Government of Nepal
Ministry of Forests and Environment

SNOW LEOPARD
CONSERVATION ACTION PLAN
FOR NEPAL 2024-2030

Department of National
Parks and Wildlife Conservation

Department of Forests and
Soil Conservation

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2024-2030

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Department of National Parks
and Wildlife Conservation

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Foreword

Within less than two percent of the global range, Nepal hosts five to 10 percent of global population of snow leopards, highlighting our country's key role in securing the future of this enigmatic species. Nepal government, along with community and conservation partners, is working towards holistic snow leopard conservation, aligning strategies to global commitments.

In Nepal, snow leopards are found in three conservation landscapes. Of around 30,000 sq km estimated habitat, approximately 58% fall within Protected Areas, while the remaining 42% fall outside. As elsewhere, snow leopards face a multitude of threats from human snow leopard conflicts, wildlife crime, habitat degradation and prey decline aggravated by impacts of changing climate, disease and poorly planned infrastructure development. Addressing these issues under complex socio-economic and geo-political circumstances, within rugged Himalayan terrains, are highly challenging. Yet, time and again, Nepal has set a high standard for snow leopard conservation, as for other priority species. The Snow Leopard Conservation Action Plan (SLCAP) is a driving document that streamlines stakeholders towards a common vision to safeguard this iconic species and its entire ecosystem.

The third SLCAP (2024-2030) incorporates learnings from past experiences and adopts newer opportunities. It continues to address threats to the species through partnership, especially focusing on capacitating and engaging indigenous communities, their knowledge, and leadership. Accordingly, every strategy in this document encourages working with local communities and governments, and faith leadership who have traditionally led conservation practices for generations.

Engaging community not only addresses practical needs but will also create a strong foundation for sustainability in conservation. This Plan encourages creating and strengthening positive correlations between conservation and communities' wellbeing. Managing human-snow leopard conflicts holistically, including livelihood diversification and security, is a key strategy, to help the communities thrive with nature.

This Plan also acknowledges global need and recommends interdisciplinary research for improved management and adaptations. Establishing robust national population of snow leopards, using innovation in technology, understanding grassroots circumstances, to address challenges are among the priorities. Habitat management, particularly managing valuable mountain rangeland ecosystems, addressing wildlife crimes engaging diverse stakeholders are encouraged. Likewise, transboundary collaboration with our great neighbors continues to remain a key priority.

Acknowledging the country's development aspirations, this Plan attempts to provide a pathway for development without compromising nature. This also includes embedding understanding of climate change projections to incorporate adaptations benefiting nature and people. Considering the need and challenges of mountain landscape, a budget of ~14.2 m USD is estimated for this Plan. While the DNPWC and DoFSC will continue to lead implementation. This plan acknowledges the need for partnerships of all three tiers of governments and conservation partners, to achieve its objectives.

We would like to thank all experts engaged in preparation of this Plan, with special thanks to WWF Nepal for financial and technical support. With the hope that this Plan continues to guide holistic conservation that benefits the species, its ecosystems and communities, we assure continued leadership of DNPWC and DoFSC for impactful outcomes for people and nature.

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ACRONYMS AND ABBREVIATIONS

ACA	Annapurna Conservation Area
ANCA	Api-Nampa Conservation Area
APO	Anti-Poaching Operation
BZMC	Buffer Zone Management Committee
CBAPU	Community-Based Anti-Poaching Unit
CBD	Convention on Biological Diversity
CBO	Community-Based Organization
CIB	Central Investigation Bureau
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
DFO	Division Forest Office/ Divisional Forest Officer
DHR	Dhorpatan Hunting Reserve
DNA	Deoxyribonucleic Acid
DNPWC	Department of National Parks and Wildlife Conservation
DoFSC	Department of Forests and Soil Conservation
EHL/N	Eastern Himalaya Landscape, Nepal
FoN	Friends of Nature
FY	Fiscal Year
GCA	Gaurishankar Conservation Area
GGN	Green Governance Nepal
GPS	Global Positioning System
GSLEP	Global Snow Leopard and Ecosystem Protection Program
GTF	Global Tiger Forum
ICIMOD	International Center for Integrated Mountain Development
IUCN	International Union for Conservation of Nature
KCA	Kangchenjunga Conservation Area
km	Kilometer
KNP	Khaptad National Park
KSL	Kailash Sacred Landscape
KSLCDI	Kailash Sacred Landscape Conservation and Development Initiative
LNP	Langtang National Park
MAP	Medicinal and Aromatic Plants
MBNP	Makalu-Barun National Park
MCA	Manaslu Conservation Area
MoFE	Ministry of Forests and Environment
MoU	Memorandum of Understanding
NBSAP	National Biodiversity Strategy and Action Plan
NPR	Nepalese Rupee
NPWCA	National Parks and Wildlife Conservation Act
NSLEP	National Snow Leopard and Ecosystem Protection Priorities
NTCC	National Tiger Conservation Committee, Nepal
NTFP	Non-Timber Forest Product
NTNC	National Trust for Nature Conservation
NWCCCC	National Wildlife Crime Control Coordination Committee
PA	Protected Area
RNP	Rara National Park
SHL	Sacred Himalayan Landscape
SAWEN	South Asia Wildlife Enforcement Network
SLCAP	Snow Leopard Conservation Action Plan
SLCC	Snow Leopard Conservation (sub-) Committee
SMART	Special Monitoring and Reporting Tool
SNP	Sagarmatha National Park
SPNP	Shey-Phoksundo National Park
TAR	Tibetan Autonomous Region
UAV	Unmanned Aerial Vehicle
UKALI	Upper Karnali Landscape Initiative
USAID	United States Agency for International Development
WCCB	Wildlife Crime Control Bureau
WHL/N	Western Himalaya Landscape, Nepal
WWF	World Wide Fund for Nature

Nepal Government's Snow Leopard Conservation and Action Plan (SLCAP 2024-2030) presents robust strategies to address urgent conservation needs of the iconic snow leopard *(Panthera uncia)* across its range in the country. This five-year plan is a collaborative effort involving governments, conservation partners, NGOs, local communities, and researchers committed to safeguarding this elusive and vulnerable species.

Snow leopards inhabit some of the world's harshest and most remote landscapes, spanning 12 countries across Central and South Asia. Recognized as a keystone species, snow leopards contribute to maintaining the integrity of their ecosystems by regulating prey populations and promoting biodiversity. Mountain communities also hold socio-cultural significance of snow leopards; within Nepal, these largely Buddhists communities consider snow leopards as Gods or their pets, and have maintained traditional coexistence based on their beliefs and values. Yet, globally, snow leopards face numerous threats, including habitat loss, retaliatory killings due to livestock predation, poaching for their exquisite fur and body parts, and the impact of climate change on their fragile habitats. These challenges have led to a significant decline in snow leopard populations, making conservation efforts crucial.

The Snow Leopard Conservation and Action Plan 2024-2030 outlines a set of strategic goals and objectives to guide conservation efforts. Enhancing Knowledge on Snow Leopard's Ecology, their Prey, Habitats and Human Dimensions for their conservation through Research and Monitoring, Improving Habitats and Corridors, Mitigating Human-Snow Leopard Conflict through Community Engagement, Reducing Wildlife Crime on Snow Leopard and their Prey through Effective Law Enforcement, and Strengthening Trans-boundary, Regional and International Cooperation and Support were the identified objectives.

The plan emphasizes adaptive management strategies, incorporating latest scientific insights and innovative technologies. It encourages integration of traditional knowledge and practices with modern conservation approaches. Implementation will involve a multi-pronged approach, including policy advocacy, capacity building, education, and raising public awareness, with partnerships – both conventional and non-conventional, as a key element. Progress will be tracked through regular monitoring and evaluation, utilizing key performance indicators tied to each objective. Flexibility will be maintained to adjust strategies based on new information and changing circumstances.

The Snow Leopard Conservation and Action Plan 2024-2030 represents a critical step toward securing the future of snow leopards and their unique ecosystems. By addressing a complex web of challenges facing these magnificent cats, the plan aims to ensure their survival for generations to come, while also safeguarding the balance of their ecosystems and promoting sustainable development in Nepal. Successful implementation of this plan will require unwavering political will, commitment, collaboration, and global support.

It is envisaged to spend NPR 1,77,97,00,000 (~USD 14.24 million) to implement the action plan for six years. This action plan estimates about 35% for mitigating human-snow leopard conflict through community engagement, and about 26% of the budget is estimated for wildlife crime management. Yet, in all strategies, investments will be directed towards partnering, capacitating, and engaging local communities and their leadership.

The Context

1

INTRODUCTION

1.1 RELEVANCE OF THE ACTION PLAN

Nepal is one of the 12 snow leopard (Panthera uncia) range countries of the world, hosting the fourth highest population. Within less than 2% of the global range estimated around 1.8 million sq km, Nepal hosts about 5-10% of the global population, making the country a hotspot for conservation of this species (McCarthy et al., 2024). Accordingly, the Government of Nepal has been supporting global efforts to save the species by helping formulate global agenda and vision for snow leopard conservation, aligning national priorities to global targets, and coordinating nationally to implement the priority activities. This Action Plan revision is part of the process to take stock of what has been achieved, and what actions might be needed in the coming years to secure the future of snow leopards.

Traditionally, mountain communities have considered snow leopards as 'God's pets'; such cultural associations by communities have helped create a strong foundation for conservation in Nepal, not just for snow leopards but for many other species. With changing circumstances, over the past 50 years or so, Nepal government has led, and supported, efforts to better understand the species and aid conservation, including creating multiple mountain 11 protected areas.

As part of the coordinated efforts to save the species, in 2005, Nepal launched its first national Snow Leopard Conservation Action Plan (SLCAP, 2005-15). Since then, these plans have been regularly updated, to align to changing contexts - addressing challenges and tapping new opportunities. In view of increasing new information on impacts of climate change in snow leopard habitats, as well as increasing

pressures of infrastructure development, the plan was revised in 2012. Upon completion of the period of first SLCAP, the plan was reviewed and revised for the period 2017-21. Continuing this process of learning and adapting, this third SLCAP aims to provide guidance for coordinated steps for the next five years to meet Nepal's commitment to Global Snow Leopard & Ecosystem Protection (GSLEP) Program, towards the vision of securing snow leopards and their ecosystems in their entirety in the three conservation landscapes within Nepal.

Table 1 Nepal's SLCAP and timelines	
SLCAP	Timeline
I	2005-2015
II	2017-2021
III	2024-2030

1.2 CONSERVATION ACTION PLAN REVISION PROCESS

As with all protected species plans, a technical committee led by the Ecologist of the Department of National Parks and Wildlife Conservation (DNPWC) and represented by the members of the Department of Forests and Soil Conservation (DoFSC), and key conservation organizations (NTNC, ZSL Nepal, WWF Nepal) - was tasked with guiding the revision process. Considering previo   us and ongoing support to snow leopard conservation provided to DNPWC, WWF Nepal was requested to provide resources for this revision. The DNPWC approved the terms of reference (ToR) for the

preparation of the updated document.

Implementation status of the SLCAP, 2017, as well as updating the plan, was done through literature reviews and discussions (consultations as well as key informant interviews). Documents and reports on snow leopard research and conservation of government as well as non-government institutions in Nepal were reviewed, along with published scientific and popular literature. Information generated from regional consultation of duty bearers as well as field consultations with right holders were conducted, along with key informant interviews with over 100 key persons working for wildlife conservation, snow leopard conservation or community well-being were interviewed. Informants also included representatives from federal, provincial, and local municipal governments, as well as conservation organizations, individual experts, and community representatives including citizen scientists. Nepal government's global commitments, existing policies and priorities, and guiding documents for conservation were reviewed. The information generated was collated into an updated document and shared during a national workshop at DNPWC (Kathmandu, June 2023). Suggestions from the participants were further used to improve and prepare this updated plan.

1.3 SCOPE OF THE ACTION PLAN

The main aim of this action plan is to improve survival prospects of snow leopards through informed conservation measures that reduce negative interactions and reinforce positive correlation between well-being of nature and people in eastern, central, and western snow leopard conservation landscapes of Nepal. The plan also acknowledges challenges presented by the harsh terrains where snow leopards inhabit and focuses on partnerships with diverse stakeholders – for skill and resource leveraging - to achieve the plan's objectives. The plan also acknowledges the development aspirations of the country, to strengthen sustainable development interventions that benefit both nature and people.

The strategic focuses of this action plan are to enhance scientific understanding of snow leopards and their ecosystems for improved conservation, addressing conflicts and crime, improving habitats, and strengthening transboundary coordination. The plan also attempts to ensure that linear and other infrastructures being developed in snow leopard landscapes adopting measures to minimize negative impacts on nature and optimizing long-term positive benefits to community. The plan acknowledges threat intensification through climate change, as well as potential addition of newer risks such as diseases, which impact both snow leopards and people and their livelihoods, embedding principles of One Health approach. Noting that community stewardship is key to long-term sustainability in conservation, this plan prioritizes partnership and well-being of local indigenous communities, with their engagement – in planning and implementation - incorporated in all relevant strategies.

The action plan aligns with the other guiding national policy documents focusing on snow leopards, such as the National Snow Leopard Recovery Plan, Bishkek Declaration 2013, Global Snow Leopard, and Ecosystem Protection Program (GSLEP), National Biodiversity Strategy and Action Plan, 2014-2020, Rangeland Policy, 2012, Nepal's National Forest Policy 2075 B.S. (2019), Protected Area Management Strategy (2022-2030) (DNPWC, 2022b). Therefore, this action plan will serve as a policy document to guide strategies, actions, and activities of all three tiers of the governments, conservation partners, community-based organizations, and all other stakeholders actively engaged in snow leopard conservation.

The action plan will be implemented to holistically address the need for the conservation of snow leopards in Nepal. It considers the collaborative efforts of a wide range of stakeholders including policy and decision-makers, wildlife law enforcement agencies, conservation partners, academic institutions, and communities for its successful implementation.

BACKGROUND

2.1 GLOBAL STATUS AND DISTRIBUTION

The elusive snow leopard (Panthera uncia) is a native cat inhabiting the high mountains of Central and South Asia. Covering an estimated area of 1.8 million square kilometers, these cats are usually found at altitudes ranging from 540 meters to over 5,000 meters (McCarthy et al., 2024). They are distributed in 12 countries (Figure 1). With snow leopards known to be among the least studied of the big cats, GSLEP reports that there is 'a great deal of uncertainty about the species distribution and population'.

GSLEP estimates the global population to be between 4500-6000 individuals' (Sharma et al., 2019) while IUCN Red List categorizes the species as 'vulnerable' with 'declining population trend' and estimates provides of 2710-3386 adult individuals (McCarthy et al., 2017) (Refer to Table 1). Recognized as an indicator of high mountain ecosystems, the species is vital for maintaining ecological balance. Healthy populations of apex predators, like the snow leopard, play a crucial role in sustaining ecosystem health by regulating herbivore populations and ensuring the stability of local plant and animal communities.
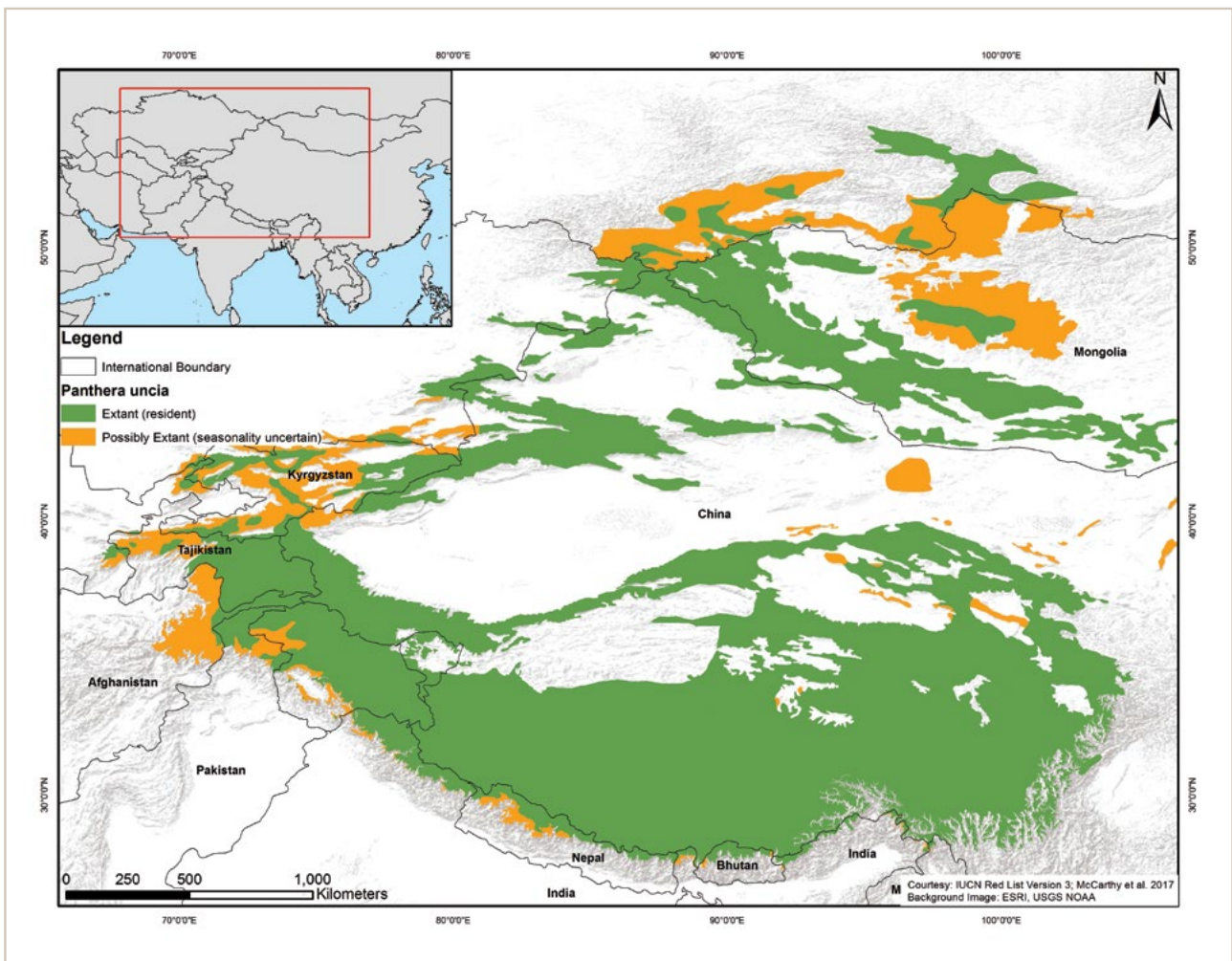
Figure 1: Global Snow Leopard Distribution.

S. No.	Range Country	Estimated Snow Leopard Population (and estimation year)	Updated Snow Leopard Population	
			Latest Available Estimates	Source
1	Afghanistan	100 – 200 (2003)		
2	Bhutan	100 – 200 (1994)	121-148	NCD 2023
3	China	2,000 – 2,500 (2003)		
4	India	200 – 600 (1994)	718	MoEFCC 2023
5	Kazakhstan	100 – 110 (2001)		
6	Kyrgyzstan	150 – 500 (2001)		
7	Mongolia	500 – 1,000 (2000)	806 - 1127	Bayandonoi et al., 2021
8	Nepal	300 – 500 (2009)	301 – 400	DNPWC 2012 (Revised SLCAP)
9	Pakistan	200 – 420 (2003)		
10	Russia	70 – 90 (2012)		
11	Tajikistan	180 – 220 (2003)		
12	Uzbekistan	20 – 50 (2003)		
	Total	**3920 - 6390**		

Table 2
Estimated populations of snow leopards (GSLEP, 2013) and updated figures (with source)

Typically, regions inhabited by snow leopards are home to communities heavily reliant on traditional pastoralism. The escalating presence of livestock and overgrazing poses a threat, leading to the deterioration of rangelands, heightened competition between prey and livestock, and an increase in conflicts and retaliatory killings, recognized as significant challenges across all snow leopard range countries (Gentle and Thwaites, 2016). The rise in human settlements and large-scale infrastructure development further contributes to the degradation and fragmentation of wildlife habitats in high mountain areas, disrupting the genetic connectivity among snow leopard populations (GSLEP, 2024).

The establishment of transportation networks may facilitate wildlife crimes by providing easier access and trafficking routes for wildlife products, and risks fragmenting snow leopard habitats (GSLEP, 2024). Weak law enforcement, porous borders, and escalating global demands for snow leopard products compound the threats to snow leopard conservation (Nowell et al., 2016). Additionally, climate projections indicate potential loss of snow leopard habitats across its range (Farrington and Li, 2024),

increase in disease risks (Mishra et al., 2021), potential aggravation of conflicts, among others with changing climatic circumstances.

Despite these challenges, conservation efforts are hindered by insufficient resources, including inadequately trained personnel, equipment, and finances, coupled with weak trans-boundary cooperation and low levels of awareness (Mallon and McCarthy, 2024). The vast and harsh habitat of snow leopards, coupled with limited staff trained for community engagement in conservation, exacerbates the challenges faced by some range countries. Additionally, a lack of scientific information on various aspects of snow leopards' ecology and behavior, such as distribution, population status, potential habitats, predator-prey relationships, prove to be a critical obstacle.

To tackle these threats, globally coordinated efforts have been undertaken with the leadership of GSLEP. In October 2013, articulated through the Bishkek Declaration, snow leopard range countries and partners committed to collaboratively identifying and securing a minimum of 20 snow leopard landscapes across its range by 2020. A snow

leopard landscape is defined as an area with at least 100 breeding-age snow leopards, supported by adequate and secure prey populations, and functional connectivity to other landscapes, some of which share international boundaries and involve local community participation. Achieving the goal of 20 'secure' snow leopard landscapes by 2020 is anticipated to safeguard the snow leopard as a symbol of Asia's high mountains (GSLEP, 2013). In March 2015, during the first High-Level Steering Committee meeting in Bishkek, the number of landscapes was increased from 20 to 23, aiming to provide more space and security for the species (GSLEP, 2015).

Likewise, since the Bishkek Declaration in 2013, October 23 is commemorated annually as 'International Snow Leopard Day,' serving to raise awareness and underscore the global significance of snow leopard conservation. Similarly, the year 2015 was designated as 'International Snow Leopard Year.'

Efforts are being increased to understand population status at national or local levels, with several countries like Mongolia (Bayandonoi et al., 2021), India (MoEFCC, 2023) and Bhutan (NCD, 2023) unveiling their population estimates. In addition to periodic updating of national plans such as this one, climate-smart landscape plans are also being prepared, with Government of Nepal rolling out the first-ever Snow Leopard and Ecosystem Management Plan for the Eastern Himalayan Landscape of the country. GSLEP is also bringing the stakeholders together to address new concerns, including linear infrastructures.

2.2 NATIONAL CONSERVATION STATUS

The snow leopard is the apex predator of the Himalayan ecosystem. They are found within and outside mountain protected areas (PAs) of Nepal (Figure 2), with their prime and fair habitat distributed almost equally outside and inside PAs. Extending from Kangchenjunga Conservation Area towards the country's northeastern corner to Api Nampa Conservation Area towards the west, Nepal's snow leopard habitat is divided into three snow leopard conservation landscapes – Eastern, Central and Western (DNPWC, 2017).
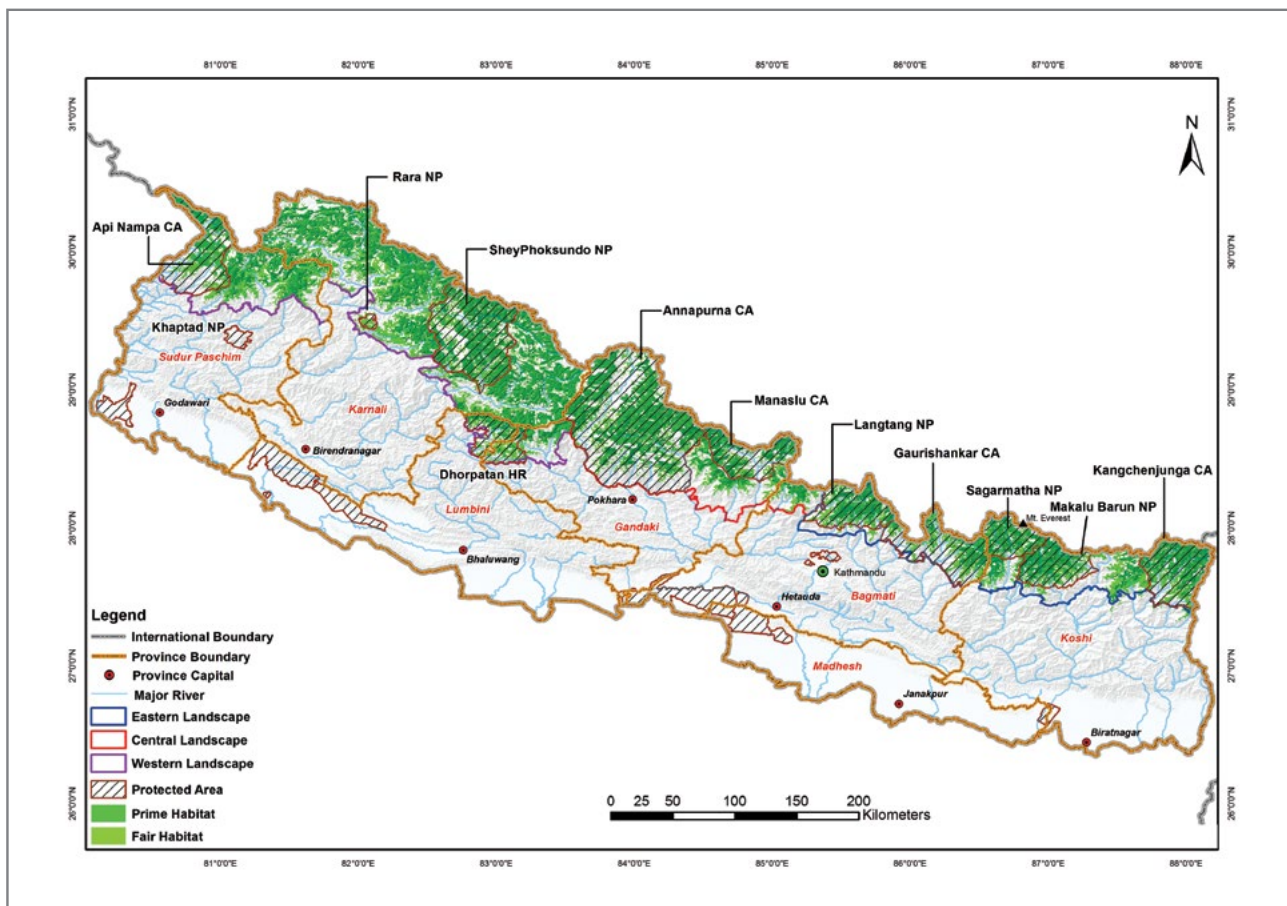

Figure 2: Snow Leopard Range in Nepal's Himalayas and Conservation Landscapes.

Nepal holds a significant proportion of the global snow leopard population with about 301-400 individuals (DNPWC, 2017), making Nepal the country with the fourth-highest population in the world. This also accounts for 5-10 % of the global snow leopard population within less than 2% of the species distribution range. The government lists them as a Schedule I species in the National Parks and Wildlife Conservation Act (Jnawali et al., 2011), granting them the highest level of protection possible. Mountain communities also have cultural association with the species, and have facilitated safeguarding the species through faith values.

Yet, newer challenges mandate stronger coordination and cooperation to save the species in the long-term. Snow leopard remains an understudied species, although Nepal is regarded as the country with highest research on the species and its ecosystems. Site-specific studies on populations have indicated a wide density range from 10-12 per 100 sq km to fewer than one per 100 sq km (Jackson and Alhborn, 1990 in DNPWC, 2012). Use of cutting-edge research such as satellite telemetry has unveiled diverse movement ecology, with their territories ranging from few hundred sq km to few thousand sq km. Robust national population estimation remains a priority for this updated SLCAP, and a clear understanding of patterns of genetic diversity is critical for guiding conservation initiatives to ensure their long-term persistence. The abundance and density of snow leopard's natural prey also varies across their range in Nepal Himalayas. Maintaining prey populations would be crucial to secure snow leopards and is therefore a priority for this SLCAP.

Additionally, diet studies have indicated snow leopard's reliance on livestock, with up to 45% comprising domesticated animals in Nepal. While these may have been true over generations, these behavioral imprints, along with deterioration in traditional herding knowledge, and incursion of modern ways, have caused communities to turn against snow leopards. Specifically, surplus killing by the predators cause huge economic losses; when combined with limited access to relief, this creates conditions of desperation, leading to retributions. Holistic conflict management, including improving access to conflict relief provisions, has been, and continues to be a priority to preserve conservation stewardship, which is crucial for snow leopard conservation. These holistic measures include conflict prevention and mitigation support, as well as supporting sustainable livelihoods, and remain a key priority for this updated SLCAP.

Safeguarding habitats of snow leopards is a priority for this SLCAP, not just for snow leopards and prey, but also for well-being of mountain communities, who rely on rangelands for their livelihoods. These rangelands are multi-use habitats providing a wide range of immediate and long-term benefits. They contribute to the national economy through tourism, generate revenue through NTFPs, provide grazing grounds for livestock, among others. Yet, these are also known to aid carbon sequestration and form a crucial part of watersheds that supply freshwater to millions of people downstream. These remain one of the most neglected habitats, not least due to the challenges presented by the terrain. Moreover, the country's development aspirations have necessitated development of linear infrastructures slicing through these regions. Considering the values they provide globally, nationally, as well as locally, this plan prioritizes streamlining their sustainable management and use, in partnership with local communities, and other stakeholders.

From early faith-based conservation of snow leopards, Nepal has come a long way. The interdependence that faiths have spoken of for generations is ever more evident in our world today. These mountain communities have conserved these entire ecosystems through principles of sustainable use, and today, their knowledge and abilities are ever more important to find solutions. Strengthening long-term resilience and conservation stewardship of local communities therefore continues to be a priority for this updated SLCAP. In each strategy, this Plan envisions engagement, partnership and leadership of local communities, noting that success in snow leopard conservation is closely tied to the communities' well-being. This landscape is known to be among the most vulnerable to climate change, and the impacts affect all – nature and people. Accordingly, Nepal has provided leadership by developing and rolling out climate-smart landscape conservation plan for the Eastern Snow Leopard Conservation Landscape and is building on that to prepare and effectively roll out similar plans for the other landscapes. These plans are an opportunity for integrated approach for conservation and sustainable development and aspires to bring together all stakeholders – not only conservation institutions but also those working for people's wellbeing and development, including all tiers of government and their institutions.

PROGRESS, ACHIEVEMENTS, MILESTONES
(Setting Context For Next SLCAP)

3.1 OVERVIEW

3.1.1 POLICY, LEGISLATION, & INSTITUTIONS

3.1.1.1 Policy and Legislation

Nepal has been working on multiple fronts to enhance conservation efforts in the snow leopard landscape, aligned to global commitments of the country. This includes bringing in policies and guidelines that benefit nature, enhancing and adapting them to suit evolving needs, periodically. The snow leopard, listed as Vulnerable on the International Union for Conservation of Nature (IUCN) Red List (McCarthy et al., 2017), and designated as an Appendix I species in CITES, prohibiting international trade of the species. Within the country, the conservation of snow leopards and their ecosystems is guided by National Forest Policy, 2075 BS, Wetlands Policy, 2069 BS, Medicinal plants and NTFP Policy, 2061, National Climate Change Policy, 2076 BS, National Rangeland Policy, 2068 BS, among others.

The Nepal Biodiversity Strategy and Action Plan (NBSAP) 2014-2020 emphasizes priority actions for conserving this species. The species is included in the protected mammals list under the National Parks and Wildlife Conservation Act, 2029 (1973) in Nepal. Poaching or illegal trade in snow leopards are punishable by law – including imprisonment from five to 15 years or a fine from NPR 5,00,000 to NPR 10,00,000, or both. The act also rewards informants with up to NPR 50,000 for aiding in the seizure or arrest of wildlife criminals. Conservation of these ecosystems are also guided by Environment Protection Act, 2076 BS, Forest Act, 2076 BS, and specifically mountain PAs are also guided by Himalayan National Parks Regulations, 2036 BS, National Parks and Wildlife Conservation Regulations, 2030 BS and Buffer Zone Management Regulation, 2052 BS, Wildlife Crime Control Directives, 2080 BS, among others.

Moreover, the Wildlife-Friendly Infrastructure Construction Directives, 2022 (2078) has ensured that the ecological requirements of wildlife including snow leopards are incorporated from the early planning phase for infrastructure construction. Likewise, the Wildlife Damage Relief Guideline, 2080 BS has increased the relief amount for livestock lost to snow leopards and other protected wildlife to a maximum of NPR 60,000 per animal.

3.1.1.2. Institutional Development

Nepal government has dedicated institutions to provide leadership for conservation of snow leopards and ecosystems. The Department of National Parks and Wildlife Conservation (DNPWC) is the prime agency species conservation through protected area (PAs) networks across the country . With 11 PAs (Table 3a) falling within the three snow leopard landscapes, these PA offices do protect and implement conservation activities under the direction and supervision of DNPWC for conservation of snow leopards and their habitats in areas within their jurisdiction.

Likewise, the Department of Forests and Soil Conservation (DoFSC) leads natural resource management and utilization including species conservation in non-PAs; with snow leopard habitat falling in 26 districts (Table 3b) in the three landscapes, the Divisional Forest Offices take the lead role for management and regulation of forest resources and conservation of species under the direction of respective province governments.

Among other institutions, law enforcement agencies provide crucial to control poaching and illegal trade. The National Tiger Conservation

Committee (NTCC), National Wildlife Crime Control Coordination Committee (NWCCCC), and Central, Province, and District-level Wildlife Crime Control Bureau (CWCCB) actively address illegal wildlife trade and poaching of endangered species, including the snow leopard. NTCC and NWCCCC are chaired by the Prime Minister of Nepal and the Minister for Forests and Environment (MoFE) respectively. The Central WCCB is coordinated by the Director General of the DNPWC. Likewise, Province WCCB is coordinated by Secretary of Ministry of Forest, Province Government and District WCCB is coordinated by Senior Conservation Officer or Division Forest Officer of respective district. The Wildlife Crime Control Directives 2080 BS has ensured WCCB formation in all provinces and districts of Nepal to coordinate with law enforcement agencies of respective province governments and districts for curbing illegal wildlife trade across the country including SL range districts.

3.1.2 PROTECTION OF SNOW LEOPARD CONSERVATION LANDSCAPES

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3.1.2.1 Snow Leopard Habitat of Nepal

Snow leopard is a wide-ranging species, and their habitats extend both inside and outside of PAs and often connected through dispersal corridors. Based on expert consultations and habitat modeling, Nepal's snow leopard habitat coverage is believed to be nearly 30,500 sq km. Of this, around 58% (17627 sq km) falls inside protected areas, while nearly 42% falls outside of PAs (Table 2a and 2b). This assessment relied on data from satellite telemetry of two snow leopards in KCA in EHL, and sign detections in the WHL, to create habitat suitability map for the species. This was further used to create cost surface and identify corridors and barriers for species movement in SL landscapes in Nepal (DNPWC, 2017; MoFSC, 2017). As such, the Nepal government is working towards community-led conservation outside of PAs. The new modality being explored prioritizes biodiversity hotspots to be conserved for sustained ecosystem services and community wellbeing, incorporating community's traditional knowledge, beliefs, and values.

Table 3 a			
Potential Snow Leopard Habitat within Protected Areas and Buffer Zones in the three Conservation Landscapes of Nepal			
Snow Leopard Habitat in Protected Area and Buffer Zone			
Western Landscape	**Prime Habitat (sq km)**	**Fair Habitat (sq km)**	**Total Snow Leopard Habitat (sq km)**
Api-Nampa CA	793.59	389.13	1182.72
Rara NP and BZ	0	125.4	125.4
Dhorpatan HR	387.7	435.7	823.4
Shey Phoksundo NP and BZ	2908.3	705	3613.3
Total SL habitat within PAs in Western Landscape	**4089.59**	**1655.23**	**5744.82**
Central Landscape			
Manaslu CA	900.4	256.2	1156.6
Annapurna CA	3481.3	840.1	4321.4
Total SL Habitat within PAs in Central Landscape	**4381.7**	**1096.3**	**5478**
Eastern Landscape			
Gaurishankar CA	623.14	565.56	1188.7
Kangchenjunga CA	1209.1	393.9	1603
Langtang NP and BZ	817.6	444.68	1262.28
Makalu Barun NP and BZ	872.44	415.8	1288.24
Sagarmatha NP and BZ	906.26	155.7	1061.96
Total SL Habitat within PAs in Eastern Landscape	**4428.54**	**1975.64**	**6404.18**
Grand Total (Protected SL Habitat in Nepal)	**12899.83**	**4727.17**	**17627**

Table 3 b			
District-wise potential Snow Leopard Habitat within the three Conservation Landscapes of Nepal			
District	**Prime Habitat (sq km)**	**Fair Habitat(sq km)**	**Grand Total (sq km)**
Western Landscape BAGLUNG	26.57	162.82	189.39
BAJHANG	968.04	554.50	1,522.54
BAJURA	263.97	228.24	492.21
DARCHULA	793.54	389.09	1,182.63
DOLPA	4,653.60	877.94	5,531.54
HUMLA	2,976.72	1,005.88	3,982.60
JUMLA	366.20	348.00	714.20
MUGU	1,146.17	643.35	1,789.52
MYAGDI	358.95	178.42	537.38
RUKUM	280.85	200.76	481.61
Grand Total	**11,834.61**	**4,589.01**	**16,423.62**
Central Landscape DHADING	87.21	109.94	197.15
GORKHA	1,063.59	439.67	1,503.26
KASKI	238.17	155.84	394.00
LAMJUNG	177.81	168.81	346.62
MANANG	1,543.66	273.39	1,817.05
MUSTANG	1,690.91	349.03	2,039.94
MYAGDI	100.42	64.62	165.04
RASUWA	77.81	73.83	151.64
Grand Total	**4,979.57**	**1,635.13**	**6,614.70**
Eastern Landscape DOLAKHA	449.06	330.90	779.96
NUWAKOT	11.67	31.70	43.38
RAMECHHAP	137.16	123.17	260.33
RASUWA	468.02	188.17	656.20
SANKHUWASABHA	665.27	525.34	1190.60
SINDHUPALCHOK	368.85	334.53	703.38
SOLUKHUMBU	1363.54	386.18	1749.73
TAPLEJUNG	1351.79	661.85	2013.64
Grand Total	**4815.62**	**2581.84**	**7397.46**
NATIONAL TOTAL	**21629.80**	**8805.98**	**30435.78**

3.1.2.2 Landscape Approach to Conservation

Conservation of wide-ranging species like the snow leopard needs a landscape approach, often covering areas beyond geo-political boundaries.

In 2012, the transnational Kailash Sacred Landscape (KSL) was designated covering a total area of 31,252 km2 of north-western Nepal, China, and India. Nepal covers about 42.5% of this landscape (an area of 13,289 km2). The KSL Conservation and Development Initiative (KSLCDI): Implementation Plan (2012-2016) and Sacred Himalayan Landscape (SHL) Strategic Plan (2006-2016) and the SHL

Interim Implementation Plan (2010-2014) provided opportunities to implement landscape approach in snow leopard conservation. During these plan period, the Government of Nepal extended SHL to Kali Gandaki River in the west increasing its coverage.

The Chitwan-Annapurna Landscape (CHAL) has been created covering an area of 32,090 km2. CHAL covers the rain shadow of the trans-Himalayan area and the snow-capped mountains of Annapurna, Manaslu and Langtang in the north, descending southwards through diverse topography to the mid hills, Churia range and the flat lowlands of the Terai.

3.1.2.3 Climate-Smart Snow Leopard Landscape Conservation

Climate change has emerged as a pervasive threat multiplier jeopardizing the survival of snow leopards as approximately 30% of snow leopard habitat could be lost from the shifting of tree line chiefly along the southern edge of the Himalayas and in river valleys of the alpine zone (Forrest et al., 2012). Study on Himalayan fir (Abies spectabilis) and mountain birch (Betula utilis) at the high-altitude tree line of Manaslu region in central Nepal Himalayas, reveals that the upward shift of fir at MCA was estimated to be 2.61 meters/year but the upper distribution limits of birch has been stagnant in recent years although its upward migration continued up to the mid-20th century and the studied tree line is changing. Spatial and temporal variations in age structure and regeneration pattern of these two species and their species-specific response to climate indicated that the plant communities at the tree line ecotone in the Nepal Himalayas were sensitive to climate change (Liang et al., 2014; Gaire et al., 2014). Moreover, studies have predicted faster elevational shifts for highland tree species (Maharjan et al., 2023). Retrospective studies in upper Mustang region in the trans-Himalayas of Nepal, showed decline in grasslands and forests by 11% and 42% respectively from 1979 to 2009 (Aryal et al., 2013).

In addition to shrinking spaces, climate change is observed to have many direct and indirect impacts on biodiversity and people of mountains. Uncertain and aggravated precipitation pattern have been reported by communities across Nepal Himalayas, including herds of prey, livestock and even snow leopards, being deluged for instance, in resulting disasters (Farrington and Li, 2024). Instances are also reported of food shortage resulting from climate disasters

resulting in increased conflicts, increase in disease outbreaks, which risk both nature and people. Direct impacts of climate on people's livelihoods including tourism have been reported; in the long-term these impacts may also erode conservation stewardship, further aggravating risks for snow leopards.

Aligned to Nepal's commitment to GSLEP, in 2017, Nepal became the first country to release a climate-smart landscape level management plan for snow leopards. The Snow Leopard and Ecosystem Management Plan – Eastern Himalayan Landscape (SLEMP-EHL) guides integrated conservation and community well-being. Coordinated implementation however has been a challenge; in addition to limitation of geography and resources, the past five years have been a period of learning for Nepal's federal governance system. The country is also preparing a similar plan for the Western Himalayan Landscape (WHL), anticipating greater participation from wider stakeholders in implementing such landscape plans.

3.1.2.4. Infrastructures in Snow Leopard Habitat

Landscape conservation planning approaches are recommended for snow leopard due to their extensive home range and for overall conservation of biodiversity in the region (Forrest et al., 2012). In such situations, consideration should be given to managing snow leopard populations as a metapopulation for long-term conservation of the species. Infrastructures, particularly large linear infrastructures – pose multi-pronged threats to snow leopard ecosystems, and must be constructed minimizing such risks (GLSEP, 2024). An assessment in Nepal Himalayas have indicated that while threats from infrastructures are minimal currently, these are likely to subject snow leopard habitats to high degree of fragmentation and human disturbances in the future (WWF, 2018).

3.1.3 CUTTING-EDGE RESEARCH TO INFORM CONSERVATION MANAGEMENT

Globally, snow leopards remain one of the least studied big cats. An assessment report on '100 years of snow leopard research' found this research only covered 23 percent of the snow leopard's extant range. Less than 3% of the global range has robust data on snow leopard abundance. Nepal has recently been one recognized as one of the global leaders to advance research on snow leopards through the

implementation of cutting-edge conservation technologies.

Within the country, diverse research is being carried out to guide conservation. While some are published in peer-reviewed journals, many action-oriented research led by government bodies directly feed into ground conservation activities. In addition to helping inform conservation, this research provide opportunities to enhance community's conservation knowledge and stewardship, contribute to livelihood, improve park-people relationships, among others.

3.1.3.1 Population Status of Snow Leopards in Nepal

The snow leopard is the apex predator of the Himalayan ecosystem. They are found within and outside mountain protected areas (PAs) of Nepal (Figure 2). Extending from Kangchenjunga Conservation Area towards the country's northeastern corner to Api Nampa Conservation Area towards the northwest, Nepal's snow leopard habitat is divided into three snow leopard conservation landscapes – Eastern, Central and Western (DNPWC, 2017).

Nepal holds a significant proportion of the global snow leopard population with about 301-400 individuals (SLCAP, 2017). The population density of snow leopards in Nepal is found to be extremely variable, from 10-12 animals per 100 sq km in Langu Valley to fewer than one per 100 sq km (Jackson and Alhborn, 1990 in DNPWC, 2012).

Population monitoring through camera traps and molecular genetics have been conducted in various parts of Nepal. In Annapurna and Manaslu CAs in central snow leopard conservation landscape, using DNA analysis, average density of snow leopards is estimated at 0.95 individuals/100 sq km, with total population of 48 individuals (Chetri et al., 2019). In GCA, the first camera trap record of snow leopard was also received (Koju et al., 2020). In KCA, researchers estimated a population of 23 snow leopards (DNPWC, 2013). Recent camera trap assessments have indicated estimates of around 2.21/100 sq km in SPNP and 1.5/100 sq km in regions outside PA in eastern Dolpa (DNPWC, 2023; DFSC, 2024).

While some studies have recently been undertaken within pockets of snow leopard habitats in Nepal, robust national population and habitat studies remains a priority for this updated SLCAP. Accordingly, the DNPWC and DFSC organized a meeting among researchers and conservation organizations in May 2024 to share population research findings and following GSLEP's PAWS approach to help consolidate Nepal's national snow leopard population benchmark. The meeting ended with the creation of a working group to consolidate the data on population available from around the country, work in close coordination with GSLEP to identify gaps and guide on the way forward for national population estimation.

A citizen scientist checking a camera trap.

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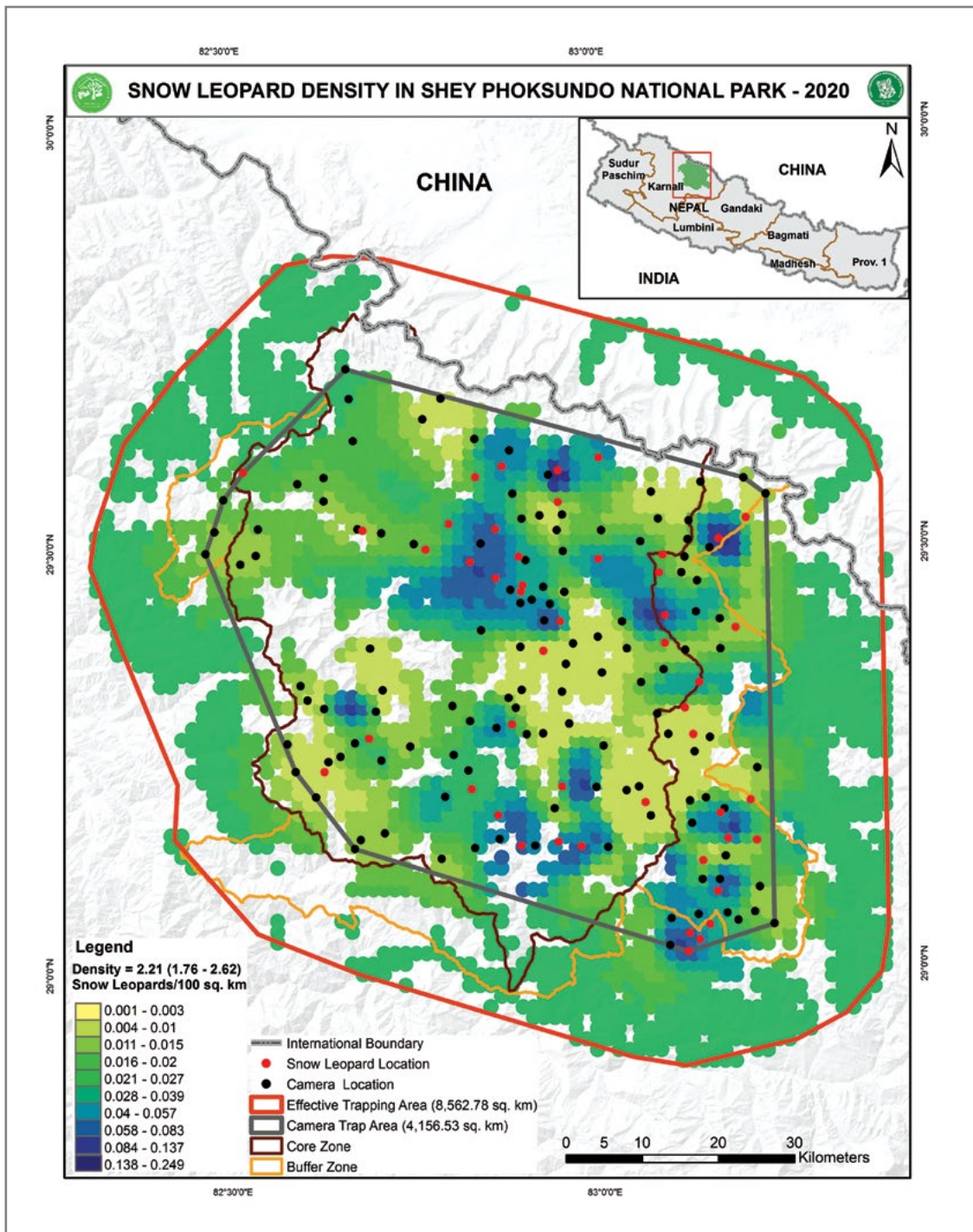
Figure 3: Snow leopard density within Shey Phoksundo National Park.

3.1.3.2 Status of Snow Leopard Prey

The abundance and density of snow leopard's natural prey also varies across their range in Nepal Himalayas. A relatively higher range was reported in Manang (Nar Phu and Neshyang valleys) with a range of 6.0-7.8 individuals/ km2 (Filla et al., 2021), based on surveys conducted in spring and autumn of 2019. In SPNP, surveys conducted in autumn indicated stable population trends of 3.5, 3.6 and 4.1 blue sheep/ km2, in 2020, 2021 and 2022

respectively (DNPWC, 2023). In Manaslu Conservation Area, 3.8 blue sheep/km2 and 1.8 Himalayan tahr/km2 were reported within two and one of three blocks respectively, of the study site within Chhekampar VDC (Devkota et al., 2017). In Dhorpatan, 1.8/km2 was reported within two blocks (Aryal et al, 2014), while within KCA, based on 2012 data, prey density of 2.3 blue sheep/km2 was estimated (Thapa et al., 2021).

3.1.3.3 Co-predators in Snow Leopard Landscapes

Another equally important aspect of snow leopard ecology that needs to be considered to devise sound conservation strategy is its interaction with other co-predators. The snow leopard and common leopard share prey species, with a dietary overlap of about 69% (Lovari et al., 2013a). Since both are similar in size and have similar food habits, these species will have to contend with each other if they live in sympatry (Lovari et al., 2013b). Other sympatric predators such as wolves, lynxes, red foxes, and brown bears with occasional occurrences of dholes, and golden jackals should also be taken into consideration for conserving snow leopards and managing prey bases (Subba et al., 2016).

Comparative study of the diets of the sympatric Snow leopard and Grey wolf (Canis lupus) using standard micro histological analyses of scats collected from the western complex of Nepal Himalaya revealed one of the highest recorded contributions of livestock to the diet of top predators (55% for Grey Wolf and 39% for Snow Leopard) and high dietary overlap (0.82) indicating potential exploitative or interference competition (Shrestha et al., 2019).

3.1.3.4. Movement Ecology

Efforts to understand snow leopard movement ecology has been taken in Nepal since the 1970s, providing crucial insights into the lives of these cryptic species. In the past decade and half, eight snow leopards have been studied through satellite telemetry in KCA and SPNP. These yielded average annual home range estimates (MCP 95%) of 1031.6 sq km for male, and 730 and 211 sq km for two females (KCA, 2019), and a range varying from 31.7 sq km to 122.6 sq km for four males in SPNP (Figure 4). The collared snow leopards in KCA showed transboundary movement into India and China (Figure 5), while the movement of SPNP snow leopards were largely localized. The SPNP snow leopards were studied for a period of four to eleven months, till the collars provided mortality signals. While the precise cause of death remained unclear, circumstantial evidence indicated natural deaths and possible conflict-related retaliatory killing.

Figure 4: Home Range (MCP 95) of the collared snow leopards from SPNP (left) and KCA (right).

3.1.3.5 Snow Leopard Diet

Few studies have been carried out in Nepal to assess food habits of snow leopards, and the predator-prey relationship in recent years by employing non-invasive molecular genetic analysis (Karmacharya et al. 2011, Wegge et al, 2012). These studies have indicated that livestock contributing a bulk (from 27 to 43%) of total diet of snow leopards (Chhetri et al., 20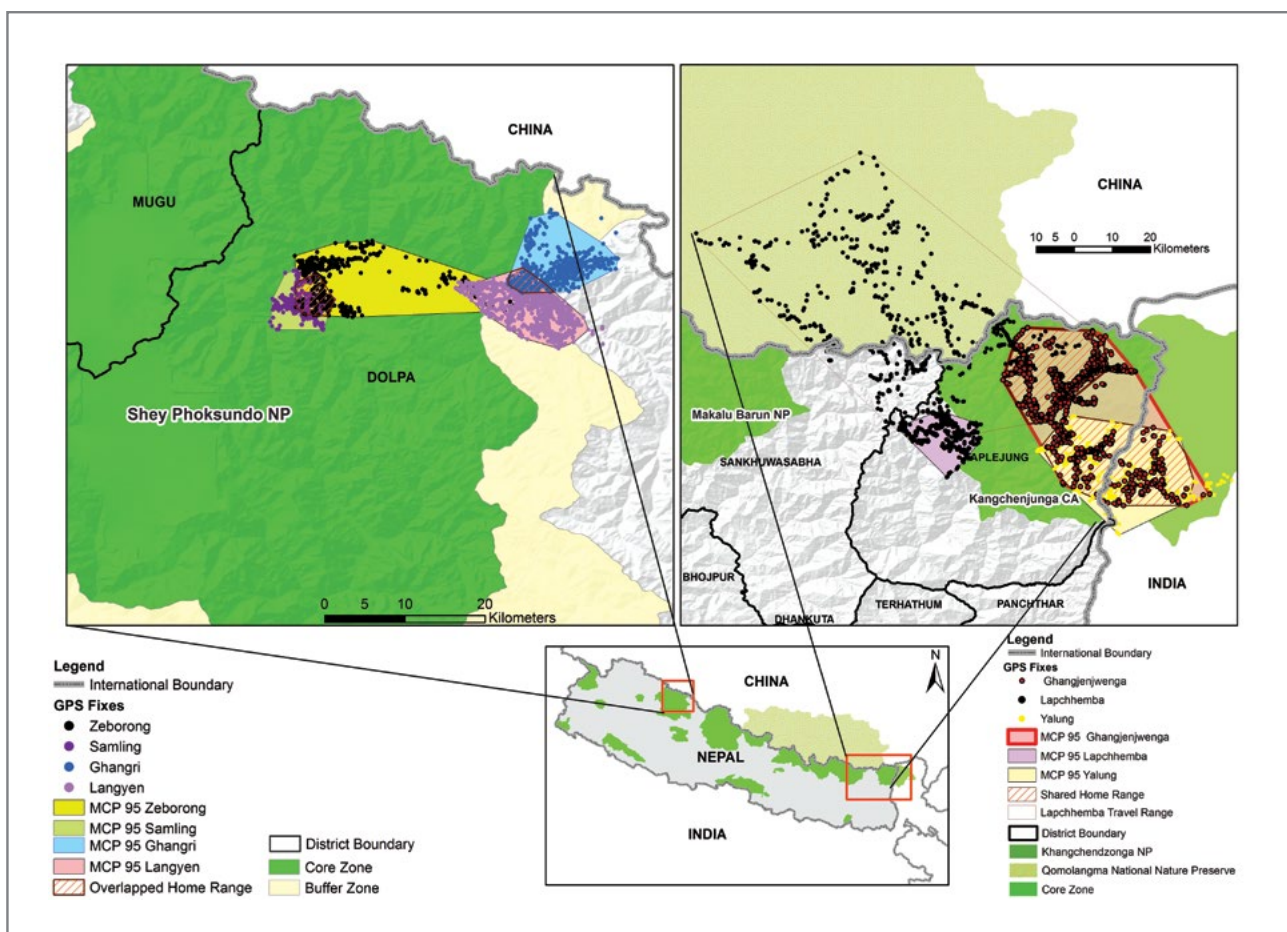17; Shrestha et al., 2018; Shrestha et al., 2019; Thapa et al., 2021). This is also substantiated through interview of local herders attributing to 96% of respondents reporting livestock losses to snow leopards (WWF 2018). Concurrently, there is also a positive association between prey density and their contribution to snow leopard diet (Devkota et al., 2013; Khanal et al., 2020).

3.1.3.6. Human-Snow Leopard Interactions

Traditionally, mountain communities of Nepal thrived alongside snow leopards, revering them as Gods. Preserving this traditional coexistence embedding community knowledge and modern technology and understanding will assure conservation sustainability.

A major challenge to be addressed to lay foundation for conservation sustainability is managing conflicts. With livestock rearing a major source of livelihoods for these communities, they face losses of their animals to the predators. Snow leopards kill livestock individually but occasionally, incidences of mass killing are recorded (Chetri, 2014; Thapa 2015). Such losses have been known to aggravate retributory killings of snow leopards (Oli et al., 1994; Khatiwada and Ghimirey, 2009; Shrestha et al., 2019), which is also believed to fuel illegal trade (Nowell et al., 2016). Poaching of snow leopards is relatively high in the WHL than in other parts of Nepal Himalayas (Khatiwada & Ghimirey, 2009; GGN, 2014).

Moreover, with new opportunities, access, and policies, many of these remote alpine habitats where snow leopards inhabit face over-exploitation of medicinal plants and over-grazing causing wildlife habitat loss and degradation in rangelands (Miller, 1998). Such loss and degradation also have negative impacts on local communities' long-term well-being.

3.1.4 COMMUNITY ENGAGEMENT IN SNOW LEOPARD CONSERVATION

Nepal government has prioritized community participation in conservation of snow leopards. This is not only important for long-term conservation through local stewardship, but also provides immediate practical benefits to local communities. Snow leopard habitats are extremely remote and difficult terrains, making local communities that are adapted to these landscapes the most important stakeholder.

Considering logistical complexity, unlike in other more accessible parts of Nepal, conservation outreach is challenging in mountains. Most often, many communities are unable to access federal government benefits. While efforts are being made towards improving governance, this can be sped up with simultaneously capacitating community members and institutions. Accordingly, long-term sustained efforts towards snow leopard conservation in Nepal attempts to increase community awareness, capacity, and stewardship on conservation. While doing so, it is extremely important to acknowledge the socio-economic contexts of the community, and accordingly, community's well-being must be the priority to ensure their meaningful and sustained engagement.

3.1.4.1 Community Development

Through various channels, conservation funds are ploughed back into community development by government bodies. This includes about 30-50% of PA revenue being invested in buffer zone communities to address their community-level development priorities. Such investments are made in a range of development activities that directly or indirectly ensure holistic well-being, including improving access, communication, and livelihood opportunities. Helping secure local livelihoods and assure growth opportunities is crucial to ensure community-government partnership for conservation.

3.1.4.2 Community knowledge in conservation planning

Community's role in conservation as implementers cannot be stressed enough. However, it is equally important to acknowledge their role as co-planners for conservation and sustainable development. Contextually, Nepal's

mountain regions are particularly different from other regions; even within the mountains, stark circumstantial differences mandate site-specific planning.

Remote mountain communities of Nepal Himalayas have lived in these landscapes, sustainably using the limited resources, and adapting to fluctuations brought about by geopolitical and socio-economic changes. Nepal government has increasingly stressed on the integration of traditional ecological knowledge of communities in natural resource management (GoN, 2012). In line with such policies, conservation approaches have engaged local communities as co-designers, either directly through discussions and meetings, or indirectly – documenting community views and knowledge, consolidating and incorporating them in conservation projects.

For instance, DNPWC/SPNP-WWF project has relied on local knowledge to design, adapt and implement snow leopard conservation. Specific efforts have been made to document traditional ecological knowledge (TEK) with the aim of designing integrated habitat management strategies. The project has also helped visits of federal policy makers on the ground, and that of local community leaders to Kathmandu, to help align policies with grassroots needs and realities.

3.1.4.3 SLCC and Citizen Scientists in Wildlife and Habitat Monitoring

To facilitate research and conservation in the difficult terrains that snow leopards inhabit, community youth have been trained and mobilized as citizen scientists, referred to as SLCC [Snow Leopard Conservation (sub-) Committees] generally. These efforts have had mutual benefits to both the community and conservation workers. On one hand, their engagement has helped enhanced community's ecological understanding of snow leopards and other wildlife, provided newer avenues for livelihood; on the other side, and importantly, their role has been crucial in supporting PA/DFO authorities, researchers, organizations, implement research and conservation aiding in improved management of Nepal Himalayas.

Since the formation of SLCCs in ACA and KCA, several new SLCCs have been formed in other mountain PAs including LNP, MCA, SPNP to engage local people in the conservation of iconic and other species, and their habitat and prey species (WWF, 2015). Community youth have been capacitated as citizen scientists or SLCCs in snow leopard habitat outside PAs even in the remotest districts such as Humla, Mugu and Dolpa.

Other than SLCC members, interested individuals trained as citizen scientists also aid in wildlife monitoring. Both SLCC and citizen scientists are trained in GPS handling, camera-trapping, and monitoring of snow leopards and their prey. In KCA, all SLCC members and over 20 citizen scientists, and in SPNP- around 100 individuals have been capacitated through various skill development trainings, including operating camera-traps and data recording system (WWF, 2013- 2022; KCAMC, 2015; KCA, 2019).

While initially conceptualized as individuals to aid wildlife research and monitoring, citizen scientists/SLCCs have grown to become a pivotal figure to lead conservation activities in these remote regions. In SPNP for instance, citizen scientists/SLCCs have not only aided successful research undertakings, but also aided implementation of conservation programmes. Accordingly, SLCCs are also actively involved in educating people about the importance of snow leopard conservation in and around protected areas, aiding in relief processing for conflict, supporting habitat management, and other diverse activities. While role of citizen scientists has been crucial for conservation, such engagement has also capacitated local leadership in public service, and contributed to bring about sustainable conservation; for instance, Shey Phoksundo Rural Municipality is currently chaired by former SLCC, and several SLCC members were elected chair and members of wards in the 2021 federal election. Regular post-formation support including capacity building is crucial for smooth running of SLCCs.

3.1.4.4. Conflict Management With Community Leadership

Conflict continues to remain one of the major challenges for snow leopard conservation globally. Managing conflicts sustainably requires holistic and long-term efforts to ensure communities coexisting with wildlife have sufficient understanding and ability to reduce conflict losses, to tolerate some losses as natural, to financially offset losses through relief or livelihood diversification, among others.

Accordingly, in 2006, the first community-based Livestock Insurance Scheme (LIS) was initiated in KCA to mitigate human-snow leopard conflict. LIS operation guidelines were developed; an endowment fund was created and annual premium for insuring livestock was collected from owners, as per the guidelines. The endowment fund and premium are the main sources of the livestock insurance fund amounting to a total of NPR 9,780,000 till 2022 in KCA (KCAMC, 2022). A similar LIS has also been formed in ACA. Operated by the local communities, the fund allows quick relief to owners for livestock killed by snow leopard. With the help of this scheme, retaliatory killings across the country have been reduced (Gurung et al., 2011).

Likewise, SPNP has been working with communities on holistic conflict management, in collaboration with WWF Nepal. To reduce 'surplus killing' by snow leopards, SPNP is helping the community improve livestock corrals to make them inaccessible to wild predators such as snow leopards, using mesh wire roofing. For contextual practicality of transportation challenges and household finances, the project has focused on training local community on mesh wire fabrication, which aims to generate livelihood opportunities, and ensure access to such opportunities for the wider community. Currently, the park authorities are helping the community by procuring and transporting wire rolls for corral improvement. Similarly, to mitigate financial losses, LIS has also been institutionalized in SPNP. In 2018, effort was made to integrate the LIS with Nepal Government's WDRG, to leverage strengths of the two provisions and address limitations. The park has helped community access government WDRG relief by systematizing community-run LIS funds. Between 2019-2022, SPNP provided relief from WDRG amounting to nearly 2 crore NPR to conflict victim households through WDRG-LIS integration, even as the communities' LIS funds increased to 1.5 crore NPR. To ensure that wider community understand these conflict management measures and benefit from them, SPNP is also running focused conflict management mass awareness drives mobilizing SLCCs and using limited communication approaches such as posters in local language. The project is also working to help the community tap into other livelihood opportunities including focusing on local products and services for nature-based tourism, among others.

3.1.4.5 Faith-based approach for snow leopard conservation

With increasing challenges facing our world today, global institutions have increasingly acknowledged the need for wider partnerships and an integrated approach to safeguard nature. The United Nations through its Faith for Earth initiative, CITES through resolutions on traditional medicines, are among many who have advocated partnership with faith institutions and leadership for conservation.
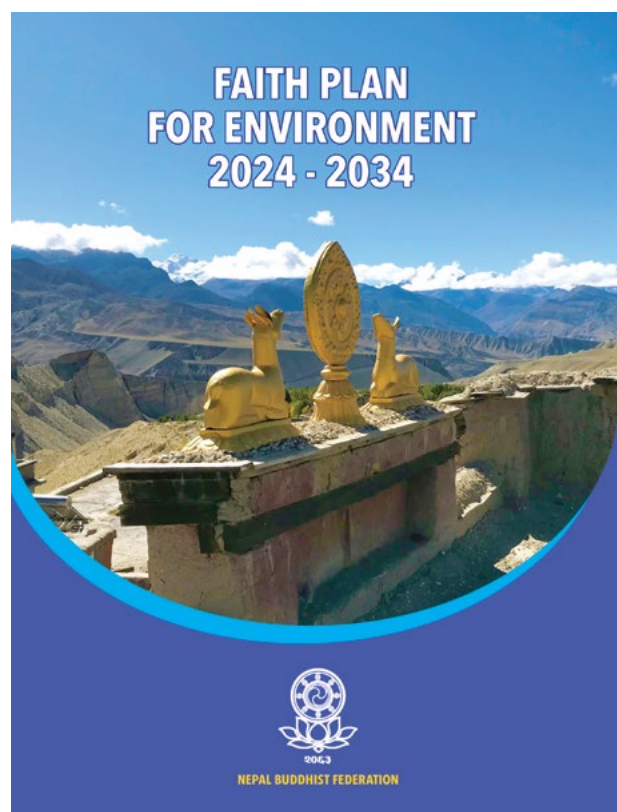
Nepal's conservation work with faith institutions is not new; seminal work with traditional medicine ('Sowa Rigpa') and their practitioners – faith leaders called 'Amchis' were initiated in the 1990s and early 2000s, to safeguard and sustainably harvest and use medicinal plants found in the Himalayas.

These works have laid the foundation to systematize one of the few priority livelihood options available to mountain communities that share habitat with snow leopards. With deep insightful knowledge on medicinal plants, their sustainable use and preservation, faith leaders can play a key role in safeguarding the mountain habitats. Moreover, with their reach and influence over the communities, their partnership can help galvanize whole communities towards conservation. During

the period of the SLCAP, some key associations were initiated with faith groups to mobilize their support in conservation. Within this timeframe, Nepal's Buddhists have also unveiled the ten-year Faith Plan for Environment, 2024-34, which among others aims to support GoN's efforts to conserve the snow leopards and their ecosystem (NBF, 2024).

3.1.4.6 Conservation Awareness

Mass awareness about the importance of preserving wildlife is critical for success and sustainability in conservation. October 23rd is celebrated as the 'International Snow Leopard Day' globally to mark the adoption of the landmark Bishkek Declaration on the conservation of this elusive cat. Other than general awareness, specific technical capacity building programs were organized for specific target groups including local communities and staff to enhance their knowledge and skills for effective conservation.

3.1.5 TRANSBOUNDARY, REGIONAL & INTERNATIONAL COOPERATION

Nepal shares international borders with China and India. Accordingly, snow leopard habitats are contiguous across both neighbors. Nepal is also a member of the GSLEP Program, an initiative of 12 snow leopard range countries for collaborative conservation and to promote snow leopard conservation globally. Other than that, Nepal is state party/member to CITES, CBD, RAMSAR, IUCN, and GTF, showcasing its commitment for the conservation of biodiversity from local to global levels.

To enhance international cooperation, a specific project 'Transboundary cooperation for snow leopard and ecosystem conservation' was started in 2017, to build capacity at different levels for trans-boundary conservation of the snow leopard focusing on Central Asia.

Nepal and China have signed a MoU for cooperation in conserving biodiversity of the region, making provisions for regular meetings between high and senior officials of the two countries. Officials of PAs and district forests situated along the border also occasionally meet their counterparts to address field level issues. However, many challenges including COVID has affected sustainability, and therefore

Various conservation education, awareness campaigns and outreach programs have been conducted targeting a wide range of audiences from the grassroots level including local communities and schools, to policy and decision-making level. 'Snow Leopard Atlas, Nepal' was published in 2013 to spread awareness on the plight and status of the species. A Nepali publication titled 'Hiun Chituwa ko Samrakshan (Conservation of Snow Leopard)', Eco-club formation and strengthening, roll-out of Green School Guidelines, development of curricula on conservation for schools, including their translation in Bhot language is being rolled out, in various parts of the country. Use of sports as a platform to generate awareness has been done in KCA, ACA, SPNP, among others. Formation and mobilization of the snow leopard scouts committee has been done by including students of the Greenforce Club, a student environmental group operating in the schools of Kagbeni, Lupra, Jomsom, Syang, Marpha, Kowang, & Ghasa, etc.

remains a priority for this SLCAP.

Nepal and India hold consultative meetings regularly to share experience and discuss matters of common interest in conservation. Regional Trans-boundary meeting is also being held with officials from the Indian state of Sikkim. Nepal has been advocating and working for transnational cooperation, through the designation and declaration of landscapes like SHL and KSL. Regional cooperation in controlling wildlife trade is being facilitated through the South Asia Wildlife Enforcement Network (SAWEN) including eight countries (Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka), with its secretariat based in Nepal. SAWEN organizes various trainings, workshops, and annual meetings. Efforts are ongoing to institutionalize SAWEN and develop a regional level capacity building plan. The SAWEN focal persons meeting was organized in Nepal in November 2015. The fourth meeting of SAWEN-an inter-governmental wildlife law enforcement agency was in Kolkata, West Bengal (India), 2018. General meeting of SAWEN was held from 2-3 Nov 2023 in Male, Maldives. Meeting discussed the SAWEN strategic plan 2022-2026 which has opened a new arena for future collaborative actions together with focused area and themes

supported by implementation plan (SAWEN secretariat, DNPWC 2022). Six proposals, including tracking of wildlife smuggling routes, review of existing laws and structure for the organization were tabled during the meeting. Participating countries also adopted many resolutions to curb wildlife crime in the region. They agreed on having an operational framework for strengthening the regional body to combat wildlife crime.
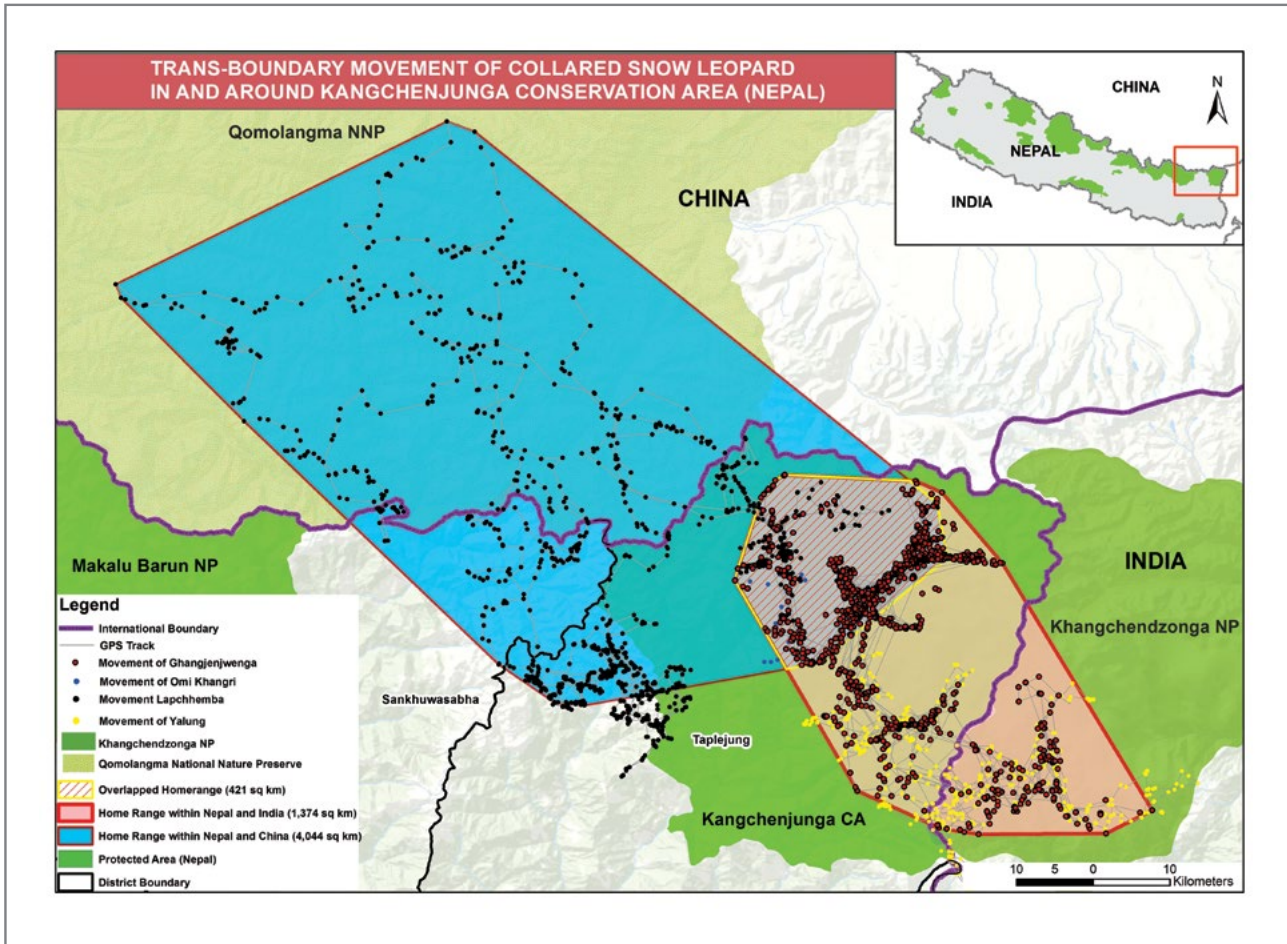
Figure 5: Transboundary movement of the collared snow leopards from KCA highlighting need for collaboration among bordering nations for conservation.

3.2 REVIEW OF THE ACTION PLAN 2017-2021

Nepal has been in the forefront of snow leopard research and conservation globally, playing a crucial role in securing the future of this species. Many critical actions guided by SLCAP (2017) were initiated and/or being implemented by stakeholders, while some were not initiated (Table below).

Table 4 Outlook of Status of Activities' Implementation of SLCAP 2017-2021		
Objectives and Actions identified in SLCAP, 2017	**Status of implementation**	
	Not Initiated	**Ongoing/Completed**
Objective 1: Enhancing knowledge on snow leopard's ecology, their prey and habitats through research and monitoring		
Actions		
• Estimate nationwide snow leopard population using cutting-edge technologies and best available science; establish and update DNA database of snow leopard through non-invasive genetic analysis	▓	
• Update national protocol for 'Monitoring Snow Leopard and their Prey base in Nepal Himalayas'		▓
• Promote citizen scientists and build capacity to undertake snow leopard and prey study and other conservation initiatives		▓
• Continue extensive monitoring of snow leopards in eastern landscape and initiate similar GPS satellite telemetry studies in central and western landscapes		▓
• Research on sympatric carnivores (wolf, common leopard, wild dog, and jackal) to understand resource competition mainly diet and habitat use		▓
• Research on snow leopard habitat use with respect to climatic and anthropogenic disturbances		▓
• Research on blue sheep-habitat relationships and their feeding ecology, mapping their key habitats and interaction with livestock	▓	
• Conduct study on impacts of changing traditional pastoralism system on wildlife habitats and rangelands productivity		▓
• Pilot drone technology to monitor snow leopard's prey and status of their habitat		▓
• Establish permanent sampling sites/plots in snow leopard habitats for regular monitoring of the key species such as Himalayan tahr, blue sheep, marmot, and hare and status of habitat.		▓
• Conduct studies on the socio-economic and cultural drivers of human - snow leopard interactions		▓
• Carry out periodic monitoring of snow leopard and prey population status to evaluate and guide conservation initiatives		▓
• Support staff, youth and other citizens for Certificate and Diploma in Wildlife Management courses	▓	

Actions		
• Carry out conservation education and outreach programs extensively for community awareness		▨ (tan)
• Create a central database of snow leopard information to aid researchers and conservationists	▨ (brown)	
• Capacitate local people and staff on research and monitoring of snow leopard, their prey and habitat		▨ (tan)

Objective 2: Improving Habitats and Corridors

Actions		
• Identify, inventory and map different types of habitats (rangelands, wetlands, forests etc.)	▨ (brown)	
• Identify critical corridors along snow leopard habitat range in Nepal Himalayas		▨ (tan)
• Identify important snow leopard habitats with respect to climate and human-caused stressors		▨ (tan)
• Continue active monitoring and scientific management of rangelands		▨ (tan)
• Assess status and maintain wetlands		▨ (tan)
• Initiate valuation of ecosystem services of the snow leopard habitats	▨ (brown)	
• Initiate intensive management of climate- resilient habitats that are susceptible to human disturbances including unsustainable harvesting of NTFPs	▨ (brown)	
• Initiate a study on impact of NTFPs collection (including Ophiocordyceps) in key snow leopard hotspots		▨ (tan)
• Assess status of infrastructure and develop policy brief to reduce impacts on snow leopard habitat		▨ (tan)
• Support studies on impacts of land use change and mega infrastructure development on snow leopard and prey base	▨ (brown)	

Objective 3: Mitigating human-snow leopard conflict through community engagement

Actions		
• Initiate mapping spatio- temporal hotspot for human-snow leopard conflict across Nepal Himalayas		▨ (tan)
• Conduct attitude perception of local people on snow leopard across Nepal Himalayas		▨ (tan)
• Research on the scale, extent and intensity of human wildlife conflict mainly focusing on snow leopards and retaliatory killings		▨ (tan)
• Develop human-snow leopard conflict mitigation strategy across Nepal Himalayas; explore and pilot innovative technology to reduce human-snow leopard conflict		▨ (tan)

Actions		
• Capacitate herders in managing livestock more effectively and reward best practices		▨
• Develop and implement integrated livestock/ rangeland management plan	▨	
• Undertake a comprehensive study to review sustainable trophy harvest plan (blue sheep) for KCA	▨	
• Review and improve existing community-based insurance scheme and replicate it in other areas in the snow leopard landscape		▨
• Review and improve relief delivery mechanism		▨
• Provide conflict resolution and management training to staff and communities		▨
• Develop nature-based tourism plan for high priority mountain PAs		▨
• Organize campaigns to raise awareness on conservation of snow leopards		▨
• Support for alternative livelihoods for local communities including snow leopard victim families		▨
• Support for effective predator proof corrals		▨

Objective 4: Reducing wildlife crime on snow leopard and their prey through effective law enforcement

Actions		
• Initiate investigative study on snow leopard poaching and illegal trade on its body parts in all three snow leopard landscapes	▨	
• Pilot cutting-edge surveillance schemes such as SMART, DNA profiling, UAVs to curb wildlife crime		▨
• Provide capacity building trainings (Investigation, Scene of Crime, etc.) to protected area and DFO staff, Nepal Police and Nepal Army engaged in curbing wildlife crime		▨
• Develop anti-poaching strategy and operation protocol for snow leopard protection in Nepal	▨	
• Train relevant stakeholders on CITES implementation		▨
• Conduct awareness raising programs at community level on conservation related laws and fighting against wildlife crime		▨
• Strengthen intelligence network (Informants, information gathering, purchasing information and communication and travel, establishing wildlife crime database)		▨
• Form and strengthen APOs and CBAPUs in protected areas and district forests		▨
• Strengthen Wildlife Crime Control Bureau Units in all snow leopard bearing districts		▨

Objective 5: Strengthening transboundary, regional, and international cooperation and support		
Actions		
• Organize regular meetings and sharing of meeting minutes for implementation of decisions, capacity building trainings and workshops at transboundary and regional level		
• Participate in international convention meetings, workshop, and training		
• Facilitate collaborative trade research and monitoring across political borders		
• Initiate coordinated patrolling and illegal wildlife trade control along international border between Nepal, China, and India		

3.3. MAJOR LESSONS

A. Community participation is crucial for snow leopard conservation success: While this is true for all flagship species, with snow leopards, particularly, community participation becomes key for practical reasons. Without community participation, planning and implementing research or conservation interventions becomes practically unfeasible. All conservation institutions – government and non-government - must therefore build a working relationship with local communities and engage them.

B. Conservation leadership through citizen science: Research is not only important to inform conservation, but also provides opportunity to learn from local communities and help them understand the newer perspectives in conservation. Alternately, this also provides a growth opportunity for youths from mountain communities, with citizen science providing a platform. Many youths from mountain communities who have been engaged as citizen scientists to help their communities, have earned greater trust, and are serving higher role in local governments to continue helping their communities.

C. Capacitating community to access government services: Alongside extending government outreach, expediting community access to government services, strengthening community institutions can be extremely crucial. An approach tried in SPNP, adapting, and strengthening community-run Livestock Insurance Scheme (LIS) has been successful in ensuring community's access to government's wildlife relief funds. Such measures can be replicated across mountain landscapes to improve remote communities' access to government relief.

D. Motivating frontline staff working in remote mountains: For improved relations between government and community, frontline staff working in remote mountains can play a key role. The frontline staff work in difficult conditions with limited access to modern amenities, field gear, equipment, and incentives. Sensitization to local socio-cultural contexts, capacitating them to support community in dealing with issues related to nature, and creating a more motivating environment will be very useful.

E. Developing synergy with diverse stakeholders, especially local governments, will ensure improved results and sustainability: Collaborative and concerted efforts among stakeholders mainly local government, buffer zone institutions, protected area authority, province government and private sectors are essential for reducing wildlife crimes and human-wildlife conflicts. With the new governance structures devolving power, local governments are an important ally for conservation and community wellbeing. In remote mountains, local governments are working towards community well-being; close coordination with them will be beneficial for both people and nature.

F. Contextual adaptation of policies and guidelines: Nepal government's policies and legislations are directed to ensure equitable rights and benefits to all. However, often mountain contexts are different; sometimes, these differences create hurdles in implementation requiring contextual interpretations to achieve the objectives. While periodic amendments are important, it may also be important to internalize the inherent objectives of the policies and adaptively implement as allowed by the government's legislations, to bring these policies to practice.

THREATS, CHALLENGES AND OPPORTUNITIES

4.1. PERSISTING THREATS

4.1.1 Human-wildlife conflict

Conservation conflict over livestock depredation is one of the key drivers of large mammalian carnivore declines worldwide. Mitigation requires informed strategies, guided by reliable knowledge of factors influencing depredation. Wild prey and livestock abundance are among these factors influencing the extent of livestock depredation (Khanal et al, 2020). Mountain communities of Nepal, following faith values, accept some livestock losses as part of their coexistence with wildlife. However, heavy losses, particularly resulting from mass killing of livestock by snow leopards (Thapa 2021; Shrestha and Gurung, 2022) can cause enormous financial strain on individual households. With reliance on livestock herding and limited external support available, particularly in remote snow leopard areas, extreme frustrations are known to result in retaliatory killing of snow leopards, which is one of the gravest threats to the species across its global range (Oli et al., 1994; Mishra, 1997; Jackson and Wangchuk, 2004). Minimizing retaliatory killings is thus essential for snow leopard conservation, particularly as they are also known to fuel illegal trade (Nowell et al., 2016).

4.1.2. Wildlife Crime

Hunting for trade (Theile, 2003; Maheshwari and Niraj, 2016), (ii) retaliatory killing due to livestock depredation (Nowell et al., 2016), and (iii) opportunistic killing (Paltsyn et al., 2012) are the three stressors driving the poaching of snow leopard. Poaching and illegal trade of snow leopard are occasionally reported from different parts of the country. Effective control of illegal trade is a challenge due to porous international borders, limited intelligence network, inadequate staff, under equipped anti-poaching operations and CBAPUs in the remote mountain PAs. Opening of new trade routes to Tibet Autonomous Region (TAR), China is also likely to further complicate illegal trade control. Newly established district WCCB units of respective PAs need capacity building for better functioning. Field-level trans boundary meetings and information sharing must also be improved. Also, creating a sound reference library and standardization of investigative protocols could be important first steps to achieve the global objective. Similarly, a systematic demand reduction campaign for the snow leopard products in the regions known for high demands could be an important strategy to save the species from poaching and illegal trade (Maheshwari & Niraj, 2018).

4.1.3 Habitat Fragmentation, Loss, and Degradation

A widespread human intrusion coupled with anthropogenic land uses can potentially convert and fragment the continuity of snow leopard habitats (ICIMOD, 2016), splitting ecological connectivity for snow leopards and affecting population perseverance. There is persistent threat from haphazard infrastructure development, particularly construction of road networks. In Nepal, there is growing consensus that North-South connectivity is vital for Nepal's economic growth, especially to benefit from fast growing economies of India and China, and so, road constructions are accelerating along the northern boundary (figure 6) (WWF, 2018).

An assessment of infrastructures in snow leopard habitat of Nepal has indicated increased fragmentation risks, particularly from linear infrastructures – the North-South connectivity, which is seen as crucial for Nepal's economic growth (WWF, 2018). If not planned considering snow leopards' ecological requirements, these infrastructures may fragment key habitats in Nepal, endangering the species and their ecosystems further.
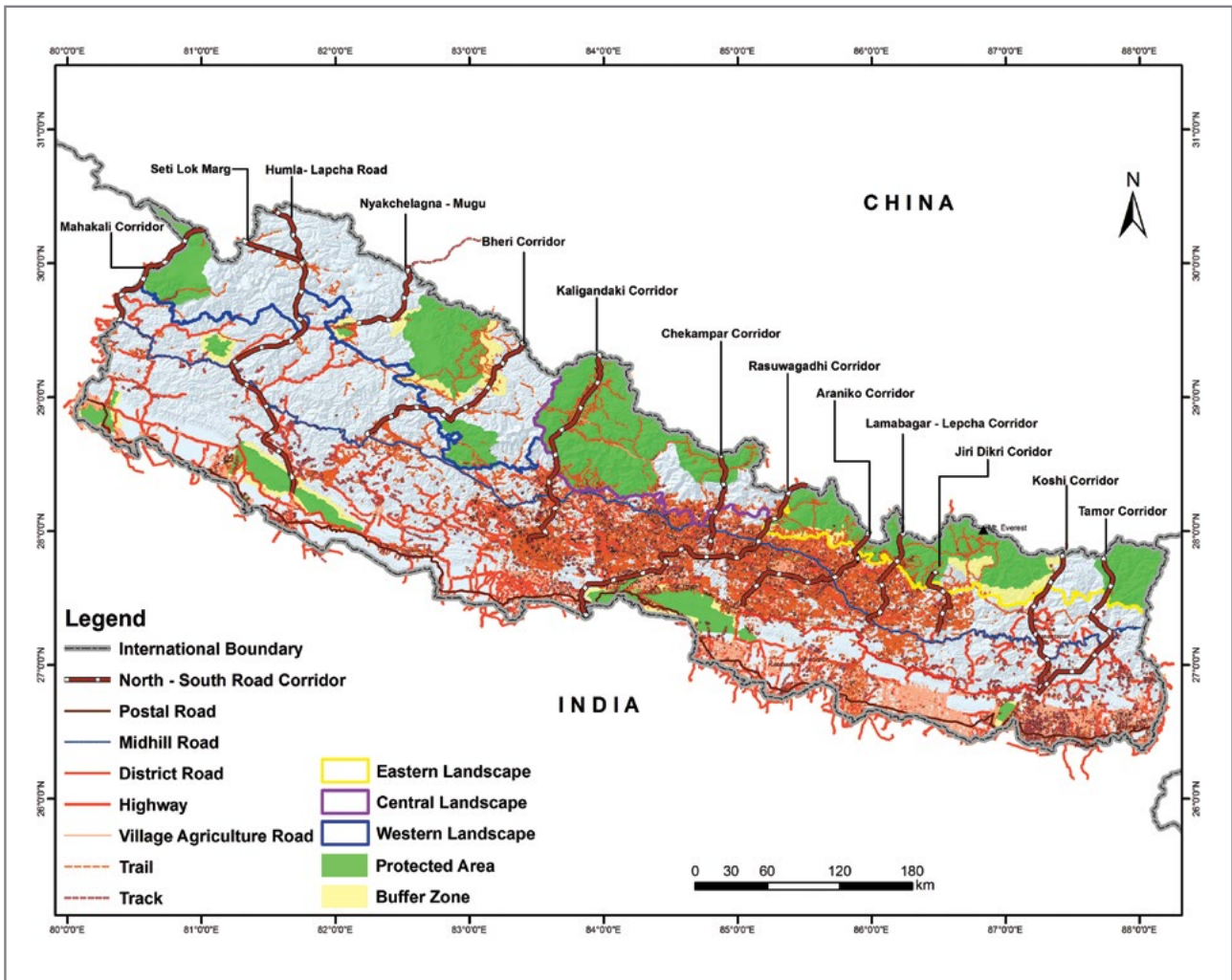
Figure 6: Existing and Potential Road Network in Nepal.

Unsustainable extraction of NTFPs is also aggravating habitat loss and degradation in snow leopard range. Mass collection of Yarsa gumba (Ophiocordyceps sinensis), a species endemic to the Himalayas and Tibetan Plateau has adversely impacted snow leopard habitat. Rangelands are considered critical ecosystems in the Himalayas. They occupy about 60% of the Himalayan landscape (ICIMOD, 2012). These critical habitats have been affected by the intrusions of woody species in sub-alpine and alpine grasslands posing a threat to the diversity of rangelands, though this may not affect the total richness of flora (Sharma et al., 2013; MoFSC, 2014). Mountain rangelands in some parts of Nepal also face pressures from increasing livestock numbers.

4.1.4 Loss of Prey

Hunting and retaliatory killing for crop raiding continues to pose risks for blue sheep - the principal prey of the snow leopard. Feral/ guard dogs are also recognized as a threat. Intensive patrolling to minimize this loss has been hindered by limited staff, inadequate field equipment and financial resources, as well as difficulties presented by the remoteness and harshness of the terrain. Also, conversion of alpine meadows, the important foraging habitats (Shrestha et al. 2008) will negatively impact both wild prey species and for domesticated livestock (ICIMOD, 2016).

4.2 EMERGING THREATS

4.2.1 Adverse Impact of Climate Change

Although it is difficult to foresee exact impacts, the mountain regions have been known to be more vulnerable to climate change related disasters. Intergovernmental Panel on Climate Change (IPCC) projects that the average annual temperature in South Asia and Tibet will increase by 3-4°C by 2080-2099 compared to historical averages from 1980-1999, while annual precipitation is expected to increase throughout this region as well. Forrest et al. (2012) reported about 30% of snow leopard habitat in the Himalaya may be lost due to a shifting tree line and consequent shrinking of the alpine zone, mostly along the southern edge of the range and in river valleys. Decrease in rangelands and forests at higher altitudes in Mustang district may increase crop damage and livestock depredation at lower elevations (Dahal, 2015).

4.2.2 Diseases

With changing climate conditions, there are possibilities of increased disease risks. In mountain landscapes, such risks not only endanger wildlife such as snow leopards and their prey but also livestock that communities heavily rely on. Nepal government is already working towards wildlife disease monitoring and management at national scale, and SPNP has also initiated efforts to setting up a mechanism for disease surveillance and monitoring. In line with One Health approach, National Wildlife Health Action Plan (2023-2032) that mainly focuses wildlife disease including zoonotic with institutional set up and program budget in DNPWC. In mountain landscapes, terrain, electricity availability, connectivity, limited human resources and more present substantial additional challenges to this national endeavor. Yet, this must become an increasing priority for all stakeholders as has been evident from the recent pandemic.

A seemingly diseased snow leopard photo-captured in Upper Dolpa, SPNP.

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4.2.3 Rapid Development of Illegal Wildlife Market Centers

International border points such as Tatopani (Sindupalchowk), Kerung (Solukhumbu) and Darchula in the northern part of Nepal have been identified as illegal marketplaces. Opening of newer trade routes between China and India via Nepal, like Lipu Lek, as well as eight new trade points [Yari (Humla), Mugu (Mugu), Chhoser/Korala (Mustang), Larke (Gorkha), Lambagar (Dolakha), Rasuwagadi (Rasuwa), Kimathanka (Sankhuwasabha) and Olangchungola (Taplejung)] in Nepal-China international border can potentially increase illicit activities.

4.2.4 Poorly Planned Infrastructure Development

The Government of Nepal has set a goal to graduate the nation from its Least Developed Country status to Developing Country status by 2026. The government is therefore slated to increase public spending and investment in infrastructure. In a drive for growth, the risks of the environment being ignored loom large. Linear infrastructures are critical for the country's growth and access to markets within and outside the country. However, this also jeopardizes natural resources through increased access and overharvesting as well as illegal trade. Likewise, hydropower generation, mining, large-scale agriculture, and tourism can have adverse impacts on snow leopard habitat, if they are not planned keeping nature in mind. Moreover, wildlife friendly infrastructure construction directive, 2022 is in effect to mitigate the adverse impacts from infrastructure with design compliance and additional constructions such as underpass, overpass, pass way for wildlife.

In addition to upgrading East-West connectivity, there are anticipated enhancements in North-South connectivity that would pass through the snow leopard habitats in the Nepal Himalayas. This could lead to habitat fragmentation, impacting snow leopard dispersal and genetic exchange between populations. Additionally, improved access to these remote habitats may increase poaching and illegal wildlife trade activities. Hydropower, transmission lines, mining, and tourism development also pose challenges to snow leopard conservation if not properly planned.

While these development measures are essential for Nepal's aspirations, they must be executed in ways that minimize their negative impact on the environment and benefit local communities in the long term. Being well-informed about existing and planned infrastructure is crucial to minimize disturbances to snow leopard habitats and fulfill global conservation commitments while pursuing sustainable, environmentally friendly development solutions.

Furthermore, linear infrastructures can disrupt natural processes regulating ecosystem functions, affecting services such as water supply, soil fertility, habitat preservation, erosion control, and climate regulation. Inadequate consideration of social and environmental factors during infrastructure planning can worsen social disparities and harm natural resources, underscoring the need for holistic and sustainable approaches to infrastructure development.

5

OPPORTUNITIES AND CHALLENGES

5.1 Transnational Landscape Conservation

The snow leopard is a wide-ranging species and requires large areas for their long-term conservation. Several mountain PAs have been established since the mid-seventies in Nepal; still, around half of the snow leopard habitat may fall outside PAs. Landscape level conservation approach aids to maintain contiguity in snow leopard habitat covering PAs and other surrounding habitats.

Efforts are in place to protect snow leopards inside PAs as well as outside. In 2006, the transnational Sacred Himalayan Landscape was designated to initiate landscape level conservation to conserve the important biological hotspots and endangered species such as snow leopard in the eastern Himalayan region of Nepal.

Similarly, in 2012, Kailash Sacred Landscape was declared in the western part Nepal covering major snow leopard habitats in Nepal, China, and India. Likewise, Chitwan-Annapurna Landscape was designated covering mountain regions in central landscape and running across the Churia and Terai along the south.

However, SHL and KSL are not contiguous, as KSL does not include the eastern end of Nepal's western snow leopard landscape. There is a need to cover this gap by either extending KSL up to Kali Gandaki River or creating a new landscape so that the integrity of the three snow leopard landscapes is maintained. Further investigation will be required to identify the potential of the area to designate as a conservation landscape.

Also, the Karnali river basin is one of Nepal's largest river systems and has several important protected areas. The habitat in the northern alpine areas is the largest expanse of connected habitats for snow leopard. Conservation in the Karnali Conservation Landscape (KCL) will provide ecological connectivity between the upper regions of the Karnali basin and the habitats of the Terai Arc Landscape, allowing for the movement of species to sustain ecosystem processes. The north-south linkages are especially important for environmental flows and as potential corridors and refugia for climate change induced migrations (MoFSC, 2016).

For holistic landscape level snow leopard conservation, aligned to GSLEP landscapes, Nepal has also designated three snow leopard conservation landscapes – Western, Central and Eastern. Also aligned to the country's commitments, climate-smart landscape level plans are also being prepared for Western landscape, following the first plan prepared for the Eastern landscape.

5.2 Enabling Policy and Institutions

National and international policies are in place to facilitate effective conservation of snow leopards. All these policies also encourage private sectors involvement in conservation for creating conservation-based employment to enhance community livelihoods. GSLEP and NSLEP are aligned on similar principles and approach for snow leopard conservation at the landscape level. However, the overarching goal to achieve snow leopard numbers as stipulated in GSLEP can be challenging for the situation in Nepal.

Establishment of institutions like NTCC, NWCCCC, WCC Unit in Centre and Province and its district units have been effective in curbing wildlife crimes up to a certain extent. Still challenges persist on strengthening these institutions, particularly the district WCCB units.

The establishment of the community-based insurance scheme and government relief support have aided in mitigating human-snow leopard conflicts. Over time, the government relief scheme has been amended to better represent mountain concerns and circumstances. However, there are opportunities to address gaps through creation and improved management of community-based funds to address logistic challenges in accessing the government relief. Accordingly, there are also opportunities to leverage resources from local and province governments to safeguard livelihoods.

5.3 Applying Cutting-Edge Technology in Research and Monitoring

Use of advanced technology in wildlife research such as non-invasive genetic analysis, camera-trap surveys, and GPS-satellite telemetry present better opportunity to conduct ecology and behavioral studies of snow leopards, their prey, and habitats. Molecular scatology analysis of snow leopards shows its potential to develop an index of snow leopard abundance, population structure, and information on sex and genetic relationships between different populations. Moreover, using other non-invasive technology for monitoring of snow leopard's prey and their habitats should be considered. Researchers and academic institutions can avail themselves of this new opportunity to pursue advanced study on the impacts of climate change on snow leopards, their prey, and habitats.

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Citizen scientists prepare for snow leopard telemetry in Saldang.

5.4 Promoting Nature-Based Tourism

The snow leopard is an enigmatic species, and their high-altitude habitats are naturally beautiful to attract visitors to the region. If thriving snow leopard populations in secure habitats are successfully linked to people's livelihoods, conservation sustainability will be better assured. At present, Sagarmatha and Langtang National Parks, and ACA are the most popular tourist destinations among the snow leopard bearing PAs in the country, making significant amount of earnings from tourism.

Up to 50% of such earnings go for community development in all PAs. Other protected areas also have high potential for tourism promotion. Such nature-based tourism can provide economic incentive to the local community for preserving snow leopard and other native wildlife as well as create opportunities to diversify sustainable livelihoods linking local resources with tourism. Further, Engagement of private sector could be explored which would benefit the community to build sustainable Culture, Wildlife and Nature based economies,

raise awareness on the plight of snow leopard and finance management of the respective protected areas. However, development of adequate infrastructure in such remote areas presents a significant challenge. Ensuring that negative impacts associated with increased human presence and activity through tourism will also need to be considered.

5.5 Recognizing Local Community in Conservation

It is well accepted that community participation is essential for sustainable and long-term conservation of biodiversity. Current management practices of Conservation Area, Buffer Zone and Community Forests provide plenty of opportunities for communities to participate in managing resources and sharing benefits accrued from them. Local communities have experienced relief to some extent with the creation of the community-based insurance scheme and government relief support for wildlife damage. Active participation of citizen scientists in monitoring snow leopards and local people's involvement in community-based anti-poaching operations have become a successful model for community empowerment and can be replicated in other areas too. Retaining the zeal of citizen scientists, providing periodic refreshment training to them, and maintaining the community-based insurance scheme and replication of these systems in other protected areas and district forests, however, is a challenge. There is also an opportunity to enhance focus

on engaging youth in conservation. Specifically targeting youth in snow leopard bearing areas, efforts can be directed towards sensitizing them on issues of nature through formal or non-formal education and identifying and engaging promising candidates to facilitate their development as local conservationists. Moreover, acknowledging, and contextually adaptively reviving community's beliefs, values and traditions that have historically helped conservation, will provide a strong foundation for improved conservation results in the future.

5.6 Promoting Transboundary, Regional & International Cooperation

The collaboration between the Government of Nepal and conservation partner organizations including NTNC, WWF, IUCN and ICIMOD among others is effectively implementing landscape level conservation and managing protected areas for snow leopard conservation within Nepal. Nepal is a member of GSLEP, facilitating its role in international cooperation and coordination for snow leopard conservation. Additionally, Nepal's transboundary consultative meetings with China and India at central and field levels also have provided opportunities to understand and resolve common issues of conservation. However, challenges persist in holding these consultative meetings on a regular basis and following up on progress and compliance of decisions made.

PRINCIPAL GUIDING DOCUMENTS

THE PRINCIPAL GUIDING DOCUMENTS FOR THIS PLAN ARE:

- Constitution of Nepal, 2072
- National Forest Policy, 2075 BS (2018)
- Forest Act, 2076 BS
- Kunming-Montreal Global Biodiversity Framework, 2022
- National Biodiversity Strategy and Action Plan, 2014-2020
- National Snow Leopard and Ecosystem Protection Priorities, 2013
- Global Snow Leopard and Ecosystem Protection Program, 2013
- National Parks and Wildlife Conservation Act, 2029 BS (1973)
- Environmental Act, 2076 BS (2019)
- Forest Sector Strategy, 2016-2025
- Sacred Himalayan Landscape Strategy, 2005-2015
- Kailash Sacred Landscape: Conservation and Development Initiative, 2012-2016
- Protected Area Management Strategy, 2022-2030
- Protected Area Management Plans and District Forest Plans
- Wildlife Damage Relief Guideline, 2080 BS
- Chitwan Annapurna Landscape (CHAL) Strategy, 2016-2025
- Himalayan National Parks Regulation, 2036 BS
- Buffer Zone Management Regulation, 2052 BS
- Provincial and local government policies related to biodiversity conservation and sustainable use – Sudur Paschim, Karnali, Gandaki, Bagmati, Kosi
- Local Governance Operationalization Act, 2017
- Environment Protection Act, 2076 BS (2019)
- Environment Protection Regulation, 2077 BS
- Rangeland Policy, 2012

Snow Leopard Conservation Action Plan

7 GOAL

Conserve the snow leopard and its habitat by maintaining ecological, economic, and sociocultural integrity across landscapes, establishing, and strengthening positive correlations between well-being of nature and people.

8 OBJECTIVES

8.1 ENHANCING KNOWLEDGE ON SNOW LEOPARD ECOLOGY THROUGH RESEARCH AND MONITORING

RATIONALE

Snow leopards are among the least studied of the world's big cats. Experts stress that improved understanding of species and their ecosystems are critical to systematically plan and implement conservation interventions. Additionally, monitoring of their populations and habitat is crucial to assess the impact of interventions and guide contextual adaptations, for effective conservation.

With its commitments to GSLEP, Nepal has played a key role in enhancing research and monitoring of snow leopards, prey, and their habitats. Nepal is recognized to have contributed most to global understanding snow leopards and their ecosystems, among the range countries. Over recent years, including in the period of the last SLCAP, advanced technology such as non-invasive genetic analysis, camera-trap surveys and GPS-satellite telemetry were used to study the target species. Research was also carried out to explore socio-economic status and way of life of indigenous communities living alongside, among others. The knowledge generated is applied to formulate and improve conservation policies and action plans.

Building upon past learnings, this updated plan also recommends continuation of research and monitoring. Research priorities include establishing a national population of snow leopards, understanding status of prey, co-predators, and other priority mountain species, understanding interrelationship with human communities, assessing climate impacts, assessing potential impacts of infrastructure, etc, for holistic conservation management planning. Additionally, a clear understanding of patterns of snow leopard genetic diversity is critical for guiding conservation initiatives that will ensure their long-term persistence. Monitoring and surveillance of conflicts and disease risks will also be increasingly important to guide management decisions. Capacitating PAs

and DFOs in carrying out such research and monitoring will be beneficial. Likewise, capacitating and mobilizing community youth as citizen scientists or SLCCs, will serve practical benefits to PAs/DFOs as well as researching institution/individual, and aid to enhance conservation stewardship.

OUTPUTS

- Nationwide benchmark population estimate of snow leopards established following GSLEP – PAWS approach.
- DNA database of snow leopards of Nepal established and updated through non-invasive genetic studies.
- Ecology and behavior of snow leopards and their ecosystems explored to guide management planning.
- Impacts of land use change, infrastructure, and other development in snow leopard habitat better understood for sustainable development.
- Conservation institutions (government, non-government and academics), frontline staff and community youth capacitated and engaged in research and monitoring.
- Wildlife disease surveillance protocol for mountain areas established.

ACTIONS

- Support regular population monitoring of snow leopard and prey to evaluate and guide conservation.
- Consolidate available population assessment data and conduct additional assessments (through modern techniques including camera traps, genetic study, etc) to estimate nationwide snow leopard population.
- Establish and update DNA database of snow leopard through non-invasive genetic analysis.
- Promote research on sympatric carnivores to understand resource competition or partitioning (e.g. diet, habitat use, temporal use, etc) for coexistence
- Establish disease monitoring and surveillance modality for high mountain regions.
- Conduct research on stocking density of herbivores (including livestock) for improved rangeland co-management.
- Support studies on impacts of land use change, infrastructure, and other development on snow leopard and prey base populations to guide wildlife-friendly infrastructure development.
- Assess impacts of infrastructures in snow leopard habitat to guide sustainable development, including measures to minimize negative impacts on nature and communities.
- Improve understanding of snow leopard habitat use with respect to climatic and anthropogenic impacts for integrated climate smart conservation.
- Research on blue sheep-habitat relationships and their feeding ecology, mapping their key habitats and interaction with livestock.
- Establish permanent sampling sites/ plots in snow leopard habitats for regular monitoring of prey species (e.g. Himalayan tahr, blue sheep, marmot, and hare) and status of habitat.
- Conduct study on impacts of changing traditional pastoralism system and shifting climates on wildlife, its habitats, and rangelands productivity.
- Conduct studies on the socio-economic and cultural drivers of human – snow leopard interactions.
- Document traditional knowledge to support co-management of high mountain rangelands.
- Conduct mapping spatio-temporal hotspot for human-snow leopard conflict in Nepal Himalayas.

- Conduct attitude perception of local people on snow leopard across Nepal Himalayas
- Research on scale, extent and intensity of human wildlife conflict mainly focusing on snow leopards and retaliatory killings.
- Foster collaborations with veterinary laboratories of Nepal to strengthen the detection of viral, bacterial zoonotic wildlife diseases.
- Create a central database of snow leopard information to aid researchers and conservationists.
- Share research findings among local communities to raise community and herder awareness on snow leopard-human cohabitation.
- Conduct national, regional, and international snow leopard research and conservation workshops.
- Strengthen capacity of conservation institutions, frontline staff and citizen scientists on high mountain wildlife research and monitoring, including supporting them with necessary equipment and field gear.
- Strengthen collaborations with universities for high mountain research and monitoring.
- Identify challenges and gaps limiting country's high mountain research potential to aid policy improvements.
- Support researches to aid sustainable financing of snow leopard bearing Pas including a comprehensive study to review sustainable trophy harvest plan (blue sheep) for KCA.

8.2 IMPROVING HABITATS AND CORRIDORS

RATIONALE

Snow leopard habitat falls both outside and within PAs of Nepal in the three snow leopard conservation landscapes. These landscapes are crucial not only for wildlife, but also contribute to the well-being of people, as well as national and regional economies. In addition to local livelihoods, these landscapes serve to assure water security for millions of people downstream and aid in carbon sequestration.

Traditionally mountain communities sustainably used these rangelands through practices that allowed time for regeneration. Today however, these landscapes are facing increasing threats from direct or indirect impacts of anthropogenic activities. Model-based research have predicted loss of 30% of snow leopard habitat in the Himalayas due to climate change (Forrest et al., 2012). Increasing infrastructures aggravate habitat degradation and fragmentation (GSLEP, 2024). Intensive collection of NTFPs and medicinal plants (like Ophiocordyceps) for commercial purposes, excessive grazing by free ranging livestock and pollution also jeopardize integrity of these habitats.

The cascading effects of habitat loss and fragmentation can isolate snow leopard populations in pockets, thereby threatening their demographic and genetic viability. Degradation of these habitats impacts local livelihoods as well as compromise opportunities for growth in national economy.

All this mandates a landscape-level climate-smart integrated conservation approach. Snow leopard and their habitats need to be better understood, their wide-scale contributions to people's wellbeing and country's economy better evaluated, and management planned accordingly both inside and outside PAs.

Identification of important climate refugia for snow leopard and pre-emptive preparations to secure them in coordination with communities and local governments will be essential. Special focus should be made to secure habitats outside PAs that can contribute to preserving connectivity to maintain integrity of snow leopard landscapes. Management measures must also aid sustainable use of rangelands including grazing and resource collection, as well as promote development with minimal negative impacts.

Considering challenging terrains, habitat management in these high mountains cannot be done without close coordination with indigenous communities who hold in-depth knowledge of the landscape and have been managing these lands for generations. Therefore, integrated rangeland co-management strategies that consider traditional knowledge and modern scientific knowledge, will be crucial to benefit both communities and nature. There are newer policy opportunities for community-led conservation being worked out by Nepal government; local governments and communities will increasingly be key partners to DNPWC and DFSC to secure snow leopard habitats.

OUTPUTS

- Spatial ecology of snow leopards in Nepal (both inside and outside PAs) better understood.

- Critical corridors with their functionality, critical conservation sites and climate refugia secured holistically integrating anthropogenic and climatic stressors.

- Multi-use rangeland co-management implemented integrating modern science and local community's traditional knowledge.

- Multi-stakeholder engagement - including local communities, governments, faith groups – ensured for long-term preservation of snow leopard habitat integrity and community wellbeing in view of climate projections.

- Linear infrastructures developed sustainably to assure long-term well-being of nature and people.

ACTIONS

- Identify, inventory and map snow leopard habitat of Nepal, both inside and outside PAs.

- Identify critical conservation sites, corridors, climate refugia for conservation planning.

- Explore new policy opportunities for community-led conservation in critical site outside PAs, engaging local governments and communities.

- Prepare and implement co-management strategies integrating modern scientific knowledge and traditional knowledge to secure long-term integrity of multi-use high altitude rangelands and community forests.

- Prepare waste management strategies to safeguard snow leopard habitats and preserve their natural integrity.

- Improve understanding of the impacts of unsustainable harvest of NTFPs on nature and people's wellbeing.

- Improve NTFP and MAP harvesting practices integrating research on management and traditional knowledge, for sustainable use of natural resources.

- Devise sustainable harvest guidelines for important NTFPs integrating community's traditional and scientific knowledge.

- Amend policies, trade agreements, and legal frameworks to facilitate sustainable traceable trade in wild NTFPs and MAPs.

- Identify, classify and map wetlands and explore RAMSAR designation for recognition and improved management.

- Conduct periodic assessments of water quality in wetlands, and rivers, to guide necessary management measures.

- Manage pollution including use of hazardous pesticides in agricultural land to preserve water sources.

- Create baseline on infrastructure impacts in snow leopard habitats and explore preventive and mitigative solutions.

- Initiate dialogues for wildlife-friendly and climate-resilient infrastructure development in snow leopard habitats for well-being of nature and communities

- Support studies on impacts of land use change and mega infrastructure development on snow leopard and prey base.

- Roll out of Wildlife friendly Infrastructure Construction Directive 2080.

- Capacitate government officials (in all three tiers) on Natural Resource safeguards in Linear Infrastructure for sustainable development.

- Sensitize communities, governments, and other stakeholders against negative impacts of infrastructures in the landscape for informed decision making.

- Enhance engagement with infrastructure planners and developmental agencies to promote wildlife-friendly infrastructures and integrate effective mitigation measures in the infrastructural planning process.

- Identify and document traditional and faith-based management practices to recognize and integrate them as per Nepal government's policies.

- Recognize communities' sacred sites in mountain rangelands to create no-touch zones to remove all direct anthropogenic pressures.

- Strategically institutionalize, capacitate and engage diverse stakeholders including faith groups, local youth, women and students in habitat management activities.

- Delineate private land settlements that are inside the protected areas with through Himalayan National Park Regulations and LSGA.

- Ensure Social and Environmental Impact Assessment before the development of all infrastructure projects where applicable and effective implementation of the recommendations therein.

- Initiate valuation of ecosystem services of the snow leopard habitats.

- Prepare and implement climate-smart Snow Leopard Ecosystem Management Plans for Western and Central landscapes.

- Develop mechanisms and capacity to access and use carbon funds to clutch the REDD+ and climate change funds for snow leopard conservation.

- Facilitate and capacitate government bodies and conservation partners to secure external funds through development banks, Green Climate Fund (GCF), and GEF funds for improved habitat protection and management opportunities.

8.3 MITIGATING HUMAN-SNOW LEOPARD CONFLICT THROUGH COMMUNITY ENGAGEMENT

Blue sheep and livestock graving together.

RATIONALE

Mounting human-snow leopard conflict is one of the most severe threats and challenges being faced by the conservation practitioners across the range countries. High number of livestock, significant overlap of habitats between wild and domestic ungulates, weak guarding practice and open corrals, reoccurrence of opportunistic predators and even dynamics of snow leopard and prey population are among the reasons that could contribute to increased human-wildlife conflict. Inadequate awareness and high reliance on animal husbandry, combined with high losses incurred due to mass killing of livestock are known to result in retaliatory killings.

Other than direct persecution, conflicts also risk creating antagonism against the species and restrain the relationship between conservation institutions and local people. Alternately, support by government and non-government institutions to communities incurring such losses is reported to positively impact their attitude towards the species. A better understanding of socio-ecological interplay helps in effective conflict management.

Initiatives like improving corral conditions to prevent mass killing, institutionalization of community-based livestock insurance schemes and government relief to mitigate losses, livelihood diversification and improvement are being practiced in snow leopard habitats to help conflict victim households. Livelihood diversification and enhancement programs with relevance to existing and changing context of the Himalayas will be beneficial; these may include sustainable harvest and trade in medicinal plants, preserving cultural heritage and skills, tourism, skill enhancements that meet current needs of the communities, among others. These also need to be scaled up and out for wider benefits to the communities for enhanced ownership. Promotion of nature-based tourism and sustainable trophy harvest schemes (mainly blue sheep) with mechanisms to channelize revenue back to local communities can be potential sources for supporting local livelihoods and snow leopard conservation initiatives. For effective and sustainable results, these interventions need to be strategized and implemented holistically, rather than as band-aid measures, contextualized to local conditions and circumstances.

Additionally, while snow leopards may be the focal flagship species, communities also incur losses from conflicts with other wildlife. Therefore, when possible, preventive and mitigative measures being strategized must also consider addressing conflicts with other wildlife to benefit both communities and nature.

OUTPUTS

- Conflict with snow leopard reduced through holistic management (including preventive and mitigative) measures.

- Improved mechanism to assure relief to communities for losses by snow leopards and other wildlife, including social innovations such as integration with community run livestock insurance schemes.

- Livelihoods diversified and earning enhanced for local communities through nature-based options, to strengthen positive correlation between wellbeing of people and nature.

- Community incentivized for conservation through benefits from sustainable initiatives.

- Wider stakeholders including local governments and community leadership capacitated and engaged in holistic conflict management.

ACTIONS

- Develop human-snow leopard conflict mitigation strategy integrating examples of best practices for replication by governments and non-governments across Nepal Himalayas.

- Conduct focused awareness drives on holistic conflict management among communities residing in snow leopard habitat.

- Support conflict prevention measures such as improving corrals, with special focus on reducing surplus killing by snow leopards.

- Capacitate herders in managing livestock more effectively and replicating successful conflict management measures, including traditional approaches to reduce conflicts.

- Explore use of innovative technology in conflict prevention and mitigation.

- Provide training on holistic conflict resolution and management to PA, DFO staff and BZ (sub-committee) members.

- Equip PA, DFO staff and BZ (sub-committees) with resources to support remote communities on conflict management, including prevention and mitigation.

- Establish, institutionalize and adaptively replicate community-based (Livestock Insurance Scheme) relief funds to bridge access to Nepal government's Wildlife Damage Relief Guidelines, 2080.

- Continue adapting policy improvements for ease of wildlife damage relief access to remote high mountain communities.

- Explore use of modern technology for conflict documentation and reporting for improved management.

- Explore working with Nepal Insurance Authority and Insurance companies to adapt professional market-based insurance schemes (human, livestock, property, and crops) to the context of high mountains.

- Support livelihood diversification for remote mountain communities, including from products and services related to nature-based tourism.

- Help community access clean energy to enhance earning and livelihoods.

- Establish effective, equitable, and sustainable human-wildlife coexistence community-led cooperatives and enterprises.

- Engage community leaders including local governments, faith leaders, CSOs for coordinated conflict management.

- Work with local governments to allocate funds to help conflict prevention as well as to address gaps in accessing Nepal government relief.

8.4 REDUCING WILDLIFE CRIME ON SNOW LEOPARD AND THEIR PREY THROUGH EFFECTIVE LAW ENFORCEMENT

RATIONALE

Global demand for pelts and bones of threatened species like snow leopard and prevailing global nexus of organized wildlife crime is one of the fundamental threats to conservation. Illegal trade has been facilitated by increased ease of access to remote areas. Weak surveillance due to insufficient staffing, capacity and inadequate coordination among relevant enforcement agencies and organizations, has affected effective control of illegal trade.

Newly formed institutions such as the coordination committees, bureaus and WCCB units at priority districts in snow leopard landscape are effective in controlling wildlife crime. Provincial level WCCB formation and management has clearly identified the role and responsibilities for wildlife crime control. APOs, CBAPUs and youth groups are engaged at the grassroots level in awareness generation and tackling wildlife crime. In Terai protected areas, real time SMART patrolling, smart eye, DNA profiling and UAVs have been found effective to reduce and deter wildlife poaching. Additionally, Nepal Police has formed a special cell under the Central Investigation Bureau (CIB) as Pillar-4 and their regional investigation team with special responsibility to curb wildlife crimes in Nepal. SMART patrolling and UAVs should be encouraged for surveillance in the high mountain protected areas too for reducing wildlife crime. These new institutional arrangements are found to be working effectively but need to be strengthened for more synergy and collaborative actions to curb wildlife crime.

Nepal has been successful in ensuring zero poaching of certain priority species in some years. Working with local communities, faith leaders and other community leaders, ensuring zero poaching of snow leopards will be possible. Traditionally protection of wildlife was facilitated by faith leaders and monasteries in upper mountain regions of Nepal. Building on this traditional protection measures, collaborations can aid improved wildlife crime prevention across Nepal Himalayas, not only to prevent poaching but also to help Nepal move towards a zero-wildlife transit country.

OUTPUTS

- Poaching and illegal wildlife trade of snow leopard and its prey reduced.
- Capacity of local and national enforcement agencies enhanced to control wildlife crime.
- Coordination among different enforcement agencies and other stakeholders enhanced.
- WCCB units, APOs, CBAPUs and youth mobilization strengthened in conservation of snow leopards.
- Faith leaders engaged in strengthening values of non-violence in high mountains to prevent wildlife crimes, including declaring 'Ahimsa zones'.

ACTIONS

- Initiate investigative study on snow leopard poaching and illegal trade.
- Pilot cutting-edge surveillance schemes such as SMART, DNA profiling and UAVs to curb wildlife crime in mountain snow leopard bearing PAs and districts.
- Provide capacity building trainings (including wildlife crime investigation, scene of crime, forensics etc) to PA and DFO staff, Nepal Police and Nepal Army engaged in curbing wildlife crime.
- Develop anti-poaching strategy and operation protocol for snow leopard protection in Nepal.
- Train stakeholders on CITES implementation.
- Sensitize communities and law enforcement institutions on conservation.
- Strengthen intelligence network (Informants, information gathering, purchasing information and communication and travel, establishing wildlife crime database).

- Form and strengthen APOs and CBAPUs in protected areas and division forests.
- Strengthen Wildlife Crime Control Bureau Units in all snow leopard bearing districts.
- Enhance transboundary coordination/collaboration at grassroots by establishing local transboundary relations.
- Conduct sweeping, camping, and long-range patrolling operations in protected areas.
- Provide mobility support, such as daily provisions and equipment for effective patrolling and park management.
- Strengthen, build capacity, and mobilize CBAPUs, including the use of new technology.
- Equip PAs and DFOs with equipment like CCTV, metal detectors, poacher cams, drones, night vision binoculars, etc.
- Improve communication and coordination between LEAs and community to address wildlife crimes in high mountain regions.
- Improve the wildlife crime investigation process using genetic profiles and enhance the evidence collection system through capacity building and training.
- Equip forensic lab with cutting edge equipment for genetic analysis of seized wildlife parts and products.
- Provide capacity building and sensitization training to the staff of customs and airports.
- Ensure mountain issues are discussed in regular meetings of NTCC, WCCCC, and WCCB.
- Create and strengthen Wildlife Crime Control Bureaus.
- Work with faith leaders to sensitize communities against wildlife crimes.
- Work with local governments and faith leaders to create non-violence (Ahimsa zones) in sacred sites.

8.5 STRENGTHENING NATIONAL, TRANSBOUNDARY, REGIONAL AND INTERNATIONAL COOPERATION

RATIONALE

As per Nepal's constitution, environment conservation is a duty of all government authorities as well as individuals, considering that environmental services not limited to geopolitical boundaries. Nepal party to CBD, has committed to implement GBF 2030 targets for biodiversity and sustainable development. Nepal government's new federal structure presents new opportunities. The Government has created policies at Federal to Provincial to Local levels for natural resources conservation and sustainable use. In addition to policies, these tiers of government allocate resources for priority activities that contribute to biodiversity conservation both inside and outside PAs.

For effective conservation, firm commitment of the government along with effective implementation of the programs and law enforcement are primary requirements. In Nepal, partners including communities at the local level, to national, regional, and international stakeholders are involved in conservation. A network of common platforms has been created for close coordination and cooperation from the grassroots to the highest policy and decision-making levels, for collaborative conservation actions. Nepal has been promoting transboundary cooperation with neighboring countries since the late nineties, to launch concerted efforts for controlling cross-border wildlife crime. Such collaboration has been further extended to regional and global levels considering the global nature of illegal activities. Nepal has joined several international conventions and treaties such as CITES, CBD, IUCN, INTERPOL, GSLEP and SAWEN for sharing common responsibility of conserving nationally as well as globally important biodiversity. Complementary conservation efforts among adjoining snow leopard range countries are also equally important for sharing best practices. There is always a need to keep these institutional associations functional and strengthened for effective collaboration and implementation of conservation initiatives.

OUTPUTS

- Local governments are sensitized to environment-integrated development policies, planning, and budgeting.
- Environment mainstreamed into province/local government development policies and plans, including formulation of Wildlife Friendly Linear Infrastructure Directives, ENRCA, EFLG, EAG (environment assessment guidelines), Local Disaster Risk Management Plan (including LAPA), etc.
- Local government focal units capacitated to discharge duties linking well-being of people, mainly poor, women and indigenous communities.
- LISA (Performance in Local Institution Self-Assessment) enhanced snow leopard bearing local governments.
- Increased regional, range country and international support for snow leopard conservation.
- Transboundary cooperation between Nepal, China and India enhanced to curb illegal wildlife trade.

ACTIONS

- Enhance capacity of local government environment focal units.
- Improve coordination between PA-BZs and DFOs with local governments.
- Explore the opportunity of working with local government and leveraging resources for community wellbeing and conservation for long-term sustainability.
- Organize regular meetings and sharing of meeting minutes for implementation of decisions, capacity building training and workshops at transboundary and regional level.
- Participate and contribute in international convention meetings, workshops, and training.
- Facilitate collaborative trade research and monitoring across international borders.
- Initiate coordinated patrolling and illegal wildlife trade control along international border between Nepal, China, and India.
- Organize transboundary learning-sharing exchange visits of local stakeholders including PA, DFO staff and community leaders including citizen scientists.
- Work closely with GSLEP to explore and generate opportunities for transboundary collaborations in conservation.

IMPLEMENTATION PLAN

9.1 INSTITUTIONAL ARRANGEMENTS

DNPWC, DoFSC and their field offices, provincial forest directorates under the Provincial Forestry Ministry shall be the main leading institutions responsible for implementing the action plan. They will be assisted by all relevant stakeholders including local offices of the two departments, non-government partners, community groups including Buffer Zone and Community Forest User Groups, local management committees like the KCAMC, among others, in implementation. The Conservation Areas in snow leopard landscapes are managed under three models in KCA (Community), ACAP (NTNC) and ANCA (Government). Nepal Army deputed in the high mountain parks and hunting reserve are responsible for protecting national parks, along with various law enforcement committees including NTCC, NWCCCC and WCC Units. The above-mentioned institutions along with project offices will be responsible for implementing the action plan in collaboration with communities and conservation partners in Nepal.

9.2 HUMAN RESOURCES AND INFRASTRUCTURE

The Government of Nepal approved new organization and management of the DNPWC in 2015. The department at present has a 'Wildlife Crime Control Unit – Crime Control Section' led by a senior wildlife officer. This section will facilitate the work of NTCC, NWCCCC, central WCC unit, Provincial WCC Unit and district WCC units and other related matters of the department. The total strength of staff working in snow leopard landscapes will be doubled if the DFO, ACA, MCA and GCA

staff are added.

Staff members in the high mountains are working in extremely difficult conditions. Suitable incentives and adequate infrastructure for accommodation such as staff quarters, security posts, etc. are needed. The earthquake heavily damaged many buildings in the high mountain PAs particularly LNP, SNP, GCA, and MCA in 2015. To some extent improvement and renovation of the same is seen but nevertheless there is a further need to improve the basic infrastructures to enable managers to perform efficiently and effectively. In addition, provision of sufficient field gears and communication equipment along with the opportunities for career development is essential to motivate staff working in the remote areas.

DoFSC has established forest and wildlife conservation division to support wildlife in an area outside the protected areas. Similarly, armed police have separate sections to control wildlife crime.

9.2.1 Capacity Enhancement

Staff of PAs, DFOs and BZMC will require orientation and refresher program/training on snow leopard conservation and management. Regular capacity enhancement will be essential to produce competent and dedicated staff for effective management of the resources and augmentation of community livelihood. In addition, community-based organizations (CBOs need to be supported) for their institutional development as well as for their active participation in conservation. Both DNPWC and DoFSC in collaboration with conservation partners will explore appropriate training opportunities for their staff in snow leopard and prey base monitoring, habitat management, anti-poaching operation etc. Attractive packages including exposure visits, refreshment training, higher studies, rewards, proper job placement etc, will be formulated to retain trained staff.

9.2.2 Coordination

The prevailing government system will be followed for effective communication and coordination among relevant stakeholders, or a mechanism as agreed for the implementation of a particular program or project will be pursued. The periodic (quarterly/trimester) and annual progress reporting from the field will be done to DNPWC and DoFSC, and the DNPWC will report to MoFE. The concerned departments and field offices will have the primary responsibility to communicate, coordinate and periodically report to the concerned institutions through their channels. The central WCC unit, Provincial WCC unit and district WCC units will be the most appropriate institutions for sharing information in curbing wildlife crime.

9.3 FINANCIAL RESOURCES

A total of NPR 1,77,97,00,000 (~USD 14.24 million) is estimated to implement the action plan for 5 years (Annex-2). This action plan will complement the overarching goal of GSLEP and NSLEP of the country. About 16% of the budget is estimated for enhancing knowledge on snow leopard's ecology, their prey and habitats through research and monitoring, 14% for improving habitats and corridors, 35% for mitigating human-snow leopard conflict through community engagement, 26% for reducing wildlife crime through effective law enforcement, and 10% for transboundary cooperation. Approximately 16% of the total budget is allocated for the first year of implementation of the action plan, rising to a maximum of ~18% in the 3rd year (Table 4).

The action plan's programs will be integrated into government annual programs through government annual planning process by the respective departments and field offices. It is also expected that government policy will remain conducive to conservation partners, donors, private sectors, and communities for their active involvement in snow leopard conservation.

However, this plan notes that the budget allocated here may not be sufficient for intensive interventions, which are often needed for successful conservation. This however represents the basic minimum for specific snow leopard conservation in Nepal, and additional costs may be needed.

9.3.1 Summary of Indicative Budget in NPR (in 00,000)

The indicative budget for the implementation of the action plan is estimated at ~USD 14.24 million. The objective wise budget estimated is presented in the table below and is expressed in NPR (in, 00,000).

S.N.	Objectives	1st year	2nd year	3rd year	4th year	5th year	6th year	Total
**Table 5: Summary of Indicative Budget in NPR (in, 00,000)**								
1	Enhancing knowledge on snow leopard's ecology, their prey and habitats through research and monitoring	460	490	605	420	460	365	2800
2	Improving habitats and corridors	285	360	450	480	440	410	2425
3	Mitigating human-snow leopard conflict through community engagement	1025	1055	1085	1075	1010	970	6220
4	Reducing wildlife crime on snow leopard and their prey through effective law enforcement	747	782	757	772	787	797	4642
5	Strengthening national, transboundary, regional, and international cooperation	285	285	285	285	285	285	1710
**Total**		2802	2972	3182	3032	2982	2827	17797
**Percentage (year-wise)**		15.74	16.70	17.88	17.04	16.76	15.88	
**Grand total (1 USD @ NPR 125)**		**~USD 14.24 million**						

9.3.2 Sustainable Financing

The government annual budget to DNPWC and DoFSC will be the major source for implementing the action plan. Province government budget for the respective divisional forest offices is the major budget source for implementing the plan. NTNC is expected to contribute significantly to the implementation of the action plan since three Conservation Areas are under its management. DNPWC itself and/or with conservation partners will jointly solicit proposals to international conservation organizations for funding. The possibility of implementation by the local municipalities can also be explored, as many activities focus on wellbeing of communities – both in short and long-term.

10
CONSERVATION PARTNER ORGANIZATIONS

The government will continue to engage conservation partners in the conservation of snow leopards and create policies and environments conducive for cooperation and coordination. WWF Nepal, National Trust for Nature Conservation (NTNC), ICIMOD, USAID, Snow Leopard Conservancy, IUCN Nepal, ZSL Nepal and international organizations and donors will continue to support the implementation of the action plan through their ongoing or new projects.

11
MONITORING AND EVALUATION

Authorities from each snow leopard bearing PAs and relevant DFOs will monitor the implementation of the plan in their respective working areas.

The PAs offices will prepare periodic progress reports to DNPWC and DFOs to concerned Province Forest Ministry and Province Forest Directorate. The DNPWC Technical Committee will review the progress report and present it to the Working Group, which is the main coordinating inter-departmental body co-chaired by the Director Generals of DNPWC and DoFSC. A consolidated annual report on the implementation status of the action plan will be prepared by incorporating the progress made within the period and shared with the concerned authorities and organizations. The monitoring and evaluation objectives, outputs and actions will be done against the indicators given in Annex- 1.

12
REVIEW OF THE ACTION PLAN

DNPWC will take the lead in initiating review of the action plan with the support of DoFSC and conservation partners. The main purpose of the mid-term review will be to evaluate the implementation status of the action plan and progress in achieving the objectives and outputs and recommend necessary changes if required. Both mid-term and final evaluation will be based on the activities mentioned in Annex- 1. A final evaluation will be done by a team of experts towards the end of the plan period. The updated Snow Leopard Conservation Action Plan will be prepared based on the recommendations of the final evaluation and feedback received from concerned agencies and experts.

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LOGICAL FRAMEWORK OF GOAL, OBJECTIVES, AND INDICATORS FOR SLCAP 2024-2030

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Assumptions
Goal: Conserve the snow leopard and its habitat by maintaining ecological, economic, and sociocultural integrity across landscapes, establishing, and strengthening positive correlations between well-being of nature and people.	No of snow leopards.	• DNPWC, DoFSC, PAs and DFO official documents and reports. • Academic Institutions & partners' research reports. • Scientific publications. • Annual reports of conservation organizations. • Consolidated annual progress report on SLCAP implementation.	• Government support to snow leopard conservation continued. • Conservation partner organizations are committed to extend cooperation. • Local communities and palikas show continuing interest and participation in conservation. • Conducive working environment prevails.
Objective: Enhancing Knowledge on Snow Leopard Ecology through Research and Monitoring	No of studies and monitoring reports of snow leopards, their prey base, co-predators, habitats, socio-economics etc.	• DNPWC, PA, DoFSC, DFO, academic and conservation partner organizations official records. • Population estimation reports. • Progress reports. • Annual reports. • Consolidated annual progress reports on SLCAP implementation.	• Government policy on snow leopard research remained as a priority. • Government budget to snow leopard conservation raised. • Academic Institutions and Conservation partner organizations' support continued in research.

Outputs	
Outputs • Nationwide benchmark population estimate of snow leopards established following GSLEP – PAWS approach. • DNA database of snow leopards of Nepal established and updated through non-invasive genetic studies. • Ecology and behavior of snow leopards and their ecosystems explored to guide management planning. • Impacts of land use change, infrastructure, and other development in snow leopard habitat better understood for sustainable development. • Conservation institutions (government, non-government and academics), frontline staff and community youth capacitated and engaged in research and monitoring. • Wildlife disease surveillance protocol for mountain areas established.	• Systematic ecological data in all three snow leopard landscapes collected. • Number of surveys of snow leopards continued through use of cutting-edge technologies such as camera traps. • Number of individually identified snow leopards through non-invasive genetic studies. • Number of SLCCs formed and citizen scientists engaged in snow leopard conservation. • Disease surveillance systems placed.

Actions:
- Support regular population monitoring of snow leopard and prey to evaluate and guide conservation.
- Consolidate available population assessment data and conduct additional assessments (through modern techniques including camera traps, genetic study, etc) to estimate nationwide snow leopard population.
- Establish and update DNA database of snow leopard through non-invasive genetic analysis.
- Promote research on sympatric carnivores to understand resource competition or partitioning (e.g. diet, habitat use, temporal use, etc) for coexistence
- Establish disease monitoring and surveillance modality for high mountain regions.
- Conduct research on stocking density of herbivores (including livestock) for improved rangeland co-management.
- Support studies on impacts of land use change, infrastructure, and other development on snow leopard and prey base populations to guide wildlife-friendly infrastructure development.

- Assess impacts of infrastructures in snow leopard habitat to guide sustainable development, including measures to minimize negative impacts on nature and communities.
- Improve understanding of snow leopard habitat use with respect to climatic and anthropogenic impacts for integrated climate smart conservation.
- Research on blue sheep-habitat relationships and their feeding ecology, mapping their key habitats and interaction with livestock.
- Establish permanent sampling sites/ plots in snow leopard habitats for regular monitoring of prey species (e.g. Himalayan tahr, blue sheep, marmot, and hare) and status of habitat.
- Conduct study on impacts of changing traditional pastoralism system and shifting climates on wildlife, its habitats, and rangelands productivity.
- Conduct studies on the socio-economic and cultural drivers of human – snow leopard interactions.
- Document traditional knowledge to support co-management of high mountain rangelands.
- Conduct mapping spatio-temporal hotspot for human-snow leopard conflict in Nepal Himalayas.
- Conduct attitude perception of local people on snow leopard across Nepal Himalayas
- Research on scale, extent and intensity of human wildlife conflict mainly focusing on snow leopards and retaliatory killings.
- Improve disease monitoring and surveillance taking One Health approach in collaboration with communities and governments to control disease transmission risks and pre-emptive preparations for management.
- Foster collaborations with veterinary laboratories of Nepal to strengthen the detection of viral, bacterial zoonotic wildlife diseases.
- Create a central database of snow leopard information to aid researchers and conservationists.
- Share research findings among local communities to raise community and herder awareness on snow leopard-human cohabitation.
- Conduct national, regional, and international snow leopard research and conservation workshops.
- Strengthen capacity of conservation institutions, frontline staff and citizen scientists on high mountain wildlife research and monitoring, including supporting them with necessary equipment and field gear.
- Strengthen collaborations with universities for high mountain research and monitoring.
- Identify challenges and gaps limiting country's high mountain research potential to aid policy improvements.
- Support researches to aid sustainable financing of snow leopard bearing Pas including a comprehensive study to review sustainable trophy harvest plan (blue sheep) for KCA.

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Assumptions
Objective: Improving habitats and corridors	• Number of functional corridors identified Number of hectares of habitat managed/protected/restored	• DNPWC, PA, DoFSC, DFO, conservation partner organizations' records • Progress Reports • Annual Reports • Monitoring Reports • Partner organizations' official documents and reports	
Outputs: • Spatial ecology of snow leopards in Nepal (both inside and outside PAs) better understood. • Critical corridors with their functionality, critical conservation sites and climate refugia secured holistically integrating anthropogenic and climatic stressors. • Multi-use rangeland co-management implemented integrating modern science and local community's traditional knowledge. • Multi-stakeholder engagement - including local communities, governments, faith groups – ensured for long-term preservation of snow leopard habitat integrity and community wellbeing in view of climate projections. • Linear infrastructures developed sustainably to assure long-term well-being of nature and people.	• No of corridors identified. • No of corridors managed. • Area of climate refugia identified. • Area of critical habitat managed. • Area of rangeland managed. • Number and areas of wetlands managed.		

Actions:

- Identify, inventory and map snow leopard habitat of Nepal, both inside and outside PAs.
- Identify critical conservation sites, corridors, climate refugia for conservation planning.
- Explore new policy opportunities for community-led conservation in critical site outside PAs, engaging local governments and communities.
- Prepare and implement co-management strategies integrating modern scientific knowledge and traditional knowledge to secure long-term integrity of multi-use high altitude rangelands and community forests.
- Prepare waste management strategies to safeguard snow leopard habitats and preserve their natural integrity.
- Improve understanding of the impacts of unsustainable harvest of NTFPs on nature and people's wellbeing.
- Improve NTFP and MAP harvesting practices integrating research on management and traditional knowledge, for sustainable use of natural resources.
- Devise sustainable harvest guidelines for important NTFPs integrating community's traditional and scientific knowledge.
- Amend policies, trade agreements, and legal frameworks to facilitate sustainable traceable trade in wild NTFPs and MAPs.
- Identify, classify and map wetlands and explore RAMSAR designation for recognition and improved management.
- Conduct periodic assessments of water quality in wetlands, and rivers, to guide necessary management measures.
- Manage pollution including use of hazardous pesticides in agricultural land to preserve water sources.
- Create baseline on infrastructure impacts in snow leopard habitats and explore preventive and mitigative solutions.
- Initiate dialogues for wildlife-friendly and climate-resilient infrastructure development in snow leopard habitats for well-being of nature and communities
- Support studies on impacts of land use change and mega infrastructure development on snow leopard and prey base.
- Roll out of Wildlife friendly Infrastructure Construction Directive 2080.
- Capacitate government officials (in all three tiers) on Natural Resource safeguards in Linear Infrastructure for sustainable development.
- Sensitize communities, governments, and other stakeholders against negative impacts of infrastructures in the landscape for informed decision making.
- Enhance engagement with infrastructure planners and developmental agencies to promote wildlife-friendly infrastructures and integrate effective mitigation measures in the infrastructural planning process.
- Identify and document traditional and faith-based management practices to recognize and integrate them as per Nepal government's policies.
- Recognize communities' sacred sites in mountain rangelands to create no-touch zones to remove all direct anthropogenic pressures.
- Strategically institutionalize, capacitate and engage diverse stakeholders including faith groups, local youth, women and students in habitat management activities.
- Delineate private land settlements that are inside the protected areas with through Himalayan National Park Regulations and LSGA.
- Ensure Social and Environmental Impact Assessment before the development of all infrastructure projects where applicable and effective implementation of the recommendations therein.

- Initiate valuation of ecosystem services of the snow leopard habitats.
- Prepare and implement climate-smart Snow Leopard Ecosystem Management Plans for Western and Central landscapes.
- Develop mechanisms and capacity to access and use carbon funds to clutch the REDD+ and climate change funds for snow leopard conservation.
- Facilitate and capacitate government bodies and conservation partners to secure external funds through development banks, Green Climate Fund (GCF), and GEF funds for improved habitat protection and management opportunities.

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Assumptions
Objective: Mitigating Human-Snow Leopard Conflict through Community Engagement.	• Zero surplus killing of livestock by snow leopards. • Zero snow leopard retaliatory killing is achieved and retained. • Decreased livestock casualties and crop loss incidences reduced at least by 50%. • Relief access increased through innovative approaches to high mountain communities.	• MoFE, state forest ministries, Regional Forest Directorate, DNPWC, DoFSC, DFO, PA and conservation partner organizations' official records. • Progress Reports. • Annual Reports. • Monitoring Reports.	
Outputs • Conflict with snow leopard reduced. • Improved mechanism for quick and adequate relief for crop damage from prey base or livestock killed by snow leopard. • Community-based insurance scheme for livestock depredation strengthened and extended. • Community incentivized for conservation through benefits from sustainable initiatives. • Improved National Park and Local Government Co-work modality.			

Actions:

- Develop human-snow leopard conflict mitigation strategy integrating examples of best practices for replication by governments and non-governments across Nepal Himalayas.
- Conduct focused awareness drives on holistic conflict management among communities residing in snow leopard habitat.
- Support conflict prevention measures such as improving corrals, with special focus on reducing surplus killing by snow leopards.
- Capacitate herders in managing livestock more effectively and replicating successful conflict management measures, including traditional approaches to reduce conflicts.
- Explore use of innovative technology in conflict prevention and mitigation.
- Provide training on holistic conflict resolution and management to PA, DFO staff and BZ (sub-committee) members.
- Equip PA, DFO staff and BZ (sub-committees) with resources to support remote communities on conflict management, including prevention and mitigation.
- Establish, institutionalize and adaptively replicate community-based (Livestock Insurance Scheme) relief funds to bridge access to Nepal government's Wildlife Damage Relief Guidelines, 2080.
- Continue adapting policy improvements for ease of wildlife damage relief access to remote high mountain communities.
- Explore use of modern technology for conflict documentation and reporting for improved management.
- Explore working with Nepal Insurance Authority and Insurance companies to adapt professional market-based insurance schemes (human, livestock, property, and crops) to the context of high mountains.
- Support livelihood diversification for remote mountain communities, including from products and services related to nature-based tourism.
- Help community access clean energy to enhance earning and livelihoods.
- Establish effective, equitable, and sustainable human–wildlife coexistence community-led cooperatives and enterprises.
- Engage community leaders including local governments, faith leaders, CSOs for coordinated conflict management.
- Work with local governments to allocate funds to help conflict prevention as well as to address gaps in accessing Nepal government relief.

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Assumptions
Objective: Reducing Wildlife Crime on Snow Leopard and their Prey through Effective Law Enforcement	• Populations of snow leopard and prey base increased/stabilized • Decrease in trend of wildlife crime cases • Zero poaching of snow leopards	• MoFE, DNPWC, DoFSC, state forest ministries, Regional Forest Directorates, DFOs and PA Offices' official records	
Outputs • Poaching and illegal wildlife trade of snow leopard and its prey reduced. • Capacity of local and national enforcement agencies enhanced to control wildlife crime. • Coordination among different enforcement agencies and other stakeholders enhanced. • WCCB units, APOs, CBAPUs and youth mobilization strengthened in conservation of snow leopards. • Faith leaders engaged in strengthening values of non-violence in high mountains to prevent wildlife crimes.	• Number of cases of snow leopard and their prey poaching -Number of personnel involved in enforcement, capacitated • Number of WCCB Units, APOs and CBAPUs engaged in curbing wildlife crimes		

Actions:
• Initiate investigative study on snow leopard poaching and illegal trade.
• Pilot cutting-edge surveillance schemes such as SMART, DNA profiling and UAVs to curb wildlife crime in mountain snow leopard bearing PAs and districts.
• Provide capacity building trainings (including wildlife crime investigation, scene of crime, forensics etc) to PA and DFO staff, Nepal Police and Nepal Army engaged in curbing wildlife crime.
• Develop anti-poaching strategy and operation protocol for snow leopard protection in Nepal.
• Train stakeholders on CITES implementation.
• Sensitize communities and law enforcement institutions on conservation.

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Assumptions
• Strengthen intelligence network (Informants, information gathering, purchasing information and communication and travel, establishing wildlife crime database). • Form and strengthen APOs and CBAPUs in protected areas and division forests. • Strengthen Wildlife Crime Control Bureau Units in all snow leopard bearing districts. • Enhance transboundary coordination/collaboration at grassroots by establishing local transboundary relations. • Conduct sweeping, camping, and long-range patrolling operations in protected areas. • Provide mobility support, such as daily provisions and equipment for effective patrolling and park management. • Strengthen, build capacity, and mobilize CBAPUs, including the use of new technology. • Equip PAs and DFOs with equipment like CCTV, metal detectors, poacher cams, drones, night vision binoculars, etc. • Improve communication and coordination between LEAs and community to address wildlife crimes in high mountain regions. • Improve the wildlife crime investigation process using genetic profiles and enhance the evidence collection system through capacity building and training. • Equip forensic lab with cutting edge equipment for genetic analysis of seized wildlife parts and products. • Provide capacity building and sensitization training to the staff of customs and airports. • Ensure mountain issues are discussed in regular meetings of NTCC, WCCCC, and WCCB. • Create and strengthen Wildlife Crime Control Bureaus. • Work with faith leaders to sensitize communities against wildlife crimes. • Work with local governments and faith leaders to create non-violence (Ahimsa zones) in sacred sites.			
Objective: Strengthening National, Transboundary, Regional and International Cooperation and Support	• Number of transboundary, regional and international meetings. • Increase in international funding support for snow leopard conservation	• MoFE, DNPWC, DoFSC, DFO and PA official documents	

Outputs		
Outputs • Local governments are sensitized to environment-integrated development policies, planning, and budgeting. • Environment mainstreamed into province/local government development policies and plans, including formulation of Wildlife Friendly Linear Infrastructure Directives, ENRCA, EFLG, EAG (environment assessment guidelines), Local Disaster Risk Management Plan (including LAPA), etc. • Local government focal units capacitated to discharge duties linking well-being of people, mainly poor, women and indigenous communities. • LISA (Performance in Local Institution Self-Assessment) enhanced snow leopard bearing local governments. • Increased regional, range country and international support for snow leopard conservation. • Transboundary cooperation between Nepal, China and India enhanced to curb illegal wildlife trade.	• Number of transboundary meetings at local and central level systems placed.	

Actions:
• Enhance capacity of local government environment focal units.
• Improve coordination between PA-BZs and DFOs with local governments.
• Explore the opportunity of working with local government and leveraging resources for community wellbeing and conservation for long-term sustainability.
• Organize regular meetings and sharing of meeting minutes for implementation of decisions, capacity building training and workshops at transboundary and regional level.
• Participate and contribute in international convention meetings, workshops, and training.
• Facilitate collaborative trade research and monitoring across international borders.
• Initiate coordinated patrolling and illegal wildlife trade control along international border between Nepal, China, and India.
• Organize transboundary learning-sharing exchange visits of local stakeholders including PA, DFO staff and community leaders including citizen scientists.
• Work closely with GSLEP to explore and generate opportunities for transboundary collaborations in conservation

ANNEX 2

FIVE YEARS' ANNUAL INDICATIVE BUDGET FOR SNOW LEOPARD CONSERVATION ACTION PLAN

OBJECTIVE 1
Enhancing knowledge on snow leopard's ecology, their prey and habitats through research and monitoring

Actions	Annual Budget						Total Budget
	1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	(NPR in 00,000)
Support regular population monitoring of snow leopard and prey to evaluate and guide conservation.	50	100	150	50	50	50	**450**
Consolidate available population assessment data and conduct additional assessments (through modern techniques including camera traps, genetic study, etc) to estimate nationwide snow leopard population.	10	5	5	5			**25**
Establish and update DNA database of snow leopard through non-invasive genetic analysis.	20	25	25	25	20	20	**135**
Promote research on sympatric carnivores to understand resource competition or partitioning (e.g. diet, habitat use, temporal use, etc) for coexistence.	20	20	20	20	20	20	**120**
Establish disease monitoring and surveillance modality for high mountain regions.	30	35	35	40	45	50	**235**
Conduct research on stocking density of herbivores (including livestock) for improved rangeland co-management.	20	20	20	20	20	20	**120**
Support studies on impacts of land use change, infrastructure, and other development on snow leopard and prey base populations to guide wildlife-friendly infrastructure development.	30	50	50	20	10		**160**
Assess impacts of infrastructures in snow leopard habitat to guide sustainable development, including measures to minimize negative impacts on nature and communities.	30	35	40	45	50	30	**230**
Improve understanding of snow leopard habitat use with respect to climatic and anthropogenic impacts for integrated climate smart conservation.	30	30	30	30	30	30	**180**
Research on blue sheep-habitat relationships and their feeding ecology, mapping their key habitats and interaction with livestock.	30		30		30		**90**
Establish permanent sampling sites/ plots in snow leopard habitats for regular monitoring of prey species (e.g. Himalayan tahr, blue sheep, marmot, and hare) and status of habitat.	5	5	5	5	5	5	**30**

Conduct study on impacts of changing traditional pastoralism system and shifting climates on wildlife, its habitats, and rangelands productivity.	20	20	20	20	20	20	**120**
Conduct studies on the socio-economic and cultural drivers of human – snow leopard interactions.	10	10	10	10	10	10	**60**
Document traditional knowledge to support co-management of high mountain rangelands.	15	15	15	15	15	15	**90**
Conduct mapping spatio-temporal hotspot for human-snow leopard conflict in Nepal Himalayas.	10	15	20	30	20	10	**105**
Conduct attitude perception of local people on snow leopard across Nepal Himalayas	5	5	5	5	5	5	**30**
Research on scale, extent and intensity of human wildlife conflict mainly focusing on snow leopards and retaliatory killings.	5	5	5	5	5	5	**30**
Foster collaborations with veterinary laboratories of Nepal to strengthen the detection of viral, bacterial zoonotic wildlife diseases.	10		10		10		**30**
Create a central database of snow leopard information to aid researchers and conservationists.	5	5	5	5	5	5	**30**
Share research findings among local communities to raise community and herder awareness on snow leopard-human cohabitation.	10	10	10	10	10	10	**60**
Conduct national, regional, and international snow leopard research and conservation workshops.	15	15	15	15	15	15	**90**
Strengthen capacity of conservation institutions, frontline staff and citizen scientists on high mountain wildlife research and monitoring, including supporting them with necessary equipment and field gear.	30	30	30	30	30	30	**180**
Strengthen collaborations with universities for high mountain research and monitoring.	15	15	15	15	15	15	**90**
Identify challenges and gaps limiting country's high mountain research potential to aid policy improvements.	20		20		20		**60**
Support researches to aid sustainable financing of snow leopard bearing Pas including a comprehensive study to review sustainable trophy harvest plan (blue sheep) for KCA	15	20	15				**50**
Sub-total for Objective 1 (NPR in 00,000)	**460**	**490**	**605**	**420**	**460**	**365**	**2800**

	OBJECTIVE 2						
	Improving habitats and corridors						

Actions	Annual Budget						Total Budget (NPR in 00,000)
	1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	
Identify, inventory and map snow leopard habitat of Nepal, both inside and outside PAs.	25	50	25				**100**
Identify critical conservation sites, corridors, climate refugia for conservation planning.		5	10	10			**25**
Explore new policy opportunities for community-led conservation in critical site outside PAs, engaging local governments and communities.	10	10	10	10	10	10	**60**
Prepare and implement co-management strategies integrating modern scientific knowledge and traditional knowledge to secure long-term integrity of multi-use high altitude rangelands and community forests.	30	30	30	30	30	30	**180**
Prepare waste management strategies to safeguard snow leopard habitats and preserve their natural integrity.	10	20	20	20	20	10	**100**
Improve understanding of the impacts of unsustainable harvest of NTFPs on nature and people's wellbeing.	5	5	25	15			**50**
Improve NTFP and MAP harvesting practices integrating research on management and traditional knowledge, for sustainable use of natural resources.	0	5	10	40	40	50	**145**
Devise sustainable harvest guidelines for important NTFPs integrating community's traditional and scientific knowledge.		5	10	10	5		**30**
Amend policies, trade agreements, and legal frameworks to facilitate sustainable traceable trade in wild NTFPs and MAPs.	5	5	5	5	5	5	**30**
Identify, classify and map wetlands and explore RAMSAR designation for recognition and improved management.		5	15	15	10	10	**55**
Conduct periodic assessments of water quality in wetlands, and rivers, to guide necessary management measures.			5	5	5	5	**20**
Manage pollution including use of hazardous pesticides in agricultural land to preserve water sources.	5	5	5	10	10	15	**50**
Create baseline on infrastructure impacts in snow leopard habitats and explore preventive and mitigative solutions.	5	5	15	15	20	20	**80**
Initiate dialogues for wildlife-friendly and climate-resilient infrastructure development in snow leopard habitats for well-being of nature and communities	10	15	15	15	15	10	**80**

Activity							Total
Support studies on impacts of land use change and megainfrastructure development on snow leopard and prey base.	15	15	15	15	15	15	**90**
Roll out of Wildlife friendly Infrastructure Construction Directive 2080.	10	10	10	10	10	10	**60**
Capacitate government officials (in all three tiers) on Natural Resource safeguards in Linear Infrastructure for sustainable development.	20	20	20	20	20	20	**120**
Sensitize communities, governments, and other stakeholders against negative impacts of infrastructures in the landscape for informed decision making.	10	10	10	10	10	10	**60**
Enhance engagement with infrastructure planners and developmental agencies to promote wildlife-friendly infrastructures and integrate effective mitigation measures in the infrastructural planning process.	5	5	10	10	10	10	**50**
Identify and document traditional and faith-based management practices to recognize and integrate them as per Nepal government's policies.	20	20	20	20	20	20	**120**
Recognize communities' sacred sites in mountain rangelands to create no-touch zones to remove all direct anthropogenic pressures.	20	20	20	20	20	20	**120**
Strategically institutionalize, capacitate and engage diverse stakeholders including faith groups, local youth, women and students in habitat management activities.	15	15	15	15	15	15	**90**
Delineate private land settlements that are inside the protected areas with through Himalayan National Park Regulations and LSGA.	10	10	10	10	10	10	**60**
Ensure Social and Environmental Impact Assessment before the development of all infrastructure projects where applicable and effective implementation of the recommendations therein.	15	15	15	15	15	15	**90**
Initiate valuation of ecosystem services of the snow leopard habitats.	5	5	25	25	20	5	**85**
Prepare and implement climate-smart Snow Leopard Ecosystem Management Plans for Western and Central landscapes.	15	25	50	75	75	75	**315**
Develop mechanisms and capacity to access and use carbon funds to clutch the REDD+ and climate change funds for snow leopard conservation.	5	10	15	20	15	5	**70**
Facilitate and capacitate government bodies and conservation partners to secure external funds through development banks, Green Climate Fund (GCF), and GEF funds for improved habitat protection and management opportunities.	15	15	15	15	15	15	**90**
Sub-total for Objective 2 (NPR in 00,000)	**285**	**360**	**450**	**480**	**440**	**410**	**2425**

Actions	Annual Budget						Total Budget
	1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	(NPR in 00,000)
OBJECTIVE 3 Mitigating Human-Snow Leopard Conflict through Community Engagement							
Develop human-snow leopard conflict mitigation strategy integrating examples of best practices for replication by governments and non-governments across Nepal Himalayas.	5	15	15	5			**40**
Conduct focused awareness drives on holistic conflict management among communities residing in snow leopard habitat.	20	20	20	20	20	20	**120**
Support conflict prevention measures such as improving corrals, with special focus on reducing surplus killing by snow leopards.	150	150	150	150	120	100	**820**
Capacitate herders in managing livestock more effectively and replicating successful conflict management measures, including traditional approaches to reduce conflicts.	10	10	10	10	10	10	**60**
Explore use of innovative technology in conflict prevention and mitigation.	25	25	25	25	25	25	**150**
Provide training on holistic conflict resolution and management to PA, DFO staff and BZ (sub-committee) members.	25	25	25	25	25	25	**150**
Equip PA, DFO staff and BZ (sub-committees) with resources to support remote communities on conflict management, including prevention and mitigation.	40	40	40	40	40	40	**240**
Establish, institutionalize and adaptively replicate community-based (Livestock Insurance Scheme) relief funds to bridge access to Nepal government's Wildlife Damage Relief Guidelines, 2080.	150	150	150	150	150	150	**900**
Continue adapting policy improvements for ease of wildlife damage relief access to remote high mountain communities.	5	5	5	5	5	5	**30**
Explore use of modern technology for conflict documentation and reporting for improved management.	30	30	30	30	30	30	**180**
Explore working with Nepal Insurance Authority and Insurance companies to adapt professional market-based insurance schemes (human, livestock, property, and crops) to the context of high mountains.	10	10	10	10	10	10	**60**
Support livelihood diversification for remote mountain communities, including from products and services related to nature-based tourism.	300	300	300	300	300	300	**1800**
Help community access clean energy to enhance earning and livelihoods.	100	120	150	150	120	100	**740**

Actions	1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	Total Budget
Establish effective, equitable, and sustainable human-wildlife coexistence community-led cooperatives and enterprises.	120	120	120	120	120	120	**720**
Engage community leaders including local governments, faith leaders, CSOs for coordinated conflict management.	20	20	20	20	20	20	**120**
Work with local governments to allocate funds to help conflict prevention as well as to address gaps in accessing Nepal government relief.	15	15	15	15	15	15	**90**
Sub-total for Objective 3 (NPR in 00,000)	**1025**	**1055**	**1085**	**1075**	**1010**	**970**	**6220**

OBJECTIVE 4 Reducing Wildlife Crime on Snow Leopard and their Prey through Effective Law Enforcement							
Actions	**Annual Budget**						**Total Budget**
	1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	*(NPR in 00,000)*
Initiate investigative study on snow leopard poaching and illegal trade.	50	60	70	80	90	100	**450**
Pilot cutting-edge surveillance schemes such as SMART, DNA profiling and UAVs to curb wildlife crime in mountain snow leopard bearing PAs and districts.	80	85	90	95	100	100	**550**
Provide capacity building trainings (including wildlife crime investigation, scene of crime, forensics etc) to PA and DFO staff, Nepal Police and Nepal Army engaged in curbing wildlife crime.	50	50	50	50	50	50	**300**
Develop anti-poaching strategy and operation protocol for snow leopard protection in Nepal.	20	40	0	0	0		**60**
Train stakeholders on CITES implementation.	15	15	15	15	15	15	**90**
Sensitize communities and law enforcement institutions on conservation.	30	30	30	30	30	30	**180**
Strengthen intelligence network (Informants, information gathering, purchasing information and communication and travel, establishing wildlife crime database).	30	30	30	30	30	30	**180**
Form and strengthen APOs and CBAPUs in protected areas and division forests.	30	30	30	30	30	30	**180**
Strengthen Wildlife Crime Control Bureau Units in all snow leopard bearing districts.	50	50	50	50	50	50	**300**
Enhance transboundary coordination/collaboration at grassroots by establishing local transboundary relations.	20	20	20	20	20	20	**120**
Conduct sweeping, camping, and long-range patrolling operations in protected areas.	30	30	30	30	30	30	**180**

Provide mobility support, such as daily provisions and equipment for effective patrolling and park management.	50	50	50	50	50	50	**300**
Strengthen, build capacity, and mobilize CBAPUs, including the of new technology.	50	50	50	50	50	50	**300**
Equip PAs and DFOs with equipment like CCTV, metal detectors, poacher cams, drones, night vision binoculars, etc.	30	30	30	30	30	30	**180**
Improve communication and coordination between LEAs and community to address wildlife crimes in high mountain regions.	30	30	30	30	30	30	**180**
Improve the wildlife crime investigation process using genetic profiles and enhance the evidence collection system through capacity building and training.	30	30	30	30	30	30	**180**
Equip forensic lab with cutting edge equipment for genetic analysis of seized wildlife parts and products.	30	30	30	30	30	30	**180**
Provide capacity building and sensitization training to the staff of customs and airports.	50	50	50	50	50	50	**300**
Ensure mountain issues are discussed in regular meetings of NTCC, WCCCC, and WCCB.	2	2	2	2	2	2	**12**
Create and strengthen Wildlife Crime Control Bureaus.	20	20	20	20	20	20	**120**
Work with faith leaders to sensitize communities against wildlife crimes.	30	30	30	30	30	30	**180**
Work with local governments and faith leaders to create non-violence (Ahimsa zones) in sacred sites.	20	20	20	20	20	20	**120**
Sub-total for Objective 4 (NPR in 00,000)	**747**	**782**	**757**	**772**	**787**	**797**	**4642**

Objective 5 Strengthening National, Transboundary, Regional and International Cooperation							
Actions	**Annual Budget**						**Total Budget**
	1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	(NPR in 00,000)
Enhance capacity of local government environment focal units.	40	40	40	40	40	40	**240**
Improve coordination between PA-BZs and DFOs with local governments.	40	40	40	40	40	40	**240**
Explore the opportunity of working with local government and leveraging resources for community wellbeing and conservation for long-term sustainability.	30	30	30	30	30	30	**180**
Organize regular meetings and sharing of meeting minutes for implementation of decisions, capacity building training and workshops at transboundary and regional level.	40	40	40	40	40	40	**240**
Participate and contribute in international convention meetings, workshops, and training.	40	40	40	40	40	40	**240**
Facilitate collaborative trade research and monitoring across international borders.	30	30	30	30	30	30	**180**
Initiate coordinated patrolling and illegal wildlife trade control along international border between Nepal, China, and India.	30	30	30	30	30	30	**180**
Organize transboundary learning-sharing exchange visits of local stakeholders including PA, DFO staff and community leaders including citizen scientists.	30	30	30	30	30	30	**180**
Work closely with GSLEP to explore and generate opportunities for transboundary collaborations in conservation.	5	5	5	5	5	5	**30**
Sub-total for Objective 5 (NPR in 00,000)	**285**	**285**	**285**	**285**	**285**	**285**	**1710**
GRAND TOTAL (00,000 NPR)	**2802**	**2972**	**3182**	**3032**	**2982**	**2827**	**17797**
GRAND TOTAL (00,000 USD) (Conversion rate used: 1 USD=125 NPR	**22.42**	**23.78**	**25.46**	**24.26**	**23.86**	**22.62**	**142.38**

Government of Nepal
Ministry of Forests and Environment

Department of National
Parks and Wildlife Conservation

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Soil Conservation