and also submitted them to their DFOs. More recently, they started submitting information to local government and other relevant stakeholders.

- Seventy-three percent of NRM groups (281 groups) shared financial audit information both in assemblies and during public hearings/public auditing meetings.

Livelihood improvement management capacity: Many NRM groups became more aware and applied participatory well-being ranking (PWBR), allocating part of their annual income to poor households through equitable benefit-sharing mechanisms, as well as enabling the participation of poor people in executive committees and subcommittees.

- Fifty-nine percent of NRM groups (227 groups) reviewed their PWBRs [12] and applied their findings in annual planning and in pro-poor livelihood improvement and benefit- sharing.
- In Phase I, Hariyo Ban supported the establishment of revolving funds with NRs 25 million (USD 226,147) to 387 NRM groups to improve the livelihoods of poor and marginalized people. Of that amount, groups reported in 2020 that 98% (NRs 24.6 million, or USD 222,609) had been mobilized; in addition, NRM groups had provided matching funds of NRs 46.6 million (USD 421,720) from their internal funds. As of 2020, 2,767 users had benefited.

Coordination/collaboration management capacity: NRM groups implemented activities such as water source protection, pond construction, riverbank protection, tree planting, fencing, promotion of ecotourism and other enterprises, awareness training, forest management technical training, and support for model forest establishment in collaboration with other stakeholders such as the federal

12 205 CFUGs and 22 CAMCs.

EXAMPLES OF OUTCOMES FROM INTERNAL CAPACITY BUILDING OF NRM GROUPS

Ishwor Bahadur Ranabhat, Chairperson, Jyantang Padherikhola CFUG, Tanahun

"Three years ago, when the ICA was carried out, many issues were identified as areas of improvement, such as low participation of women, low attendance at assemblies and meetings, and little focus on fund mobilization to improve livelihoods of poor households. Through the ICB process, we gradually addressed these issues. Our CFUG is now conducting regular monthly executive committee meetings, holding a general assembly twice a year, keeping good documentation with 21 record books, applying silviculture and conservation, ensuring representation of women in the executive committee, and providing funds for poor households for livelihood improvement. As a result, nine poor households have received NRs 135,000 (USD 1,220) for IGAs, six ponds have been constructed inside the forest for wildlife, Sipligan (*Crateva unilocularis*) has been planted on 3.5 ha of degraded land with support from the Division Forest Office, and we have invested NRs 100,000 (USD 903) as a share member in a bel juice enterprise. Finally, our CFUG is becoming institutionally strong."

Prem Shrestha, Secretary, Ranikhola CFUG, Chitwan

"Before the ICB package was introduced, we did not allocate income to improve the livelihoods of CFUG members—it was mainly used for administrative expenses and infrastructure development. After the Hariyo Ban Program supported the ICB process, we started allocating annual income to women and poor and marginalized users for alternative livelihoods. This year we allocated NRs 400,000 (USD 3,613) for goat and poultry rearing and to establish small businesses. CFUG members have become more aware and are actively engaging in CFUG planning process, reducing their dependency on forest products and getting more motivated to do conservation work."

Keshab Shahi, Chairperson, Aishworya CFUG, Kailali District

"Before Hariyo Ban, there was poor governance, such as poor responsiveness of executive committee members, exclusion of women and the Dalit community, and irregular public hearing and public auditing. There has been a huge improvement with the ICB process. Hariyo Ban Program also provided opportunities for us to interact with DFO officials that created a safe environment to share our gaps/problems as well as develop a mutual understanding for further collaboration."

Ravi Kumar Nidhi Karna, Assistant District Forest Officer, Kailali District

"NRM groups and forest government officials have the same objective of conservation and livelihood development, though we are working for this through different pathways and challenges. I would like to request and suggest that NRM groups follow the policies formulated by the government, and there won't be any obstacles in the growth of the groups. We are here to support NRM groups throughout but not to hinder their development."

© CARE Nepal, Hariyo Ban Program/Sudin Bajracharya

Hariyo Ban Program helped strengthen coordination within CFUG

government, local government/ward offices, DFOs, NGOs, and Barandabhar Conservation Forest Council. Further details on resource leveraging are provided under Result Area 2.

iii. Scaling out the ICB process

FECOFUN developed a guideline, *Local FECOFUN and CFUGs Institutional Capacity Building Approach*, based on learning in Hariyo Ban (FECOFUN 2020). As a large civil society network with over 22,000 CFUGs millions across Nepal, it is well placed to institutionalize and scale-out the CFUG institutional capacity-building process throughout the country through its 753 palikas (local-level FECOFUN chapters), which play a leading role in facilitating and coordinating the four-step process.[13] The district-level and central-level FECOFUN chapters support them with technical and financial support.

FECOFUN conducted orientation programs in TAL and CHAL for 63 palikas on the guideline, with common understanding and commitments for its effective rollout. The ICB process was scaled out in 398 CFUGs through this approach reaching out to the 63 palikas in 22 districts outside Hariyo Ban working areas.

iv. Capacity building of sub-watershed coordination committees

In order to implement ISWMPs effectively, coordination bodies were needed. Since no governance bodies existed previously, Hariyo Ban facilitated an institutional capacity-building initiative to form, mobilize, and strengthen sub/micro-watershed coordination committees (SWCCs) for effective participatory planning, implementation, and monitoring of ISWMPs. The Program provided technical support to develop an operational guideline for SWCCs and based on the learning from the NRM group ICB process, an ICA tool was developed. The ICA tool focuses on five capacity areas for SWCCs: management; annual planning, implementation, and monitoring; financial and overall documentation; coordination/collaboration; and sustainability, with 25 indicators. The capacity-building process was introduced in two sub-watersheds (Khageri and Phusre Khola). Their coordination committees conducted review and reflection meetings to assess action plan progress, identify problems and challenges, and develop the next period's action plan. Progress highlights are shown in Table 6. Based on the progress and learning observed in the two SWCCs, Hariyo Ban revised the ICA tool.

13 First step—perform institutional capacity mapping of CFUGs (palika level); second step—based on capacity mapping, explore the opportunity to exchange good/innovative practices among groups (so interested groups can learn from each other); third step—develop a three-month action plan and implement it; fourth step—review reflections every three-month period to assess the three-month action plan's progress, problems, learnings, and the next three-month action plan development.

TABLE 4: STEPS IN CAPACITY BUILDING FOR TWO SWCCS

ISWMP COORDINATION COMMITTEE	KEY PROGRESS IN INSTITUTIONAL CAPACITY BUILDING
Phusre Khola—Kaski (scored 52 out of 120)	• Conducted orientation for members on ISWMP guideline • Prepared annual work plan and submitted to concerned stakeholders • Conducted joint monitoring visits to enrich the quality of work • Prepared annual plan based on multiyear ISWMP • Completed LAPA and ISWMP workshop to mainstream biodiversity and CCA agendas in planning process • Documented financial and program documents effectively • Increased coordination with different stakeholders • Actively lobbied with the local governments to integrate ISWMP activities in local-level plans
Khageri Khola—Chitwan (scored 60 out of 120)	• Established and mobilized financial and monitoring subcommittees • Expanded coordination with Diyalo, Hariyo Ban, and local government to implement annual ISWMP activities • Continued PHPA to maintain good governance and transparency • Prepared integrated plan by incorporating GESI concerns • Increasingly coordinated with different stakeholders • Actively participated and lobbied with the local government to integrate ISWMP activities in local-level plans • Registered in Chief District Administration Office, Chitwan, as NGO "Khageri Khola Watershed Conservation Committee"

GOVERNANCE RESULT 2: CAPACITY OF USER GROUPS IMPROVED TO LEVERAGE AND MOBILIZE RESOURCES

Hariyo Ban built the capacity of NRM groups, SWCCs, LAPA committees, and livelihoods groups to mobilize internal funds as well as leverage resources from outside. The SWCCs leveraged resources by strengthening their coordination and collaboration with multiple stakeholders. Hariyo Ban facilitated linkages between LAPA committees (at ward level) and local governments, supporting their meaningful participation in local-level planning processes to integrate LAPA activities and leverage resources for adaptation activities. The Program also worked with local governments to establish ownership of LAPA preparation, review, endorsement, and implementation. This work was further described under the climate change adaptation component.

The ICA reassessment reports prepared in Year 4 showed that NRs 68.5 million (USD 618,497) were leveraged by 125 NRM groups from the federal government, local government/ward offices, DFOs, and NGOs for conservation, adaptation, and group management purposes.

In total, NRs 118.9 million (USD 1.07 million) were leveraged by LAPA and ISWMP committees for implementation of their activities. Funds came from DFOs, provinces, municipalities and wards, development agencies, and networks.

GOVERNANCE RESULT 3: TECHNICAL CAPACITY OF USER GROUPS IMPROVED TO ADVANCE LOCAL SOLUTIONS TO BIODIVERSITY CONSERVATION AND CLIMATE ADAPTATION ISSUES

The Program documented local technical solutions practiced by community groups for climate adaptation and biodiversity conservation in Hariyo Ban Program working areas. The Program selected two of these local solutions to scale up: (1) the use of leaf bags for vegetable seedling production and (2) yam farming in sacks. Since they are based on simple techniques and local resources, they are easy for small-scale farmers to use; they are economically viable, and reduce the use of plastic bags. The Program built the capacity of local institutions to implement them, and by the end of the Program, 106 local organizations were engaged in the two practices.

To do this, Hariyo Ban supported the capacity building of 97 local institutions[14] on the use of leaf bags for vegetable seedling production, integrating with the livelihoods and climate change adaptation components. Two hundred fifty-one small-scale farmers including 216 women received training in this technique in Banke, Kailali, Kanchanpur, and Kaski. These farmers applied their new skills and demonstrated the techniques to neighboring households. Monitoring visits after the training found that the farmers were implementing the practices effectively. The organizations involved in the training are committed to continuing and replicating this practice. The yam farming solution was promoted jointly with the GESI theme's work on climate-smart, timesaving, and GESI-friendly tools/techniques. Five local institutions received training on growing yams in sacks with technical assistance from LI-BIRD. Since then, 125 small farmers from five local institutions have applied the yam farming practice.

GOVERNANCE RESULT 4: POLICY AND ENABLING ENVIRONMENT IMPROVED FOR BIODIVERSITY CONSERVATION AND CLIMATE CHANGE ADAPTATION

For policy discourse, the Program adopted two strategies: advocacy for revision of existing policies, following five advocacy steps; and engagement in formulation processes for new policies, acts, and guidelines at the local, provincial, and federal levels. In both phases of Hariyo Ban, FECOFUN was continuously engaged in policy discourse on forests, biodiversity, and climate change at different levels to secure community rights and safeguard social and environmental sustainability. In Phase II, it mobilized all its chapters including community engagement to collect genuine evidence to influence policymakers. All this helped create a conducive environment for local communities and to influence policymakers to incorporate people-friendly biodiversity conservation and climate change adaptation provisions in new policies, acts, and guidelines.

At the central level, FECOFUN engaged in the process of formulating 15 federal level policies in Phase II. As a result, the Federal Forest Act 2076 BS recognized community forests as a major forest management regime at the local level. The Act provides for local governments to ensure the promotion of community forestry and forest-based micro-enterprises at the community level. Similarly, FECOFUN was actively engaged in the process of formulating seven provincial and over 100 local government forest acts, helping to harmonize and maintain consistency with federal forest law.

Champ plant weeding and cleaning at Shivashakti CFUG, Puranchaur, Kaski

14 CFUGs, saving credit cooperatives, farmers' groups, and CBOs.

CASE STUDY: KRISHNA KUWAR, ROLE MODEL FROM TIBRIKOT CFUG, KASKI

Krishna Kuwar, 45, lives in Pokhara City in Kaski and formerly worked as a social studies teacher at Udaya Secondary School in Dhampus. He joined Tibrikot CFUG in 2000 and has a huge drive and passion for forest conservation. "Until 2075 B.S. I was secretary, and now I hold the position of vice-chairperson," he said. The community forest was formally handed over to the community by the government in 2060 B.S. One of Krishna's goals is to build external relations for the CFUG with other forest-based organizations. He said that a turning point came when he attended training on forestry and financial management organized by the Forestry Institute and district forest office. Equipped with new knowledge, he was able to improve financial management, write proposals, and strengthen the facilitation of executive meetings and annual assemblies, helping to strengthen the CFUG.

Hariyo Ban followed an intensive participatory process to select a local human resource person from a well-established group in the Phewa-Panchase working complex. Krishna was selected and received further capacity development training. He was then given the role of mobilizing CFUGs and facilitating Hariyo Ban's institutional capacity-building process. He did this in 19 CFUGs in the Phusre and Phewa-Panchase Block, sharing his experiences and motivating CFUGs to apply good practices and adopt reflective ICB process. He has seen some remarkable improvements such as regularly conducted monthly meetings, women's prioritized, and inclusive executive committees with more than 50% women. As a result of Krishna's efforts, the Ganesh Man Community Forest 2075/76 prize was awarded to Tibrikot CFUG.

"The ICB package has brought about significant positive changes in CFUGs. The reflective approach has been more effective than classroom training because of regular reflection meetings with a review of progress and problem sharing, along with follow-up visits with all the CFUGs, proper preparation of timelines, and accountability," Krishna reported. To solidify CFUGs' institutional capacity building and make it sustainable, Krishna suggested the district forest office carefully monitor activities, ensure timely submission of annual progress reports, and help promote good practices in exemplary CFUGs to other CFUGs.

"I am very glad to be engaged in this CFUG institutional capacity-building campaign. I have been fortunate to receive an appropriate platform to sharpen my facilitation skills, contribute to conservation efforts, and build on my social identity. I have developed personally, along with the CFUGs I work with. Nowadays, we are very proud to fulfill almost all of the CFDG provisions. Many other CFUGs are visiting us to learn from our experiences."

Gender-based violence is a barrier to women's participation in natural resource management, so Hariyo Ban tackled it on several fronts.

GENDER EQUALITY AND SOCIAL INCLUSION

Nepal has very rich socio-cultural diversity, which includes diversity in caste, ethnicity, language, religion, and culture, and different ethnic groups have different ways of managing and using natural resources. Many of Nepal's people (60.4% of the population) depend on agriculture, forests, and fisheries for their livelihoods, and women constitute 73.6% of these people (Central Bureau of Statistics 2018). While women make significant contributions in natural resource management, marginalized women in particular often have limited access to and control over resources. Marginalized people and women are often differentially more vulnerable to climate change than others (CARE Nepal 2019b). Women often face GBV, which deters them from claiming their rights to natural resources and playing a stronger role in forest management and community decision-making (CARE Nepal 2017). It is critical to empower women and men from the poor and marginalized communities in a safe environment to enhance their access to equitable benefit sharing and to participate actively at decision-making levels in conservation, resource management, and climate adaptation.

Hence, gender and social inclusion is a key element in the theories of change for both biodiversity and climate change adaptation components of Hariyo Ban. In order to achieve the Program's objectives, river basin and water catchment management must be effectively planned and implemented in a participatory, pro-poor, inclusive manner; the NAP formulation process is participatory and incorporates differential vulnerability of people and ecosystems; GESI-responsive adaptation plans and ISWMPs are implemented in a manner that integrates CCA and DRR in priority/critical sub-watersheds, protected areas, and corridors; and sound GESI practices must be mainstreamed throughout both components.

The GESI cross-cutting theme in Phase II of Hariyo Ban focused on improving internal GESI policies, standards, and governance practiced by user groups; engaging more women, youth, and marginalized people in effective leadership, decision-making, and advocacy; and ensuring more equitable access to and benefit sharing from natural resources for women and marginalized groups.

KEY RESULTS IN GESI

34 new CLACs were formed and mobilized in Phase II; and 61 existing CLACs were given further support including capacity building of women and marginalized leaders to tackle GESI issues.

87% of leadership positions in Hariyo Ban-supported community management entities were filled by a woman or member of a vulnerable group, up from baseline of 72%.

Representation of women in executive positions in Hariyo Ban-supported NRM groups **increased from 45% to 50%.**

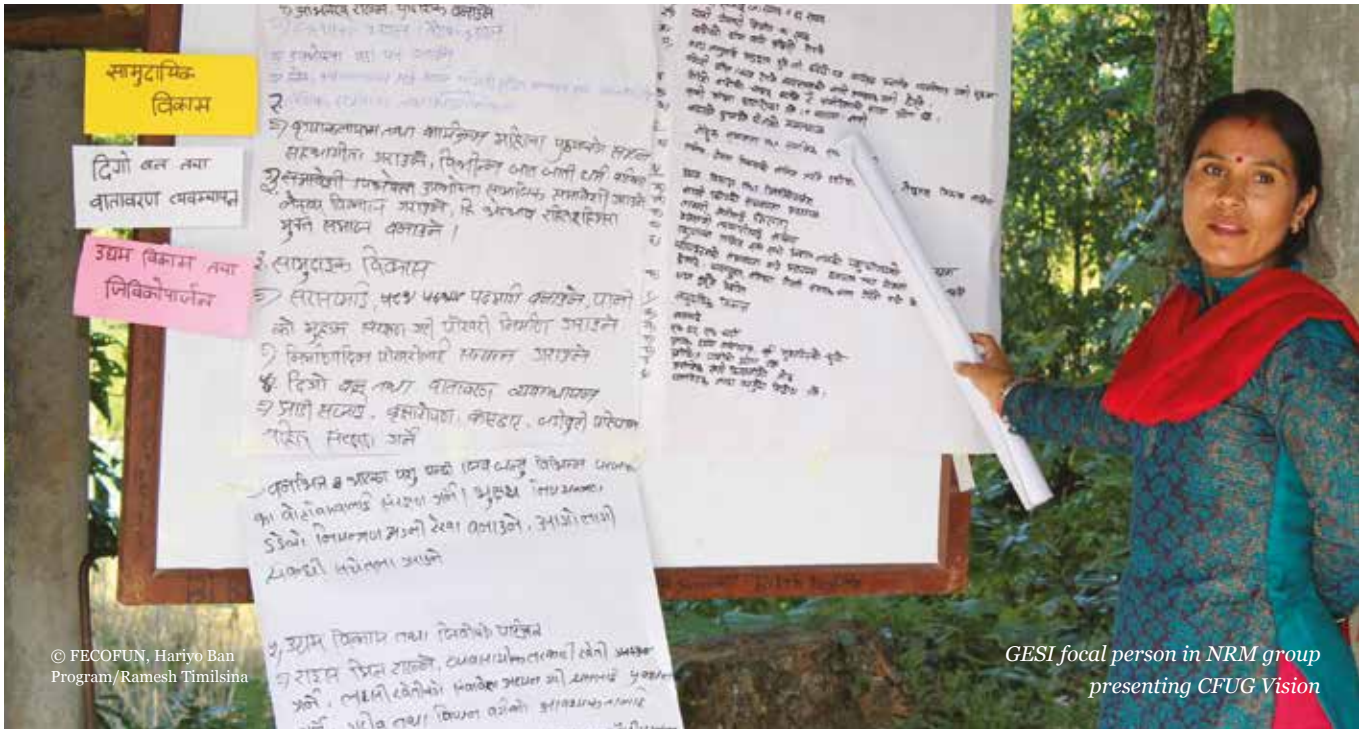
3,064 people were trained in GESI leadership, including men and decision-makers.

117 anti-GBV networks were created to tackle GBV issues at the local level. FECOFUN plans to scale this out in all districts of Nepal.

Anecdotal evidence that **rate of incidence of GBV and other harmful social practices has been reduced** locally as a result of GESI interventions in some CLACs; initiatives against practices such as early child marriage and chhaupadi (isolation of menstruating girls and women) being scaled out at the local level.

STRATEGIC APPROACH

Building on the achievements and experiences of Phase I, the Program adopted two broad approaches: (1) GESI mainstreaming in the two components of Hariyo Ban to ensure that benefited and empowered poor and marginalized people and women, and (2) GESI stand-alone initiatives that went beyond the two components to tackle specific GESI issues in Nepali society where Hariyo Ban had a comparative advantage to take action. The GESI theme also collaborated very closely with the governance theme, for example in ensuring active participation and benefit-sharing by women and by poor and marginalized people in NRM and other groups. The Program developed its GESI mainstreaming guideline in Nepali and English, and all frontline consortium staff members and partners received orientation on it. The guideline, for example, made it mandatory for 50% of participants in all project activities to be women. As a basis for the GESI theme in Phase II, the Program conducted several analyses and assessments such as rapid gender analysis (Simoneau 2016) and social analysis to understand GESI status and gaps, and these were used in designing the GESI Action Plan (WWF 2017b) and new initiatives. The Program annually measured progress on GESI actions through the GESI Report Card and assessed GESI outcomes periodically.



© FECOFUN, Hariyo Ban Program/Ramesh Timilsina

GESI focal person in NRM group presenting CFUG Vision

GESI RESULT 1: IMPROVED INTERNAL GESI POLICIES, STANDARDS, AND GOVERNANCE PRACTICED BY USER GROUPS

While GESI mainstreaming was not originally a priority for conservation in Nepal, this has changed in the past couple of decades, and now GESI is a priority for all three tiers of government. The MoFSC developed a GESI strategy in 2009, the first ministry in Nepal to do so. The CFDG has many commendable GESI-related provisions, including mandating that CFUG executive committees comprise 50% women; that 50% proportionally represent the ethnic groups in the area; and that there is equitable benefit sharing for women and marginalized groups. However, Hariyo Ban found there was weak implementation of these policies to promote GESI in the NRM sector; some key barriers at the local level were the lack of internal GESI policies in NRM groups and, often, absence of GESI-responsive leadership in the groups. In the second phase, the Program engaged with NRM groups to strengthen their governance, including internal GESI policies, and engaged with national and local governments to formulate or strengthen GESI policies related to the environment sector.

i. National and local government GESI policies and strategies

In Phase II, the Program provided technical support to the government in developing NRM and climate adaptation-related policies, strategies, and guidelines. This included working closely with MoFE to revise its GESI strategy and develop an action plan. Several rounds of stakeholder consultations were organized for the action plan, and the strategy was reviewed by experts, including the final draft. The action plan contains some GESI good practices and provisions that Hariyo Ban had been promoting, including GESI analysis, women's leadership development, GESI-friendly technology, men's engagement, and efforts to enhance equitable benefit sharing. In addition, the Program helped integrate GESI as a critical element in various strategies and plans including the CHAL Strategy and Action Plan (2016–2025) and TAL Strategy and Action Plan (2015–2025) during the first phase

and the National Ramsar Strategy and Action Plan, Nepal (2018–2024) in the second phase. Support was provided for the National Integrated River Basin Strategy and Action Plan, which in 2021 was going through the approval process. At the local government level, CARE Nepal supported the development of the GESI Strategy and Action Plan for Ward 22, Pokhara Metropolitan City. This in turn stimulated interest by the Metropolitan City to develop its GESI policy; the city has planned the activity and allocated budget for it.

ii. Internal GESI policies in NRM groups

In order to facilitate NRM groups to effectively implement GESI provisions in the CFDG, the Program supported more than 90 NRM groups to develop context-specific internal GESI policies. Hariyo Ban partnered with the NGO Children Women Empowerment Society (CWES) to provide technical support to 16 CFUGs in the Annapurna Rural Municipality, Kaski. Since GBV was found to be a major barrier preventing women from receiving equitable benefits of natural resources and from playing effective leadership roles in NRM groups, addressing GBV was a major part of these internal GESI policies. Building on the experience in Annapurna, the Program then trained 40 frontline staff and LRPs to conduct issues analysis and work with the groups to develop action plans to address GESI issues in line with CFDG. With their support, 51 NRM groups developed and rolled out internal GESI policies (22 in TAL and 29 in CHAL). Through the Small Grants Program, Hariyo Ban again partnered with CWES to scale out this initiative in 24 CFUGs in four wards in Pokhara Metropolitan City. A manual on GESI provisions and developing internal policies in NRM groups were developed for local stakeholders including ward representatives, CFUGs, district FECOFUN chapters, and CBOs (Children Women Empowerment Society 2020).

This initiative not only helped enhance accountability of NRM groups but also encouraged the groups to appoint a GESI focal point and establish referral mechanisms to cover sensitive and severe GBV cases; this goes beyond the provisions of the CFDG. Drawing on past learning, the Program linked with judicial committees of local governments to deal with sensitive and severe GBV cases in NRM groups.

iii. Engagement of poor, vulnerable, and marginalized women in SWCCs, LAPA committees, and DIARP process

In order to institutionalize participatory climate change vulnerability reduction in CHAL and TAL, the climate change adaptation component supported the formation of inclusive LAPA committees and SWCCs. Now GESI provisions have been incorporated in the composition of LAPA and SWCCs, such as the inclusion of representatives from PVSE groups; at least two women holding key positions in these committees, and one female signatory for financial matters. This helped promote representation of women and marginalized people: 32%, 39%, 11%, and 0.5% for women, Janajatis, Dalits, and Muslims, respectively. This was a good start, given the challenges in terms of social norms, gender stereotypes, lack of information, and poverty. GESI approaches such as CLACs, change agents, and LRP mobilization played a crucial role in enhancing the participation of these groups in decision-making roles.

GESI was well integrated into all planning and implementation processes to ensure active participation and benefits for women and vulnerable and marginalized groups. For example, recognizing the high level of differential vulnerability of certain groups to climate and disaster hazards, in Phase II, the Program integrated DIARP to identify risks and vulnerabilities for the most vulnerable people, including

DIFFERENTIAL VULNERABILITY OF ADOLESCENT GIRLS IN PUTALIBAZAR

A differential impact assessment and response planning study identified that girls in Putalibazar, Syangja, were missing classes during their menstrual periods because of hygiene issues due to scarcity of water in the school, made worse by erratic weather conditions. The Program provided training to 22 girls of the Aatmanirbhar adolescent CLAC in Putalibazar-7 on menstrual health and hygiene and the economic and hygiene value of reusable cloth sanitary pads. The girls learned to make pads for their personal use and also to sell them. After the training, these girls reported that they learned a lot about menstrual hygiene and its implications, as well as the fact that there is no need to be embarrassed about menstruation. Accompanying this work, the Program supported a drinking water scheme for the school, building resilience in light of increasingly erratic precipitation, and management of water in the girls' toilet was improved. The girls' parents and various tole and ward members were invited to meetings to discuss how they could support and encourage their daughters to maintain safe hygiene during menstruation. The same training was provided to school students and teachers in Marshyangdi under the LAPA for Ghermu. Soon after these interventions, the school attendance of adolescent girls improved.

people with disabilities, very young and very old people, poor and marginalized people, and women and adolescent girls, and to plan responses with them. This process helped local governments invest their resources to build the resilience of vulnerable people. For example, 10% of the Hariyo Ban budget for ISWMPs was allocated for livelihoods, GESI, and governance. This provision not only resulted in enhanced participation of women and poor and marginalized groups in climate adaptation activities but also improve their well-being with enhanced access to benefits from natural resources.

GESI RESULT 2: MORE WOMEN, YOUTH, AND MARGINALIZED PEOPLE UNDERTAKE EFFECTIVE LEADERSHIP, DECISION-MAKING, AND ADVOCACY

i. Effective leadership of women, marginalized groups, and youth

While there has been good participation of women and poor and marginalized people in NRM groups, their leadership and representation were questioned by other group members, as they had less skill, knowledge, and prior leadership experience. Hariyo Ban's gender assessment and GESI analysis confirmed this and recommended building their capacity for leadership roles (CARE Nepal 2017). The Program built capacity of 13,285 women, men, and adolescents (12,820 female and 438 male), mostly through the 519 CLACs that the Program helped establish (485 in Phase I and 34 in Phase II). In Phase II, the Program also provided post-CLAC support to 61 of these CLACs for further strengthening and scaling up successful initiatives. This focused on providing further leadership training and building the self-confidence of marginalized women by addressing psychosocial issues, as well as by addressing various social issues and harmful practices such as caste-based discrimination, GBV, child marriage, and drug abuse. The CLAC platform was used used for implementing CCA, livelihood, governance, and biodiversity conservation activities; some CLACs were formed with the direct aim of implementing DRR/CCA activities through empowering women and marginalized groups.

As a result of these interventions, participation of women in NRM group decision-making increased, and women also exhibited more effective leadership skills. For instance, a comparison of the initial capacity assessment and reassessment data of 387 NRM groups indicated that leadership positions in NRM groups held by women increased from 40% to 46% (Figure 14). In addition, 321 groups (83%) maintained women as their executive committee chairpersons or secretaries. An unpublished review by Hariyo Ban of 190 executive committee members (women and men from marginalized groups) revealed that 54% of them perceived that they were able to perform their roles effectively; this was a 43% increase from the baseline.

Many CLAC members were able to represent in leadership positions in NRM groups and CBOs. Some were successfully elected to the local government during the elections. CLAC members are now able to negotiate with local government, political parties, and NRM groups, and they are being trusted by these institutions. CLACs have also successfully taken on social issues. For example, the CLAC in Lamkichuha Municipality collaborated with local government and stakeholders to ban *chhaupadi* in one ward, and the municipality replicated this in the rest of its wards. Bhakkal CLAC in Shuklagandaki Municipality succeeded in reducing the practice of child marriage, and as a result, Ward 10 was declared a "Child Marriage Prohibited Ward." By the end of the Program, the municipality was taking lead in scaling out this initiative to the rest of its wards.

ii. Gender-based violence campaigns

The Program's social analysis (CARE 2017) found that GBV was a key leadership barrier for women to participate more

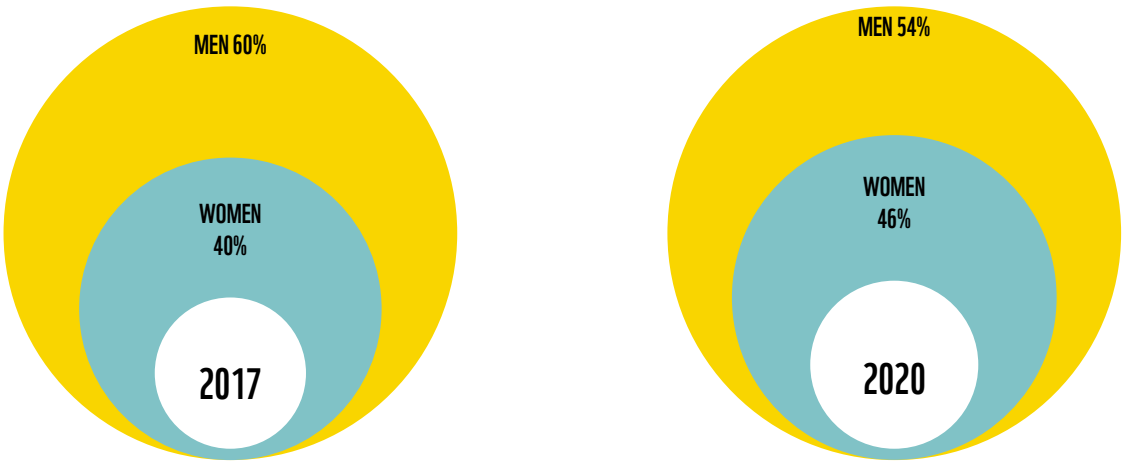


FIGURE 14: PERCENTAGE OF WOMEN HOLDING LEADERSHIP POSITIONS IN NRM GROUPS IN 2017 AND 2020.

fully in conservation activities in the Program's landscapes; this included psychological violence, spousal violence, and harmful traditional practices. Hariyo Ban started tackling GBV in Phase I, and efforts were intensified in Phase II. Every year, the Program took action during 16 Days of Activism against GBV and on International Women's Day in collaboration with local, provincial, and national governments, creating opportunities to work together and enhance GESI capacity by organizing capacity-building training, launching awareness campaigns, developing GESI strategies and guidelines, and holding anti-GBV policy dialogues at the local and national levels. FECOFUN and CARE in particular have been taking lead in carrying out awareness campaigns to educate forest users on GBV.

In Phase II, during 16 Days of Activism, the Program supported 137 events including street dramas, rallies, workshops, and speech competitions to raise awareness of local GBV issues by collaborating with CLACs, community organizations, international and Nepali NGOs, human rights alliances, political parties, schools, colleges, media, Nepal Police, and local government. The events were attended by 9,018 people (3,493 men and 5,525 women). FECOFUN district chapters launched a 16-Day Awareness Campaign, establishing a paralegal women's network and creating an anti-GBV network to deal with GBV issues at the local level. To reach wider audiences with messages on GESI and GBV in the context of biodiversity conservation, public service announcements were broadcast through radio by NTNC.

iii. Male engagement for social transformation

Men and decision-makers are key actors in transformative change. They make decisions at home, in the community, and institutions. Hariyo Ban engaged men and decision-makers to create an enabling environment for empowering women and poor and marginalized people, training 1,014 people through this approach in Phase II. Community-level men champions worked to transform gender roles and cultural norms. They shared their stories in several forums and encouraged other men and decision-makers to take action. In the second phase of Hariyo Ban, this was scaled up within the consortium partner organizations, where male staff members became role models, helping transform organizational cultures. Consortium partners nominated 12 men and senior leaders to become national-level GESI champions.

Around 25 master trainers were trained and mobilized to facilitate women's leadership in NRM groups. The Program mobilized change agents from TAL and CHAL to conduct social awareness events in communities, covering issues such as gender equality, untouchability, and social injustice that were identified in the Program's social analysis. All these activities helped build leadership skills among local change agents. These change agents, along with GESI champions and LRPs, became role models and contributed to bringing about social transformation, breaking down stereotypes in NRM and society as well as increasing women's participation at a decision-making level, guiding CLAC members and NRM groups in the economic empowerment of women and marginalized groups, and in enhancing the access of these groups to equitable benefit sharing of natural resources.

The end-line assessment of the GESI indicators study conducted by the Program also found similar results. Among the 511 respondents (296 women and 215 men), 79.53% agreed that gender roles had changed to some extent over the past two years. Men were still doing more work outside the home than inside; they were engaged in earning a living and doing the plowing and other types of work that require heavy labor. Women were undertaking income-generating activities, taking part in politics, holding jobs, and taking up further education to a greater extent than before, besides doing domestic chores (WWF-Nepal 2021b).

MALE CHAMPIONS FOR GESI

Men in the consortium partner organizations said that having the title of GESI champion increased their sense of responsibility and sensitivity to GESI issues. For example, GESI Champion Deepak Kumar Singh in NTNC said, "Being a GESI Male Champion, I believe in promoting gender inclusivity in the workplace, supporting women's leadership, and ensuring gender budgeting as priorities to combat disparity. Personally, I am raising my only daughter to believe in gender equality, switching from a traditional stereotyped parenting role."

GESI RESULT 3: MORE EQUITABLE ACCESS TO AND BENEFIT SHARING FROM NATURAL RESOURCES FOR WOMEN AND MARGINALIZED GROUPS

Despite being highly dependent on natural resources, women and marginalized groups had limited access to these resources and equitable benefit sharing within their groups. In order to enhance their access, the Program supported activities such as GESI-focused income generation activities (IGAs) through revolving funds, alternative livelihood options, and GESI-friendly climate-smart technology. Forest users and executive members of NRM groups were trained in equitable benefit sharing, a provision in the CFDG. The capacity reassessment report on the governance of 387 NRM groups showed that CFUG's annual income allocation to women, poor people, and marginalized people increased from 11% to 17% in 2020 (WWF-Nepal, 2018).

i. GESI-focused livelihoods

As outlined previously, Hariyo Ban targeted its livelihood support to forest-dependent groups, particularly forest-dependent women and poor and excluded groups; this was done through collaboration with local government and NRM groups including CFUGs, BZCFUGs, CBAPUs, CLACs, and mothers' groups. The small-scale enterprise support for conservation-friendly enterprises gave forest-dependent women and poor and excluded groups skills development training to increase opportunities for income generation and employment. A post-training assessment of skill-based trainees revealed a substantial increase in the annual income of trainees, ranging from 17% to 57%. The training also helped women and marginalized people build self-esteem, develop leadership skills, and increase their recognition in society (WWF-Nepal 2020c).

"HARIYO BAN'S SUPPORT CHANGED OUR LIVES"

Hariyo Ban Program supported us in establishing a goat-raising enterprise, Sangeet Bakhrapalan Farm, at Kalika Municipality-9, Chitwan. It paid for the registration of the enterprise and provided saplings and seeds for us to plant for fodder; it also helped us understand better the importance of forests. We need to plant trees to avoid the adverse effects of deforestation. This is one of the best programs, helping us improve our earnings by providing the knowledge and skills we need and establishing us as entrepreneurs.

Kabi Lal Praja on Program's enterprise support

Source: Friends for Peace Building and Development (2020)

Tools such as this corn sheller helped poor and marginalized women reduce workloads

Many of the medium-scale enterprises the Program supported improved livelihoods of women and poor and marginalized communities. For example, the Korak Honey Enterprise focused on providing alternative livelihoods for the youth of highly marginalized indigenous Chepang and Tamang communities. Some youth of this community were found involved in poaching and wildlife trade in the past. Our intervention aimed to motivate and involve youth in biodiversity conservation by engaging in alternative income generation activities. The honey enterprise has proved very successful in generating incomes and poaching and firewood collection are reported to have stopped. Women are now able to provide better education for their children and meet household needs.

The large-scale livelihood support to community-based homestays mainly benefited Gurung, Magar, and Tharu indigenous women in the hills and Terai. The homestays are managed mostly by women and employ local youth. Besides raising the income of poor indigenous women and youth, this work also helped improve women's ownership of assets and access to natural resources.

ii. GESI-friendly climate-smart technology and tools

Climate change impacts men and women in different ways because of different gender roles, unequal power relations between men and women, social norms, and gendered division of labor. Hariyo Ban II took into account the differential impacts of climate change among men, women, and marginalized communities and developed climate-smart, time- and energy-saving, GESI-friendly technologies and practices, as outlined in the Climate Change Adaptation section. An initial assessment of the effectiveness of these tools and technologies revealed that some were very effective, efficient, and affordable. Some of the tools, like the corn sheller, helped save women's time, and as a result, they had more time to participate in community and conservation activities. Plastic tunnels, plastic ponds, and kitchen gardens were of great benefit for men and women from poor and disadvantaged backgrounds.

iii. Issue-based partnerships to ensure access to forest resources

Since Hariyo Ban assessments indicated that Dalit and other marginalized communities had limited access to natural resources, the Program focused on issue-based partnerships to facilitate access, partnering with organizations of marginalized groups. A partnership with Rastriya Mukta Haliya Samaj in Kanchanpur resulted in 187 Haliya[15] households gaining membership in four local CFUGs; they had previously been excluded despite living close to the forest. This ensured they could use forest resources as other members did. Collaboration with the United Dalit Upliftment Forum in Tanahun resulted in many Dalit community members being included as CFUG members and some being elected to key positions on executive committees of the groups, ensuring access to forest products and inclusion in decision-making

EXAMPLES OF RESULTS THROUGH THE PARTNERSHIP WITH UNITED DALIT UPLIFTMENT FORUM IN TANAHUN DISTRICT

- One Dalit woman was nominated as chairperson of Lohiare Khotreke CFUG.
- Two Dalit women were elected vice-chairperson and treasurer of Bandipur RM-5.
- One Dalit woman was elected as secretary of Tunibhanjyang CFUG, Myagde RM-1.
- Four Dalit women were elected as executive committee members of Devithumka CFUG, Bandipur RM-3.
- Five Dalit and 11 Janajati households were included as members of their respective CFUGs.

SOCIAL INCLUSION IN HARIYO BAN II CONSORTIUM PARTNERS

The Program recruited a GESI coordinator to lead the GESI theme and ensure effective implementation of the GESI Action Plan. Each consortium partner assigned a GESI focal point to look after its GESI affairs. CARE and NTNC conducted organizational-level GESI assessments to review the level of understanding of GESI concepts and commitment to GESI mainstreaming within the institutions. FECOFUN developed a GESI strategy at the institutional level. In order to create an enabling environment to promote GESI, the consortium partners developed guidelines/policies on preventing sexual harassment, exploitation, and abuse. A complaint-handling mechanism was established and operated in TAL and CHAL by CARE, with a toll-free number to receive grievances, suggestions, and feedback. WWF-Nepal has a project

15 Haliyas are Dalits who were formerly bonded laborers and are now freed.

© CARE Nepal/Hariyo Ban Program

Sensitization on reducing child marriage at Shuklagandaki Municipality

CLAC MEMBERS SPEARHEAD SUCCESSFUL CAMPAIGN AGAINST EARLY MARRIAGE

Bhakkal CFUG developed three CLACs for women, men, and adolescent girls. The CLACs identified child marriage as a major social problem in Shuklagandaki Municipality, Tanahun, as it is damaging to the overall health, education, development, career prospects, and potential for girls to contribute to their families and society. All three CLACs decided to tackle it together, and with continuous campaigning, they succeeded in declaring Shuklagandaki-10 as a "Child Marriage Prohibited Ward." Building on this achievement, the CLAC members held several meetings with Shuklagandaki Municipality representatives and discussed scaling up child marriage reduction campaign to other wards. The chairpersons of 28 toles (settlements), social leaders, and influential persons were invited to an in-depth discussion on the topic of child marriage. It became clear that everyone understood the impacts and that strict action needed to be taken.

With the support of Hariyo Ban, the CLACs developed and implemented a joint action plan. Awareness-raising sessions were conducted that focused on issues such as health problems for girls caused by early marriage and legal provisions that prohibit child marriage. Theatrical performances delivered messages about the harm caused by child marriage, and a radio program was aired by the Shuklagandaki FM radio station. The CLACs organized an inter-school poetry recitation event to mark International Women's Day, and coordination with the local government continued.

"This is an area of personal interest for me, and I think child marriage should be everyone's concern. Recognizing the positive outcomes of Bhakkal CFUG's efforts, the same campaign is currently being replicated in ward number 8," shared Chet Narayan Poudel, chairperson of Bhakkal Community Forest Users Group. The members of all three CLACs believe the endeavor has been much more effective than it might have been if there were only women's CLACs.

complaint resolution process where community members can lodge complaints if they perceive any project supported or funded by WWF was violating the commitments of WWF's social policies;[16] the guideline for the mechanism is available in English and Nepali on WWF-Nepal's website.

The progress and achievements of Hariyo Ban's GESI Action Plan were reviewed regularly through review and reflection events for stakeholders. A GESI report card was prepared annually to track progress on planned actions and activities aligned to Hariyo Ban's identified GESI gaps.

16 WWF's social policies include gender, Indigenous peoples, human rights, and poverty, and in 2021 these were under review; the WWF Network also developed an environmental and social safeguards framework in 2019.

© WWF Nepal, Hariyo Ban Program/Nabin Baral

Women's involvement increased in NRM groups

In-kind supports for government included support for local governments in disaster preparedness and response planning, with provision of equipment such as rescue boats, and for federal and provincial governments to develop forestry and environmental acts and policies.

OVERARCHING ACTIVITIES

SMALL GRANTS PROGRAM

The Windows of Opportunity (WOO) grant fund in Hariyo Ban I was designed to help achieve Hariyo Ban's goal by funding government agencies and CSOs to undertake innovative research, pilot new ideas, fill knowledge gaps, and support activities for which government lacked funding in the fields of biodiversity conservation, sustainable landscapes, climate change adaptation, livelihoods, GESI, and governance.

Learning from WOO, the Small Grants Program (SGP) in Phase II aimed to ensure innovation, capacity building, applied research, innovative science, and technology, piloting of new approaches/tools, and filling of gaps in regular programs, focusing on ecological and community resilience building in CHAL and TAL. The SGP had four major components: (i) student research grants, (ii) CSO and private sector grants, (iii) government agency grants, and (iv) disaster response and management grants. The SGP focused on biodiversity conservation, climate change adaptation, GESI, and governance, including support for disaster response and management.

The small grants program was not a stand-alone activity. It aimed at contributing to achieve Hariyo Ban's goal and objectives by promoting flexibility and responsiveness to the dynamic policy environment and political and socio-economic transition, through providing grants to civil society organizations and in-kind grant supports to the government. The small grants fund greatly supported to fulfill the changing needs and priorities of government, and enabled GoN participation in and ownership of Hariyo Ban activities, while also leveraging resources and desired results. Resources available under this program was used for applied research, testing, and promoting innovative and catalyst approaches, capacity building, and policy review and formulation. All small grants activities were implemented in close coordination and collaboration with government at all three levels, civil society organizations and private sector.

In-kind supports for government included support for local governments in disaster preparedness and response planning, including the provision of equipment such as rescue boats, and for provincial governments to develop forestry and environment acts and policies. Some notable examples of policy support during Phases I and II included the Forest Policy, Forest Act, Environment Policy, GESI Strategy and Action Plan for Forestry and Environment Sector, NIRBSAP, mitigation action plans for human-elephant conflict and human-common leopard conflict, and the CHAL and TAL strategies and action plans. By the end of Phase II, most policies had been endorsed by the government and were being implemented.

Notable contributions under the biodiversity component included support for national priority projects like mapping of ecosystems and forest types of Nepal, as well as analysis of wildlife population dynamics; assessment of persistence and carrying capacity of tiger in Banke-Bardia; in-situ conservation of Bijaysal in Kapilvastu district; mitigation of human-primate conflict in marginalized and ethnic communities in the Seti corridor; establishment of the revolving Wildlife Damage Quick Relief Fund in the Chitwan and Bardia buffer zones;

EARTH MOUNDS IN KRISHNASAR CONSERVATION AREA FOR BLACKBUCK CONSERVATION

Blackbuck was once common in the southwest of Nepal, but numbers declined drastically when agriculture was developed in the Terai, and by the 1970s it was assumed to be extinct in Nepal in the wild. However, in 1975 a single herd of nine animals was found in Khairapur in Bardia district. The government established a guard post there, and in 2009 it declared the small Krishnasar Conservation Area; the area mainly comprises of floodplains lying between the old and new courses of the Babai River.

Having only one small population in the wild in Nepal puts the species at risk from disease, inbreeding, and extreme weather events. In 2014, the western Terai suffered devastating floods; water from the Babai River inundated the conservation area, sweeping away 40 of the 300 blackbucks. With no opportunity to expand the conservation area to higher ground, the warden came up with a very innovative approach, and with Hariyo Ban support, he constructed five raised mounds to provide a refuge for blackbuck during floods. Blackbuck used the mounds during a major flood in 2017, and fewer were lost. Hariyo Ban also provided support to raise the existing mounds and add additional ones through the SGP.

All three pictures: ® CARE Nepal/Hariyo Ban Program

Handing over rubber boats to Red Cross, Kailali

RUBBER BOAT SUPPORT FOR FLOOD EVACUATION, SEARCH, AND RESCUE

Kailali district's disaster preparedness and response plan 2015–2016 predicted nearly 30,000 households could be affected by flooding, with a displacement of approximately 6,500 people. Hariyo Ban provided six rubber boats over its two phases to help with flood evacuation and search and rescue. With these and other boats from government members of the search and rescue team from the Armed Police Force, Nepal Army, and Nepal Police were able to rescue more than 2,300 people in the 2017 floods and transport emergency food and materials.

and design and piloting of a market-based wildlife damage insurance scheme for the first time in Nepal.

The SGP provided support to continue several activities that WOO funding helped initiate. This included enhancing climate refuges for blackbuck during floods in Krishnasar Conservation Area, with one new earth mound and heightening of the three mounds developed in Phase I. The SGP provided support to implement species conservation action plans developed in Phase I for the red panda, pangolin, and Bijaysal. National community disaster management committees that were strengthened in Phase I received enhanced support in Phase II to develop LDCRPs. Other biodiversity and climate adaptation activities included research and training on measures to reduce the risk of vulnerable communities to lightning strikes and strengthening local governance to restore Dipang Lake for conservation and improved livelihoods.

Support for notable innovation and piloting of new approaches included developing and implementing internal GESI policies and appointing GESI focal persons in NRM groups, and planting campaigns to promote agro-forestry and improve biodiversity in three important biodiversity corridors. Support for livelihood improvement for forest-dependent communities included development of green enterprises by 444 households, including coffee production and processing in Kaski district, organic turmeric cultivation in Nawalparasi, homestay development in Tanahun district, and citrus production at the community and household levels in Dadeldhura.

Sixty-five students in Phase I and 188 students in Phase II received support for academic field research. About 20% of them published their work in peer-reviewed research journals; the Program compiled a compendium of abstracts of all the academic research supported by WOO and SGP (WWF-Nepal 2020d). Government agencies received 58 in-kind supports in Phase I and 30 in Phase II, and CSOs and private-sector organizations received 53 and 30 grants in Phase I and II, respectively.

WOO and SGP filled important gaps in regular programming, providing flexibility and offering the opportunity to take risks and try out new ideas with a wide range of partners, as well as supporting capacity building, policy work, and scaling up of successful approaches outside work plans. Building on learning from Phase I, concerted efforts was made to link SGP activities closely with the Program's regular interventions wherever possible for better results and synergetic impacts. WOO and SGP made important contributions in meeting the Program's targets. Monitoring data generated by the grant activities were documented in close coordination with the MEL Unit, and incorporated in the Program's performance indicator tracking table (PITT).

COMMUNICATIONS

The Program's communications strategy aimed to enhance understanding of key audiences regarding threats to biodiversity conservation and the importance of climate change adaptation and encourage them to change their behaviors. The Communications Unit implemented a strategy to reach key audiences with priority messages from the Program using appropriate communication tools and methods. It focused on documenting and communicating Hariyo Ban's results and impacts, raising awareness on key issues to promote good practices, and enhancing communication skills of field staff, implementing partners, community members, and journalists. Some key achievements of the unit are outlined below.

Profiling Hariyo Ban

The major focus of the communications unit was to increase general understanding of issues the Program was working on and to influence knowledge, attitudes, and behaviors of key audiences to promote good practices in resilience building of people and ecosystems. The unit shared Hariyo Ban Program results, learning, and stories with stakeholders, the general public, donors, and the media. It prepared stories with in-depth subject explanations and multimedia content and disseminated them via websites and social media platforms of all consortium partners. The Program also reached out to international audiences, for example, through USAID's ClimateLinks and BiodiversityLinks; a webinar and blog with the Woodrow Wilson Center in the US;[17] a webinar on GBV in a series organized by the USAID-funded IUCN project Advancing Gender in the Environment;[18] and a case study in a guide on GBV by the same project (Castañeda Camey et al. 2020). Hariyo Ban was presented at a USAID Environment Officers Annual Conference and at partner forums in the United States.

Promoting the Program via social media

Approaches, innovations, and successes were highlighted through USAID Nepal's social media platform as well as those of the consortium partners. Topics ranged from beneficiaries' stories to successful activities that could be replicated, demonstrating the Program's presence and impact. To ignite interest among youth on environmental and conservation issues while also showcasing the benefits of a participatory and sustainable approach, a video series was produced featuring national social media icons including a former Miss Nepal. The videos highlighted key messages on how people can live in harmony with nature, conserve biodiversity, and adapt to climate change.

Calendar day celebrations

To amplify the messages and achievements of Hariyo Ban, the Program organized events to celebrate major calendar days,

© WWF Nepal, Hariyo Ban Program/ Santosh Pudasaini

Training of women journalists in Nepalgunj

17 https://www.wilsoncenter.org/event/10-years-nepal-what-hariyo-ban-program-taught-us-about-integrating-community-resilience.

18 http://genderandenvironment.org/agent-webinar-gender-based-violence-and-environment-linkages-hariyo-ban-program/.

including International Women's Day, National Wildlife Week, and World Environment Day. Op-eds written by the CoP, thematic leads, and other team members were published in national dailies in Nepal to mark these occasions.

Media engagement

The Program collaborated with experienced Nepali journalists to document Hariyo Ban's interventions on the ground and produce stories in the media. As a part of the effort, senior journalists from major national dailies in Nepal traveled to Program working areas and carried out independent field-based reporting on key national issues such as governance in natural resource management, women in conservation, and conservation initiatives by local governments. This led to more informed reporting, helping raise public awareness on how the Program strives to benefit both nature and people. National newspapers also covered news related to the Program throughout the implementation period. This coverage played a crucial role in strengthening the Program's credibility and helped gain public support for its interventions.

Capacity building

To help journalists better understand the underlying principles and technicalities behind the Program's results, training events were organized for local producers and reporters from various regions in the country. Dedicated training events were also conducted for women journalists on poaching and illegal wildlife trade. Partner organizations were well oriented on Hariyo Ban branding compliance so that they could independently ensure correct branding and understand their role in Hariyo Ban's branding and marking plan. They were also trained in programmatic communications including story writing, photography, and blogging.

Publications and outreach materials

To increase the outreach of the Program and document Hariyo Ban's legacy, the Communications Unit assisted all Program components and themes in the design and production of publications. This included several Hariyo Ban publications, as well as Program-supported government plans, policies, and strategies, which were included in a section on WWF Nepal's website dedicated to government publications. Outreach materials included a series of 25 simple and readable booklets on Hariyo Ban focal species for a wide array of stakeholders, including local communities, tourism enterprises, eco-clubs, and school students. The unit supported the production of public service announcements and prepared stories, fact sheets, brochures, and other outreach materials highlighting the Program's work.

Stakeholder collaboration

The Communications Unit collaborated with all consortium partners, local stakeholders, government officials, and other relevant personnel to document and showcase several Program interventions on video. These helped people understand the interventions better, and they were also used by other program managers and stakeholders to promote understanding about best practices in biodiversity conservation and climate adaptation in Nepal.

Engaging local communities

As local communities were among the key target audiences, simple communication tools such as stickers, posters, street dramas, and radio programs were used to reach them with Program messages. Wherever possible, Nepali language was used for this audience. These messages were communicated by the Program, government, and partner NGOs and CBOs.

Maintaining communications

The Communications Unit coordinated with all team members to produce biweekly updates of the Program, managed the content of the Hariyo Ban Program webpages, updated the Program photo database, and undertook translation of communication materials. In addition, the unit carried out an assessment of behavior change communication among transportation workers in key wildlife trade routes in curbing illegal wildlife trade. Message boards were produced and displayed at public events in English and Nepali throughout the Program.

CHANGING BEHAVIOR IN TRANSPORT DRIVERS

In the baseline study covering awareness of illegal wildlife trade, 18.4% drivers reported that if they were given some goods to carry placing them under their seats, they would first check if they contained any prohibited items.

After the intervention, this percentage increased to 63.2%.

MONITORING, EVALUATION, AND LEARNING (MEL)

MEL was an integral part of the Hariyo Ban Program, which has been guided by the principles of results-based management to improve overall program effectiveness through adaptive management. The MEL approach closely followed the elements embedded in the development hypothesis and the theories of change. MEL was instrumental in improving Program performance and institutional accountability through periodic monitoring of field implementation and institutional monitoring of implementing partners, grantees, and consortium partners. MEL activities provided evidence of change and informed the Program team, consortium partners, and USAID on performance monitored through Program indicators.

The MEL activities included field monitoring; midterm and final evaluations; review and reflection; learning; documentation; data acquisition and management; and performance reporting.

Hariyo Ban II's USAID-approved MEL plan describes overall monitoring and evaluation (M&E) approaches, theories of change, and results chains; M&E structure and performance reporting systems; performance indicators; collaborating, learning, and adapting strategies; and data management methods. Objective-level theories of change and results chains were articulated and embedded in the MEL plan with annual and life-of-activity targets for the indicators in the PITT. The MEL plan was developed in a consultative and participatory manner with the involvement of USAID, Ministry of Forests and Soil Conservation, Hariyo Ban consortium partners, and other USAID-funded projects. The M&E Unit worked very closely with consortium partners and the core team facilitating data management and informing the team on progress. The MEL plan served as the guiding document for the implementation of the M&E activities in Phase II.

Data acquisition, management, and quality assurance

The data generated through Hariyo Ban interventions comprised output-level data collected on completion of activities (the majority of the data) and outcome-level data that became available sometime after the activities were completed. The Program designed and operationalized an online database system to store, process, and retrieve Program data.

Consortium partners collected output-level data and fed it into the online system, where it was later verified and approved by the central M&E Unit. Mechanisms were developed at several levels and stages to check the integrity of data and data analyses. This included partner administration at the consortium partner level and central administration in the central M&E Unit. Learning from Phase I was applied to enhance the efficiency of data management, and the online system greatly improved this. Data entry and retrieval processes became easier and faster. Consortium partners could easily retrieve information from the system and use it for performance reporting. The M&E Unit served as the hub for Program database and information, supporting data requirements of partners and the core team and increasing the reliability of data.

The M&E Unit conducted an internal data quality assessment (DQA), and USAID undertook DQA focusing on the performance indicators. DQA has been a very effective approach to maintain data quality standards and minimize errors in data handling and processing at different levels. This process also ensured that there was a common understanding of standard data collection templates; provided a way to check that data submitted on the online system was consistent with data at the field level; and identified ways forward for effective data collection and management. These assessments were also helpful in identifying data gaps at different levels. Results from key indicators were updated in USAID's Development Information System (DIS) and TraiNet system. All important documents including studies, assessments, performance reports, and monographs were uploaded in USAID's Development Experience Clearinghouse[19], and data was shared in the Development Data Library.[20]

Hariyo Ban Program set targets for the 51 output- and outcome-level indicators in the PITT. Progress toward the indicators is outlined in the fiscal report.

M&E capacity building

The M&E Unit organized several capacity-building activities for M&E focal point persons in consortium partners, key program staff, grantees, and staff of other stakeholders. At the start of Phase II, an orientation on the MEL plan was organized to develop a common understanding of the plan and prepare the team to implement the M&E system. Several training events were organized to enhance the knowledge and skills of the consortium partner M&E focal points and key program staff to enable them to undertake M&E work more efficiently. Refresher training, cross-learning visits, and on-the-job coaching on database management were provided to update these individuals and brush up on their M&E skills. As staff turnover was an ongoing issue, the unit also trained new staff. Training activities did not tail off toward the end of the Program; instead, training evolved to include more and more practical dimensions linking directly with trainees' day-to-day work activities. In total, 195 people (62 female) were trained in Phase II.

Program evaluation

As part of the Hariyo Ban agreement with the Government of Nepal's Social Welfare Council (SWC), the mid-term evaluation of the Program was carried out in May and June 2019 by a team of experts recruited by SWC. The Midterm evaluation team found Hariyo Ban Program very relevant to the national context, and appreciated various initiatives undertaken by the Program to curb biodiversity threats and climate vulnerabilities. The team acknowledged that implementation of most of the recommendations made by the Final Evaluation of Phase I was satisfactory. The team suggested to work further on the water quality management and pollution control, adopt river basin approach, etc. Hariyo Ban addressed all actions recommended by the mid-term evaluation. The final evaluation was conducted during May and June 2021.

Learning and knowledge documentation

Since the first phase of the Program, learning and knowledge managementwere considered ashigh priorities. Documentation in the first phase created a vast repository of knowledge for future application. To ensure consistent results are documented as well as to catalog past projects, collect successes, and share results with local governments, Hariyo Ban II organized learning sharing events at 17 different local government levels. Achievements were shared and learnings were handed over at those events for a smooth transition of successful interventions of the Program. This knowledge

19 https://dec.usaid.gov/dec/home/Default.aspx.

20 https://data.usaid.gov/.

management will also help local governments in scaling up and scaling out of best practices in critical areas.

Hariyo Ban II has also prioritized capturing learning and knowledge for use in Nepal and around the world; this forms part of the Program's legacy.

Field monitoring

Several monitoring visits were organized to triangulate the field situation with information reported by the consortium partners. They were also used to inform stakeholders on the status of field implementation of Hariyo Ban and to better understand progress and the reality of operating conditions on the ground for a particular component or theme through monitoring. Recommendations from the monitoring visits were periodically reviewed and discussed with the core team and consortium partners. However, toward the end of the Program, field visits were severely restricted due to the global COVID-19 pandemic. The team organized virtual meetings for information sharing and to conduct monitoring from a distance. Though physical verification was not possible, much information was gathered through virtual channels, thanks to the wide reach of the digital network in Nepal, something that would not have been possible until recently.

Key monitoring and evaluation learning

The following lessons were learned for Phase II M&E:

High value of beneficiary cross-learning visits: These visits provided valuable opportunities for Hariyo Ban beneficiaries to learn through direct observation and discussion with successful communities—for example, for enterprise approaches, providing motivation and confidence to take on similar activities at home, and also creating connections for future exchanges.

Getting maximum benefit from monitoring visits: Thematic monitoring visits made jointly by the thematic expert and by the Program and monitoring staff were much more effective than separate visits, as they fostered a deeper understanding of specific themes; joint observation and analysis ensured the findings were owned by the team and helped craft a way forward. Sharing the findings of monitoring visits with senior management of each consortium partner in one-on-one meetings was very effective in ensuring accountability for implementing recommendations and improving adaptive management for program effectiveness.

Value of online database management system: Having an internet-based system has made database management more efficient and accurate at all levels, increasing data reliability.

Data quality assurance should be undertaken at multiple levels: Conducting DQA at different levels, - instead of MEL conducting it exclusively- of just by the MEL team, is more effective in establishing accountability across the team.

Allocation of indicator targets is key for ownership and accountability: Allocation of indicator targets to consortium partners before planning the annual work each year, aligning the work plan with PITT targets, constant follow-up, and frequent update and review of PITT by the core team were crucial for attaining indicator targets and ensuring accountability of consortium partners. The core team and consortium partners need to work to attain indicator targets and major deliverables of the Program, instead of assigning this exclusively as an MNE task. Working closely with the Program team with strong ownership and support from management is crucial.

Annual M&E training is essential: Capacity-building refresher training on M&E is required annually to address capacity gaps due to high staff turnover in the consortium and implementing partner organizations.

COLLABORATION WITH GOVERNMENT AND CONTRIBUTION TO ROLLING OUT FEDERALISM

Hariyo Ban has been in a remarkable position to provide support as Nepal has transitioned from a post-conflict peace-building situation to the holding of elections and rollout of a new constitution and federalist system of government in the space of 10 short years. The Program started supporting the government in moving the federalism agenda forward in Phase I when the election for the second constituency assembly was planned in 2013. Hariyo Ban carried out awareness-raising and policy discourse events on biodiversity conservation, environmental protection, and climate change adaptation with a focus on bringing critical issues that should be discussed and incorporated in the new constitution to the fore. Similar processes were carried out after the election, including engagement with elected constituent assembly members. After the promulgation of the new constitution in 2015, local and national elections were held in 2017. Several forest-dependent women who had been empowered through Hariyo Ban's CLACs and other activities successfully ran for local office, encouraged by FECOFUN. The Program collaborated with and supported all three levels of government (federal, provincial, local) to formulate various policy documents (acts, regulations, directives, strategies, policies, plans, and guidelines). This included providing existing results and plans for climate adaptation, disaster risk reduction, and sub-watershed management at the local level, which were in many instances incorporated into local government plans. The Program also helped build the capacity of local government units through training.

Federal level

During Phase II, Hariyo Ban worked closely with the MoFE and other relevant GoN agencies at the federal level. Coordination at the federal level continued through the Program Steering Committee and its Working Group

© WWF Nepal, Hariyo Ban Program/Samir Jung Thapa

Rhino translocation supported by Hariyo Ban Program

represented by different ministries, USAID, senior management of the four consortium partners, and core Hariyo Ban staff, to ensure overall guidance and integration with GoN priorities and policies. The Program supported MoFE to formulate, review, and update more than 28 policies, strategies, and action plans, and species conservation action plans, as well as undertake other activities of national priority, including mapping of ecosystems and forest types of Nepal, reestablishing assemblages of herbivores (translocating blackbuck, wild water buffalo, and rhino), and capacity building. The Program also worked with the Ministry of Federal Affairs to formulate Natural Resources and Biodiversity Acts for local governments and supported the Department of Roads to develop Nepal's first Green Road Engineering Training Manual and train its technical staff.

Provincial and local levels

The Program worked closely with the provincial as well as local governments in the two landscapes to share the landscape- and local-level plans, programs, and key achievements. For example, at the provincial level, the Program supported Sudurpaschim Province to formulate its new Forest Policy and Forest Act, Environment Protection Policy, Environment Protection Act, Environment Protection Regulation, and a Guideline for Sand and Gravel Mining. In Karnali Province, WWF-Nepal supported the preparation of a Tourism Management Plan, which has been rolled out by the provincial government. At the local level, the Program supported several municipal governments to prepare LAPAs (12), ISWMPs (5), local environment and natural resource acts (7), and long-term master plans for two municipalities (Thakurbaba and Bheemmdatt). Hariyo Ban also supported local governments in capacity building, providing technical assistance and joint implementation of mutually agreed-upon interventions. Some of the local governments received support to prepare sectoral and GESI policies.

SUDURPASCHIM PROVINCE'S GUIDELINE FOR SUSTAINABLE MANAGEMENT OF SAND, GRAVEL, AND STONE

A Guideline for Sustainable Management of Sand, Gravel, and Stone was endorsed by the Cabinet of the Sudurpaschim Provincial Government in 2019. This enabled stakeholders in the province to prepare initial environmental examination reports necessary for development activities such as the extraction of sand, gravel, and stone and the construction of rural roads and bridges, and to seek approval for them from the province. Previously, proposals had to be submitted at the central level in Kathmandu, involving significantly more resources, time, and administrative hassle. Moreover, the Environment Protection Act, which has been endorsed by the Cabinet, will be instrumental for mainstreaming biodiversity and environment into the overall development framework and projects in Sudurpaschim Province in the future.

© WWF Nepal, Hariyo Ban Program/Nabin Baral

Begnas Lake, Kaski

HARIYO BAN CONTRIBUTIONS TO THE LANDSCAPES

Several partners support the government and other stakeholders in implementing the landscape strategies and action plans, and Hariyo Ban has been one of the larger projects and programs involved. For the TAL strategy and action plan (2015-2025), the Program contributed to strategic actions on species and ecosystems; forest and other land uses; enabling environment and cross-cutting themes; and a particularly high proportion of the strategic actions on social well-being, reflecting the Program's strong focus on people. In CHAL, the Program contributed to significant proportions of actions under ecosystem services and ecological processes; forests and other land uses; socioeconomic prosperity; GESI; policy and governance; and knowledge management and communication.

The Program undertook participatory threat and vulnerabilty assessments with stakeholders for landscape complexes and sub-river basins in 2012 and early in Phase II, using methodology from the WWF Standards for Project and Programme Management.[21] Results were used as a guide to prioritize activities during both phases. The Program had intended to repeat all the assessments at the end of Phase II and compare them with the earlier results as a potential indicator of Program impact. However, due to the COVID-19 pandemic, it was only possible to do this for the Seti sub-river basin. Since the Barandabhar complex was last assessed as recently as 2018, results from there are also presented. However, these assessments do not provide a complete picture for the two landscapes.

Barandabhar complex lies in the heart of the Program's working areas, at the intersection of the two landscapes, and part of it is a key corridor between Chitwan National Park and the upstream areas of the Gandaki basin. Several severe, high-priority threats were reduced in the complex between 2012 and 2018 (infrastructure, invasive species, and road accidents with wildlife); the overall trend was for some threats and vulnerabilities to decline and others to remain at the same level; drought and drying of water sources were introduced as vulnerabilities in 2016, likely in response to advancing climate change. Results are shown in Table 5.

TABLE 5: CHANGES IN THREATS AND VULNERABILITIES FROM 2012 TO 2018 IN BARANDABHAR COMPLEX

THREATS AND VULNERABILITIES	2012	2016	2018
Encroachment	Medium	Medium	Low
Forest fire	High	Medium	Low
Soil erosion and landslides	Medium	Medium	Medium
Physical infrastructure	Very High	Medium	Medium
Illegal logging and poaching	Low	Low	Medium
Invasive species	Very High	Medium	Medium
Pollution in rivers and ponds	High	Medium	Low
Over-harvesting of firewood	Low	Low	Low
Overgrazing	Low	Low	Low
Road accidents with wildlife	Very High	Low	Low
Disturbance of animal habitat	High	Low	
Drought and drying of water sources		High	Medium

21 https://wwf.panda.org/discover/about_wwf/how_were_run/programme_standards/?.

In the Seti sub-river basin, which lies in the heart of CHAL, the overall trend is not so clear cut (Table 4). The highest threats in 2012 were agricultural runoff and unplanned infrastructure; in 2020 unplanned infrastructure continued to be one of the highest threats, along with pollution and human-wildlife conflict (HWC). Several threats and vulnerabilities remained at the same level; some increased; and a few decreased. Some new, emerging threats were documented in 2021, such as flooding and HWC, and some climate-related factors got worse (flooding, uncontrolled fire, and landslides). Some agricultural factors such as excessive grazing, shifting agriculture, and agricultural runoff were no longer deemed important. These trends likely reflect the rapid changes that this sub-river basin has faced over the lifetime of Hariyo Ban, with rapid development coupled with demographic change, land-use change, and climate change as a background to Program activities.

FISCAL REPORT

Hariyo Ban support helped in declaration of Kumroj as Nepal's First Model Biogas VDC

This section outlines how the Program funds were used and the degree to which Hariyo Ban II achieved its targets.

PROGRAM FUNDS

The Program followed the budget allocation in the Cooperative Agreement. Of the USD 18 million total budget, 80% (USD 14.4 million) was allocated for CHAL, primarily to support implementation of the newly formulated CHAL Strategy and Action Plan (2016–2025), and the remaining 20% (USD 3.6 million) was allocated for TAL to support the implementation of the revised TAL Strategy and Action Plan (2015–2025). Thematically, 70% of the budget (USD 12.6 million) was allocated for the biodiversity component in the landscapes, and 30% (USD 5.4 million) was allocated for climate change adaptation. From the biodiversity conservation budget, 11.9% (USD 1.5 million) was allocated for CWT. From the budgets of both components, 13.9% (USD 2.5 million) was allocated for the Small Grants Program, and 5% (USD 0.9 million) was allocated for monitoring, evaluation, and learning.

Cost-share of USD 2,988,216 was provided by the consortium partners. Approximately USD 1.5 million was leveraged to augment and supplement Hariyo Ban activities through collaborative efforts with local governments, local communities, and institutions that shared their resources to implement interventions.

The Program strategically spent a large proportion of the budget during the second and third years to accelerate field implementation. This enabled timely achievement of the planned activities and results and provided ample time for documentation, sharing of learning among key stakeholders, scaling out best practices, and smooth closure of the project.

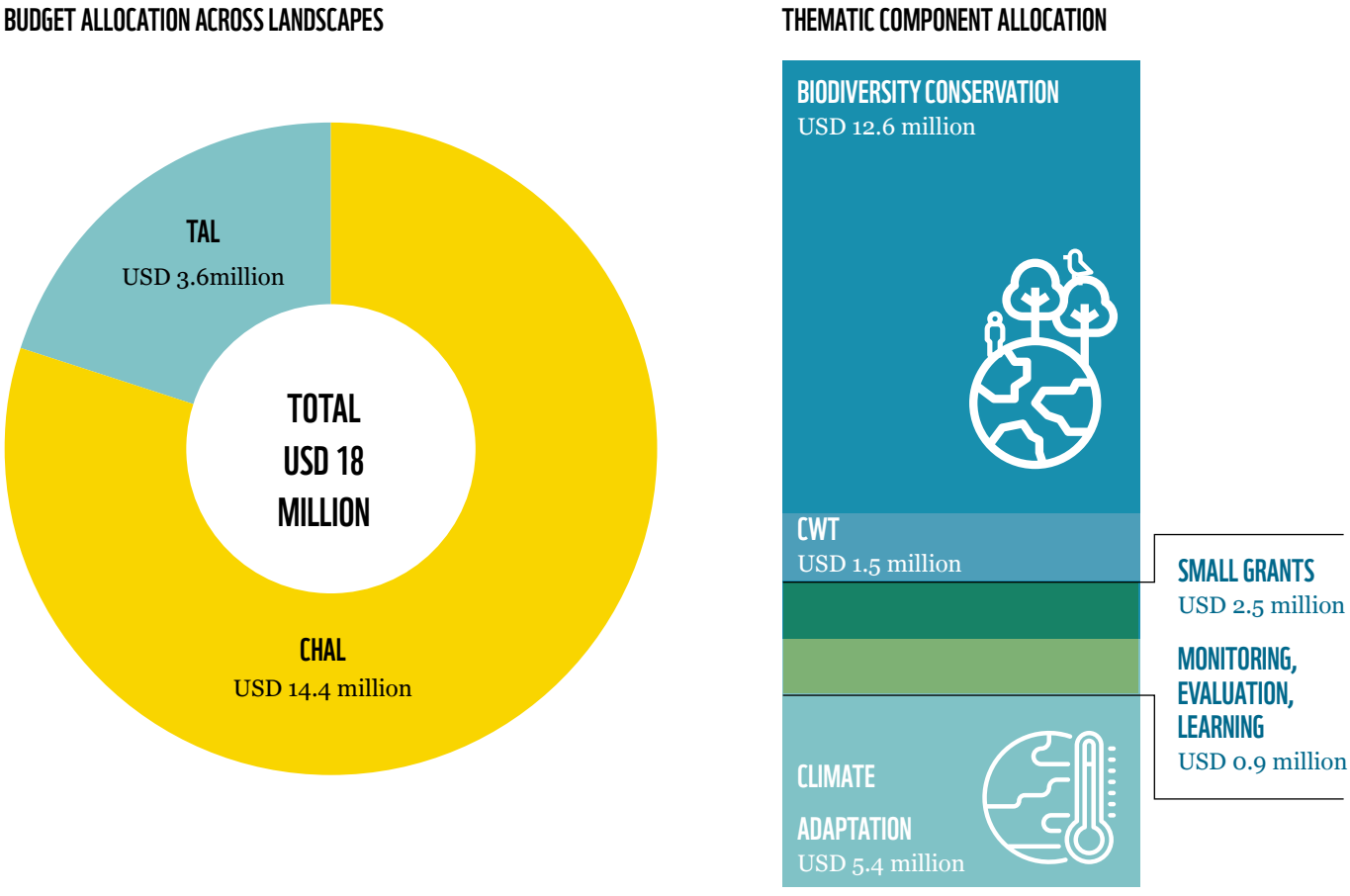


FIGURE 15: BUDGET ALLOCATION ACROSS LANDSCAPES AND THEMATIC COMPONENTS

ACHIEVEMENT OF TARGETS

The Program was largely successful in attaining and in some cases exceeding the targets set in its MEL plan: 78% of targets were fully achieved or exceeded; 14% had 90%–99% achievement; 6% were below 90%, and the Program ceased to report on one target (Table 6).

TABLE 6: SUMMARY OF ACHIEVEMENTS COMPARED TO MEL PLAN TARGETS (MARCH 2021)

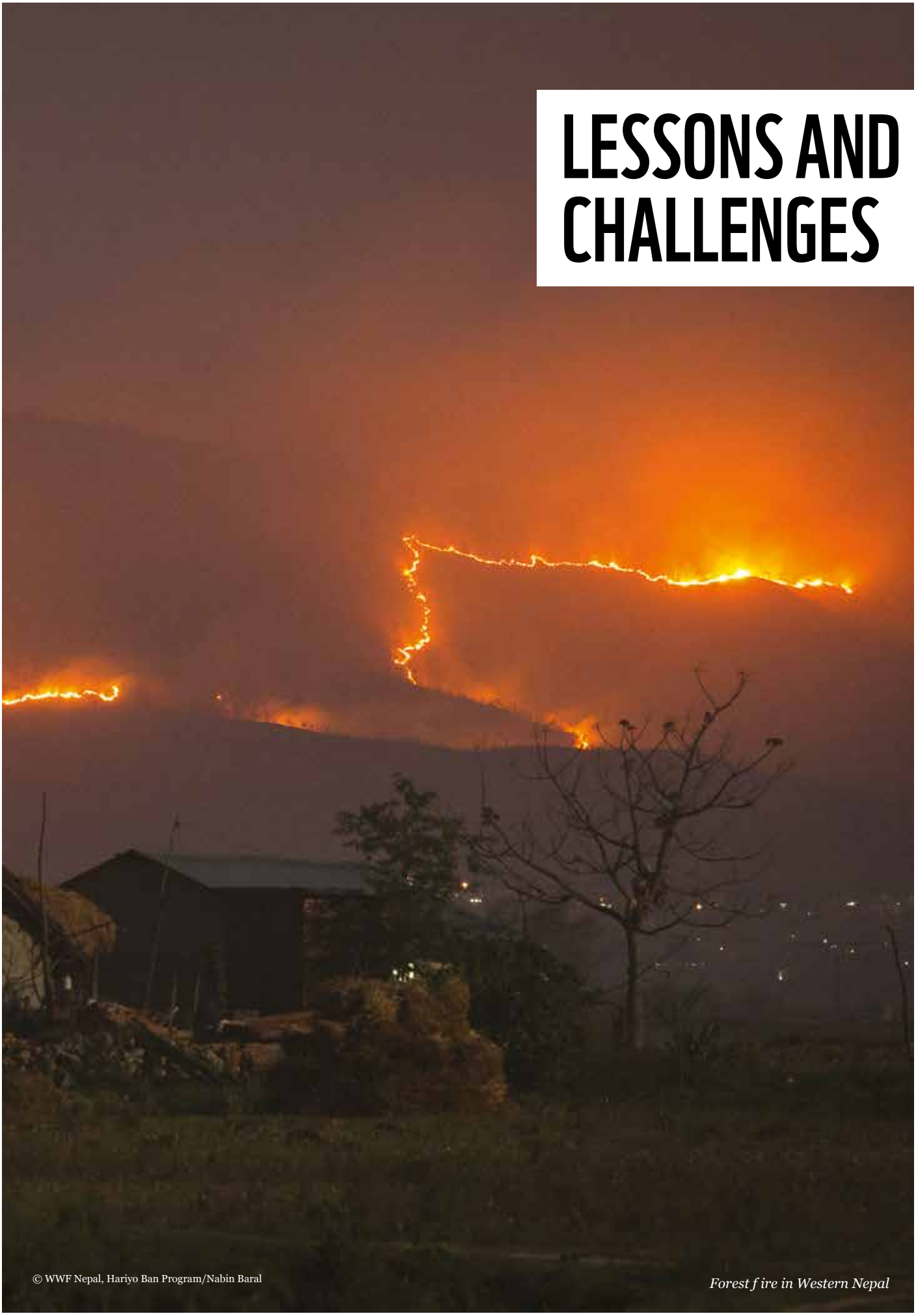
COMPONENTS AND THEMES	NUMBER OF INDICATORS WHOSE TARGETS WERE ACHIEVED AT 100% OR ABOVE	NUMBER OF INDICATORS WHOSE TARGETS WERE 90%–99% ACHIEVED	NUMBER OF INDICATORS WHOSE TARGETS WERE LESS THAN 90% ACHIEVED	NUMBER OF INDICATORS THE PROGRAM CEASED TO REPORT ON
Biodiversity conservation	14	1	2	
Climate change adaptation	10	3		1
Livelihoods	6			
Governance	6	1		
GESI	4	2	1	
Total	40	7	3	1
%	74%	18%	6%	2%

Two indicators had performance scores exceeding 110% of their targets. A higher-than-expected proportion of respondents perceived that the relief fund was distributed on time (the process of relief fund disbursement was improved during the life of Hariyo Ban II; however, the baseline value was low and a low end-line target was set). The number of people that used the climate information or implemented risk-reducing actions to improve resilience to climate change, exceeded the set target (this was mainly due to reaching a large number of people through broadcasting radio jingles, many of whom used the climate information they contained).

Three indicators had performance scores below 90% of their targets: number of rhino and tiger poaching incidents; economic loss due to human-wildlife conflict; and perception of women and marginalized groups of the behavior of men and decision-makers. Though zero poaching was achieved for seven years between 2011 and 2020, poaching of tigers in western TAL and rhinos in eastern TAL increased during the COVID-19 pandemic in 2020, and this exceeded the target of zero tigers and rhinos poached during Phase II. The economic loss from human-wildlife conflict did decline compared to past levels due to interventions such as electric fences, cultivation of unpalatable crops, and awareness activities about avoiding conflict; however, it did not decline as far as the targeted level, primarily because of increasing populations of primates, ungulates, leopards, and wild boars as a result of improved habitat and connectivity. The proportion of women and members of ethnic and marginalized groups perceiving that NRM group members including men and decision-makers exhibit gender-equitable and socially inclusive behavior was lower than the target. The target of this indicator was set before the baseline study was conducted; the target was to increase the baseline value by 25%, and this resulted in a target of 99%, which was too ambitious to achieve.

We ceased to report on the number of climate change adaptation plans being implemented in collaboration with the Environment Friendly Local Governance Program, as it terminated with the restructuring of local bodies.

LESSONS AND CHALLENGES



Forest f ire in Western Nepal

LESSONS LEARNED

OVERARCHING LEARNING

The multi-sectoral nature and integrated approach equipped Hariyo Ban well to deal with complexity: Working across several different sectors and having an integrated approach across its components and cross-cutting themes, while working in two large landscapes, enabled Hariyo Ban to deliver impacts over a range of result areas at different scales. The climate adaptation component alone enabled us to work across multiple sectors while responding to different climate risks. Having the flexibility to use donor funding where it was most needed was critical. The incorporation of GESI and governance in Program design by USAID/Nepal was a major factor in the Program's achievements.

Partnerships across sectors and at multiple scales were essential for Hariyo Ban's success, but took time: Partnerships with government, communities, CSOs, USAID and the private sector were critical, with in-depth understanding and consensus building among all stakeholders. Building relationships and trust took time; for example, engaging multiple stakeholders and interest groups in the Pokhara valley lakes restoration and management was a lengthy process as some of them were initially reluctant to get involved in lake management activities. Enhancing their capacity was important for sustained implementation.

Government ownership and leadership were essential: Ownership by the government at all levels was essential, including for landscape-scale interventions such as species conservation. Government must have full ownership and leadership from inception to implementation and monitoring and should be engaged from the beginning. Much more effort was needed when the government started engaging at a later stage (e.g., when the municipalities were first formed).

There is tremendous opportunity to work with new local government units: Close collaboration with newly created local governments enabled incorporation of many Hariyo Ban-supported approaches, results, and plans into local government plans and budgets, ensuring greater sustainability and scale-up.

Capacity is a limitation for local governments: Effective collaboration with local government was often limited by low technical capacity. While this was partially overcome by working with provincial offices, it was not a complete solution. For example, low municipality capacity to provide watershed management services meant that long-term watershed management interventions were not prioritized over short-term infrastructure solutions. Hariyo Ban conducted training on LAPAs and ISWMPs to help address this.

Community partnerships work best when communities lead: Active community involvement in the design, planning, and implementation of interventions ensures that they own the process and that interventions are directly relevant to them. When they lead and value the activities, they are more likely to scale up results, for , by leveraging additional funds. This happened, for example, with the Prok power fence installation and regular maintenance in MCA.

Complementarity of Hariyo Ban consortium partners enabled innovation, flexibility, and breadth of operation at multiple scales: The complementarity in the consortium, with international and national NGOs from the development and conservation sectors, enabled work across different disciplines and scales. The international NGOs brought in new approaches and best practices, and the national NGOs were able to reach local communities with both new and traditional approaches. Long-term commitment to their missions in Nepal ensures that new approaches will continue in the future and be scaled up beyond the Hariyo Ban landscapes e.g., the anti-GBV campaign being scaled out to 77 districts by FECOFUN.

Policy support should be provided both to government and civil society: Supporting both GoN and CSOs is crucial for the development of pragmatic policies, with government demonstrating accountability and CSOs facilitating citizen input. This approach was followed during the development of the National Forest Policy. However, this requires time, resources, and patience. For lessons and good practices to be integrated into policies, they should be well documented, and stakeholders should be part of the process from the beginning.

It is a challenge to reconcile landscape and jurisdictional scales: While ecological processes work at multiple scales, including landscape, river basin, watershed, and corridor, government works at district, province, and municipality levels. It was often challenging to demonstrate the value of working at ecological scales, and this needed to be backed up with data and documentation.

A 10-year time frame was valuable for partnerships but short for producing tangible conservation results at the landscape level: Having 10 years for Hariyo Ban helped for long-term partnership building. However, it was not long enough to demonstrate many tangible results at the landscape level; in hindsight, more focused baselines would have helped us document changes.

© WWF Nepal, Hariyo Ban Program/Nabin Baral

Coffee cultivation in Kaski

BIODIVERSITY CONSERVATION

Climate-smarting biodiversity conservation approaches were critical to managing risk: This included landscape strategies; protected area, forest, and watershed management plans; and species and translocation plans. Hariyo Ban was able to initiate climate-smarting and build capacity in many conservation operations; involving stakeholders from the start greatly increased the likelihood of continuity and scale-up of successful approaches. Even so, unexpected extreme events can derail efforts; for example, the newly introduced population of wild water buffalo in Chitwan was badly affected by a flash flood. It is important to learn from this and adapt.

Effort was needed to maintain active and vibrant CBAPUs: Periodic reformation of CBAPUs helped keep them vibrant and active. Those that were proactive in leveraging resources creatively were more active and effective than others; the financial sustainability of CBAPUs is critical for them to continue to engage. Resource leveraging and networking should be included in capacity building for CBAPUs.

Capacity building of non-traditional partners to combat wildlife crime needed to be tailored for their convenience: This included, for example, training customs officials at their duty stations and transportation workers near bus parks and markets. These efforts helped bring them on board in the long battle to control the illegal wildlife trade. Similarly, engagement of the media on CWT issues at the district level, in strategic locations, and through multiple means was productive and generated learning about raising awareness on wildlife crime. Many forms of media, including online news, printed media, television, radio, and social media, provided platforms for addressing CWT at large scales. Building understanding of media personnel including women on wildlife crime issues was critical to motivate them to disseminate wildlife trade control messages; provision of training and information packages containing accurate information and appropriate resource material was key. Learning from this helped tailor future strategies on media engagement.

HWC relief funds require a reliable replenishment source to be effective and sustainable: The relief fund managed by NTNC at the national level has been very effective at providing immediate relief to victims of HWC and management of problematic wild animals. FECOFUN managed a relief fund mechanism in the Seti sub-river basin, which has been very effective in providing immediate relief at the local level. This mechanism has also been applied in the Marshyangdi sub-river basin, and FECOFUN plans to gradually replicate it in all 77 districts in the country. However, these funds will dry up soon if replenishment mechanisms are not developed. At the national level, NTNC regularly adds to the central relief fund using its core budget and support from other conservation partners. FECOFUN is working closely with local government authorities to develop a replenishment mechanism for basin-level relief funds. As HWC is a burning issue at the local level, some local governments have expressed commitment to supporting ongoing relief schemes and establishing such mechanisms at the municipality level. Relief should also be accompanied by HWC prevention efforts.

© WWF Nepal, Hariyo Ban Program/Nabin Baral

Leaf plate production, Jumdanda Jhapri CFUG, Jumdanda, Tanahun

LIVELIHOODS

Small-scale enterprises require regular support: Multiyear technical backstopping (not just one-time training) along with revolving funds led to more effective small enterprise development. Support should focus on products requiring small investments with quick returns (e.g., vegetable farming, honey production, and goat/pig rearing) and be clustered in areas with high threats to biodiversity conservation. Third-party monitoring (e.g., by a cooperative or local government) was essential to ensure sound management, use, and continuity of revolving funds.

Medium-scale enterprises required early stakeholder engagement and sound business practices for long-term success: Site and crop selection with block planting involving several farmers should be done in wide consultation with all relevant stakeholders at the initial planning stage. This helped mobilize local resources and leverage external resources for infrastructure development (such as irrigation and storage buildings). Farmers must be interested in the product for the enterprises to be successful (a lesson learned with the tea enterprise). Value addition at the community level created local employment (e.g., coffee, cardamom, and honey). Business plans were key, and these should be formulated jointly with the community or private individuals. Different models of business plans were needed for group and privately-owned enterprises. Group enterprises should not depend on a single person to manage them and should develop a second tier of technical and managerial personnel. Business plans should be reviewed at least every two years and updated to ensure ownership and stay relevant as the operating environment changes.

To be successful, enterprises needed to meet the requirements and preferences of the private sector: Consultations with the private sector and feasibility analyses were essential before the establishment of community enterprises to ensure business viability. Producers must ensure product quality. Private-sector operators preferred to deal with a third party (e.g., cooperative; collection center manager) when doing business with community-owned enterprises. For viable homestays, sound product identification, marketing, and connections with hotels, trekking, and travel agencies were essential.

Follow-up support was needed for skill-based training: Skill-based training for forest-dependent youth was effective, but advanced-level training and enterprise establishment support were essential for ensuring full-time employment.

CLIMATE CHANGE ADAPTATION

While the benefits of working at watershed scale were clear, encouraging local governments to invest in long-term ecological and adaptation processes was challenging: Integrated watershed management not only contributed to biodiversity conservation and livelihood improvement but also reduced climate and disaster risk (e.g., by reducing soil erosion, sedimentation, and flooding, and by enabling early warning flood systems through upstream/downstream linkages). However, local governments tend to fund short-term activities such as hard infrastructure; it is difficult for them to invest in multiyear plans to rehabilitate degraded land, improve land productivity, and adapt to climate change. Field visits for local government officials to successful intervention sites were an effective tool to convince them about the importance of mainstreaming CCA-DRR issues in their policies and plans.

Stakeholder engagement and establishment of watershed institutions at different levels were challenging but resulted in successful integrated watershed management approaches: Management institutions at watershed, sub-watershed, and micro-watershed level were key building blocks for an integrated watershed management approach; they mobilized local people and collaborated with local governments and other stakeholders to ensure inclusive planning, decision-making, and implementation at the community level. While management of stakeholder relationships was time-consuming, it resulted in full ownership and active participation, helping ensure quality work, shared accountability, and sustainability. Interactions between stakeholders helped deepen understanding of

© WWF Nepal, Hariyo Ban Program/Nabin Baral

Climate adaptation activities have built resilience in many communities

upstream-downstream linkages, fostering collaboration (e.g., for irrigation and drinking water supplies). A specific challenge arose when awareness and capacity building were undertaken across the entire area, but intensive support focused only on critical priority micro-watersheds; it is important to have a balance in resource allocation.

Setting up payments for ecosystem services schemes required a lot of effort and continued to face challenges; in complex situations, it may be easier to develop simpler incentive schemes: The PES approach needs considerable effort, as it is new and not very tangible. An appropriate institutional structure is crucial to establish a PES scheme, backed up by government agencies. The Climate Smart Integrated Watershed Management Planning Framework can be used for packaging and scaling out PES interventions focusing on multiple ecosystem services. The absence of a concrete PES policy at the federal level hinders the involvement of both private and public sectors in PES; however, the new federal structure is conducive to expanding PES schemes at the local level, as local governments can develop policies to support it. Overall, PES in the classical sense may not be fully applicable in complex scenarios with multiple ecosystem services and multiple stakeholders; incentives for ecosystem services could be a more suitable option in such cases.

Special focus on differential impacts of climate change was key to building the resilience of the most vulnerable people: Assessing differential impacts on highly vulnerable people and planning responses with them through separate consultation was crucial in formulating tailored responses. The approach gave good results (e.g., providing water supplies and toilets reduced school dropout rates in adolescent girls). Integrating DIARP helped local governments direct resources to help the most vulnerable; this practice should be integrated into new and existing disaster risk management policies and planning. Users found GESI-friendly, climate-smart tools and technologies to be efficient, cost-effective, and affordable, though capacity building or technical assistance was needed to ensure successful uptake and buy-in from the very beginning by CFUGs, local government, and vendors were critical for wider replication. There are good opportunities to scale out this approach by showcasing these tools and technologies to local and federal government and development partners.

© WWF Nepal, Hariyo Ban Program/Kapil Khanal

Sand, stone and gravel extraction along Seti River in Kotre, Tanahun

GOVERNANCE

Capacity building of many local groups was key for their success: Capacity building of local community institutions enabled them to fulfill their roles; for example, strengthened LAPA committees were able to implement LAPAs effectively, including leveraging resources from local governments. The strengthening of NRM groups enabled them to seek additional resources from other agencies.

Support for policy advocacy was a powerful process: Systematic policy advocacy created awareness among people about policy provisions; the feedback they provided was strong evidence that could be used to influence policymakers. Policy analysis briefs provided a valuable foundation for these advocacy initiatives. A structured advocacy process makes it easier to ensure citizen engagement.

The reflective approach led to greater inclusion but not without challenges: This approach in local NRM institutions proved effective in sharing information, helping improve access to livelihood activities, and increasing representation in decision-making. It also worked in sub/micro-watersheds; for example, it led to the registration of the Khageri Khola Sub-watershed Conservation Committee, Chitwan, as an NGO—perhaps the first of its type in Nepal. Participation of government forest officials and other stakeholders in CFUG assemblies and PHPA including monitoring was very important to support the effective implementation of the Community Forest Development Guideline. However, the voluntary process required transparency and accountability from executive committee members, and some NRM groups dropped out when their leaders faced difficult questions from users during the ICA.

Scaling up capacity building by mobilizing mature groups was successful at the municipality level: Mobilizing mature groups to share their best practices and experiences with other groups proved effective in building CFUG capacity at the municipality level and provides good opportunity for FECOFUN to replicate successful governance approaches.

GESI

CLACs proved to be an effective mechanism to ensure the rights of women and marginalized people: CLACs were effective in reducing gender-based violence in NRM, enhancing the institutional accountability of NRM institutions, and enhancing access of women and poor and marginalized people to equitable benefit sharing. Introducing separate CLACs for women, men, and adolescent girls was very effective in identifying and addressing social issues specific to each group, and this can be replicated in other communities with the same harmful social practices. CLACs with a strong social transformation agenda and active leadership are more likely to continue engagement and collaboration with local government and NRM groups, whereas those with a short-term development focus may not remain as active after Hariyo Ban closes.

Promotion of GESI in community NRM groups is effective, though there are limitations: Formulation of internal GESI policies by NRM groups can greatly assist commitment and implementation of the GESI provisions in the Community Forest Development Guideline, especially if a GESI focal point is appointed by the group to help facilitate this. However, the focal point must be well oriented to be effective. The formation of GESI subcommittees or anti-GBV committees in groups can be effective in reducing GBV at the community level, through regular follow-up and links with the local government judicial committee are important.

Engaging decision-makers and men champions is often a critical step to ensure success: The influence of decision-makers and men champions can make a huge difference in the success of social transformation, creating a conducive environment to promote GESI. Opportunities should be explored to engage them through CLACs, women's groups, and other community-based groups, as well as at higher levels so that they can contribute to helping poor, marginalized groups and women increase social networking, improve confidence, and take on leadership roles. They can also play an important role in organizations at national and subnational levels, speaking out on the importance of mainstreaming GESI.

GESI mainstreaming in key partner organizations makes GESI implementation more effective across the Program: GESI mainstreaming at the program level is more effective if key partners institutionalize GESI approaches, for example through organizational GESI analysis and action planning and adoption of GESI mainstreaming guidelines, with social campaigns and mobilization of GESI men champions and change agents across all programs and projects. Poor GESI understanding and low capacity in key actors and stakeholders sometimes resulted in GESI integration in the two components of the Program not being as effective as anticipated. Much more work needs to be done in engaging influential stakeholders to make this process more effective.

CHALLENGES

General: The Program faced many challenges during the second phase. These included external factors such as harmonizing the work of the Program with the new federal system and coping with the COVID-19 pandemic. There were extremely high expectations for the second phase on the part of the government and the public, which the Program had to manage, particularly challenging since the second-phase budget was considerably lower than the first-phase budget. The smaller budget also meant the Program had to stretch funds to complete its work in the two landscapes. Staff turnover was a challenge again in this phase, setting the Program back when staff left and new staff had to be brought up to speed (e.g., in the GESI theme). Finally, while the Program has worked hard to promote sustainability of key approaches and results, some may not be continued.

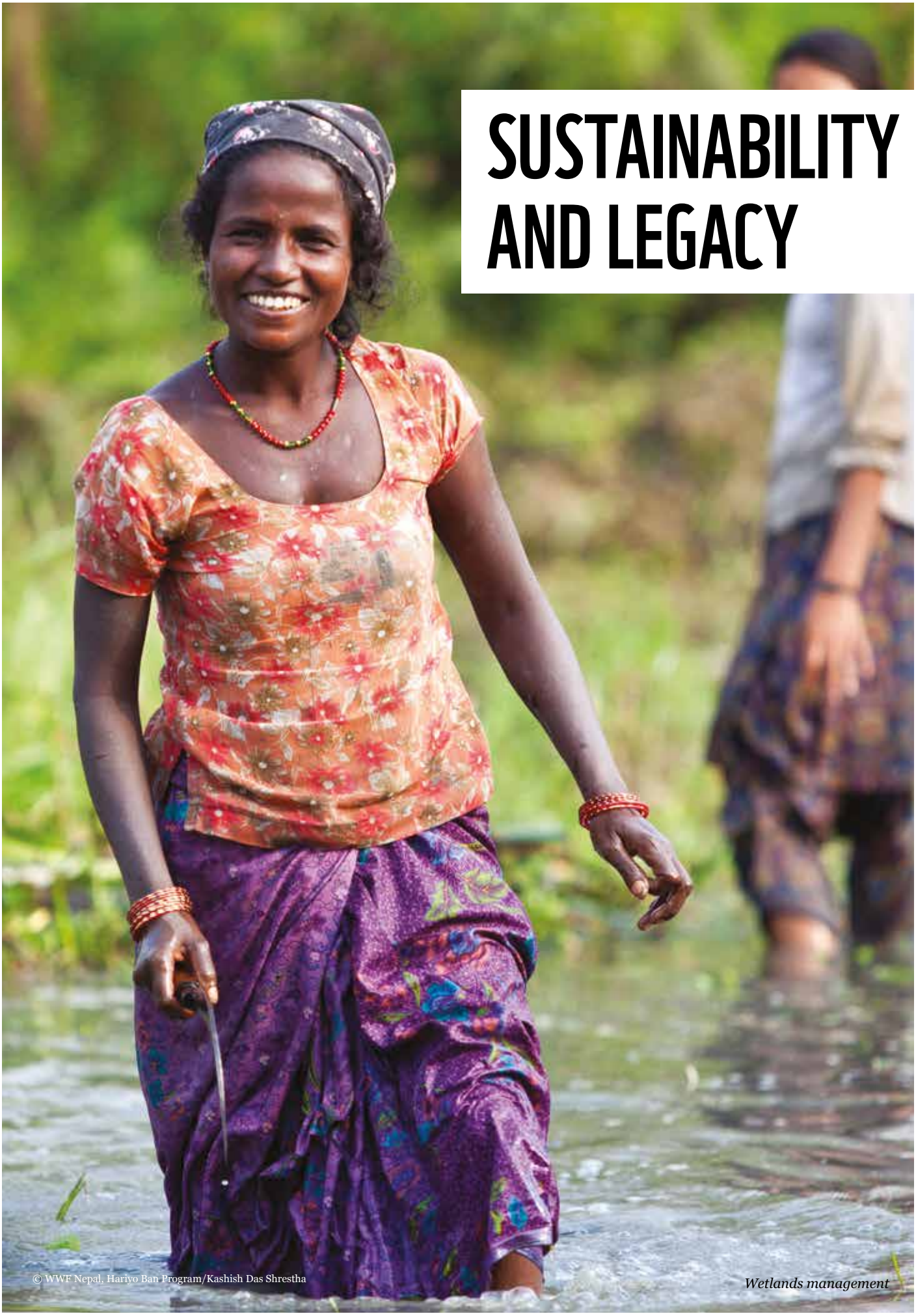
Biodiversity and livelihoods: Challenges in the biodiversity component included difficulty in identifying clear linkages between improving market-based livelihoods and enhancing biodiversity conservation. Other challenges were reduced government budget allocation/prioritization from the federal to the local level for biodiversity conservation; difficulty in sustaining the component's achievements under changing threat dynamics; and problems in marketing green enterprises during the COVID-19 pandemic, which adversely affected producers.

Climate change adaptation: The component faced difficulty of working in a policy gap because the National Adaptation Plan, with its long- and medium-term CCA strategies and actions, had yet to be endorsed and rolled out by the government. There was unclear communication, coordination, and joint working mechanisms across the tiers of government, and no integrated watershed management unit in the local governments (in spite of a constitutional provision for this). The lack of a comprehensive PES policy made it difficult to scale out sustainable financing mechanisms for integrated watershed management including climate change adaptation and disaster risk reduction.

GESI: Though Hariyo Ban succeeded in increasing the participation of women and marginalized people in decision-making positions at the community level, it was challenging to bring their perspectives to district-level forums formed under the Program where participants were mainly men and non-marginalized people. Due to the out-migration of youth and men from rural areas, women are taking on more responsibility for forest management, but their engagement in biodiversity conservation activities, particularly in BZCFUGs, needs to be amplified in days to come. While CLACs have been crucial in enhancing the access of women and marginalized people to natural resources and benefit-sharing, not all CLACs can continue these social transformation efforts, as they lack financial resources and capacity to mobilize on their own.

Governance: Challenges included the need to harmonize forest and conservation policies across the three tiers of government to reduce gaps and inconsistencies; the need to mainstream the NRM group institutional capacity-building process in relevant government agencies' regular plans to ensure replication and sustainability; and the lengthy time involved for policy advocacy, as well as the challenge of obtaining evidence-based results in a short time frame.

SUSTAINABILITY AND LEGACY



© WWF Nepal, Hariyo Ban Program/Kashish Das Shrestha

Wetlands management

SUSTAINABILITY

As in the first phase, the second phase of Hariyo Ban developed and implemented plans for sustainability and Program legacy. Much of Hariyo Ban's work was designed to promote sustainability; for example, the huge amount of capacity building the Program undertook, from NRM groups and civil society organizations including consortium partners to all tiers of government, helps ensure sustainability once the Program's technical assistance ends. The sustainability plan had specific measures to ensure that Hariyo Ban achievements would not be lost and progress toward Program goals would continue, as well as to ensure smooth administrative and financial closeout. In addition, the Program documented and shared successful practices and learning to promote replication and scaling out, both in Nepal and beyond. Sustainability approaches and examples are outlined below.

ECOLOGICAL SUSTAINABILITY

The Program worked towards ecological sustainability by ensuring its interventions were embedded in sound ecological approaches, planning for both current and future conditions. This includes landscape processes such as restoring structure and functionality of corridors, including along climate gradients and conserving areas likely to be climate refugia. Habitat restoration and modification, as well as translocation and dispersal of key species, have helped ensure that key species are less likely to be wiped out in Nepal by events such as disease outbreaks or climate hazards and have started to recreate original large mammal assemblages and their ecological functions. Incorporation of these approaches in policy formulation and management planning and implementation by stakeholders for forests, sub-watersheds, species, and protected areas provides continuity beyond the life of Hariyo Ban.

SOCIAL SUSTAINABILITY

Promoting democratic stewardship and leadership by local communities in many of the Program's interventions as well as tangible and equitable benefits for community members has ensured that interventions are widely accepted by communities. For example, CBAPUs have been widely accepted because of the conservation benefits they enable through tourism. There is increasing demand for adaptation interventions because they help communities address multi-faceted vulnerabilities, providing not only short-term tangible benefits but also resilience building for the longer term.

Adaptive livelihood in Kailali

INSTITUTIONAL SUSTAINABILITY

Capacity building for enhanced governance (inclusive representation, transparency, accountability to members and government authorities, capacity for technical and financial management, and linkages with external stakeholders) has helped ensure effective functioning and long-term sustainability in a range of local NRM institutions (CFUGs, CAMCs, LHFUGs, and BZCFs and their subgroups, such as CLACs and CBAPUs).

FINANCIAL SUSTAINABILITY

Hariyo Ban worked on sustainable financing mechanisms for several of the approaches it supported to enable them to continue and scale-out beyond the life of the Program. These include supporting community institutions to identify opportunities to leverage funding for planned activities and engage with source institutions such as local governments, as well as using a portion of their revenues. Many local governments are investing in approaches promoted by Hariyo Ban, including LAPAs and ISWMPs, and some are establishing their own HWC local relief funds (for example, NRs 95,311,235 (USD 860,987) was leveraged from local governments to implement 74 LAPAs in Phase II). In Kaski and Lamjung, local governments have incorporated the two PES schemes, thus ensuring sustainable support for watershed management. Many household incomes have increased through sustainable livelihood interventions, and revolving funds established by Hariyo Ban, and revenues from green enterprises are being reinvested to sustain and upscale the enterprises and ensure sound management of the resource base.

SUSTAINABILITY THROUGH POLITICAL SUPPORT

Engagement with all three tiers of government has enhanced sustainability. The acts, regulations, policies, and plans that Hariyo Ban supported at federal, provincial, and local government levels ensure that the political leadership will continue their effective implementation beyond the life of the Program. This includes LAPAs and local disaster risk management plans prepared and implemented by Hariyo Ban that have been formally endorsed by local governments. Bringing communities and local government together in Program activities helped establish shared expectations and accountability, which will also promote sustainability.

Hariyo Ban II gradually shifted responsibility for continuing interventions to local governments, community institutions, networks, and implementing partners in a stepwise process. This included a series of handover events with municipalities to inform and influence their policies and plans. Information sheets capturing key interventions, outcomes, and learning were prepared and handed over to local government officials in the presence of Program beneficiaries and implementing partners, and participants discussed the future roles of municipality authorities and local stakeholders post-Hariyo Ban.

PROGRAM LEGACY

The legacy of Phase II builds on the legacy of Phase I and also includes several new items. It encompasses results and achievements that were innovative; had local, regional, national, and/or global significance; provided value addition; and presented opportunities to scale up. The legacy will play a significant role in sustaining and upscaling Program results and impacts. Major legacy activities have been documented through policy documents, reports, publications, and/or on video, and are listed in Annex 3. The Program's publications and other outreach materials will continue to be archived on the Hariyo Ban webpages on WWF-Nepal's website (www.wwfnepal.org/hariyobanprogram/hariyobanprogram) as well as USAID's Development Experience Clearinghouse (https://dec.usaid.gov/). Sets of major Hariyo Ban publications were distributed to relevant government ministries, departments, and offices; academic and research institutions and libraries; NGOs; and donors.

HARIYO BAN LEGACIES

New tools and approaches for conserving biodiversity and adapting to climate change

Climate-smart restoration of species, ecosystems, and watersheds

Capacity building for new municipalities and integration of climate-smart approaches in their plans

Green market-based enterprises as a foundation for livelihoods of poor and marginalized people and healthy forests

Institutionalization of GESI approaches in community groups for social transformation

Throughout its work, Hariyo Ban had a major focus on empowering women and improving their lives

CONCLUSIONS

In its five years of operation, Hariyo Ban II made great strides towards the building resilience of ecosystems and people in the two landscapes. It did this by improving understanding, building capacity, piloting and testing innovative strategies and approaches, replicating and scaling out proven approaches, using adaptive management to address challenges, and using opportunities when they arose.

Working across various sectors and with an integrated approach across its components and themes enabled Hariyo Ban to deliver impacts over a range of result areas at different scales and respond to complexity. The Program adapted when the government was restructured and was able to work closely with local municipalities as well as federal and national governments; it adapted its working modality during the COVID-19 pandemic. Much of the second-phase work was geared towards ensuring that partners and stakeholders could continue and scale-out successful approaches once the Program closed.

At the end of Hariyo Ban II, implementation of the second TAL Strategy and Action Plan (2015–2025) was well underway, with continued improvements in wildlife numbers, forest cover and connectivity, and mainstreaming of climate adaptation for nature and people. In CHAL, which was formally recognized by the government as a landscape in 2016, the first CHAL Strategy and Action Plan (2016–2025) was rolled out with a focus on river basin and watershed management, connectivity, climate change adaptation, and disaster risk reduction. In both landscapes, the cross-cutting themes enhanced livelihoods strengthened governance and promoted the rights of women and marginalized people.

REFERENCES

Acharya, K.P., Paudel, P.K., Neupane, P.R., and Köhl, M. 2016. Human-wildlife conflicts in Nepal: patterns of human fatalities and injuries caused by large mammals. PLoS ONE 11(9): e0161717. https://www.researchgate.net/publication/307969765_Human-Wildlife_Conflicts_in_Nepal_Patterns_of_Human_Fatalities_and_Injuries_Caused_by_Large_Mammals

Banerjee, S., Pandey, A., Jamarkattel, B.K., Joshi, J., Gurung, B.R., and Mishra, A. 2020. Using the Analytic Hierarchy Process to support decision making on climate change adaptation. HI-AWARE Training Manual. Kathmandu: HI-AWARE. https://lib.icimod.org/record/34862

Barstow, M. 2017. Pterocarpus marsupium. The IUCN Red List of Threatened Species 2017: e.T34620A67802995. https://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T34620A67802995.en

CARE Nepal. 2017. Social analysis identification of marginalized segments of the society and underlying causes of marginalization in Hariyo Ban II working areas. CARE Nepal, Lalitpur, Nepal.

CARE Nepal 2018. Increasing resilience: Hariyo Ban Program's Resilience Framework. CARE Nepal, Lalitpur, Nepal. (Unpublished report.)

CARE Nepal 2019a. Report on flood/inundation hazard mapping and upgrading of hydro-meteorological station in Madi and Seti Sub-River basin to support flood early warning system. CARE Nepal, Lalitpur, Nepal. (Unpublished report.)

CARE Nepal 2019b. Learning brief on responding to differential impacts: lessons from Hariyo Ban Program in Nepal. CARE Nepal, Lalitpur, Nepal. https://carenepal.org/wp-content/uploads/2020/01/Learning-Brief-on-Responding-to-Differential-Impacts_Lessons-from-Hariyo-Ban-Porgram-in-Nepal.pdf

CARE Nepal 2020. Assessment on the effectiveness of climate smart, time and energy saving, GESI friendly adaptation tools, technology and practices for agriculture and domestic use through demonstration and action research in Hariyo Ban Program. CARE Nepal, Lalitpur, Nepal. (Unpublished report.)

FECOFUN. 2020. Local FECOFUN and CFUGs Institutional Capacity Building Approach. FECOFUN, Bhaktapur, Nepal.

Castañeda Camey, I., Sabater, L., Owren, C., and Boyer, A.E. (2020). Gender-based violence and environment linkages: the violence of inequality. Wen, J. (ed.). IUCN, Gland, Switzerland. https://portals.iucn.org/library/sites/library/files/documents/2020-002-En.pdf

Central Bureau of Statistics. 2011. National Population and Housing Census (National Report). National Planning Commission Secretariat, Government of Nepal, Kathmandu, Nepal. https://unstats.un.org/unsd/demographic/sources/census/wphc/Nepal/Nepal-Census-2011-Vol1.pdf

Central Bureau of Statistics. 2018. Women in Nepal Statistical Highlights 2018. Central Bureau of Statistics, Kathmandu, Nepal. https://www.nepalindata.com/media/resources/items/20/bgender_statistics_booklet_2018.pdf

Children Women Empowerment Society. 2020. A manual on GESI provisions and developing internal policies in NRM groups. Hariyo Ban Program, WWF-Nepal, Kathmandu, Nepal.

Chetri, M., Odden, M., Devineau, O., and Wegge P. 2019. Patterns of livestock depredation by snow leopards and other large carnivores in the Central Himalayas, Nepal. Global Ecology and Conservation 17, e00536. https://www.sciencedirect.com/science/article/pii/S2351989418303019

Department of Forest Research and Survey. 2015. State of Nepal's Forests. Forest Resource Assessment (FRA) Nepal, Department of Forest Research and Survey. Kathmandu, Nepal. https://frtc.gov.np/downloadfile/state%20%20forest%20of%20Nepal_1579793749_1579844506.pdf

Department of Forests. 2018. Bijaysal Conservation Action Plan, Nepal (2018-2022). Department of Forests, Ministry of Forests and Soil Conservation, Kathmandu, Nepal. https://wwfasia.awsassets.panda.org/downloads/bijaysal_conservation_action_plan__nepal___english_2.pdf

Department of National Parks and Wildlife Conservation, 2019. Pangolin Monitoring Guideline for Nepal. Department of National Parks and Wildlife Conservation, Ministry of Forests and Environment, Kathmandu, Nepal. http://d2ouvy59p0dg6k.cloudfront.net/downloads/pangolin_monitoring_guideline_for_nepal.pdf

Department of National Parks and Wildlife Conservation and DoFSC. 2018. Red Panda Conservation Action Plan for Nepal (2019-2023). Department of National Parks and Wildlife Conservation and Department of Forests and Soil Conservation, Kathmandu, Nepal. https://dnpwc.gov.np/media/publication/Red_Panda_Action_Plan_2018_1.pdf

Dobremez, J.F. 1976. Le Nepal Ecologie et Biogeography. Editions du Centre National de la Recherche Scientifique, Paris. https://www.worldcat.org/title/nepal-ecologie-et-biogeographie/oclc/3582923

DSCWM, 2016. Sub-Watershed Management Planning Guideline. 2016. Department of Soil Conservation and Watershed Management, Kathmandu, Nepal. WWF. https://issuu.com/manohardhami00/docs/sub-watershed_management_planning_g

WWF-Nepal. 2020. A Project Report on 'Entrepreneurship Development of Forest-Dependent Women for Biodiversity

Conservation and Climate Change Adaptation' Project. WWF-Nepal, Hariyo Ban Program, Kathmandu, Nepal.

Jamarkattel, B.K., Dhakal, S., Joshi, J., Gautam, D.R., and Hamal, S.S. 2019. Responding to differential impacts: lessons from Hariyo Ban Program in Nepal. CARE Nepal, Lalitpur, Nepal. https://www.academia.edu/40881222/Responding_Differential_Impacts_Lessons_from_Hariyo_Ban_Program_in_Nepal

MoFE. 2019. Climate change scenarios for Nepal for National Adaptation Plan (NAP). Ministry of Forests and Environment, Kathmandu, Nepal. http://mofe.gov.np/downloadfile/MOFE_2019_Climate%20change%20scenarios%20for%20Nepal_NAP_1562647620.pdf

MoFSC. 2014. Nepal Biodiversity Strategy and Action Plan 2014-2020. Ministry of Forests and Soil Conservation, Kathmandu, Nepal. http://www.mofe.gov.np/downloadfile/29_Strategy%20and%20action%20plan_1526382258.pdf

MoFSC. 2015a. Strategy and Action Plan 2016-2025, Chitwan-Annapurna Landscape, Nepal. Ministry of Forests and Soil Conservation, Kathmandu, Nepal. http://d2ouvy59p0dg6k.cloudfront.net/downloads/strategy_and_action_plan_2016_2025__chitwan_annapurna_landscape__nepal.pdf

MoFSC 2015b. Strategy and Action Plan 2015-2025, Terai Arc Landscape, Nepal. Ministry of Forests and Soil Conservation, Kathmandu, Nepal. https://wwfint.awsassets.panda.org/downloads/terai_arc_landscape_strategy.pdf

MoFSC. 2016. Red Panda Field Survey and Protocol for Community Based Monitoring. Ministry of Forests and Soil Conservation, Singha Durbar, Kathmandu, Nepal. http://d2ouvy59p0dg6k.cloudfront.net/downloads/red_panda_survey.pdf

NTNC 2018. Study on Adaptation Strategy of Women and Marginalized Groups of High Mountain Areas in ACA and MCA. Hariyo Ban Program, NTNC, Lalitpur, Nepal. (Unpublished report.)

RECOFTC. 2020. Preparing a local-level periodic development plan in Nepal. RECOFTC, Bangkok, Thailand.https://www.recoftc.org/sites/default/files/publications/resources/recoftc-0000377-0001-en.pdf

Simoneau, N. 2016. GESI rapid assessment report. WWF-Nepal, Hariyo Ban Program, Kathmandu, Nepal.

Suwal, T.L., Thapa, A., Gurung, S., Aryal, P.C., Basnet, H., Basnet, K., Shah, K.B., Thapa, S., Koirala, S., Dahal, S., 2020. Predicting the potential distribution and habitat variables associated with pangolins in Nepal. Global Ecology and Conservation, e01049. https://dspace.stir.ac.uk/handle/1893/30985#.YW_iGhpByUk

Thapa, K., Thapa, G.J., Bista, D., Jnawali, S.R., Acharya, K.P., Khanal, K., Kandel, R.C., Karki Thapa, M., Shrestha, S., Lama, S.T., Sapkota, N.S., 2020. Landscape variables affecting the Himalayan red panda Ailurus fulgens occupancy in wet season along the mountains in Nepal. PLoS ONE 15, e0243450. https://pubmed.ncbi.nlm.nih.gov/33306732/

WWF-Nepal. 2013a. Chitwan-Annapurna Landscape: A rapid assessment. WWF-Nepal, Hariyo Ban Program, Kathmandu, Nepal. https://wwfasia.awsassets.panda.org/downloads/chal_rapid_assessment.pdf

WWF-Nepal. 2013b. Chitwan-Annapurna landscape biodiversity important areas and linkages. WWF-Nepal, Hariyo Ban Program. Kathmandu, Nepal. https://wwfasia.awsassets.panda.org/downloads/annex_12_6_report___chal_biodiversity_report.pdf

WWF-Nepal. 2016. Hariyo Ban Program II Monitoring, evaluation and learning (MEL) plan. 2016. WWF-Nepal, Hariyo Ban Program, Kathmandu, Nepal. https://pdf.usaid.gov/pdf_docs/PA00XBNX.pdf

WWF-Nepal. 2017a. Baseline survey of Hariyo Ban. WWF-Nepal, Hariyo Ban Program, Kathmandu, Nepal. https://wwf.panda.org/wwf_news/?212390/A-Baseline-Study-of-Hariyo-Ban-Program

WWF-Nepal. 2017b. Gender and social inclusion analysis and action plan. WWF-Nepal Hariyo Ban Program, Kathmandu, Nepal.

WWF-Nepal. 2018. Baseline survey of Hariyo Ban Program II. WWF-Nepal, Hariyo Ban Program, Kathmandu, Nepal. https://www.careevaluations.org/evaluation/baseline-survey-of-hariyo-ban-program-ii/

WWF-Nepal. 2019a. Model community forest. WWF-Nepal, Hariyo Ban Program, Kathmandu, Nepal. https://wwfasia.awsassets.panda.org/downloads/model_community_forest.pdf

WWF-Nepal. 2019b. Midterm assessment of GESI indicators. WWF-Nepal, Hariyo Ban Program, Kathmandu, Nepal. (Unpublished report.)

WWF-Nepal. 2020a. Assessing the climate change impacts on species and habitats. WWF-Nepal, Hariyo Ban Program, Kathmandu, Nepal. (Unpublished report.)

WWF-Nepal. 2020b. Linkages between livelihood and conservation: A case study from Barandabhar Forest Corridor in Terai Arc Landscape. WWF-Nepal Hariyo Ban Program, Kathmandu, Nepal.

WWF-Nepal, 2020c. Skill based training evaluation report of Hariyo Ban Program. WWF-Nepal, Hariyo Ban Program, Kathmandu, Nepal.

WWF-Nepal, 2020d. Compendium of thesis abstracts funded from student research grant program, Hariyo Ban Program. WWF-Nepal, Kathmandu, Nepal. https://learningportal.wwfnepal.org/web-eadmin/resources-file-view.php?exid=20190531105024991513 29&id=3228&open=&doctype=doc-file

Hariyo Ban Program, 2021. Land use and land cover change analysis of Terai Arc Landscape and Chitwan Annapurna Landscape over a period of ten years (2010-2020). Hariyo Ban Program, WWF-Nepal, Kathmandu, Nepal.

WWF-Nepal. 2021b. Hariyo Ban Program II endline assessment. 2021. WWF-Nepal, Hariyo Ban Program, Kathmandu, Nepal. (Unpublished report.)

ANNEXES

© WWF Nepal, Hariyo Ban Program/Nabin Baral

Climate-smart agriculture was a major focus in many adaptation plans

ANNEX 1: SUMMARY OF PROGRAM RESULTS

The indicators presented in the tables below are exactly as in the Program's MEL Plan approved by USAID.

BIODIVERSITY CONSERVATION

INDICATOR	UNIT	TARGET	PROGRESS
1.1. Threats to target species reduced			
Population size of key species: tiger & rhino	Number of individuals	Tiger: 250 Rhino: 700	Tiger: 235 (2018) Rhino: 752 (2021)
Number of rhino and tiger poaching incidents	Number of poaching incidents	Tiger: 0 Rhino: 0	Tiger: 5 Rhino: 6
Number of protected area management plans revised to make climate smart	Number of management plans	6	6
Species Research and Monitoring – number of research activities conducted; no of peer reviewed articles published	Number of publications	13	13
Species Assemblage to Former Range	Type and number		• Rhino – 8 {Chitwan National Park to Bardia National Park (3) and Shuklaphanta National Park (5)} • Wild Water buffalo – 15 from Koshi Tappu Wildlife Reserve and Central Zoo to Chitwan National Park • Swamp deer - 7 from Shuklaphanta to Chitwan National Park
Conservation of Floral Species	Type and number	Bijaysal Champ	Bijaysal Champ
Managing a human wildlife interaction- relief fund, victims benefited	Type and number of victims' families benefited	Not applicable (NA)	• National level relief fund: 75 families • Seti River Basin Relief Fund: 63 families
Number of predator proof corrals	Number	NA	455
Combatting Poaching and Illegal Wildlife Trade:	Formation Mobilization	Formation: 278 Mobilization: 418	Formation: 278 (201 Phase I+77 Phase II) Mobilization: 415
CBAPU capacity building for CBAPU members	CBAPU Members		9,130
Number of non-traditional partners trained	Persons		3,996
Number of Wildlife Crime Control Bureaus supported	Number		7 (Surkhet, Bajhang, Kailali, Gorkha, Kaski, Mustang and Kathmandu)

INDICATOR	UNIT	TARGET	PROGRESS
Result 1.2: Threats to target landscapes reduced			
Sub-watershed plans prepared/ revised and implemented	Formation: 278 (201 Phase I+77 Phase II)	Prepared: 5 Revised: 3 Implemented: 8	Prepared: 5 Revised: 3 Implemented: 8
Number of water sources (perennial) conserved	Number	26	26
Number of people trained in sustainable natural resources management and/or biodiversity conservation	Number of people	23,480	24,641
Number of hectares of biologically significant area under improved natural resource management	Ha	970,524	970,524
Number of hectares of biologically significant area showing improved biophysical condition	Ha	50,535	50,826
Number of CFOPs supported for renewal and implementation	Number of plans	316	318
Number of laws, policies, or regulations that address biodiversity conservation and/or other environmental themes officially proposed, adopted, or implemented	No. of policies	25	25
Model Community Forests: number supported	Number of CF	12	12
Waterholes for wildlife	Number of conservation ponds		50
Fence	Km		61 (including 2 km power fence)
Nursery support	Number		15
Fireline	Km		119
Open grazing control support (cement trough, grass chopper)	Number of households (HHs) benefiting		135
Grassland & wetland Management: number of sites, area	Number of sites, area		Grassland Number of sites: 11, area: 180 ha Wetland Number of sites: 47, area: 1,075 ha
Plantation – number of sites, area	Number of sites		Number of sites: 140 Area: 714 ha Total seedlings: 1,175,076

INDICATOR	UNIT	TARGET	PROGRESS
1.3 Market Based Livelihood			
Revenue generated from conservation friendly enterprises	Nepali Rupees	147,908,399	149,673,494
Number of people with improved economic benefits derived from sustainable natural resource management and/or biodiversity conservation	Number of people	30,000	30,270
Number of women entrepreneurs engaged in conservation friendly enterprises	Number of Women	661	677
Number of skill-based trainees trained	Number of people trained	1,516	1,516
Tool support for skill-based trainees	Number of people supported		234
Proportion of skill-based trainees employed	% of trainees employed	68%	68%
Small-Scale Enterprise: types and number, HHs involved	Number of types, total number of enterprises and HHs		Tyes: 12 Number: 48 HHs involved: 993
Medium-Scale Enterprise: type and number, HHs involved	Number and types, total number of enterprises and HHs		Types: 11 Number: 17 HHs involved: 1951
Large-Scale Enterprise: Number of home stays, HHs involved	Number of types, total number of enterprises and HHs		Types: 1 Number: 10 HHs involved: 171
Number of buildings constructed – collection centers	Number of buildings		9

CLIMATE CHANGE ADAPTATION

INDICATOR	UNIT	TARGET	PROGRESS
Result 2.1 Participatory Climate Change Vulnerability reduction integrated into local, district and national process			
Number of vulnerability assessments conducted at sub-river basin, sub-watershed, rural municipality level	Number of VAs	28	28
Number of LAPAs prepared and/or implemented Number of PES promoted and supported	Number of LAPAs prepared Number of LAPAs implemented	Number of LAPAs prepared: 103 Number of LAPAs implemented: 78	Number of LAPAs prepared: 102 (including 90 from Phase I) Number of LAPAs implemented: 78
Number of laws, policies, regulations, or standards addressing climate change adaptation formally proposed, adopted, or implemented	Number of policies	3	3
Result 2.2 Community Readiness to adapt to and benefit from climate change increased			
Number of people trained in climate change adaptation	Number of people	11,260	11,362
Number of embankment constructions/ riverbank protection	Number/Sites		66
Number of landslide treatments	Number/Sites		17
Number of irrigation schemes	Number		26
Number of drinking water schemes	Number		91
Number of HHs benefiting from adaptive livelihoods	Number of HHs		3,675
Number of institutions with improved capacity to assess or address climate change risks	Number of institutions	202	206
Number of people using climate information or implementing risk-reducing actions to improve resilience to climate change	Number of people	100,000	121,008
Number of adaptation plans that are implementing measures to address differential impacts of climate change and DRR on women and vulnerable communities/people	Number of plans	30	28
Number of institutions established and operational at sub basin, sub-watershed and micro watershed level	Number of institutions	24	24

Result 2.3 Climate-related risks to people and ecosystems reduced through disaster risk reduction and management efforts			
Number of people with improved capacity to recover from disasters including from climate induced disasters	Number of people	8,293	7,975
DRR training delivered	Number of people		6,500
Number of elevated tube wells/toilets constructed	Number of HHs constructing wells/toilets		32
Number of disaster management committees formed/strengthened	Number of institutions		19 (National Network of Community Disaster Management Committee, district chapters and Community Disaster Management Committees)
Health Insurance policy support	Number of HHs		139

GOVERNANCE

INDICATOR	UNIT	TARGET	PROGRESS
Governance Result 1: Improved institutional capacity of user groups			
Percent of local organizations with improved capacity and/or performance scores	% of institutions (Number of institutions)	75% (291 NRM groups)	75% (291 NRM groups)
Local FECOFUN and CFUGs that apply Institutional Capacity Building approach in CFUGS and scale it out	NRM groups		398 NRM groups
Governance Result 2: Improved capacity of user groups to leverage and mobilize resources			
Number of LAPA groups able to leverage resources from other sources including government agencies for CCA-DRR	Number of institutions	75	74
Total resource leveraged in Phase II	Nepalese Rupees		173,959,245 (US$1,571,448)
Governance Result 3: Improved technical capacity of user groups to advance local solutions on biodiversity conservation and climate adaptation issues			
Number of local organizations receiving US assistance engaged in implementing initiatives for local solutions	No. of institutions	100	106

INDICATOR	UNIT	TARGET	PROGRESS
Governance Result 4: Improved policy and enabling environment for biodiversity conservation and climate change adaptation			
Number of policies/Regulations/ Administrative Procedures in following stages of development: Stage 1: Analysis; Stage 2: Stakeholder consultation/public debate; Stage 3: Drafting or revision; Stage 4: Approval (legislative or regulatory); Stage 5: Full and effective implementation	No. of policies completing all 5 stages	29	29
Number of CSOs receiving USG assistance engaged in advocacy interventions	No. of organizations	75	77
Number of public policies introduced, adopted, repealed, changed or implemented consistent with citizen input	No. of policies	9	9

GENDER EQUALITY AND SOCIAL INCLUSION

INDICATOR	UNIT	TARGET	PROGRESS
Number of NRM groups integrating GESI provisions in plan and policies	Number of groups	309	335
Number of NRM groups implementing the GESI provisions	Number of groups	238	238
Percent of leadership positions in USG-supported community management entities that are filled by a woman or member of a vulnerable group	%	Women and marginalized - 87% (women only - 46%; marginalized women only - 38%; marginalized men only - 41%)	Women and marginalized - 87% (women only - 46%; marginalized women only - 38%; marginalized men only - 41%)
Representation of women and marginalized in LAPA committees	%		30% women 56% marginalized (Janajati, Dalits and Muslims)
Representation of women and marginalized in sub-watershed coordination committees	%		38% women 45% marginalized (Janajati, Dalits and Muslims)
Representation of women and marginalized in CBAPUs	%		34% women 52% marginalized (Janajati, Dalits and Muslims)
Benefits received by women and members of ethnic and marginalized groups from NRM and adaptation interventions (revenue – NRs. allocated for women and marginalized groups)	NRs. (million) Income/ Revenue	33.42 (17% of annual revenue)	33.42 (17% of annual revenue)
CLAC formation and mobilization	No of CLACs		34 (488 members)

INDICATOR	UNIT	TARGET	PROGRESS
Mobilization of post CLACs	No of post CLACs		61 (1,597 members)
Number of people trained on GESI leadership including men and decision makers engagement	Number of persons		3,064
GESI Approaches			
LRPs	Number of persons		99
GESI champions	Number of persons		Consortium level: 12
Number of change agents mobilized	Number of persons		30
Social campaigns	Number of campaigns		137 (9,018 attended) GBV campaigns

OVERARCHING

INDICATOR	UNIT	TARGET	PROGRESS
Small Grant Program Governments CSO/private sector Students DRR	Number of grants		Government: 30 CSO/Private Sector: 30 Students: 188 Disaster Risk Reduction and Management: 16
Communications Types of outreach materials			Posters: 102 Videos: 14 Radio program/jingle: 17
Monitoring, Evaluation and Learning Number of local institutions M&E capacity building Number of joint monitoring visits with government			Number of local institutions M&E capacity building: 39 Number of joint monitoring visits with government: 26
Collaboration with local governments Number of periodic and sectoral plans/ policies supported Number of local and provincial governments reached/supported	Number of plans Number of governments		Number of local governments reached/ supported: 108 within working areas, 74 outside working areas Number of provincial governments reached/ supported: 4 provinces (Gandaki, Bagmati, Lumbini, Sudurpaschim) within working areas; all seven provinces outside program areas

ANNEX 2: POLICY SUPPORT

Hariyo Ban II supported the three levels of governments in the formulation of over sixty acts, regulations, policies, strategies, guidelines, periodic plans, management plans and action plans. They are listed below.

POLICIES	YEAR APPROVED/PERIOD/STAGE AT END OF PROJECT
Federal level	
Human Wildlife Conflict Relief Fund Mobilization Guideline	2017
National Environment Policy	2018
National Forest Policy	2018
Ramsar Management and Declaration Guideline	2018
Human Elephant Conflict Mitigation Action Plan	Under Review
Human-Common Leopard Conflict Mitigation Action Plan	Under Review
National Adaptation Plan	Under Review
National Climate Change Policy	2019
National Environment Act	2019
National Forest Act	2019
Pangolin Monitoring Guideline	2019
National Integrated River Basin Management Strategy and Action Plan	Under Review
Wildlife-friendly Infrastructure Guideline	2021
GESI Strategy and Action Plan for Forestry and Environment Sector	Endorsement Process Initiated
Blackbuck Conservation Area Management Plan	2017/18-2021/22
Koshi Tappu Wildlife Reserve Management Plan	2017/18-2021/22
Banke National Park Management Plan	2018/19-2022/23
Chitwan National Park Management Plan	2018/19-2022/23
Dhorpatan Hunting Reserve Management Plan	2018/19-2022/23
Parsa National Park Management Plan	2018/19-2022/23
Pangolin Conservation Action Plan	2018-2022
Bijaya Sal Conservation Action Plan, Nepal	2018-2022
National Ramsar Strategy and Action Plan	2018-2024
Wild Water Buffalo Conservation Action Plan	2019-2024

POLICIES	YEAR APPROVED/PERIOD/STAGE AT END OF PROJECT
Bear Conservation Action Plan	Under Review
Revision of Soil Conservation and Watershed Management Act 2039	Under Review
Invasive Alien Species Management Strategy	Under Review
Provincial level	
Environment Protection Act, Sudurpaschim Province	2018
Environment Protection Regulations, Sudurpaschim Province	2018
Forest Policy, Sudurpaschim Province	2018
Forest Act, Sudurpaschim Province	2018
Forest Regulations, Sudurpaschim Province	2018
Forest Act, Province 1	2019
Forest Act, Bagmati Province	2020
Forest Regulations, Sudurpaschim Province	2018
Forest Act, Province 1	2019
Forest Act, Bagmati Province	2020
Sudurpaschim Province: Sand, Gravel and Stone Management Guidelines	2018
Local level	
Integrated Sub Watershed Management Plan, Pantura	2017
Integrated Sub Watershed Management Plan, Phusre	2017
Integrated Sub Watershed Management Plan, Khageri	2017
Local Disaster and Climate Resilient Plan, Myagde	2018
Integrated Sub Watershed Management Plan, Radha	2018
Thakurbaba Municipality Strategic Plan	2019
Integrated Sub Watershed Management Plan, Khudi Marshyangdi	2019
Local Environment and Natural Resource Act, Besisahar Municipality, Lamjung	Under Review
Local Environment and Natural Resource Act, Phedikhola Municipality, Syangja	Under Review
Local Environment and Natural Resource Act, Thakurbaba Municipality, Bardia	Under Review
Periodic Plan, Kalika, Chitwan	2020
Periodic Plan, Myagde, Tanahun	2020

POLICIES	YEAR APPROVED/PERIOD/STAGE AT END OF PROJECT
District Disaster Preparedness Response Plan, Tanahun	Endorsement Process Initiated
Disaster Preparedness Response Plan, Thakurbaba Municipality, Bardiya	Endorsement Process Initiated
Disaster Preparedness Response Plan, Tikapur Municipality, Kailali	Endorsement Process Initiated
Disaster Preparedness Response Plan, Bedkot Municipality, Kanchanpur	Endorsement Process Initiated
Disaster Preparedness Response Plan, Pokhara Ward no 21, Kaski	Endorsement Process Initiated
Disaster Preparedness Response Plan, Myagde Rural Municipality, Tanahun	Endorsement Process Initiated
Disaster Preparedness Response Plan, Byas Municipality	Endorsement Process Initiated
Disaster Preparedness Response Plan, Waling Municipality, Syangja	Endorsement Process Initiated
Disaster Preparedness Response Plan, Chapakot Municipality, Syangja	Endorsement Process Initiated
Disaster Preparedness Response Plan, Marshyangdi Rural Municipality, Lamjung	Endorsement Process Initiated
Disaster Preparedness Response Plan, Gaindakot Municipality, Nawalparasi	Endorsement Process Initiated
Disaster Preparedness Response Plan, Devchuli Municipality, Nawalparasi	Endorsement Process Initiated
Disaster Preparedness Response Plan, Aarughat Rural Municipality, Gorkha	Endorsement Process Initiated
Disaster Preparedness Response Plan, Dhawalagiri Rural Municipality, Myagdi	Endorsement Process Initiated
Disaster Preparedness Response Plan, Malika Rural Municipality, Myagdi	Endorsement Process Initiated
Disaster Preparedness Response Plan, Mangala Rural Municipality, Myagdi	Endorsement Process Initiated
Bheemdatt Municipality Strategic Plan	2018-2038

ANNEX 3: PHASE II LEGACY ACTIVITIES

LEGACY ACTIVITY	ORGANIZATION
Restoration of Pokhara Valley Lake Cluster and initiation of payment for ecosystem services: source of sustainable financing for healthy and safe watersheds and wetlands of lake cluster of Pokhara valley including Ramsar Strategy and Action Plan	WWF
Green enterprises	WWF
Coffee in Adhikaridanda	
Honey in Korak	
Broom grass in Amdanda	
Reflective Institutional Capacity Building Approach for Improved NRM governance	CARE
PES Piloting in Mid-Marshyangdi watershed - learning documentation capturing overall status of institutionalization	
Multi-stakeholder engagement in implementation of ISWMP (Case-Khageri Khola)	
Assessment of vulnerability reduction by addressing climate change impacts on poor, vulnerable and marginalized groups in LAPA implementation sites	
CLAC/Post CLAC learning and impact assessment	
Bijaysal revived in its former habitats	FECOFUN
Group insurance for injury or death when fighting forest fire: safety net to cover risk in community forests of Nepal	FECOFUN
Developing state-of-the-art molecular laboratory in Nepal	NTNC
Development of second viable population of blackbuck in Terai Arc Landscape and climate refugia in Krishnasar Conservation Area	NTNC and WWF
Long-term climate change monitoring plots	WWF

ANNEX 4: MAJOR PUBLICATIONS AND STUDIES

JOURNAL PUBLICATIONS

Thakur, J. K., Khanal, K. and Poudyal, K. (2017) **LUPWY: Land use planner for water yield for environmental change analysis**. *Modeling Earth Systems and Environment*, **3**(1), 1–14. doi: 10.1007/s40808-017-0304-1. https://link.springer.com/article/10.1007/s40808-017-0304-1

Thakur, J. K., Khanal, K. and Poudyal, K. (2017) **Assessment of regional changes for enhancing water availability**. *Environmental Systems Research*. 6, 19 (2017) doi: 10.1186/s40068-017-0096-3. https://link.springer.com/article/10.1186/s40068-017-0096-3

Chetri, M., Odden, M. and Wegge, P. (2017) **Snow leopard and Himalayan wolf: Food habits and prey selection in the Central Himalayas, Nepal**. *PLoS ONE* 12(2): e0170549. doi: 10.1371/journal.pone.0170549. https://pubmed.ncbi.nlm.nih.gov/28178279/

Bista, D., Shrestha, S., Sherpa, P., Thapa, G.J., Kokh, M., Lama, S.T., Khanal, K., Thapa, A. and Jnawali, S.R. (2017) **Distribution and habitat use of red panda in the Chitwan-Annapurna Landscape of Nepal**. *Plos ONE,* **12,** e0178797. https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0178797

Khanal, C., Baniya, S. and Acharye, M. (2017) **First confirmed record of striped hyaena (*Hyaena hyaena*) den in Nepal**. *J Biodivers Endanger Species*, **5**, 2 https://www.hilarispublisher.com/abstract/first-confirmed-record-of-striped-hyaena-hyaena-hyaena-den-in-nepal-28614.html

Rimal, R., Maharjan, R., Khanal, K., Koirala, S., Karki, B., Nepal, S. and Shrestha, H. (2017) **Detection, assessment, and updating the maps of encroached forest areas: A case study from Bara district, Nepal**. *Banko Janakari,* **27,** 65-71. https://www.nepjol.info/index.php/BANKO/article/view/18554

Koirala, S., Oglethorpe, J., Khanal, K., Dhakal, S., Poudel, K.R., Sharma, K. and Bhandari, K. (2017) **Temporal change detection of Kahphuche glacial lake, Kaski District, Nepal**. *Journal of Nepal Geological Society,* **53,** 119-122. https://www.nepjol.info/index.php/JNGS/article/view/23826

Neupane, K., Gautam, A.P. and Regmi, A. (2017) **Trends of land cover change in a key biological corridor in Central Nepal**. *Asian Journal of Forestry,* **1,** 64-69. https://smujo.id/ajf/article/view/2313

Acharya, K.P., Khadka, B.K., Jnawali, S.R., Malla, S., Bhattarai, S., Wikramanayake, E. and Köhl, M. (2017) **Conservation and population recovery of Gharials (*Gavialis gangeticus*) in Nepal**. *Herpetologica,* **73,** 129-135. https://bioone.org/journals/herpetologica/volume-73/issue-2/HERPETOLOGICA-D-16-00048.1/Conservation-and-Population-Recovery-of-Gharials-Gavialis-gangeticus-in-Nepal/10.1655/HERPETOLOGICA-D-16-00048.1.short

Bista D, Shrestha S, Kunwar AJ, Acharya S, Jnawali S.R., and Acharya KP. (2017) **Status of gastrointestinal parasites in Red Panda of Nepal.** *PeerJ* 5:e3767 https://doi.org/10.7717/peerj.3767 https://www.semanticscholar.org/paper/Status-of-gastrointestinal-parasites-in-Red-Panda-Bista-Shrestha/d1fab1b943fa3c2e15d3ceac015f97298c619759

Subedi, N., Lamichhane, B.R., Amin, R., Jnawali, S.R. and Jhala, Y.V. (2017) **Demography and viability of the largest population of greater one-horned rhinoceros in Nepal**. *Global Ecology and Conservation,* **12,** 241-252. https://www.sciencedirect.com/science/article/pii/S2351989417300938

Adhikari, J.N., Bhattarai, B.P. and Thapa, T.B. (2018) **Human-wild mammal conflict in a human dominated midhill landscape: A case study from Panchase Area in Chitwan-Annapurna**. Journal of Institute of Science and Technology, 23(1), 30–38. https://www.nepjol.info/index.php/JIST/article/view/22158

Thapa, G.J., Thapa K., Thapa, R., Jnawali, S.R., Wich, S.A., Poudyal, L.P. and Karki, S. (2018) **Counting crocodiles from the sky: Monitoring the critically endangered gharial (*Gavialis gangeticus*) population with an unmanned aerial vehicle (UAV)**. *Journal of Unmaned Vehicle System,* 6, 2 (2018), 1–12. https://cdnsciencepub.com/doi/full/10.1139/juvs-2017-0026

Poudel, M., Kafle, G., Khanal, K., Dhungana, S., Oli, B., Dhakal, A. and Acharya, U. (2018) **Linking land use and forestry transition with depopulation in rural Nepal.** *Banko Janakari*, **27**(3), 130-143. https://doi.org/10.3126/banko.v27i3.20558

Acharya, K.P., Shrestha, S., Paudel, P.K., Sherpa, A.P., Jnawali, S.R., Acharya, S. and Bista, D., (2018) **Pervasive human disturbance on habitats of endangered red panda *Ailurus fulgens* in the central Himalaya**. *Global Ecology and Conservation*, **15.** e00420. doi: 10.1016/j.gecco.2018.e00420. https://www.readcube.com/articles/10.1016/j.gecco.2018.e00420

Shrestha, H., Kafle, M., Khanal, K. and Mandal, R. (2018) **Developing local volume tables for three important tree species in Nawalparasi and Kapilvastu districts**. *Banko Janakari*, 27(3), 84-9184-91.https://www.nepjol.info/index.php/BANKO/article/view/20552

Khadka, U., Poudel, K., Kafle, S., Acharya, S., Gotame, R., Adhikari, M., Khanal, K. and Karkee, K. (2018) **Climate-induced Vulnerability Assessment: A Case of Seti**

River Corridor, Central Nepal. *Nepal Journal of Environmental Science*, **6**, 17-28. https://doi.org/10.3126/njes.v6i0.30122

Adhikari, J.N. and Bhattarai, B.P. (2019) **Local People's Perception on Climate Change , its Indicators and Adaptation Strategies in the Chitwan-Annapurna Landscape**. *Journal of Ecology & Natural Resources* 3, 1 (2019) 1–9. doi: 10.23880/jenr-16000153. https://medwinpublishers.com/JENR/JENR16000153.pdf

Lamichhane, B.R., Subedi, N., Pokheral, C.P., Dhakal, M., Acharya, K.P., Pradhan, N.M.B., Smith, J.L.D., Malla, S., Thakuri, B.S. and Yackulic, C.B. (2019)**Using interviews and biological signs to infer seasonal use of forests and agricultural portions of a human-dominated landscape by Asian elephants in Nepal**. *Ethology Ecology & Evolution*, **30,** 1–17. doi: 10.1080/03949370.2017.1405847.https://pubs.er.usgs.gov/publication/70195069

Singh, P.B., Saud, P., Cram, D., Mainali, K., Thapa, A., Chhetri, N.B., Poudyal, L.P., Baral, H.S. and Jiang, Z., (2019) **Ecological correlates of Himalayan musk deer *Moschus leucogaster***. *Ecol Evol*. 2019;9, 4–18. doi: 10.1002/ece3.4435. https://www.nature.com/articles/s41598-019-41167-4?proof=t

Lamichhane, B.R., Persoon, G.A., Leirs, H., Poudel, S., Subedi, N., Pokheral, C.P., Bhattarai., S., Gotame, P., Mishra., R. and de Iongh, H.H. (2019) **Contribution of buffer zone programs to reduce human-wildlife impacts: The case of the Chitwan National Park, Nepal**. *Human Ecology*, **47**. https://link.springer.com/article/10.1007/s10745-019-0054-y

Chetri, M., Odden M., Devineau, O., and Wegge, P., (2019) **Patterns of livestock depredation by snow leopards and other large carnivores in the Central Himalayas, Nepal**. *Global Ecology and Conservation*, **17**. e00536. doi: 10.1016/j.gecco.2019.e00536. https://www.sciencedirect.com/science/article/pii/S2351989418303019

Chetri, M., Odden, M., Sharma, K., Flagstad, O. and Wegge, P. (2019) **Estimating snow leopard density using fecal DNA in a large landscape in north-central Nepal**. *Global Ecology and Conservation*, **17**. e00548. doi: 10.1016/j.gecco.2019.e00548. https://doi.org/10.1016/j.gecco.2019.e00548

Bista, D., Paudel, P.K., Jnawali, S.R., Sherpa, A.P., Shrestha, S. and Acharya, K.P. (2019) **Red panda fine-scale habitat selection along a Central Himalayan longitudinal gradient**. *Ecology and Evolution,* **9,** 5260-5269. https://onlinelibrary.wiley.com/doi/full/10.1002/ece3.5116

Kandel, R.C., Poudel, R.C., Sadaula, A., Kandel, P., Gairhe, K.P., Pokheral, C.P., Bajracharya, S.B., Chalise, M.K. and Solanki, G.S. (2019) **Revisiting genetic structure of wild buffaloes *Bubalus arnee* Kerr, 1792 (Mammalia: Artiodactyla: Bovidae) in Koshi Tappu Wildlife Reserve, Nepal: an assessment for translocation programs**. *Journal of Threatened Taxa,* **11,** 14942-14954. https://www.threatenedtaxa.org/index.php/JoTT/article/view/4940

Kandel, R.C., Shrestha, M., Sadaula, A., Medha, K., Maharjan, J., Solanki, G.S., Chalise, M.K., Asada, M., Kaneko, O. and Poudel, R.C. (2019) **First report of malaria parasites in water buffalo in Nepal**. *Veterinary Parasitology: Regional Studies and Reports,* **18,** 100348. https://doi.org/10.1016/j.vprsr.2019.100348

Pokhrel, K., Poudel, P., Neupane, B. and Paudel, R. (2019) **Comparative study in habitat suitability analysis of wild water buffalo (*Bubalus arnee*) in two flood plains of Chitwan National Park, Nepal**. *International Journal of Research Studies in Zoology,* **5,** 1-10. https://www.arcjournals.org/international-journal-of-research-studies-in-zoology/volume-5-issue-3/1

Aryal, K., Bhatta, L.D., Thapa, P.S., Ranabhat, S., Neupane, N., Joshi, J., Shrestha, K. and Shrestha, A.B. (2019) **Payment for ecosystem services: Could it be a sustainable financing mechanism for watershed services in Nepal?** *Green Finance,* **1,** 221.https://www.aimspress.com/fileOther/PDF/GF/GF-01-03-221.pdf

Karki, K., Chhetri, B.B.K., Chaudhary, B. and Khanal, G. (2019) **Assessment of socio-economic and environmental outcomes of the homestay program at Amaltari village of Nawalparasi, Nepal**. *Journal of Forest and Natural Resource Management,* **1,** 77-87. https://www.nepjol.info/index.php/jfnrm/article/view/22655

Poudyal, B.H., Maraseni, T.N. and Cockfield, G. (2019) **Implications of selective harvesting of natural forests for forest product recovery and forest carbon emissions: Cases from Tarai Nepal and Queensland Australia.** *Forests,* **10,** 693. https://www.mdpi.com/1999-4907/10/8/693

Singh, P.B., Khatiwada, J.R., Saud, P. and Jiang, Z. (2019) **mtDNA analysis confirms the endangered Kashmir musk deer extends its range to Nepal**. *Scientific Reports,* **9,** 1-11. https://www.nature.com/articles/s41598-019-41167-4

Lamichhane, B.R., Leirs, H., Persoon, G.A., Subedi, N., Dhakal, M., Oli, B.N., Reynaert, S., Sluydts, V., Pokheral, C.P., Poudyal, L.P., Malla, S. and de Iongh, H.H. (2019) **Factors associated with co-occurrence of large carnivores in a human-dominated landscape**. *Biodiversity and Conservation,* **28,** 1473-1491. https://link.springer.com/article/10.1007/s10531-019-01737-4

Pokhrel, G. and Rijal, M.L. (2020) **Seasonal variation of springwater in-situ parameters in the Bhusundi Catchment, Gorkha, Nepal**. *Journal of Institute of Science and Technology,* **25,** 45-51. https://www.nepjol.info/index.php/JIST/article/view/29450

Khadka, A., Dhungana, M., Khanal, S. and Kharal, D. (2020) **Forest and other land cover assessment in Nepal using Collect Earth**. *Banko Janakari,* **30,** 3-11. https://www.nepjol.info/index.php/BANKO/article/view/29176

Suwal, T.L., Thapa, A., Gurung, S., Aryal, P.C., Basnet, H., Basnet, K., Shah, K.B., Thapa, S., Koirala, S., Dahal, S., Katuwal, H.B., Sharma, N., Jnawali, S.R., Khanal, K., Dhakal, M., Acharya, K.P., Ingram, D.K. and Pei, K.J.-C. (2020) **Predicting the potential distribution and habitat variables associated with pangolins in Nepal**. *Global Ecology and Conservation*, 23(2020) e01049. https://doi.org/10.1016/j.gecco.2020.e01049

Pant, G., Maraseni, T., Apan, A. and Allen, B.L. (2020) **Climate change vulnerability of Asia's most iconic megaherbivore: Greater one-horned rhinoceros (*Rhinoceros unicornis*)**. *Global Ecology and Conservation,* **23,** e01180. https://doi.org/10.1016/j.gecco.2020.e01180

Paudel, P.K., Acharya, K.P., Baral, H.S., Heinen, J.T. and Jnawali, S.R. (2020) **Trends, patterns, and networks of illicit wildlife trade in Nepal: a national synthesis**. *Conservation Science and Practice*, **2**(9), e247. https://conbio.onlinelibrary.wiley.com/doi/full/10.1111/csp2.247

Bhatta, S., Joshi, L.R. and Shrestha, B.B. (2020) **Distribution and impact of invasive alien plant species in Bardia National Park, western Nepal**. *Environmental Conservation,* **47,** 197-205. https://doi.org/10.1017/S0376892920000223

Parajuli, J., Eakin, H. and Chhetri, N. (2020) **Small irrigation users' perceptions of environmental change, impacts, and response in Nepal.** *Climate and Development*, 1-18. https://www.tandfonline.com/doi/abs/10.1080/17565529.2020.1836468?journalCode=tcld20

Chetri, M., Odden, M., Devineau, O., McCarthy, T. and Wegge, P. (2020) **Multiple factors influence local perceptions of snow leopards and Himalayan wolves in the central Himalayas, Nepal**. *PeerJ,* **8,** e10108 https://peerj.com/articles/10108/

Rayamajhi, N. and Manandhar, B. (2020) **Impact of climate change and adaptation measures on transhumance herding system in Gatlang, Rasuwa**. *Air, Soil and Water Research,* **13,** 1178622120951173 https://bioone.org/journals/air-soil-and-water-research/volume-13/issue-1/1178622120951173/Impact-of-Climate-Change-and-Adaptation-Measures-on-Transhumance-Herding/10.1177/1178622120951173.full

Kandel, S.R., Lamichhane, B.R. and Subedi, N. (2020) **Leopard (*Panthera pardus*) density and diet in a forest corridor of Terai: Implications for conservation and conflict management**. *Wildlife Research,* **47,** 460-467. https://www.publish.csiro.au/wr/WR19126

Khadka, K. and Rijal, M.L. (2020) **Hydrogeochemical assessment of spring water resources around Melamchi, Central Nepal**. *Water Practice and Technology,* **15,** 748-758. https://iwaponline.com/wpt/article/15/3/748/75451/Hydrogeochemical-assessment-of-spring-water

Kafle, K., Thanet, D.R., Poudel, P., Gautam, D., Thapa, G. and Bhatt, P. (2020) **Status and conservation threats to large mammals of the Laljhadi Mohana Biological Corridor, Nepal.** *Journal of Animal Diversity*, **2**(2). https://jad.lu.ac.ir/article-1-74-en.html

Thapa, K., Thapa, G.J., Bista, D., Jnawali, S.R., Acharya, K.P., and Khanal, K. (2020) **Landscape variables affecting the Himalayan red panda *Ailurus fulgens* occupancy in wet season along the mountains in Nepal.** *PLoS ONE,* **15**(12). e0243450. https://doi.org/10.1371/journal.pone.02434500

Thapa, K., Malla, S., Subba, S.A., Thapa, G.J., Lamichanne, B.R., Subedi, N., Dhakal, M., Acharya, K.P., Thapa, M.K., Neupane, P., Poudel, S., Bhatta, S.R., Jnawali, S.R. and Kelly, M.J. (2021) **On the tiger trails: leopard occupancy decline and leopard interaction with tigers in the forested habitat across the Terai Arc Landscape of Nepal**. *Global Ecology and Conservation*,25(2021) https://doi.org/10.1016/j.gecco.2020.e01412

Joshi, J., Bharadwaj, D., Paudyal, P. and Timalsina, N. (2017) **Landslide inventory, susceptibility mapping and recommendation of mitigation measures in Nuwakot District.** *Journal of Nepal Geological Society*, **53**, 107-118. https://www.nepjol.info/index.php/JNGS/article/view/23825 https://doi.org/10.3126/jngs.v53i0.23825

Thapa, R.S. and Joshi, J. (2018), **Watershed Management: contributing towards biodiversity conservation**. p. 67 in: *25 Years of Achievements on Biodiversity Conservation in Nepal*, Ministry of Forests and Environment, Kathmandu, Nepal.

MAJOR ASSESSMENTS AND STUDIES

Climate-smart, energy saving and GESI-friendly adaptation technologies and practices in CHAL and TAL under Hariyo Ban Program. CARE. 2017

A**ssessment of River Connectivity Using Genetic Approach in Chitwan Annapurna Landscape**. WWF. 2017

Assessment of distribution, abundance, threats, challenges and possible conservation of Tree Ferns in Chitwan-Annapurna Landscape. WWF. 2018

Assessment of effectiveness of guiding fence along Sikta Irrigation Canal. WWF. 2018

Social Analysis of TAL and CHAL. CARE. 2018

Prey-base of snow leopard in Chitwan Annapurna Landscape. NTNC. 2019

Assessment of spring shed for management and conservation of drying springs in Chitwan-Annapurna Landscape. WWF, 2019

Climate change and its impact on species and habitat in Chitwan Annapurna Landscape. WWF. 2019

Using the analytic hierarchy process to support decision making on climate change adaptation. CARE. 2020

Documentation of differential impact assessment and response planning (DIA-RP). CARE. 2020

Flood/inundation hazard mapping and upgrading of hydro-meteorological station in Seti sub-river basin including Madi watershed to support flood early warning system. CARE. 2019

Ecological carrying capacity of greater one horned rhinoceros in Nepal. WWF. 2020

Assessing distribution of bats in Chitwan Annapurna Landscape. WWF. 2020

Assessing indicators of climate change in Gandaki River Basin and engaging local communities for long term monitoring. WWF, 2020

Assessment of canopy bridges of Nepal at Banke National Park. WWF. 2019

Value addition study of GESI and governance on biodiversity conservation and climate change adaptation. CARE. 2021

Modelling of Bijaysal population in TAL landscape of Nepal. FECOFUN. 2020

Assessment of water quality parameter status of Lake Cluster of Pokhara Valley, Nepal. WWF. 2021

Review and reflection report of GESI Action Plan of Hariyo Ban Program. CARE. 2021

Intregration of GESI in biodiversity conservation and climate change adaptation: An Experience from Hairyo Ban Program. CARE. 2020

Institutionalization of GESI approaches for social transformation in Hariyo Ban Program. CARE. 2021

Assessment of the effectiveness of climate smart, time and energy saving, GESI friendly adaptation tools, technology and practices for agriculture and domestic use through demonstration and action research in Hariyo Ban Program. CARE. 2020

Resilience Measurement in Hariyo Ban Program: Case studies from Khageri Khola Sub-watershed, Chitwan and Rapti Sonari Rural Municipality -5, Banke. CARE. 2021

Assessing the impact of community learning and action centers of Hariyo Ban Program. CARE. 2021

Social analysis identification of marginalized segments of the society and underlying causes of marginalization in Hariyo Ban II working areas. CARE. 2017.

Increasing resilience: Hariyo Ban Program's Resilience Framework. (Unpublished report). CARE. 2018.

Report on flood/inundation hazard mapping and upgrading of hydro-meteorological station in Madi and Seti sub-river basin to support flood early warning system. (Unpublished report). CARE. 2019.

Learning brief on responding to differential impacts: lessons from Hariyo Ban Program in Nepal. CARE. 2019.

Assessment on the effectiveness of climate smart, time and energy saving, GESI friendly adaptation tools, technology and practices for agriculture and domestic use through demonstration and action research in Hariyo Ban Program. (Unpublished report). CARE. 2020.

Local FECOFUN and CFUGs Institutional Capacity Building Approach. FECOFUN. 2020.

A manual on GESI provisions and developing internal policies in NRM groups. WWF. 2020

OTHER MAJOR PUBLICATIONS

Checklist of faunal species of Seti Sub River Basin. WWF. 2021

Invasive species factsheet in Nepal: *Parthenium, Lantana, Mikenia,* and *Chromolena*. WWF. 2021

Monograph of champ (*Michalia champaca)*. WWF. 2019

Use and effectiveness of wildlife crossings in Nepal 2019: Results from the wildlife underpasses built along Narayanghat - Mugling Road in Barandabhar Corridor Forest. WWF. 2019

Species booklets (Assamese macaque, blue bull, clouded leopard, dolphin, fishing cat, gaur, grey wolf, leopard cat, spotted deer, wild water buffalo, alpine musk deer, Bengal florican, Bengal tiger, blackbuck, common leopard, danphe, elephant, gharial, great hornbill, pangolin, red panda, rhino, sarus crane, snow leopard, swamp deer). WWF. 2020

Legacies of Hariyo Ban Program. WWF. 2021

Compendium of Thesis Abstract Funded from Student Research Grant Program of Hariyo Ban Program. WWF. 2020

Milestones of Hariyo Ban Program. WWF. 2021

Framework for differential impact assessment and response planning for climate change adaptation and disaster risk management. CARE. 2020. (In English and Nepali) (Manual)

Green road engineering training manual. WWF. 2019

Community Forests Users Groups Catalogue. FECOFUN. 2019

A Case study on *Chhaupadi* free campaign. CARE. 2020.

Learning Brief on child marriage free campaign in Shuklagandaki. CARE. 2020.

Vulnerability Assessment and Resilience Planning in Community Based Green Enterprises. CARE. 2020.

VIDEOS

TITLE	ONLINE LINK
Hariyo Ban Program	bit.ly/3wCGY6I
The Aromatic Guardians of Phewa Lake	bit.ly/3i3F36O
ELEVATED - From the Waters We Rise	bit.ly/3fnhFiY
Counting Tigers	bit.ly/3hWEFHi
Long-Term Monitoring Climate Change Impacts in Gandaki River Basin, Nepal	bit.ly/2RSiDuC
Water Mower for Wetlands	bit.ly/34jq1lu
Nepal Stockpile Burn	bit.ly/2RO8kb8
Green Recovery and Reconstruction for Resilient Nepal	bit.ly/3hW8Yy3
Rhino Released in Shuklaphanta National Park - Rhino Translocation 2017	bit.ly/3oV7GF1
Swamp Deer Switching Grounds	bit.ly/34mr7x2
Rhinos on the Move	bit.ly/34ln6Zx
Rhino Translocation Bardia National Park, Nepal - March 2, 2016	bit.ly/3fpdP9h
She is the Change	bit.ly/3hXP5GS

10 YEARS OF HARIYO BAN

GOAL

Phase I: Reduce Adverse Impacts of Climate Change and Threats to Biodiversity in Nepal

Phase II: Increase Ecological and Community Resilience in CHAL & TAL

OBJECTIVES

Phase I: Reduce Threats to Biodiversity in Targeted Landscapes

Build the Structures, Capacity, and Operations Necessary for Effective Sustainable Landscape Management

Focusing on Reducing Emissions from Deforestation and Forest Degradation (REDD+) Readiness

Increase Climate Change Adaptation of Targeted Communities

Phase II: Improving the Conservation and Management of CHAL and TAL

Reducing Climate Change Vulnerability in CHAL and TAL

LEVERAGED USD 1.5 MILLION

10 YEARS OF HARIYO BAN

126,202 HECTARES
of grasslands, wetlands, and forest managed and improved.

58,150 PEOPLE
trained in sustainable natural resource management and/ or biodiversity conservation.

ORIGINAL ASSEMBLAGE

8 Rhinos
15 Wild Water Buffaloes
42 Blackbucks
7 Swamp Deer

7 365-DAYS
of rhino zero poaching since 2011

Tiger
Number increased from 198 in 2013 to 235 in 2018

278
Community based anti-poaching units formed

415
Community based anti-poaching units mobilized

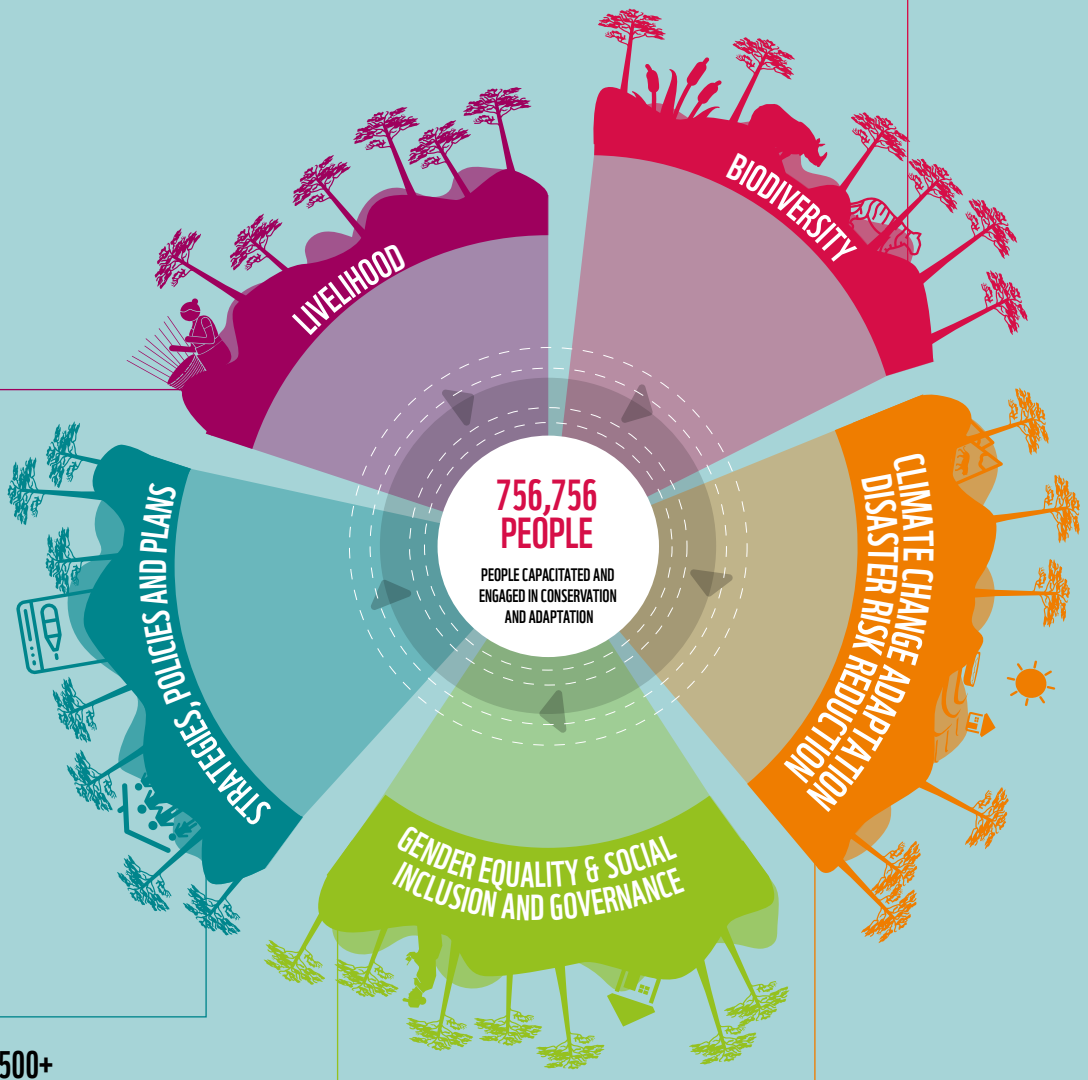
1516
People received skill-based training

19,970
Households benefited from income generation activities

36
Off-farm based enterprises supported - wool-weaving, homestays, etc.

78
Eco-friendly enterprises established

16 Forest enterprises like bel, broom
26 Agro enterprises like coffee, citrus, cardamom
36 Off-farm enterprises - wool, homestay



64
Conservation strategies, plans and policies

331
Community adaptation plans of action

96
Local adaptation plans of action

15
Disaster preparedness and response plans

19
Integrated sub-watershed management plans

500+
500+ Strategies, Policies, and Plans supported

14,855
Men and women reached through Community Learning and Action Centers (CLACs)

35,238
People trained on Gender Equality & Social Inclusion and Governance

387
Natural Resource Management Groups supported to improve governance and benefit women and marginalized groups

468,485
People reached through climate change adaptation and disaster risk management activities

439,574
People benefited from implementation of climate change adaptation-disaster risk reduction activities

30,193
People trained in CCA-DRR

WWF Nepal, Hariyo Ban Program
PO Box 7660
Baluwatar, Kathmandu , Nepal

Tel: +977-1-4434820

www.wwfnepal.org/hariyobanprogram/

Hariyo Ban Program's support has helped climate vulnerable communities enhance their climate change preparedness and resilience