Volume 2 2022
Nepal Public Policy Review

Research Article

DOI: https://doi.org/10.3126/nppr.v2i1.48395

# Understanding Policy Coherence and Interplay Governing Biodiversity Conservation and Associated Livelihood Practices in Karnali Province, Nepal

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Manuscript Received: 1 May, 2022 Final Revision: 7 August, 2022 Accepted: 7 August, 2022

## Abstract

One of Nepal's most significant strategies for biodiversity protection is biodiversity conservation policy. Despite a significant paradigm shift in Nepalese policies and huge success in community-based conservation, conservation efficiency and proficiency remain low in Karnali. This pause results in ineffective policy implementation. Through a literature analysis, this study seeks to assess policy coherence and challenges within three levels of government conservation policies. The findings show that the components of central top-down non-participatory biodiversity conservation policies share consistent characteristics, such as the use of multiple policy tools, which can be either macro or micro, as well as short-term or long-term policies involving multiple actors at multiple levels. These policies often complement one another regarding the ownership, use, and management of natural resources, particularly forests. However, various findings have highlighted discrepancies, overlaps, and shortcomings in biodiversity protection and commonly shared resources. Despite global recognition as Important Bird Areas and the growing ecological concern of global and national conservation societies in Jajarkot, Jumla, Humla, Dolpa, and Kalikot, it is still not reflected fully in relevant federal policies. There is a lack of a specific policy agenda and responsive policies with federal, provincial, and local governments to promote its conservation. Hence, the paper's discussion considers active community participation as the applicable measure for integrated biodiversity conservation and development strategies with greater conservation impact.

**Keywords:** Karnali Province, Biodiversity conservation, Policy gap

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## 1. Introduction

Karnali Province is Nepal's largest province, endowed with exceptionally rich biodiversity and high endemism (Tiwari et al., 2019) with about 47 endemic flowering plants. Considering the ecoregions type, Karnali Province consists of five ecoregions: (a) Himalayan subtropical broadleaf forest, (b) Himalayan subtropical pine forests, (c) western Himalayan broadleaf forests, (d) western Himalayan subalpine conifer forests and (e) western Himalayan subalpine scrub and meadows and 21 types of forest, based on Lillesø et al. (2005) forest classification (Acharya & Poudel, 2020). Despite the province's great biodiversity, we know little about its current state, geographical distribution, population, habitat, and threats (Acharya & Poudel, 2020). After the declaration of Karnali Province, different levels of government have formulated policies, plans, and acts including Nepal Provincial Planning, baseline, and strategic options for Karnali Province (Karnali Province Planning Commission [KPPC], 2020) and have implemented them considering their significance. But the conservation is not yet at its point as planned as the illegal wildlife trade is still prevailing (Neupane et al., 2018), overgrazing by cattle and local people have less knowledge about sustainable ecosystems (Pandey & Pokhrel, 2020), conflicts for common resources (Pandey & Pokhrel, 2020) exist as the major issues which need to be incorporated in the policies and plans.

Ecological understanding and learning from crises and mistakes can help to enhance conservation expertise (Berkes & Turner, 2006) which could be imperative in the case of Karnali Province. Knowledge about biodiversity remains inadequate and plagued by the so-called Linnean and Wallacean shortfalls (Brown & Lomolino, 1998; Lomolino, 2004; Whittaker et al., 2005;). Such shortfalls create considerable ambiguity and impede attempts to protect biodiversity in Karnali (Acharya & Poudel, 2020; Kollmair et al., 2003). Also, international agreements have influenced national policies (Busch & Jörgens, 2005; Chaudhary & McGregor, 2018) which sometimes may not incorporate provincial issues. Similarly, Karnali Province lags behind in articulating the policy framework for biodiversity conservation and in several development fronts (KPPC, 2020). Although local communities are doing their best from the present level of their skills and knowledge, for instance, conservation of Gangetic dolphin (Timilsina et al., 2003), and harvesting of Yarsagumba (Pandey & Pokhrel, 2020), community-based efforts alone seem inadequate to ensure their long-term conservation (Malla, 2007; Neupane et al., 2018), therefore the local government, provincial government, and central government need to contribute in biodiversity conservation and betterment in the livelihood of local people. The province now has the power to endorse new laws as per the necessity and power to manage zoos and botanical gardens, which the central government previously managed (Thakali et al.,

2018), however, proper provincial policy, critical reviews of strategic and structural factors of policy arrangements are scarce.

Compared to most lowland regions of the world, mountain regions have been less transformed by anthropogenic interference (Schickhoff, 2011). Also, scholars and practitioners discuss the lack of representation of important biological and geophysical features, wildlife, and biodiversity via the Protected Area Management system in the mid-hills of Nepal (Ministry of Forest and Environment [MoFE], 2014; Shrestha et al., 2010). Karnali region has only hills and mountains. Out of 10 districts, 5 districts fall in the hilly region and 5 in the mountain region (KPPC, 2020). As 28.9% of its people live below the poverty line with a per capita income of $606, the literacy rate is 62%, 51.2% of people are multidimensionally poor; and the Human Development Index of the province is just 0.427, both of which are below the national average of 28% and 0.49%, respectively (KPPC, 2020); strategic and structural factors of policy arrangements are more lopsided. Under these socio-economic dimensions and understandings of biodiversity conservation, building potential conservation interventions ensuring Non-Timber Forest Product (NTFPs) collection and transhumance-based livelihood and livelihood diversification, conflict resolving for common resources could be biologically meaningful; the fact, however, has been inadequately incorporated in previous studies and contextual local and province level policies. "Biodiversity in Karnali Province: Current Status and Conservation", was prepared to consolidate existing knowledge about the state of components of biodiversity and the livelihood of communities associated thereof with biodiversity in Karnali (Acharya & Poudel, 2020). But, the policy gaps and issues are scares along with appraisal. Therefore, this study tends to explore policy coherence in relation to wildlife conservation in Karnali Province with the objective of devising appropriate policy tools for integrated conservation with the exploration of the gap between the policy and its implementation at the local level in Karnali Province. Also, the study tends to identify the various threats to biodiversity with reference to previously published articles and reports within the province and put some ways forward.

## 2. Materials and Methods

### 2.1 Study Area

Karnali Province is the largest and least populous province with 16,94,889 individuals contributing 5.81% of the total population of Nepal (Central Bureau of Statistics, 2022). Karnali occupies a 30,716.23 sq km area and shares its border with the Tibet Autonomous Region of China to the north, Gandaki Province to the east, Lumbini Province to the south, and Sudurpaschim Province to the west. The province consists

of 79 Local Government Units (25 Municipalities and 54 Rural Municipalities) having 718 wards extended into 10 districts, namely Surkhet, Salyan, Rukum (West), Dolpa, Jajarkot, Dailekh, Kalikot, Jumla, Mugu and Humla. There are 4483 community forests, 861 leasehold forests, 10 religious forests, and one protected forest in Karnali Province (KPPC, 2019). Karnali province has two National Parks (NP) (Fig 1): Rara NP (106 sq. km), and Shey-Phoksundo NP (3555 sq. km) including a total buffer zone of 1801.18 sq. km that includes those of Rara NP, Shey-Phuksundo NP, and Banke NP and Bardiya NP in the South, four Important Bird Areas (IBAs): Limi Valley (Humla district), Rara NP, Shey-Phoksundo NP and Barekot (Jajarkot district). Non-timber forest products are one of the major sources of income in the mountains of Nepal (Lamichanne et al., 2021). Karnali supports a huge possibility of NTFPs like Yarsagumba (*Ophiocordyceps sinensis*), Guchi chyau (*Morchella conica*), Jatamansi (*Nardostachys grandiflora/N. jatamansi),* Sugandhawal (*Valeriana jatamansi*), Setakchini/ Khiraula of *Polygonatum cirrhifolium* and *Polygonatum verticillatum* including others mentioned in Table 3 (Basnyat et al., 2019; Regmi et al., 2000) with 48 complexes rich in Important Plant Areas (IPAs) adopted from Hamilton and Radford (2007) as cited in Chaudhary et al. (2020). The distribution of Medicinal Plants IPA Complexes is in the lower Bheri-Rapti region (Chaudhary et al., 2020). Of Nepal's total 54 Important Plant Areas (IPAs) complex for medicinal plants comprising 230 IPAs of the priority medicinal plants (Hamilton & Radford, 2007), Province 1 has 51 IPAs per complex in seven IPA complex and Karnali Province has 48 complex No. of IPAs per complex in 10 IPAs (Table 1).

**Table 1: IPAs Complex List Adopted from Hamilton and Radford (2007)**

| Province (Districts) Covered | Medicinal Plants IPA Complexes | No. of Sites per IPA Complex | No. of IPAs per Complex |
|---|---|---|---|
| Karnali Province (Jajarkot, Rukum) | Upper Bheri-Rapti | 2 | 6 |
| Karnali Province (Dailekh, Surkhet and Salyan) | Lower Bheri-Rapti | 3 | 6 |
| Karnali Province (Humla, Mugu, Jumla, Kalikot and Dolpa) | Karnali | 5 | 36 |

In Karnali Province, two botanical gardens have been established covering 10.15 hectares and are being managed under the Department of Plant Resources, representing 422 socioeconomically valuable plants and conserving High Himalayan species (DPR, 2017) (Table 2).

**Table 2: Botanical Gardens in Karnali Province**

| Name of the sites | District | Area (ha) | Features |
|---|---|---|---|
| Mulpani Botanical Garden, Kapurkot | Salyan | 5.65 | Include 375 socioeconomically valuable plant species |
| Dhitachaur Botanical Garden | Jumla | 4.5 | High Himalayan species are conserved here. 47 socioeconomically valuable plant species conserved |

The study area acts as a refuge for 47 endemic plants (Tiwari et al., 2019) and high-value NTFPs. High-value NTFPs of Karnali are presented in Table 3.

**Table 3: High-value NTFPs of Karnali (Basnyat et al., 2019)**

| S.N. | Scientific Name | Common/ Local Name | Family |
|---|---|---|---|
| 1 | *Acorus calamus* | Bojho | Araceae |
| 2 | *Berberis aristate* | Chutro | Berberidaceae |
| 3 | *Bergenia ciliate* | Pakhanved | Saxifragaceae |
| 4 | *Brachycorythis obcordate* | Themni/Kaladana | Orchidaceae |
| 5 | *Delphinium himalayai* | Atis | Ranunculaceae |
| 6 | *Fritillaria cirrhosa* | Kakoli | Liliaceae |
| 7 | *Ganoderma lucidum* | Rato Chyau | Ganodermataceae |
| 8 | *Morchella esculenta* | Guchi chyau | Morchellaceae |
| 9 | *Nardostachys jatamansi* | Jatamansi, Bhutle | Caprifoliaceae |
| 10 | *Ophiocordyceps sinensis* | Yarsagumba | Ophiocordycipitaceae |
| 11 | *Paris polyphylla* | Satuwa | Liliaceae |
| 12 | *Picrorhiza scrophulariiflora* | Kutki | Plantaginaceae |
| 13 | *Polygonatum cirrhifolium* | Khiraunla. Setakchini | Liliaceae |
| 14 | *Polygonatum verticillatum* | Khiraunla, Setakchini | Liliaceae |
| 15 | *Rheum austral* | Aksechuk | Polygonaceae |
| 16 | *Taxus contorta* | Lauth salla | Taxaceae |
| 17 | *Zanthoxylum armatum* | Timur | Rutaceae |

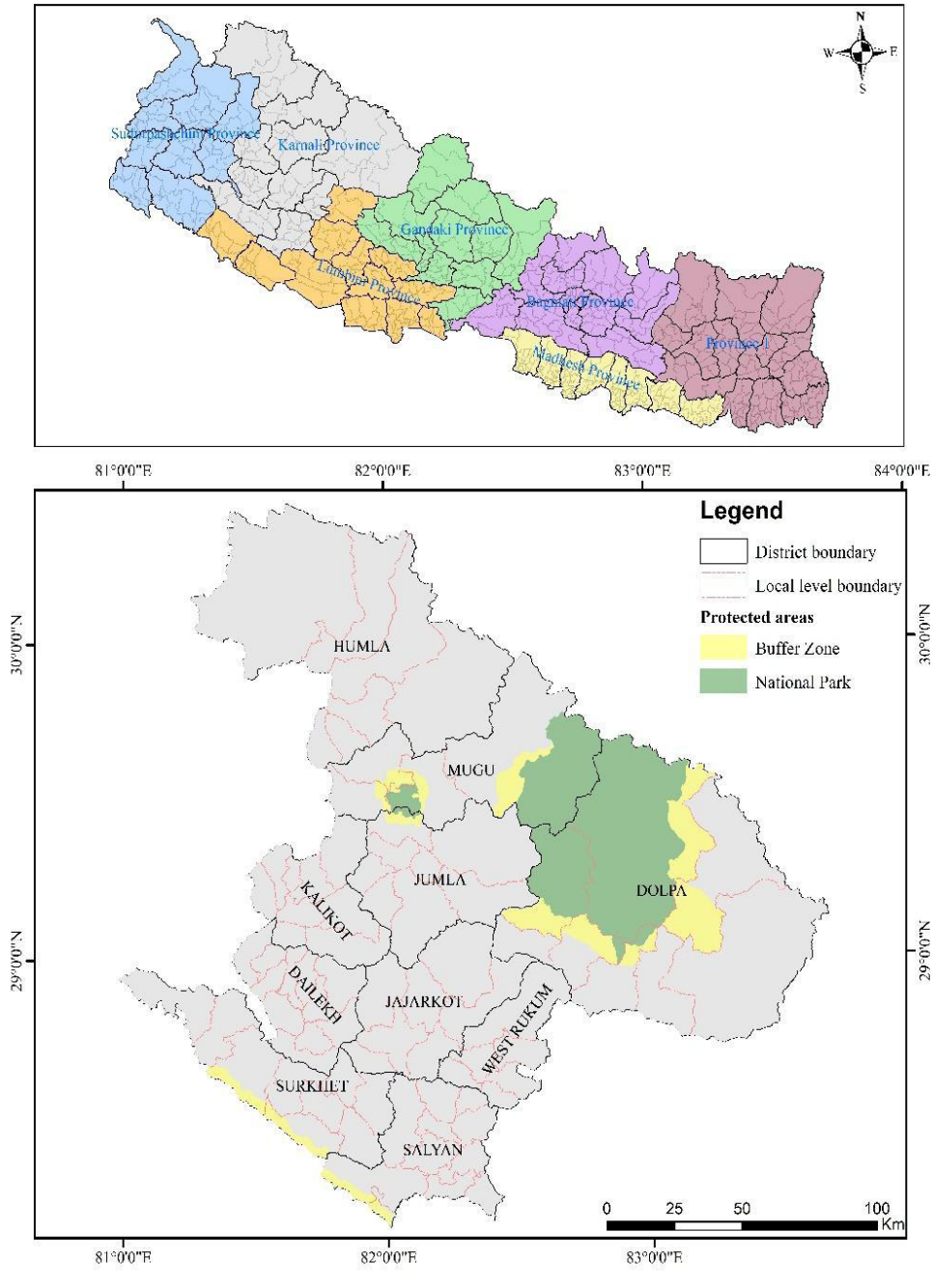


Figure 1. Map of Karnali Province showing protected areas

The list of mammalian species with the evidence of records is presented in Table 4.

**Table 4: List of Mammalian Species with Evidence of Records**

| S.N. | Scientific Name | Red List | | CITES Appendix | Sources |
|---|---|---|---|---|---|
| | | National | IUCN | | |
| 1 | *Ailurus fulgens* | EN | EN | I | (Baral, 2014; Baral et al., 2014; Bhatta et al., 2014; Dangol & Chalise, 2018) |
| 2 | *Bos mutus* | CR | VU | I | (Acharya et al., 2015) |
| 3 | *Canis aureus* | LC | LC | III | (Baral et al., 2014; Jnawali et al., 2011) |
| 4 | *Canis lupus chanco* | CR | LC | I | (Baral et al., 2014; Jnawali et al., 2011) |
| 5 | *Cuon alpinus* | EN | EN | II | (Baral et al., 2014; Jnawali et al., 2011) |
| 6 | *Capricornis thar* | DD | NT | I | (Baral et al., 2014; Jnawali et al., 2011) |
| 7 | *Felis chaus* | LC | LC | II | (Baral et al., 2014; Jnawali et al., 2011) |
| 8 | *Hyaena hyaena* | EN | NT | III | (Bhandari & Bhusal, 2017) |
| 9 | *Hemitragus jemlahicus* | NT | NT | | (Baral et al., 2014; Jnawali et al., 2011) |
| 10 | *Lutra lutra* | NT | NT | I | (Shrestha et al., 2021) |
| 11 | *Lynx lynx* | VU | LC | II | (Werhahn et al., 2018) |
| 12 | *Martes flavigula* | LC | LC | III | (Baral et al., 2014; Jnawali et al., 2011) |
| 13 | *Moschus spp.* | EN | EN | I | (Baral et al., 2014; Jnawali et al., 2011) |
| 14 | *Muntiacus vaginalis* | | LC | | (Baral et al., 2014; Jnawali et al., 2011) |
| 15 | *Mustela altaica* | | NT | III | (Ghimirey et al., 2014) |
| 16 | *Mustela eversmanii* | | LC | | (Gurung et al., 2022) |
| 17 | *Mustela kathiah* | LC | LC | III | (Baral et al., 2019) |

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|---|---|---|---|---|---|
| 18 | *Mustela sibirica* | | NT | III | (Ghimirey et al., 2014) |
| 19 | *Naemorhedus goral* | | NT | I | (Baral et al., 2014; Jnawali et al., 2011) |
| 20 | *Neofelis nebulosa* | | VU | I | (Baral et al., 2014; Jnawali et al., 2011) |
| 21 | *Ovis ammon* | DD | NT | II | (Kusi et al., 2019) |
| 22 | *Plecotus auritus* | DD | LC | | (Baral et al., 2019) |
| 23 | *Panthera pardus* | | VU | I | (Baral et al., 2014; Jnawali et al., 2011) |
| 24 | *Panthera uncia* | | VU | I | (Baral et al., 2014; Jnawali et al., 2011) |
| 25 | *Prionailurus bengalensis* | | LC | I | (Ghimirey & Ghimire, 2010) |
| 26 | *Semnopithecus schistaceus* | LC | LC | I | (Kusi et al., 2018) |
| 27 | *Ursus arctos* | CR | LC | | (Kusi et al., 2018) |
| 28 | *Ursus thibetanus* | EN | VU | I | (Baral et al., 2014; Jnawali et al., 2011) |
| 29 | *Viverra zibetha* | NT | LC | III | (Ghimirey et al., 2014) |
| 30 | *Vulpes bengalensis* | | LC | III | (Baral et al., 2014; Jnawali et al., 2011) |
| 31 | *Vulpes ferrilata* | DD | LC | | (Baral et al., 2014; Jnawali et al., 2011; Werhahn et al., 2016) |
| 32 | *Vulpes vulpes* | DD | LC | III | (Baral et al., 2014; Jnawali et al., 2011) |

*CITES= Convention on International Trade in Endangered Species of Wild Fauna and Flora*

*IUCN= International Union for Conservation of Nature*

*CR= Critically Endangered, EN= Endangered, VU= Vulnerable, NT= Near Threatened, LC= Least Concerned, DD= Data Deficient*

Acharya & Poudel (2020) provided a checklist of 410 species of birds for the Karnali province. A total of 142 species of birds for the Jajarkot District of which 125 were

recorded from Barekot (Baral et al., 2014) which was later updated to a total of 195 species of birds for Jajarkot and Jumla range (Basynat et al., 2019). Moreover, Kusi et al. (2018) developed a checklist of 300 birds for Shey Phoksundo and the adjoining region in Dolpa. Likewise, *Monticola saxatilis* (Kusi et al., 2017), *Melanocorypha maxima* were recorded for the first time in the country from Karnali (Kusi et al., 2017; Kusi & Werhahn, 2016)

### 2.2 Data Collection and Documents Review

We conducted the research in Karnali (Fig. 1). All the documents relating to the biodiversity conservation policy, acts, rules, and regulations were reviewed as presented in Table 3. A checklist was prepared based on the existing policies, its advantages, and loopholes in the policies. Questions mentioned in the checklist were more specific, especially on pitfalls of existing biodiversity conservation policies, prevailing illegal wildlife hunting and trade, and NTFPs collection in the region. Based on the review of the documents, discussions were made.

## 3. Review and Discussion

### 3.1 Analysis of Present Policy and Actions

#### 3.1.1 Current Policies and Integration of Wildlife Conservation

Wildlife conservation in Karnali Province is regulated by international conventions, national and provincial policies, acts, rules, regulations and guidelines. Major international conventions, treaties, national wildlife conservation act, regulations, rules, and strategic activities with major provisions have been enlisted in Table 5.

**Table 5: Provision on International Conventions, National and Provincial Policies, and other Legislations**

| International Treaties and Convention | |
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| Convention on Biodiversity (CBD), 1992 | The objectives of this convention, to be pursued in accordance with its relevant provisions, are the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding. There are 42 Articles. Article 6 clearly mentions general measures for conservation and sustainable use. |

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| | Each Contracting Party shall, in accordance with its particular conditions and capabilities:<br>• Develop national strategies, plans or programmes for the conservation and sustainable use of biological diversity or adapt for this purpose existing strategies, plans or programmes which shall reflect, inter alia, the measures set out in this Convention relevant to the Contracting Party concerned; and<br>• Integrate, as far as possible and as appropriate, the conservation and sustainable use of biological diversity into relevant sectoral or cross sectoral plans, programmes and policies. |
| Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), 1973 | CITES aims to ensure that international trade in wild animals and plants is legal, sustainable and traceable, and does not threaten the survival of the species in the wild. It reflects all three dimensions of sustainable development-social, economic and ecological and contributes to the achievement of Sustainable Development Goals through People, Planet, Prosperity, and Partnership. CITES regulates international trade in specimens of species of wild fauna and flora based on a system of permits and certificates issued under certain conditions. It covers export, re-export, import and landing from the high seas of live and dead animals and plants and their parts and derivatives. International trade in the species included in the Appendices of the Convention must fulfill three conditions:<br>Legality: The specimen has been obtained in accordance with the national laws and regulations for the protection of fauna and flora. Parties must make a legal acquisition finding to confirm this.<br>Sustainability: Parties must make a non-determination: a science-based biological finding which confirms that the trade in the species is sustainable and will not be detrimental to the survival of the species and takes account of the role of the species in its ecosystem.<br>Traceability: Parties must ensure that trade can be traced through the issuance and control of appropriate CITES permits and certificates. Parties report on all permits and certificates issued in national annual reports, which are compiled in the CITES Trade Database (http://trade.cites.org). |

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| International Labour Organization (ILO) 169, 1989 | ILO 169 on its article 6, 1(a) reads: "In applying the provisions of this Convention, governments shall consult the peoples concerned, through appropriate procedures and in particular through their representative institutions, whenever consideration is being given to legislative or administrative measures which may affect them directly |
| **Constitution of Nepal** | |
| Constitution of Nepal 2015 | Clause (g) of Article 51 of the Constitution requires all three spheres of the government to protect, promote and use available natural resources of the country in an environmentally sustainable manner in consonance with the national interest, by adopting the principle of intergenerational equity and distributing the results (fruits) judiciously and according to priority and preferential right to local communities (article 51 (g) (1). The benefits of natural resource use will be distributed "according to priority and preferential right to the local communities." Unlike fundamental rights, Article 51 Sub-clause 5 states that the government will conserve and make sustainable use of forests and biodiversity by "mitigating possible risks to the environment from industrial and physical development." The new Constitution of Nepal (sub-clause 6) simply calls for maintaining "the forest area in necessary lands for ecological balance" (Article 51(G-6)). Nepal's Sustainable Development Goals 2016-2030, however, has a target to maintain 45% of forest cover. Sub-clauses 7 and 8 of Article 51, Clause (G) further reinforce the government's commitment to the protection of the environment and biodiversity, and guides the government to adopt principles of ecologically sustainable development practices, such as the "polluter pays" principle, the precautionary principle, and prior informed consent in environmental protection.<br><br>Article 59 (4) of the Constitution states that "The Federation, State and Local level shall provide for the equitable distribution of benefits derived from the use or development of natural resources. Certain portions of such benefits shall be distributed, pursuant to law, in forms of royalty, services or goods to the project affected regions and local communities." |

| Federal Legislations | |
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| National Parks and Wildlife Conservation Act (NPWCA), 1973 | Article 3.1 of NPWCA reads: "the Government of Nepal (GoN) may, if it deems necessary, declare an area as a National Park or Reserve or Conservation area by notification in the Nepal Gazette and indicating the boundaries thereof". According to this Act, the government can exercise this legal right to declare a new Protected Area (PA) or expand existing protected areas. |
| Forest Act, 2019 | Chapter 9 lists wildlife farming as a type of "forest enterprise". Article 34 of Forest Act 2019 reads: Any person, body, group, or community may, subject to the prescribed standards, also carry out agroforestry, herbs farming, and wildlife farming. |
| Forest Regulations, 2022 | Section 16 has provisions for NTFPs conservation and management and Section 26 provides for NTFPs collection, sales, and distribution. Chapter 5 has provisions for Forest Conservation Areas. Chapter 6 has a provision for Community Forest. No one shall perform any activity prohibited in the national forest as stated by the Act and this Regulation. Similarly, activities other than those mentioned in the approved work plan for ecotourism cannot be carried out. Construction of infrastructure like a new motorway to stop/ block water sources and rivers/ streams, divert their course or obstruct the sources being utilized by the locals and capture, injure or kill or trouble wildlife, and affect their habitat in a manner to create disturbance have also been prohibited. Likewise, Section 53 prohibits infrastructure development for tourism purposes within Community Forests beyond 0.5 ha of forests. Likewise, eco-tourism activities have been restricted in the areas identified as critical habitats of threatened species, biological corridors, and breeding sites in the operational plan of Community forests. |
| Federation, Province and Local Level (Coordination and Inter-relation) Act, 2020 | Section (11) Consultation to be Held: (1) The GoN shall coordinate and consult with the provincial government on the following matters:<br>• While enacting the law and formulating policies on matters of concurrent powers referred to Constitution's Schedule-7, and Schedule-6, at the request of two or more than two provinces, implementing large projects of national importance, interprovincial level projects or programmes, |

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| | • While developing national plans and policies that are to be abided and implemented by the province as well<br><br>The GoN shall, as per necessity, coordinate and consult with the Local Level while formulating national plans and policies that are to be abided and implemented by the Local Level and any other matter deemed appropriate by the Government of Nepal.<br><br>The GoN shall, as per necessity, coordinate and consult with the Province and Local Level in enacting laws and formulating policies on matters of concurrent powers referred to in Schedule 9 of the Constitution, On sharing of natural resources and their benefits.<br><br>The GoN shall, in addition to the matters referred to in subsection (1), as per necessity consult with and coordinate the Provincial Government while enacting laws on other matters that are concerned with the Provincial Government and on matters of residuary powers under Article 58 of the Constitution.<br><br>• The province shall, while enacting laws and formulating policies on matters referred to in the list of concurrent powers as specified in Schedules-7 and 9 of the Constitution, coordinate and consult with the thematic ministry or body of the Government of Nepal.<br><br>• The Local Level shall, while enacting laws and formulating policies on matters referred to in the list of concurrent powers as specified in Schedule 9 of the Constitution, coordinate and consult with the thematic ministry of the GoN and also with the thematic ministry or body of the concerned Provincial Government.<br><br>• The province shall, while enacting laws and formulating policies on matters referred to in the list of concurrent powers as specified in Schedule 9 of the Constitution, coordinate and consult with the Local Levels within the Province. |
| Local government operation Act, 2017 | The Local Government Operation Act 2017 does make one important change related to national parks and wildlife reserves: human-wildlife conflict management is now the responsibility of the local government. However, it is unclear whether this includes the management of relief and compensation for when wildlife |

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| | destroys crops or property, harms or kills local people, or simply the mediation role between wildlife victims and the protected area authority to access relief and compensation support. According to clause 24(1) of the act, the local government has to develop and implement periodic, annual, strategic, and thematic mid-term and long-plan development plans. |
| Environment Protection Act, 2019 | Chapter 2 has provisions for Environmental Study<br>Chapter 5 has provisions relating to the protection of National Heritages and Environment Protection Areas.<br>Chapter (7), Section 38 (1) The GoN may formulate and implement an environmental protection plan with a view to maintaining a clean and healthy environment, and conserving and promoting the same. (2) The Provincial Government and Local Level may, subject to the plan referred to in sub-section (1), make and implement necessary plans for environmental protection.<br>(3) In formulating the plans referred to in sub-sections (1) and (2) traditional and local practices on the protection, conservation, sustainable use of the environment and equitable distribution of fruits received from the use of environmental resources shall be included in the plans. |
| Buffer Zone Regulation, 1996 | In coordination with the local authority, the warden may form a necessary users committee to assist conservation and local development and balanced utilization of forest resources of the things mentioned in rule 7 in the units divided under rule 4.<br>Users committee under sub-rule (1) shall have a president, a vice president, a secretary, a treasurer, and at least five members selected by users among themselves.<br>The Ministry will decide the percentage of the amount expended for community development of local people among the amount earned by national parks, reserves or conservation areas under section 25a of the Act. |
| | The following things should be taken basis for prescribing the percentage of the amount for community development under sub-rule (1) by the ministry:- |

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| | • Annual income made by national park, reserve or conservation area,<br>• Population and area of buffer zone,<br>• Status of community development of buffer zone, Quantity of effect made by national park and reserve and buffer zone,<br>• Local people contribution for the conservation of national park, reserve or conservation area,<br>• Availability of local resource and equipment required for community development,<br>• Local people's interest, activeness and participation for community development. |
| National Parks and Wildlife Conservation Rules, 1974 | In exercise of the powers conferred by Section 33 of the National Parks and Wildlife Conservation Act, 1973, the GoN has framed the National Parks and Wildlife Conservation Rules, 2030 (1974). These Rules, consisting of 39 sections divided into five Chapters and completed by 15 Schedules, regulate any activity to be performed within National Parks and Reserves. They specify the following related matters establishing that: Services operating in National Parks or Reserves, pursuant to Section 6 of the Act, shall comply with specific requirements. They establish that any person shall not be allowed to enter the National Reserves without written authorization, which is generally issued for scientific purposes. In addition, they establish that each hunting license shall consist of a hunting register in which the full and accurate record of all wildlife and birds that have been injured or killed by the licensee during the course of hunting shall be mentioned. The place, date, species, sex of each wildlife or birds, that has been killed shall be clearly mentioned. The Rules, in particular, specify the following issues: Preliminary (Chap. 1); Provisions on National Parks and Reserves (Chap. 2); Provisions on Hunting (Chap. 3); Provisions of Hunting License (Anugya Patra) and Other Permit (Ijajat Patra) (Chap. 4); and Miscellaneous (Chap. 5). No person shall carry out the following actions within national park or reserve without obtaining a written permission from the authorized official: hunt wildlife; construct or possess house, hut, shelter, or any other structures of any material; occupy, clear, |

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| | reclaim or cultivate any part or grow or harvest any crop; d) graze any domestic animal or bird, or feed water to it; take any domestic or any other kind of animal or trophy by persons other than government employees on deputation or visitors of the public paths within the national park or reserve, and block, divert any river or stream flowing through national park or reserve, or any other source of water, or use any harmful or explosive materials therein. |
| National Forest Policy, 2019 | Necessary laws and strategies, directives, procedures, guidelines, and plans will be formulated and implemented at the federal, state, and local levels for the effective implementation of forest sector policy arrangements.<br><br>Learning from forestry sector-related research and information dissemination will be made effective and used in thematic policy formulation, planning, and management of forest areas.<br><br>Ex-situ and in situ conservation and management of endangered, near threatened, and protected plant and animal species will be done.<br><br>Apart from managing protected areas of international identity such as national parks, reserves, and conservation areas, forest areas that a local community has traditionally protected should be identified as Community Conserved Area<br><br>Integrated and proper management of biological corridors inside National forests and protected areas should be done for human-wildlife conflict. |
| National Agro-Forests Policy, 2019 | • Facilitation will be done in transporting and selling forest-based products from Agro-forestry practice.<br>• Agro-forest system will be recognized as an industry and will be developed and extended.<br>• Necessary provisions will be made in order to support loans and insurance for Agroforests. Also, the provision will be made for using trees as collateral for taking loans.<br>• In specified areas, Agroforestry models will be tested and referred. |

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| | • Provisions will be made in the registration of Agro-forest models.<br>• The structures for Agro-forest models will be developed that minimizes the Human-Wildlife Conflict (HWC) and will be extended to necessary areas.<br>• Needed support and services will be provided to employees and technicians willing to receive higher education in Agro-forestry subjects. |
| Herbs and NTFP Development Policy, 2004 | Prioritized 30 medicinal and aromatic plants for research and cultivation for Nepal and set of six objectives such as focusing on regeneration, reproduction, exsitu conservation of NTFPS; local processing through private sector participation; business development services; inclusion of the disadvantaged groups and earning of foreign currency through the competitive development of NTFPs. |
| Wildlife Damage Relief Support Directives, 2013 (Third Amendment, 2018) | Wildlife Damage Relief Support directives incorporate the relief and support that can be provided to victims affecting human, domesticated animals, crop raiding (stored and in land) and loss of infrastructure. Currently, wild animal namely: Tiger, Rhino, Elephant, Leopard, Snow leopard, Clouded leopard, Wolf, Wild dog, Bear* Water buffalo, Mugger crocodile, Python, Gaur and Wild Boar have been recognized as conflicts associated. It has provision of NRs. 20,000 to NRs. 2,00,000 for human injuries for treatment and NRs 10,00,000 for the loss of human life, NRs. 30,000- NRs.10,000 for loss of livestock, NRs10,000 for loss of crops and Nrs.10,000 for stored food-grain, and NRs.10,000 for damage to houses and farm buildings.<br><br>*However, Wildlife Damage Relief Support Directives, 2013 (Third Amendment, 2018) failed to specify bears' species among three species of bear available here in Nepal. |
| Guidelines for Promotion and Development of NTFP-based Enterprises, | Effective NTFP enterprise development must draw upon many interconnected and intricate fields of knowledge and practices. There are various tools available at the local level for government and private sector users to develop NTFP based enterprises sustainably. The promotion of NTFP based enterprises should |

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| 2005 | consider schemes appropriate to the area's forest/land management systems (including tenure arrangement), the socio-economic conditions of the farmers, and technically viable plantation/ cropping systems. For planning purposes, there is a need to prioritise NTFPs for its development to focus the interventions on NTFP enterprises with high economic potential. |
| Nepal Biodiversity Strategy and Action Plan (NBSAP), 2014–2020 | The NBSAP (2014-2020) is a key instrument for translating the Aichi targets set by Conference of Parties (CoP) 10 of CBD into national action through national targets. NBSAP was designed for the period 2014-2020 and it aims to provide a strategic framework for the conservation and sustainable use of Nepal's biodiversity for enhancing local livelihoods and eco-friendly national development, and equitable sharing of the benefits accrued from utilization of biological resources among all sections of the society. It is a multi-sectoral strategy and plan with national coverage and the country's response to its commitment under the CBD.<br><br>The NBSAP highlights the importance of biodiversity for food security and nutrition. It will seek to link the Gene Bank with national (private and public) and international research centers and institutions for increased access and exchange of genetic resources needed for the country to enhance national food security.<br><br>The NBSAP will seek the improvement in management of protected areas; forest biodiversity outside PAs; rangeland biodiversity; wetland biodiversity; agrobiodiversity; and mountain biodiversity. It will also seek to address the policy and legislative gaps, institutional strengthening, and mainstreaming biodiversity across the government, society and economy. In addition, the NBSAP will seek the harmonization of biodiversity related international conventions; the enhancement of national capacity for improved management of biodiversity, landscapes, invasive alien species; and the integration of gender and social inclusion perspectives. It will also seek the conservation of and respect to traditional knowledge, innovation and practices of indigenous and local communities. The NBSAP will also promote knowledge generation and management; technology development, acquisition and use; communication, extension and outreach; and fund generation and mobilization for biodiversity. |

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| | The NBSAP will seek enhanced human well-being and poverty reduction through mainstreaming biodiversity conservation into the local economy.<br><br>The NBSAP will also seek the development of guidelines for integration of biodiversity on climate change adaptation projects and programmes; and the implementation of payment of ecosystem services and REDD+ where feasible.<br><br>The National Biodiversity Coordination Committee (NBCC) will be the main institutional entity for coordination and monitoring of biodiversity related programmes at the national level. |
| Rara National Park and Its Buffer Zone Management Plan 2076/77–2080/81 | The management policy of RNP is guided by HNPR 1979 under NPWC Act 1973. Buffer zone activities are guided by Buffer Zone Management Regulation 1996 and Buffer Zone Management Guideline 2000. The current Management Plan 2076/77-2080/81 has been prepared for conservation, management and utilization of the Park and its buffer zone resources in a scientific and participatory approach with due consideration of its significance as one of the most important biodiversity areas of the country. The objective of RNP and its BZ management plan is "to enhance biodiversity of the Park, promote tourism and regulate it where necessary to maintain delicate balance between conservation and development including eco-tourism promotion and also support the livelihoods of the local communities through effective management of the natural and cultural heritages". The broad thematic areas incorporated in the management plan are protection and conservation of biodiversity, habitat management, tourism and interpretation, BZ management and research, monitoring and capacity building. Special programs on species conservation have also been formulated focusing on Musk Deer, Red Panda and Snow Trout. A total of NRs. 39,94,61,037 (Rupees Thirty Nine crore Ninety Four lakhs Sixty One thousands and Thirty seven only) in NP and NRs. 13,82,26,500 (Rupees Thirteen Crore Eighty Two Lakh Twenty Six Thousand Five Hundred only) in BZ has been proposed for its implementation.<br><br>*Special program and strategies for Musk deer Conservation* |

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| | Coordinate with Forest Authority of local body as wildlife often uses forest under their jurisdiction as biological corridor,<br>• Introduce advanced technology in monitoring and communication for effective conservation,<br>• Initiate developing linkages with research institutions,<br>• Collaborate with global conservation institution to introduce advance technology, build capacity of technical staffs and pool the resources,<br>• Use geo-information science (RS and GIS) in the management,<br>• Continue involve BZ communities in participatory biodiversity conservation,<br>• Disseminate research findings through seminar and workshop,<br>• Reduce poverty of Park dependent poor people by appropriate livelihood intervention and link them with tourism based enterprises,<br>• Adopt effective and appropriate communication strategy to raise the conservation awareness especially to poor household who are living in the periphery of park,<br>• Institutionalize various institutions formed for the biodiversity conservation of the Park, and<br>• Continue real time SMART patrolling for Musk deer conservation<br>*Special program and strategies for Red Panda Conservation*<br>• Ensure protect in Red Panda bearing and sensitive areas,<br>• Initiate a long-term plan of Red Panda inventory and database involving User Committees (UCs) and User Groups (UGs) in collaboration with other partners,<br>• Promote habitat outside PAs and corridors and initiate management activities in order to secure movement and maintain viable population,<br>• Enhance capacity, development facility and generate funding, |

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| | • Improve habitat for accommodating the increasing Red Panda and prey population,<br>• Train member of UCs and UGs to inventory and keep database of Red Panda,<br>• Secure adequate biological connectivity for free movement of Red Panda.<br><br>*Special program and strategies for fish Conservation*<br><br>From the Rara Lake, seven species of fishes: *Schizothorax rarensis (Tarashima)* Kalo Rara Asla, *Schizothorax nepalensis (Tarashima)* Nepali Asla, *Schizothoraichthys marcophthalmus (Tarashima)* Tilke Asla, *Naziritor chelynoides (McClelland)* Karange, *Pseudecheneis serracula (Ng and Edds)* Dhami Machha, *Schistura rupicola (McClelland)* Gindula, *Garra annandalei (Hora)* were recorded. Of these species, *Schizothorax rarensis, S. macrophthalmus and S. nepalensis* are three endemic species of Snow trout (Shrestha, 2017).<br><br>• Initiate a long-term plan of endemic fish inventory and database,<br>• Restore and rehabilitate of Lake and their function,<br>• Enhance knowledge and capacity on Lake management including functions and values, and<br>• Collaborate academic/conservation institutions to enhance knowledge and information on endangered fish conservation |
| Forestry Sector Strategy (FSS), 2016-2025 | The FSS identifies seven key thematic areas which form the core area of the strategy: managing Nepal's forests, managing ecosystems and conserving biodiversity, responding to climate change, managing watersheds, promoting enterprise and economic development, enhancing capacities, institutions, and partnerships, and managing and using forestry sector information. |
| Owl Conservation Action Plan for Nepal 2020-2029 (DNPWC and | This action plan aims to ensure a viable population of owls and conserve their habitat through strategic actions and participatory approach. Desired objectives of this action plan are;<br>• Enhance the quality of habitat<br>• Promote scientific research to enhance knowledge |

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| DFSC 2020) | • Reduce illegal hunting and trade<br>• Sensitize stakeholders and build their capacity for long term conservation of owls<br>• Build partnership at local, national and international level |
| Pangolin Conservation Action Plan for Nepal (2018-2022) (DNPWC & DoF 2018) | Indian Pangolin presence has been recorded in Surkhet. Indian or Chinese pangolins have been recorded from Salyan from Karnali province. A total indicative budget of NPR 11,16,50,000 has been proposed to implement this action plan over the next 5 years. About 38.42% of the budget is estimated for poaching and illegal trade control, followed by 21.94 % of the budget is estimated for research and studies to fill the existing knowledge gap for the species, 20.60% for habitat management and 19.04 % of total budget is allocated for enhancing community stewardship in conservation through awareness, eco-tourism and livelihood support.<br>The primary goal of this action plan is to secure pangolin populations from emerging threats so that the species can be recovered in the wild. Following objectives are proposed to achieve the goal of the action plan:<br>• Enhance understanding and knowledge on conservation status, ecology and habitat dynamics of pangolins.<br>• Curb poaching and control illegal trade of pangolins.<br>• Identify and manage the habitat for pangolins conservation.<br>• Develop local stewardship for conservation of pangolins |
| Pheasant Conservation Action Plan (2019-2023) | The total budget for the five-year plan is estimated at NPR 7,38,50,000 the pheasant conservation action plan (2019-2023) has been prepared with the goal to "increase the population of the species and their habitats protected". The plan identifies four objectives towards achieving this goal. |
| (DNPWC and DFSC 2018) | • Enhance knowledge on the ecology and threats to pheasant species<br>• Implement conservation initiatives to reduce threats to species and their habitat<br>• Explore the possibility of local livelihood enhancement.<br>• Enhance partnership and capacity. |

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| Red Panda Conservation Action Plan for Nepal (2019-2023) (DNPWC and DFSC 2018) | Total budget for this five-year action plan has been estimated to be NPR 30,30,50,000. This conservation action plan has been envisioned with the goal to protect and manage red panda populations in Nepal. Following five objectives have been set to achieve this goal.<br>• Enhance understanding and knowledge on conservation status, ecology and habitat dynamics of red panda.<br>• Curb poaching and illicit trade of red panda.<br>• Protect and manage the red panda habitat.<br>• Strengthen and extend community based red panda conservation initiative.<br>• Strengthen cooperation and coordination on red panda conservation at national and international level.<br>This plan highlighted West Rukum, Dolpa, Jajarkot, Jumla, Mugu and Kalikot of Karnali province for red panda conservation and livelihood enhancement via red panda based ecotourism |
| Snow Leopard Conservation Action Plan (2017-2021) (DNPWC 2017) | A total of NPR 34,65,00,000 (~USD 3.15 million) is estimated to implement the action plan for 5 years. This action plan will complement the overarching goal of Global Snow Leopard and Ecosystem Protection Program (GSLEP) and National Snow Leopard Ecosystem Protection Priorities (NSLEPs) of the country. About 30% of the budget is estimated for enhancing knowledge on snow leopard's ecology, their prey and habitats through research and monitoring, 9% for improving habitats and corridors, 31% for mitigating human-snow leopard conflict through community engagement, 24% for reducing wildlife crime through effective law enforcement, and 6% for transboundary cooperation |
| **Provincial Legislations** | |
| Karnali Province Forest Act, 2022 | To contribute to the homogeneity of the province forests maintaining the forest area of government-managed forests, community forests, leasehold forests, and religious forests for the conservation, promotion, and sustainable management via easy supply of forest products to forest-based enterprises, conservation of land and water resources, biodiversity and herbs and tourism for the prosperity and enhancement of the livelihood of the local community, Province Forest was enacted. |

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| | Chapter 3 has provision for conduction of tourism and enterprises inside Community Forests as per tourism activities included in its Operational Plan by itself or in partnership with Private Institutions or Cooperatives. Chapter 4 provides for the establishment of Community Forests Users Groups and Chapter 5 provides for leasehold forest management for poverty alleviation. Chapter 8 provides for sustainable Forest Management and Plantation programs. There is provision for NTFPs development and research center development in Chapter 9 and biodiversity conservation in Chapter 11. The Provincial government can identify important biological hotspots and categorize biological corridors, declare conflicting species for agriculture. Section 54 provides for wildlife research, breeding, and wildlife farming. Divisional Forests Office can operate HWC mitigation measures and provide relief in collaboration with local governments under Section 56. |
| Province Environmental Act, 2020 | Chapter 2 provides environmental assessment under provincial jurisdiction. Chapter 5 Section 28 mentions that the provincial government in collaboration with the local government may delineate biodiversity, natural beauty, and historically important areas of any specific areas or any areas vulnerable to environmental degradation induced from natural resources exploitation as Biodiversity or Environmental Conservation areas. Chapter 7 Section 37 mentions that based on the federal Environment protection plan local and provincial environmental protection plan shall be developed to maintain a clean and healthy environment. |
| Province Environmental Regulation, 2020 | Section 4 has provision of Scoping and Section 5 has provision for Terms of Reference to be prepared as per Annex (6), Annex (7) and Annex (8) for the conduction of Brief Environmental Studies, Initial Environmental Examination and Environmental Impact Assessment under the jurisdiction of Provincial legislation. Section 7 has provision for a report to be prepared as per Annex (10), Annex (11) and Annex (12) for the conduction of Brief Environmental Studies, Initial Environmental Examination and Environmental Impact Assessment under the jurisdiction of Provincial legislation. Section 9 describes report approval approaches. |

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| Nursery Management and Operation Procedure 2022 | Nursery management and operation will be prioritized based on: Ongoing Nursery management and operation by Users Committee, interested entrepreneurs and cooperatives, Related Local Government, Related Divisional Forests Office. Provision of funds by the Ministry of Industry, Tourism, Environment and Forest, Karnali as per annual budget to the Divisional Forests Office to conduct technical training on plant production and nursery operation. |
| Hitech Nursery Establishment and Operation Procedure 2019 | Chapter 2 has provision on identification and selection of nursery establishment areas, users committee formation, nursery design, layout, and cost estimation, sustainable operation and management of Hi-Tech Nursery. And it clearly mentions sustainable operation and management of Hi-Tech Nursery to be the role of Users' committee, Local Government and Divisional Forests Office. The Ministry of Industry, Tourism, Environment and Forest, Karnali will develop the required operational plan for sustainable operation and management of Hi-Tech Nursery. |
| Local Red Panda Conservation Action Plan (2021-2025), Jajarkot (Baral et al., 2021). | Total budget for this five-year action plan has been estimated to be NRs. 4,367,500. This conservation action plan has been envisioned with the goal to protect and manage red panda populations in Jajarkot and adjoining areas. Following five objectives have been set to achieve this goal.<br>• Enhance understanding and knowledge on conservation status, ecology and habitat dynamics of red panda.<br>• Curb poaching and illicit trade of red panda. |
| | • Protect and manage the red panda habitat.<br>• Strengthen and extend community based red panda conservation initiative.<br>• Strengthen cooperation and coordination on red panda conservation at local and national level. |

"Forest for Prosperity" program has been envisioned for the development and prosperity of Karnali employment via Scientific Forest Management (SFM), employment generation from wildlife, NTFPs, biodiversity conservation, green economy, and ecotourism by Karnali Province in its policy and program for the fiscal year 2021/22. It contradicts with central government's decision to ban all logging

throughout the country through the Council of Ministers' meeting on May 28, 2021, after the reports of cutting trees wantonly in the name of SFM began to do the rounds in the media, which was implemented in Nepal in the fiscal year 2014/15 (https://www.opmcm.gov.np/) and Chapter 8 of Karnali's Province Forest Act 2022 which clearly states the provision of Sustainable Forest Management.

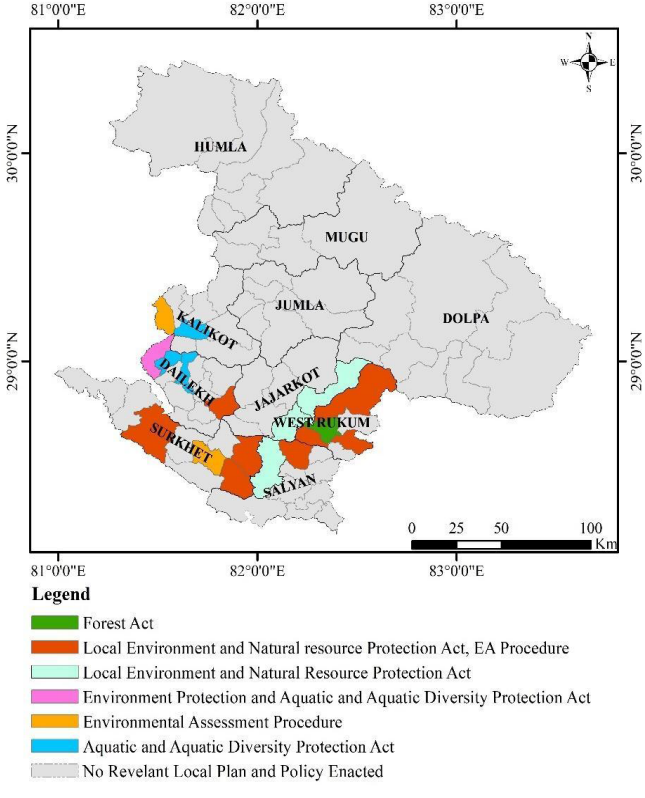


Figure 2. Policy Map of Local Governments in Karnali Province

Out of 79 Local Government Units in Karnali Province, only Sani Bheri Rural municipality (RM) of West Rukum has Forest Act 2019. Three RMs (Barahatal of Surkhet, Thantikandh, and Bhairabi of Dailekh, and two municipalities (Khadachakra of Kalikot, Aathbiskot of Dailekh) have their respective Aquatic and Aquatic Diversity Protection Act. Four RMs (Simta and Barahatal of Surkhet, Siddhakumakh, and Bhagawatimai of Dailekh), and five municipalities (Aathbiskot, Chaurjhari, and Musikot of West Rukum, Gurbhakot of Salyan, Lekhbesi of Surkhet) have their respective Brief Environmental Studies (BES) and Initial Environmental Examination (IEE) Procedure. Thantikandh RM of Dailekh has Environment Protection Act 2020 and Naraharinath RM of Kalikot has Environment Protection and Management Procedure, 2018 which are illustrated in the policy map in Figure 2.

### 3.1.2 Conservation Planning via Protected Area Management

Based on Article 3.1 of NPWCA 1973, Nepal government has put forward a plan to declare three NPs: Dolphu NP disintegrating 839 sq. km of existing Shey Phoksundo NP, Kutumsang of Nuwakot to Balephi of Sindhupalchok, Bung area of Solukhumbu to some parts of Makalu Barun region in Sankhuwasabha for better management,

better institutional coordination, manpower, and conservation awareness. Likewise, the government also proposes community-based conservation areas in seven places of which four areas, namely: Humla's Limi, Jumla's Sinja, Jaljala, and Jajarkot are of Karnali, and the other three are Phulchowki, Chandragiri and Jogebudha of Dadeldhura (Kantipur National daily 3 November 2020). Disintegrating Shey Phoksundo into Dolphu and Shey Phoksundo is critical for snow leopard conservation as Shey Phoksundo NP hitherto has the largest snow leopard population in Nepal which demands landscape-level conservation. Based on Article 15(c) of NPWCA 1973 the local government can also establish zoos, and conserve and manage wildlife. Concomitantly, with this provision, Kuse RM conducted the feasibility of hunting reserve establishment in its territory (B. Harischandra, personal communication, June 3, 2019). Section 13(6) has provisioned enacting laws and formulating policies on matters referred to in the list of concurrent powers on sharing of natural resources and their benefits as specified in Schedule-9 of the constitution, but Kushe RM failed to coordinate and consult with the thematic ministry of the federal government and also with the thematic ministry or body of the concerned provincial government. Chapter 3 of the Federation, Province, and Local Level Act, 2020 clearly advocates maintaining the role of federal, provincial, and local government as far as possible, avoiding duplication in the implementation of any matter while the formulation of laws, policies and plans. However, feasibility of hunting reserve establishment by Kushe RM and community-based conservation areas conducted by the federal government overlapped and failed to avoid duplication.

Federation of Community Forestry Users Nepal (FECOFUN) condemns the recent proposal to declare new protected areas by the Government of Nepal, relating it to curtailing the right of natural resources users to access and maintain control over natural resources violating the provisions of the CBD and not taking consideration of free, prior, and informed consent of local communities and indigenous peoples of ILO 169 even after ratifying it. ILO 169 on its article 6, 1(a) reads: "In applying the provisions of this Convention, governments shall consult the peoples concerned, through appropriate procedures and in particular through their representative institutions, whenever consideration is being given to legislative or administrative measures which may affect them directly" (ILO, 1989).

The percentage coverage of protected areas in Karnali is not proportional as compared to its contribution to the biodiversity of Nepal as a whole. Karnali province has covered 13.082% of the total area as a protected area excluding the buffer zone (Department of National Parks and Wildlife Conservation [DNPWC], 2018). IUCN

has identified six categories of protected areas (Dudley, 2008). Earlier in the region, Nepal Government has designated IUCN Category II: National Parks for ecosystem conservation and protection with a top-down approach and expert-driven PA governance. The protected area design in Karnali's case seems to be an isolated and single reserve (DNPWC, 2018) with no corridors and stepping stones, and observed fragmentation of forests connecting Khaptad NP and Shey Phoksundo NP (RNP, 2019). Ignoring Indigenous Peoples and Local Communities (IPLC) and their knowledge in protected area establishment, expansion, and management can trade-off against IPLC's livelihood options, quality of life, and rights, disrupt local communities, and result in conservation failures (Agrawal & Redford, 2009; Sayer et al., 2021; Whyte, 2018), confirming the notion that conservation can be a colonial endeavor (Whyte, 2017). The study conducted by Basnyat et al. (2019) suggested the establishment of IUCN category VI: protected area with sustainable use of natural resources as the best fit option in Jajarkot and adjoining areas. However, only protected areas in Karnali Province are only of IUCN Category II types only, which makes less involvement of the local people in conservation planning. As current legislation of conservation area management committee formation (Conservation Area Management Regulation, 2000) seems less relevant with the current structure of the local government, Basnyat et al. (2019) recommend forming the ad-hoc committee, to be transformed into a new committee once the legislation is promulgated. The project will develop detailed guidelines for the different institutional structures, including their roles and responsibilities according to the country's legislation during the implementation stage. However, FECOFUN opposed the proposal of declaring new PAs in Karnali, which was similar to its earlier criticism that the Nepal government considered circumventing and undermining the role and contribution of community forestry in Gaurishankar Conservation Area (Sunam et al., 2015).

In Nepal, seven conservation landscapes have been identified with six existing and one proposed: Nepal's Eastern Chure-Tarai Complex Landscape (MFSC, 2016, GoN, 2018), of which four are transboundary (Bajracharya et al., 2015; Chaudhary et al., 2015; Gurung et al., 2019). The Terai Arc Landscape (TAL) covers six provinces, Chitwan Annapurna Landscape (CHAL) and Sacred Himalayan Landscape (SHL) extend from Rasuwa in Province 3 all the way to Taplejung in Province 1, respectively. Part of Province 1 is covered by Kangchenjunga Landscape (KL), while parts of Karnali and Sudurpacchim provinces are also covered by Kailash Sacred Landscape (KSL). Table 6 lists the existing and one proposed conservation landscapes

**Table 6: Existing and Proposed Conservation Landscapes**

| Landscape | Year of Initiation | Area ($km^2$) | Province(s) and Districts Covered | Key Features |
|---|---|---|---|---|
| **Chitwan-Annapurna Landscape (CHAL)** | 1999 | 32090 | **Bagmati Province** (Rasuwa, Nuwakot, Dhading, Chitwan and Makwanpur), **Gandaki Province** (Baglung, Parbat, Myagdi, Mustang, Syangja, Kaski,Tanahun, Lamjung, Gorkha, Manang and Nawalparasi) **Lumbini Province** (Arghakhanchi, Gulmi and Palpa) | Connects south-north highland and lowland, covers Gandaki river basin, river basin planning approach |
| **Kailash Sacred Landscape (KSL)** | 2009 | 13289 | **Sudurpacchim Province** (Baitadi, Bajhang and Darchula) **Karnali Province** (Humla) | Transboundary, aims to maintain cultural and ecological integrity of the landscape around Mt. Kailash |
| **Kangchenjunga Landscape (KL)** | 2013 | 5190 | **Province 1** (Taplejung, Panchthar, Ilam and Jhapa) | Transboundary landscape facilitating movement of wildlife (snow Leopard, Red panda and others) |

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| **Sacred Himalayan Landscape (SHL)** | 2010 | 23336.36 | **Province 1**<br>(Taplejung(partly), Ilam (partly), Panchthar, Terhathum (partly), Dhankuta, Sankhuwasabha, Bhojpur, Solukhumbu, Khotang, Udaypur (partly) and Okhaldhunga<br>**Bagmati Province**<br>(Dolakha, Ramechap, Sindhuli, Rasuwa, Kavrepalanchok and Kathmandu) | Transboundary, covers most of Koshi basin, connects Langtang National Park to Kangchenjunga Conservation Area, Transboundary landscape facilitating movement of wildlife (snow Leopard, Red panda and others |
| **Terai Arc Landscape (TAL)** | 2000 | 24710.13 | **Madhesh Province**<br>(Bara, Rautahat and Parsa)<br>**Bagmati Province**<br>(Makwanpur and Chitwan)<br>**Gandaki Province**<br>(Nawalparasi)<br>**Lumbini Province**<br>(Argakhachi, Banke, Bardiya, Dang, Kapilbastu, Palpa and Rupendehi)<br>**Karnali Province**<br>(Surkhet and Salyan) | Transboundary, focus on habitat conservation of large mammals (Tiger, Elephant, Rhinoceros and others, targets on corridors and connectivity |

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| | | | **Sudurpacchim Province**<br>(Dadeldhura, Kailali and Kanchanpur) | |
| **Eastern Chure-Tarai Complex Landscape** | 2016/17 | 39,252.04 | 36 districts extends from east to west in the southern part of Nepal<br>**Province 1**<br>(Ilam, Jhapa, Dhankuta, Bhojpur, Morang, Sunsari and Udaypur )<br>**Madhesh Province**<br>(Sarlahi, Dhanusha, Bara, Rautahat, Saptari, Siraha, Mahottari and Parsa)<br>**Bagmati Province**<br>(Sindhuli, Kavre, Lalitpur, Makwanpur and Chitwan)<br>**Gandaki Province**<br>(Nawalparasi and Tanahun)<br>**Lumbini Province**<br>(Nawalparasi, Argakhachi, Banke, Bardiya, Dang, Kapilbastu, Palpa and Rupendehi)<br>**Karnali Province**<br>(Surkhet and Salyan) | A hotspot of biological diversity and recharge ground water for Tarai part of Nepal, 8 IPA complexes and 19 sites have been identified, 13 IBAs are found in this landscape, focus on habitat conservation of large mammals (Tiger, Elephant, Rhinoceros and others, targets on corridors and connectivity |

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| | | | **Sudurpacchim Province**<br>(Doti, Dadeldhura, Kailali and Kanchanpur) | |
| **Western Mountain Landscape*** | 2017 | 41254 | **Lumbini Province** (Rolpa amd Rukum)<br>**Karnali Province**<br>(Dailekh, Dolpa, Jajarkot, Jumla, Humla, Mugu, ,Salyan, and Kalikot)<br>**Sudurpacchim Province**<br>(Achham, Bajhang, Bajura and Doti) | Immense natural and cultural wealth, covers most parts of Karnali River basin, landscape facilitat ing movement of wildlife (Musk Deer, Red panda and others) |

*Feasibility study and strategic plan prepared in 2017 by MoFE (then MoFSC) (MoFSC, 2018).

## 3.2 Issues for Conservation

### 3.2.1 Park-People Conflict and Human-Wildlife Conflict

Even after the creation of protected areas, conservation policy continues to cause conflict between policymakers and resource users, as illustrated by demonstrations (local restrictions) that erupted when Nepal's PAs were designated (Sunam et al., 2015), Karnali Province is also affected by such phenomena (Subedi et al., 2020). HWC, considered the major issue within the vicinity of the protected area and also outside the protected areas, is not only an issue for local people but also from the managerial standpoint. Local communities, both in the vicinity of PAs and outside PAs, are unaware of the provision of the Nepal Government for wildlife damage relief to be made via wildlife damage relief guideline 2013 (third amendment 2018). All of these provisions are mandated for different documents. Application letter claiming relief, photographs of dead/injured human/livestock, crops/stored crops, damaged houses/farm buildings, proof of deeds, and recommendation from related local government, recommendation letter from related Buffer Zone Users' Committee

(BZUC)/Conservation Area Management User Committee (CAMUC)/Conservation Area Management User Council/ Community Forest Users' Committee for all types of HWC. In addition to these documents, death certificate, police report, recommendation letter from health institution with post mortem report (if died there) and relation verification certificate are required for claiming relief regarding loss of human, recommendation letter from health institution with bills of medicine for the treatment of human injury, technical assessment of agricultural/livestock service for loss of livestock/crops/stored grains and land ownership documents are required to claim loss of crops, housed/farm buildings.

Inadequate prevention and control techniques to deal with wildlife damage exacerbate the HWC situation in Banke NP (Subedi et al., 2020). Despite the awareness of their role in conservation, local people's participation in conservation is rapidly declining (Subedi et al., 2020). Improper wildlife damage prevention and control approaches aggravate the HWC problem. Reliance on deterrence creates poor relations between conservation authorities and local people by restricting access to resources that may have an important (or irreplaceable) role (Infield, 2001). Stern (2008) argues that trust and legitimacy between protected-area staff and local people are key factors for voluntary compliance, where general agreement with formal regulations does not necessarily exist. People are not being compensated for their losses (Sijapati et al., 2021; Subedi et al., 2020). Hence, the majority of people are dissatisfied with the park's administration system especially during Yarsagumba collection. The situation is exacerbated by various overlapping policies, regulations, directives, laws, and different agencies enforcing these policies related to access regulation (Pant et al., 2017). Not only within the peripheral region of PAs, but such conflict of common resources between locals and governments also exists outside PAs as well (Heinen & Kattel, 1992) primarily due to high dependency on park resource and crop and animal depredation has made make park-people relationship sour (RNP, 2019). In addition to this incident of black bear attack to the human and crop depredation is seen in Rara National Park (RNP, 2019).

### 3.2.2 Illegal Hunting and Wildlife Trade

Despite Nepal's remarkable efforts in wildlife protection, considerable illegal wildlife trafficking persists, and given recent increases in worldwide commerce is likely to increase (Burgess et al., 2014; Dongol & Heinen, 2012; Stoner & Pervushina, 2013). Among the global second (China) and seventh (India) largest economies, Nepal is a least developed country prone to international illicit wildlife trade at varying temporal and spatial scales (Elliott & Schaedla, 2016).

Karnali area is notorious for illegal hunting both by locals and outsiders (Baral et al.,

2014; Basnyat et al., 2019). Wildlife hunting has been an inseparable part of local inhabitants in Karnali since time immemorial (Baral, 2014; Baral et al., 2014; Basnyat et al., 2019). The records of illegal poaching and possession in Karnali region is presented in Table 7.

**Table 7: Records of Illegal Poaching and Possession in Karnali Region in News**

| Records of Illegal Hunting and Possession of Wildlife Parts | Published Date | News Links |
|---|---|---|
| Three nabbed along with leopard skin | April 27, 2022 | https://english.makalukhabar.com/2022/04/56915/ |
| Four held with leopard hides in Surkhet | November 21, 2021 | https://english.nepalpress.com/2021/11/21/four-held-with-leopard-skin-in-surkhet/ |
| Four arrested with red panda hide, two others with musk from Surkhet, Mansarovar Hotel in Birendranagar | September 19, 2021 | https://myrepublica.nagariknetwork.com/news/four-arrested-with-red-panda-hide-two-others-with-musk/ |
| One held with leopard skin in Surkhet | May 13, 2021 | https://nepalnews.com/s/nation/one-held-with-leopard-skin-in-surkhet |
| Two arrested with leopard skin from Rukum West | October 26, 2019 | https://english.khabarhub.com/2019/26/51249/ |
| Man arrested in Rukum district for possession of red panda hides | February 25, 2019 | https://redpandanetwork.org/Event/Man-arrested-in-Rukum-district-for-possession-of-red-panda-hides |
| Red Panda hide seized in Jajarkot (Three people for smuggling a red panda hide in Nalagad Municipality, Jajarkot) | January 16, 2019 | https://former.redpandanetwork.org/2019/01/16/red-panda-hide-seizure-in-jajarkot/ |
| Man arrested with leopard skin | September 9, 2018 | https://myrepublica.nagariknetwork.com/news/man-arrested-with-leopard-skin/ |
| Leopard skin smugglers busted | April 03, 2016 | https://thehimalayantimes.com/nepal/leopard-skin-smugglers-busted/ |

Because annual crop yields are just three months long, illicit hunting becomes a viable activity and a credible alternative source of income. Many local youths cannot afford the money needed for business and overseas jobs so are found to engage themselves in illegal hunting (Baral et al., 2014). Surkhet district of Karnali Province is one of the illicit trade networks of leopard, red panda, and pangolin (Paudel et al., 2020). The poverty of people living nearby forests and the geographic setting of Karnali (being porous borders right on the doorstep of China in the north makes Karnali a seemingly easy destination for poaching) is inadequate for livelihood alternatives, and poor law enforcement mechanisms in source locations influence illegal activities has been cited as a reason for growing illegal hunting and illicit trade (Baker et al., 2013; Baral & Heinen, 2005; Dongol & Heinen, 2012; Lindsey et al., 2013). Apart from poverty, limited human resources delegated in government institutions such as National Parks and Wildlife Conservation offices are a limiting factor to proper police implementation and monitoring of potential poaching and illegal trade areas (Acharya, 2016). Besides, the geographical setting and climatic conditions always make it difficult for the concerned authorities to manage the flora and fauna, particularly in Nepal's hilly region.

Now, the federal government has set a target to increase the current country's average income of $1004 to $2100 per capita income to be upgraded into a mid-income level country by 2030 (Neupane, 2018). But it seems impractical for Karnali Province to increase per capita thus envisioned, as more than half of its population is in multidimensional poverty with the province's per capita income of $ 677 (Neupane, 2018). In a recent survey, 28% of the population is at food risk. Of them, 7% are in a stagnant condition of hunger once a week (Nepali et al., 2018). So, dependency on illegal hunting for lucrative business and to cope with food insecurity as an untenable solution to food deficiency leads to the tragedy imposing irreversible pressure on the commons (Borgerson et al., 2019; Lindsey et al., 2015; Wilkie et al., 2016). The nexus between Illegal hunting and wildlife trade are neither limited in local society nor only due to food insecurity and business as usual of hunting experiences, there might be other many more factors intertwined with this that need to be explored and analyzed extensively for evidence-based policy intervention. Local hunting skills are passed from the old generation to the new generation, as a result, it still exists in the area. Children are grown up under these adverse childhood experiences in their society. Implementing policies against illegal hunting and illicit wildlife trade under this scenario is complicated. Hence, policies and strategies formulation and implementation to reduce the unsustainable hunting of threatened species and ensure food security via livelihood diversification and exercising

education at the school level about: globally threatened species i.e.red panda, snow leopard, musk deer, wildlife-based ecotourism, ecosystem services that their habitat provides, and livelihood diversification can largely contribute to empower students to take charge of their own future from the very formative stage. However, the above-mentioned activities may not only aid to reduce the threat. Hence, awareness-raising campaigns, community mobilization for information gathering, greater patrolling, and cross-border collaboration should also be prioritized (Uprety et al., 2021).

Direct community people engagement, perceived responsibility, and fairness is also critical to gaining the support of communities to protect high-value wildlife. IPLCs are the first line of defense who are defending their territories and resources and against the illegal wildlife trade (Scheidel et al., 2020; Skinner et al., 2018). There is a need to better acknowledge how recognizing local rights and motivations can help counter the trade (Skinner et al., 2018). Provision of paid employment (e.g., tour guides), which increases levels of material wealth, or alternative income generation or disbursement schemes, such as the development of markets for local agricultural produce and nature-based tourism could tackle illegal wildlife hunting (Adams & Infield, 2002; Roe et al., 2010; Spenceley & Meyer, 2012).

It has also been argued that commercial breeding and legalized trade can alleviate pressure on wild populations (Jiang et al., 2007). Considering the importance of wildlife breeding to combat illegal wildlife trade, NPWCA act was amended with a new provision to allow farming of wild animals for commercial purposes which primarily applies to non-domesticated mammals, birds, reptiles, amphibians and insects (Bhusal, 2021). Based on Article 15(a) of NPWCA 1973 (fifth amendment) musk deer breeding center has been established in Barekot RM of Jajarkot. Nepal government stipulates a provision for granting permission to any person or entity for commercial farming and reproduction of various wild mammals, reptiles, and amphibians. There are some lacunae in policy for granting this permission to any person or entity for commercial farming and reproduction.

Owing to the federal government's proposal to include endangered IUCN Red List Species, lack of clarity in the selection of wild animals and their specimens (Nidup et al., 2010), and current human resources, technically tough to deal with the source monitoring and regulations over the sourcing of seed animals, are challenges confronted for the implementation of wildlife farming policy and passing regulation (Bhusal, 2021). The average per capita income of citizens of Karnali is $606 (KPPC, 2020), much less than the proposed costs for obtaining the license, seed animal, and travel expenses of government officials to source seed animals and transportation of

seed animals hence seems unaffordable. The benefits from wildlife farming programs are lopsided in favor of a few vested groups, business ventures, leaders, and/or communities; hence reaping economic benefits via wildlife farming policy the citizens of Nepal including those poor and marginalized people of Karnali have been questioned (Bhusal, 2021).

### 3.2.3 NTFPs and Traditional Transhumance

Karnali Province is rich in high value NTFPs such as Yartsagumba, Panchaule, Padamchal, Kutki, Jatamansi, Morchella, etc. The residents of Karnali heavily rely on the collection and trade of Yarsagumba for income and livelihood support even if Yarsagumba are not available in each and every district of Karnali Province. Yarsagumba contributes 64.5% and 53.3% of total household income in Jumla and Dolpa respectively and has become an integral part and significant source of local livelihoods (Shrestha et al., 2019; Shrestha & Bawa, 2014). However, local communities in regions with low productivity and limited livelihood opportunities are vulnerable to increasing dependence on this high-value resource, Yarsagumba and other NTFPs as these areas have already been hard hit by climate change, and future climate change is likely to have a negative effect on Yarsagumba and other NTFPs (Shrestha et al., 2012; Shrestha & Bawa, 2014). Farmers in Mugu district are suffering as a result of the ban on its collection for the prescribed duration (Shrestha & Bawa, 2013; Thapa et al., 2014) which is the only source of income with high economic returns not only for families only in Mugu but in higher Himalayas of Karnali Province (Shrestha & Bawa, 2013). Likewise, the rhizome Setakchini/Khiraula of *Polygonatum cirrhifolium* and *Polygonatum verticillatum* has high demand from China and is accordingly traded high in recent years (Basnyat et al., 2019). Apart from harvesting, the trade of Setakchini has severe environmental concerns: substantial quantities of fuelwood are required for primary processing, posing double degradation (over-harvesting and excessive fuelwood collection) in the area (Basnyat et al., 2019). Due to high demand from China, hundreds of collectors visit the area and indiscriminately harvest Setakchini before its actual harvest time (September-October) starting from July, thereby hampering the natural propagation, which is a major sustainability concern in Karnali (Basnyat et al., 2019). This sustainability concern is similar to one of the NTFPs threats that Kunwar (2002) highlighted as high pressure from unsustainable harvesting practices for trade. Guchi chyau (*Morchella conica*) is another major medicinal plant in the area. In the present time, the income from Guchi chyau is the third most important after Yarsagumba and Setakchini, in terms of total trade value (Basnyat et al., 2019). NTFPs and globally threatened faunal species like red panda, snow leopard, musk deer, himalayan black bear share the same habitats and

unsustainable harvest of NTFPs could threaten those biological hotspots and human wildlife conflict may be confronted. Hence provision of legislations relating to harvesting, collection and trading of NTFPs must be in synchrony with the wildlife conservation plan and community-based wildlife conservation plan.

According to the Forest Act, 2019 and NPWCA, 1973 the right to issue the license for collecting NTFPs including Yarsagumba is vested with the Divisional Forest Officer (DFO) and warden for issuing NTFPs collection licenses within the area of their respective jurisdiction. National Forest Policy 2019, and Forestry Sector Strategy (2016-2025) emphasize sustainable management of NTFP resources. Interested traders need to register an application in DFO in case of the outside protected area and in the warden's office if the collection area is located inside the protected area. DFO and warden grant the license for collecting Yarsagumba after completing necessary steps not exceeding the amount specified in the Division Forest and PA Management Plan. Local governments can also make separate rules compatible with the site.

In lieu of a collection permit from the local government, traders deploy the collectors but for transportation out of the district, DFO/warden's transport permit is required. So, there is a discrepancy in jurisdiction among the local government and DFO/PAs warden regarding issuing collection and trade permits. It is very inevitable to ensure the just and equitable distribution of the natural and fiscal resources among the three tiers of the government of Nepal for the effective implementation of the federal system (National Natural Resources and Fiscal Commission [NNRFC], 2018). To address this, the constitution has a provision relating to the National Natural Resources and Fiscal Commission (NNRFC) as a constitutional body. Article 251, of the Nepalese constitution has mandated the various functions, duties and powers of the NNRFC and among them 251(i) has a provision that NNRFC can do study and research work in the possible disputes that may arise between the Federation and the Provinces, between the Province, between a Province and Local Levels and make suggestions to act in a coordinated manner for the prevention of such Disputes. Nepalese constitution has listed the powers of the Federal, provincial and local government and concurrent powers of three tiers of the government of Nepal in its Schedule. Under the concurrent powers of the three tiers of government includes forests, wildlife, birds, water uses, environment, ecology, biodiversity, mines and minerals and royalty from those natural resources which are economically important. The power-sharing on the natural forest resources between the governments and role of different tier governments is presented in Table 8.

**Table 8: Power-sharing on the Natural Forest Resources between the Governments and the Role of Different tier of Government**

| Federal Power | Provincial Power | Local Power |
|---|---|---|
| National forest policies and carbon services including National parks, wildlife reserves and wetlands including national and international environment management | Use of the forest and management of the environment within the province | Protection of wildlife. |
| Policy formulation and management of all forms of Protected Areas under NPWCA 1973 | Policy formulation and implementation related to national forests | Policy formulation and implementation related to local biodiversity and watershed conservation |
| Maintaining records of biodiversity and wetlands in all Protected Areas | Maintaining records of biodiversity and wetlands at provincial levels | Maintaining records of biodiversity and wetlands |
| Declaration and management of national-level conservation areas | Declaration and management of provincial-level conservation areas | Declaration and management of local-level conservation areas |
| Formulation and implementation of policy and law as required by multilateral environmental agreements | Implementation of Provisions related to policy and law formulated by federal government | Implementation of Provisions related to policy and law formulated by federal and provincial governments |
| Policy formulation and management of national level zoo and botanical gardens | Policy formulation and management of provincial level zoo and botanical gardens | Policy formulation and management of local level zoo and botanical gardens |

| | | |
|---|---|---|
| Policy formulation and management of Ramsar sites | Implementation of actions of Ramsar sites' management plans | Implementation of Ramsar sites management plans |
| Policy formulation and management of inter-provincial forests and biodiversity | Policy formulation and management of inter-provincial forests and biodiversity | |

Local Government Operation Act (LGOA), 2017 was enacted to realize and exercise the local government's powers and right for inclusive, accountable and transparent service delivery to people. LGOA has elaborated the local government's rights, duties and function in section 11 (Pa), which has devised that Local government will carry out the function of the conservation and monitoring of the natural resources. Intergovernmental Fiscal Management Act, 2017 has a provision on the benefits sharing from the natural resources among the three tiers of the government. Among the concurrent power of the local it has power of collection, coordination and monitoring of the royalty obtained from the natural resources, excavation of the mines and minerals, and royalty from the community forest.

The Nepal government has adopted the Herbs and NTFPs Development Policy 2004 as articulated by the CBD (Sharma et al., 2004) and has not been updated yet. In accordance with this policy, herb and NTFPs coordination committee was formed to set long-term goals and formulate national policies related to review: research and policy documents Herbs and NTFPs; to formulate and implement acts, rules, and directives for the sustainable development and utilization of Herbs and NTFPs as per policy; to develop strategies for programme implementation in coordination with different agencies on priority basis as directed by the national policy; to coordinate, evaluate, and monitor Herbs and NTFPs related activities between government, non-government and private sector; and to establish and coordinate interrelationships of programmes regarding resource conservation, research, technology development, marketing, training and publicity related with Herbs and NTFPs (Ministry of Forest and Soil Conservation [MFSC], 2002). In the meantime, no concrete national, provincial, and local acts, rules, and directives for the sustainable development and utilization of herbs and NTFPs were endorsed targeting sustainable utilization of NTFPs of Karnali including other parts of the country (Kunwar, 2002; Kunwar et al., 2006; MFSC, 2002; Olsen & Helles, 1997, Olsen & Helles, 2009).

In Nepal and mountain regions elsewhere, a unique age-old adaptive strategy of the seasonal livestock and human migration, transhumance pastoralism, between many

agro-ecological zones support the subsistence livelihood via income from cattle-based products complemented by NTFPs trade (Agrawal, 2010; Rota & Sperandini, 2010). It's been more than one millennium that the pastoralists in the Himalayas including Karnali have transformed these mountain ecosystems (grasslands, pastures, and shrublands) into economically productive assets for their subsistence agro pastoralism-based livelihoods (McVeigh, 2004; Kreutzmann, 2012). These ecosystems are important sources of forage, but only 37% of the forage is accessible to livestock in Nepal (Ning et al., 2013) indicating a need for evidence-based policy intervention. Like in the Karnali Province, Kanchenjunga Conservation Area (Taplejung), Makalu Barun NP (Sankhuwasaba) and adjoining areas (Bhojpur, Khotang), Sagarmatha NP (Solukhumbu), Gauri Shanker Conservation Area (Dolakha, Ramechhap) of Province One, Langtang NP and adjoining areas (Rasuwa, Sindhupalchowk, Dhading, Nuwakot) of Bagmati Province (Aryal et al., 2014), Manaslu Conservation Area (Thapa et al. 2016), Annapurna Conservation Area and Dhorpatan Hunting Reserve (Gorkha, Manang, Mustang, Myagdi, Baglung) of Gandaki Province, and Khaptad NP, Api Nampa Conservation Area and adjoining areas of Sudurpaschim Province) still have practiced the same system. During the late spring and summer seasons livestock herders graze their livestock like *Bos Taurus, Bubalus bubalis, Equus ferus coballus*, *Equus asinus*, *Capra aegagrus hircus*, and *Ovis aries* in the alpine pastures above their villages (Baral, 2014) which are prone to depredation by the carnivores. The monetary loss due to livestock depredation is equivalent to 15.8% of Nepalese per capita income in upper Humla, and 67.5% in upper Dolpa (Kusi et al., 2019). The combined circumstances of their agropastoralism-based livelihoods, absence of support or adequate mitigation measures either infrastructural or governmental and livestock losses as a result of carnivore attacks all contribute to fostering a concrete need for policy intervention for contextual livelihood diversification based on the culture and damage relief payments of which many of the pastoralists are unknown. The continuation of this practice is threatened by the effects of climate change on mountain ecosystems, exploration and choices of livelihood diversification for betterment, socioeconomic changes, market influence on livelihood decisions, youth migration and labor shortage, low motivation of local people to engage in livestock rearing, and conflicts between herder and nonherder communities and institutions, as well as inadequate policy support and institutional arrangements (Gentle & Thwaites, 2016). Unsustainable harvesting and habitat loss due to land use change, deforestation, and overgrazing are common threats to NTFPs in this region (Uprety et al., 2010; Uprety et al., 2016) which leads to deterioration of biodiversity (Ghimire, 2008).

Despite these obstacles, there are opportunities for the development of NTFP-based community forestry enterprises. Nepal's Third National Communication to the

United Nations Framework Convention on Climate Change 2021 identified Agriculture, Forestry and Other Land Use (AFOLU) sector as the largest GHG emitting sector and has adopted a range of policies and measures for mitigation from the AFOLU sector (MoFE, 2021a). The expansion and consolidation of the Program for the conservation and protection of grazing lands, designation and promotion of protected area and avoidance of policies enabling sprawling, leapfrogging development have been prioritized as long-term action of Province level ministry for Grazing lands, plants and animal management as mitigation action plans for AFOLU (MoFE, 2021a).

Not only the mainstream biodiversity conservation legislation; but also, Nepal's National The NAP sets out priority programmes in the nine thematic sectors as outlined in the National Climate Change Policy 2019. NAP identified Forest, Biodiversity and Watershed Conservation as one of the priority sector proposing 8.7 billion (18.35% of total NAP implementation budget 47.4 billion) to implement priority activities and programmes regarding biodiversity conservation until 2050; hence is in coherence with National biodiversity conservation policies, strategies, plans, development goals, and priorities; and International commitments under the United Nations conventions including the United Nations Framework Convention on Climate Change, Paris Agreement, Sustainable Development Goals, Sendai Framework for Disaster Risk Reduction, United Nations Convention to Combat Desertification, and United Nations Convention on Biological Diversity. NAP has highlighted forests fire preparedness, prevention and control, Karnali Watershed Management Programme for reducing climate risks and vulnerabilities and promoting irrigation facilities in the downstream, Integrated sub-watershed management for climate resilience and increased water availability and agricultural productivity, improvement of forest health and restoration of rare, endangered, endemic, and threatened species for building resilient forest, restoration of habitats and strengthening ecological connectivity for wildlife and biodiversity, promotion of multiple uses of Protected Areas and Natural Heritage and generation of climate adaptation services by maximizing the utility of Protected Areas, control of climate induced disasters and extension of the network of Protected Areas for resilient ecosystems, development and strengthening of ponds/lakes in community forests for resilient biodiversity (One Community Forest- One Wetland), wetlands development, conservation and management at the foothills of Chure, Integrated Green Economy and Green Job Promotion Programme through sustainable forest management and circular Economy in the Hills and Mountains, and Upland Conservation and Climate Resilient Livelihoods Programme in High Mountains as priority activities and programmes while dealing with national adaptation planning until 2050 (MoFE, 2021b). NAP

also allocates $0.7 billion to enhance resilience to climate change through Gender Equality and Social Inclusion (GESI) Responsive Livelihood Programmes via Gender, Social Inclusion, Livelihoods and Governance Sector (MoFE, 2021b) which will be fruitful to bring about resilience to climate change for forest dependent IPLC.

Until and unless the prevailing policies cannot be harmonized for commonly shared resources and ecological regions, they would not translate well into practice (Pandey & Pokhrel, 2020). In Nepal failure to meet social, political, and economic needs, scarcity of resources, corruption, bad governance, poverty and inequality, contradictions and inconsistencies in the application of formal legal procedures and customary practices, diversity in local norms and beliefs, and management differences have contributed for emerging social and resource conflicts (Upreti 2002; Panday, 2001) so does happen in Karnali.

### 3.3 Challenges for Biodiversity Conservation Legislation Implementation in Karnali

Karnali's biodiversity conservation plan and policy face legal complexities or jurisdictional conflict among implementing agencies: PAs managers and forestry officers, local government authorities, institutional capacity, and availability of resources and staff to deal with three interwoven components: biodiversity conservation, market-based livelihood diversification, and climate change adaptation. The policy analysis by Thakali et al. (2018) concludes that major achievements such as community-based conservation, which Nepal has pioneered over the last three to four decades, could be jeopardized under the new constitutional and legislative framework for federal and provincial systems. Implementing agencies: Protected areas managers work under state ministry jurisdiction; while divisional forest officers work under provincial government jurisdiction, sometimes conflicts of interest arise though are from the same educational background and fraternity although are governed and guided by state and national act and policy. Moreover, local government authorities and jurisdiction are autonomous and exercise priority. Yet, local governments less prioritize natural resource conservation including wildlife protection rather they focus more on physical development and construction like roads, buildings, tower, park and bridges etc. At the same time local governments lack skilled manpower, and political leaders lack administrative/management capacity, and knowledge to exercise the respective power of their jurisdiction and attempts to regulate PA management, DFO and local government authority in order to prosecute offenders against wildlife crimes. Likewise, the lack of commitment, coordination, communication, cooperation, sense of local stewardship, and capacity between key

stakeholders, agencies, and locals reduced collective efforts and has been highly prioritized to hinder policy implementation. The current conservation approach in RNP and Shey Phoksundo NP is still largely top-down, which is highly regulated and frequently disregards local needs and aspirations regarding human-wildlife conflicts and common resource use (Pokhrel, 2013). To properly grasp user rights, locals must comprehend it and discuss it with the relevant authority. However, there is necessity to review current buffer zone regulations from a mountain viewpoint is necessary to reflect the socioeconomic circumstances of the communities (RNP, 2019) which can aid to conserve and uphold the biological integrity of the Karnali while boosting locals' quality of life through the prudent and self-sustaining use of natural resources.

The benefits from incentive-based conservation programs (Karki, 2013; Pokhrel, 2013) are lopsided in favor of a few vested groups, leaders, and/or communities. Both the politicians and bureaucrats are aware of good governance principles and processes, but politicians sometimes fail to comprehend the legal and technological constraints of bureaucrats believing principles and processes aren't always applicable and legitimate (Gupta et al., 2019). Hence, the political conflicts between local leaders and bureaucrats could hinder the goals of community-based conservation approaches outside PAs (Dongol & Heinen, 2012) and urge necessary amendments. Apart from these policy implementation challenges in Karnali region, Mountain specificities i.e. limited accessibility, greater fragility and marginality, greater diversity, and unique niches (e.g. resources, indigenous knowledge, and adaptation practices of communities evolved over the generations) in Karnali have been foreseen as policy implementation barriers. With references to the species management in and around the national park, species monitoring practices have not been developed or conducted till today, the province has limited grazing lands which are invaded by invasive species.

A broadened resource base and successful networking are essential if Non-governmental Organizations (NGOs) are to remain focused on their own brand of participatory development. Geographical factors, weak planning and implementation, dependence mindset, lack of educated human resources, inadequate coordination, and socio-economic problems have been identified as impending variables of NGOs' performance in Karnali, thus they must be addressed through policy and program (Mahat & Bihari, 2017).

There are very few conservation-based NGOs and less than four dozen research articles published on flora and fauna ecology and conservation in mainstream international journals (Acharya & Poudel, 2020). However past research is centered around faunal distributional, observational, and monitoring records: Baral (2014), Baral et al. (2014), Baral et al. (2019), Bhandari & Bhusal (2017), Bhatta et al. (2014),

Dangol & Chalise (2018), Ghimirey & Ghimire (2010), Ghimirey et al. (2014), Gurung et al. (2022), Kusi et al. (2018), Kusi et al. (2019), Paudel & Kindlmann (2012), Paudel et al. (2015), Paudel et al. (2019), Shrestha et al. (2021), Werhahn et al. (2016). Similarly, the researchers and NGOs conducting research and conservation interventions in Karnali Province and the role of such individual researchers and NGOs have been considered a positive effort; but amorphous with a narrowed resource base and limited network (Opare, 2010), producing little benefit to marginalized groups. Hence, conservation-focused institutions (including government and non-government agencies) and individual researchers failed to prioritise the conservation issue in the political issue in Karnali.

IPLC continues to face obstacles in drafting and endorsing biodiversity policy at local, regional, and global levels (Witter et al., 2015). Endorsing new biodiversity conservation policy tools requires recognizing IPLC contributions and potential social impacts, creating equitable and constructive representative spaces in formal decision-making bodies, and developing financial mechanisms that allow indigenous people and local community stewardship in biodiversity policy design and implementation (Armstrong & Brown, 2019) and state acknowledgment of territorial rights, IPLC laws, principles, and customary practices that simultaneously improve local livelihoods (Tengö et al., 2014). Implementation mechanisms and institutional arrangements for the transformation of policy objectives into implementation were largely subjugated by government officials, which in turn obstructed the achievement of the policy outcomes and led to policy failure (Aryal et al., 2021).

### 3.4 Ways Forward

Karnali province is endowed with many opportunities for the conservation of biodiversity. However, the policy formulation context has already been set despite the issues in effective implementation as conflicts in sharing resources between stakeholders.

Considering the policy formulation and implementation as the medium for effective conservation of wildlife (Kingsford et al., 2009), building more sustainable federal, provincial, and local government conservation policies underpinned by research acknowledging IPLC laws is necessary, principles, and customary practices to improve local livelihoods. Environment Protection Regulations, 2020 mandate local-level legislation for environmental assessment for a proposal relating to the development, construction work, or project pertaining to a matter falling under the jurisdiction of the local government; hence of 79 local governments in Karnali, only 14 have environmental protection related legislations, of which nine are BES and IEE

procedure, one has its own EPA, 2020, and one has Environment Protection and Management Procedure, 2018 which indirectly incorporates biodiversity and wildlife conservation issues in project implementation. The other 65 local governments of Karnali lack environment-related legislation. Only one local government (Sani Bheri of west Rukum) enacted forest-related legislation, Forest Act 2019, and three local governments enacted aquatic diversity-related legislation.

Hence, it is expedient to amend and consolidate the prevailing law on environmental protection and develop non-overlapping laws upon the contextual requirements for biodiversity conservation. It also ensures protecting the fundamental right of individuals to live in a clean and healthy environment and safeguarding biodiversity, minimising adverse developmental activities and livelihood-associated environmental impacts on the environment. Moreover, local governments with no biodiversity and environmental-related policy at present should consider social, political, and economic needs, scarcity of resources, governance, poverty and inequality, contradictions and inconsistencies in the application of formal legal procedures and customary practices, diversity in local norms and beliefs on how to promote and integrate community-based wildlife conservation for improving locals' livelihoods rather than induced blanket policies from elsewhere.

Policy implementation and harmonization at all levels may not solve all problems regarding biodiversity conservation at provinces; rather there is still a lack of management issues which policy maker/ planner, academicians, researchers and civic society must pay attention to. Information on species occupancy, movement ecology, predator prey relationship, habitat fragmentation or encroachment, carrying capacity of the habitat, need of habitat improvement etc could be crucial and must be updated and integrated in conservation plan. CBM is one of the widely practicable and acceptable models to resource conservation planning, monitoring or management in Nepal, including a few other countries. Nevertheless, model or law, act or policy alone could not be executed perfectly unless the state ensured community justice, participation and rights together with comprehend and strengthened research outputs inside policy framework.

Local communities and poor indigenous people are affected by such conflict between humans and wildlife as they are nearer to the forest and more dependent on forest resources. Local residents, buffer zone community forests users' group and community forests users' group are vital stakeholders in the battle against the illegal wildlife trade and there is a need to better acknowledge how recognizing local rights and motivations can help counter the trade. Schemes like land-use planning, direct incentives, preventative management measures and raising awareness, performance payments,

private insurance, and disincentives on land conversion have been proposed as a part of conservation plans to reduce the negative impacts of wildlife on people (Rayamajhi, 2009; Upadhyay, 2014).

In order to resolve the problem of NFTPs conflicts between local residents and government, Pant et al. (2017) suggest the GoN prepare a national Yarsagumba management policy and local Yarsagumba management guidelines by clearly defining the roles, responsibilities, and rights of local institutions and actors while ensuring the provision of particular services in the community forestry programme to distant and seasonal users. Furthermore, detailed biological inventories and monitoring systems are required which fulfill the data scarcity regarding the distribution and abundances of the floral and faunal species. And research priority must be given to species and forests outside the protected areas (Heinen & Kattel, 1992). Although the government has implemented various conservation initiatives outside the protected area including conservation landscape, conservation management buffer zone, community forestry, it seems inadequate for information dissemination in regards to the awareness of local people (Ghimire et al., 2014). For controlling the illegal wildlife trade from and between Karnali Province, it is necessary to increase community knowledge and participation in conservation, conservation organization capacity building, and decreases in rural poverty are also needed, for sustainable conservation (Poudel et al., 2020). In addition, science and site-based policies must be endorsed in Karnali Province as the key action that scientists must take is to ensure that research information reaches the appropriate levels of government decision-making (Mooney & Mace, 2009). Networking is more influential than scientific rationale in Nepal's forest policy (Aryal et al., 2022). Hence communication, collaboration, and cohabitation with relevant stakeholders can ensure efficient resource governance and ensure biodiversity conservation for sustainable livelihood.

## 4. Conclusion

Despite the diverse topography and biodiversity with 21 forest types, 5 ecoregions, and many faunal and floral species, a detailed in-depth study of the biodiversity of Karnali Province is lacking. Different laws, regulations, plans, and policies formulated by the GoN have also encouraged biodiversity conservation and biodiversity-based livelihood options like the development of the NTFPs sector, and nature-based tourism. Yet, those plans and policies have not been effective (Schippmann et al., 2006). Among 79 Local governments, only one local government has enacted a forest act and the rest have not attempted to formulate concrete biodiversity conservation policies and strategies considering the social, political, and economic needs of

indigenous people and communities. There still remains space for improvement to integrate local communities into the policy including human-wildlife conflict near the protected areas (buffer zone region), illegal wildlife trade in trade routes, and the situation of the province near illegal wildlife trade hub/route even worsening the illegal supply of wildlife body as well as parts, acting the province as transit zone (Humla and Dolpa) to China are major issues in Karnali province. Along with this, the conflict between locals and the government for common resources, mainly NTFPs are also creating mishaps for sustainable conservation. The constitution has provided local government with the power of protection and conservation of natural resources, province level government is provided with power of management and exploration of the province level natural resources and central government with power of excavation, and formulation of national level policies on natural resources. The new governance structure has separated the three tiers of responsibility, and the local level is now taking charge of program and policy implementation duties. Despite having policies at different levels of government, policy implementation is lagging behind in all provinces including Karnali Province. This sort of distribution of power provokes a variety of disputes and can be best avoided a priori through clear legal provisions and power-sharing; hence seem to have trade-off in power sharing and creates problems during the implementation of those rights and powers between the governments creating conflicts. Inter-Provincial Council and NNRFC can collaboratively work for amicable intergovernmental dispute resolution in natural resources to stop further escalation of the conflict between and among governments. Concomitantly, Intergovernmental natural resources management laws should be enacted to address the issues of benefit sharing and access to natural resources and resolve any potential disputes between governments. In addition, a participatory approach, incentive strategy for common and locally available shared resources, and clear policy development could fill the gaps in conservation policy in the province. The policy should also integrate, document, and use traditional knowledge for intellectual property rights that could aid the local people's knowledge as property and can be saved as intellectual property.

## 5. Acknowledgments

This study was supported by Nature Conservation Initiative Nepal (NCI-Nepal) and Nepal Environmental Research Institute (NERI). We are grateful to all the villagers for their cooperation and support during the study. We are grateful to anonymous reviewers for the valuable comments and suggestions.

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