





# Living Sagarmatha

जीवन्त सगरमाथा

**Nepal Mountain Resilience Strategy, 2026**  
**(Working Draft)**

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# EXECUTIVE SUMMARY

## Mountains Under the Shadow of Climate Change

Nepal is a mountainous country whose geography, culture, economy, and ecosystems are shaped by the Himalayan range, extending from the high Tethyan Himalayas through the middle hills to the Indo-Gangetic Terai plains. This vertical landscape sustains high biodiversity, complex river systems, and diverse agro-ecological and cultural traditions. Often described as the “Roof of the World” and the “Pulse of the Planet,” the Himalaya is not only Nepal’s defining strategic asset, but also a globally significant ecological system, with rivers that sustain hundreds of millions of people across South Asia.

<sup>1</sup>Nepal’s altitudinal diversity creates major national opportunities in biodiversity conservation, agriculture, hydropower generation, and water security. The drop from the top of Mount Everest (Sagarmatha) to the Terai and the Indian border is close to 29000ft over 100 miles. Snow and glacier melt currently contribute an estimated 70-80 percent of Nepal’s dry-season river flows, supporting drinking water supply, food production, and hydropower, one of the country’s most promising economic sectors. At the same time, these mountain characteristics increase Nepal’s



<sup>1</sup> Photo Credit: Juan Carlos Luna Cuevas

exposure to climate risks. Rising temperatures are accelerating glacier retreat; increasing the formation and instability of glacial lakes; shifting monsoon behaviour; and intensifying floods, landslides, droughts, and water scarcity.

These biophysical changes are already producing wide-ranging impacts across sectors. Agricultural productivity is increasingly affected by climate variability. Springs are drying and groundwater tables are falling. Biodiversity and ecosystem services are deteriorating. Critical infrastructure, including hydropower, transport, and tourism assets, is more exposed to climate hazards. Social and cultural systems are also under pressure, contributing to outmigration, disrupting traditional practices, and increasing vulnerability for women, children, and marginalized communities. While Nepal has multiple policy frameworks, responses remain fragmented, and many high-risk municipalities still lack functional early warning and preparedness systems.

Looking ahead, the World Meteorological Organization (WMO) projects a **70% likelihood** that the **global mean temperature averaged over 2025-2029** will exceed **1.5°C** above the **1850-1900** baseline, indicating that warming near (and above) the Paris threshold is increasingly probable in the near term.

For Nepal, the **World Bank** warns that without strengthened resilience, **unchecked climate impacts could leave GDP at least 7% lower by 2050**. Economic modelling cited for Nepal also suggests losses equivalent to **~2.2% of annual GDP by 2050**, widening to **~9.9% by 2100** under a high-emissions / business-as-usual pathway.

Living Sagarmatha reflects Nepal's commitment to protect its mountains, secure water and food systems, conserve biodiversity and cultural heritage, and build climate resilience for both highland communities and connected lowland populations. It recognizes that Nepal's future, and that of billions beyond its borders, the peoples of South Asia, is closely linked to the health of the Himalaya, and calls for coherent national action alongside sustained regional and global solidarity to safeguard these life-supporting systems for present and future generations.

## **Aligning National Frameworks for Climate-Resilient Mountain**

### **Development**

Nepal has developed a comprehensive set of national policies and strategies that provide a strong basis for sustainable, inclusive, and climate-resilient development. Instruments such as

the National River Basin Management Strategy (2023), successive Nationally Determined Contributions (NDCs), the Long-term Strategy for Net-Zero Emissions (2021), the National Adaptation Plan (2021), biodiversity strategies, agricultural development frameworks, and the National Disaster Risk Reduction Policy (2018) collectively promote climate resilience, ecosystem conservation, disaster risk reduction, and low-carbon development across mountain areas and their connected lowlands.

Despite this policy foundation, implementation is constrained by persistent gaps in financing, technology, institutional capacity, and coordination. Delivery remains highly dependent on international finance, with Nepal's NDC 3.0 indicating substantial investment requirements through 2035. Technology limitations continue to restrict cryosphere monitoring, hydrometeorological observation and data systems, digital early warning coverage, and the scaling of climate-smart agricultural deployment. Capacity constraints across federal, provincial, and local levels reduce the effectiveness of risk-informed planning and service delivery, including for mountain-specific hazards such as landslides, permafrost thaw, and glacial lake outburst floods. Institutional fragmentation, alongside the absence of a dedicated mechanism to coordinate mountain priorities across sectors, further reduces efficiency and limits cumulative impact.

The challenges in achieving resilient mountains and interconnected lowlands can be organised into four thematic streams: (i) mountain biodiversity and ecosystems, (ii) climate change, (iii) mountain economy, culture, and prosperity, and (iv) cross-cutting issues. At present, climate, biodiversity, and environmental initiatives in mountain regions operate in parallel across policies, institutions, and programmes. This fragmentation limits effectiveness and overall impact. It has also resulted in gaps in research, financing, institutional collaboration, and stakeholder engagement, undermining Nepal's ability to respond effectively to accelerating climate and ecological risks in mountain ecosystems and their connected lowlands.

An integrated framework is therefore proposed to provide a unifying national architecture for mountain resilience. The framework would align sectoral policies, institutions, and development programmes under a shared vision and results structure, strengthening policy coherence, improving resource efficiency, and increasing accountability for delivery. Mountain-specific actions embedded within existing national strategies would be coordinated through a single,

coherent and multi-stakeholder governance arrangement, reducing duplication and enabling strategic prioritization of investments across the mountain to lowland continuum.

## **Towards Living Sagarmatha**

### **Vision**

Nature-aligned, climate-resilient, inclusive, and economically prosperous mountains and interconnected lowlands; to create a sustainable Nepal.

### **Mission**

Foster sustainable development in mountain and interconnected lowland regions by restoring ecosystems and biodiversity, enhancing climate resilience, promoting inclusive social, cultural and economic systems, and advancing a carbon-neutral, nature-based economy.

### **Objectives**

- All ecosystems and biodiversity in the mountains and interconnected lowlands are restored and sustainably maintained.
- Human and natural systems in the mountains and interconnected lowlands are effectively adapted to climate change.
- The social harmony and cultural heritage of the mountains and interconnected lowlands is preserved and promoted.
- A carbon-neutral and gender and socio-cultural inclusive economy is fostered in the mountains and interconnected lowlands.
- The country's leadership in mountain advocacy is enhanced through common understanding among state and non-state actors in the mountain agenda.
- Regional and global partnership in the country's mountain development is strengthened.

## **Strategic Building Blocks**

To deliver the vision, mission, and objectives of Living Sagarmatha, the framework is structured around core building blocks that translate strategic intent into coordinated implementation.

### **Policy, Governance and Institutions**

Living Sagarmatha proposes a coherent governance architecture to address fragmentation across mountain-related policies, institutions, and programmes. It is positioned as Nepal's foundational framework for mountain development and resilience, with an emphasis on cross-sector coordination spanning conservation, climate action, tourism, livelihoods, and risk management. The framework recommends establishing a dedicated Mountain Authority, either under the Ministry of Forests and Environment or as an autonomous body, to provide

coordination, standard setting, and oversight across relevant institutions and stakeholders. At the regional level, a council of environment ministers from the Hindu Kush Himalayan region is proposed to strengthen dialogue, alignment, and cooperation on shared mountain systems and transboundary risks. International Centre for Integrated Mountain Development (ICIMOD) plays a critical role as an anchoring institution in this scenario as it brings its interregional mandate to support the strategy.

## Programmes and Projects

Living Sagarmatha adopts a portfolio approach to implementation, comprising 35 projects over 10 years interventions organized under four thematic streams: mountain biodiversity and ecosystems; climate change; mountain economy, culture, and prosperity; and cross-cutting enabling issues. All interventions will be implemented in line with core delivery principles, including gender equality, disability and social inclusion (GEDSI), with explicit attention to children and youth; community ownership as a foundation for sustainability; peace and regional security as cross-cutting considerations; and data-driven governance to strengthen accountability and results. The portfolio is costed at an estimated USD 4.08 billion over a seven-year horizon, to be mobilized through a mix of bilateral and multilateral sources. A dedicated Sagarmatha Trust Fund is proposed as an implementation facility to support financing, coordination, and results-based delivery.

## Partnerships

Implementation will be anchored in multi-level partnerships across government agencies, UN entities, development partners, civil society organizations, and community-based institutions. Partnerships will be structured to support both delivery at scale and local ownership, including capacity strengthening, knowledge transfer, and inclusive engagement.

## From Sagarmatha to the Terai

Taken together, Nepal's mountains represent both a strategic national asset and an increasingly acute climate risk frontier. The same steep elevation gradients that underpin water security, food systems, biodiversity and hydropower are becoming more volatile under rising temperatures, shifting precipitation patterns, and cascading hazards from the cryosphere to the Terai. These stresses are already evident in livelihoods and public services, including greater variability in agricultural production, drying springs, declining ecosystem functions, and growing exposure of critical infrastructure. Future scenarios indicate that economic and social costs will escalate if adaptation and risk management do not accelerate. Living Sagarmatha therefore calls for resilience to be strengthened across the full mountain-lowland continuum, integrating

enhanced monitoring and early warning, risk-informed infrastructure and land-use planning, ecosystem restoration, and locally led, inclusive measures that protect vulnerable groups and sustain the natural systems on which Nepal and the wider region depend.



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<sup>2</sup> Photo Credit: Juan Carlos Luna Cuevas

# SAGARMATHA'S MESSAGE

## Mountains under the Shadow of Climate Change

Nepal is predominantly a mountainous nation, distinguished by its striking physiographic diversity in the central Himalayas. The Himalayan Mountain system is broadly divided into four distinct zones from north to south,

corresponding with decreasing elevation: the 'Tethyan Himalayas' (known as HIMAL), the Greater Himalayas (known as the Mahabharat), the Lesser Himalayas (known as the Siwalik or Chure) and the Indo-Gangetic Plain (known as the Terai) (Le Fort, 1996). Notably, the Terai Plain in Nepal which forms part of the Indo-Gangetic Plain, is also considered an integral part of the broader Himalayan Mountain region.

The country's skyline is defined by majestic ranges of the Kailash, Sagarmatha, and Kanchenjunga massifs. These mountain systems are intricately linked by vast river networks, functioning like arteries and veins, and organized into four principal basins, the Koshi, the Gandaki, the Karnali, and the Mahakali, arranged from east to west. These interconnected river systems create a landscape of exceptional global significance. The major basins are transboundary, with many originating in the Tibet Autonomous Region, flowing through Nepal, and drawing tributaries from all three mountain ranges before merging into the Ganges, one of the ten great river systems of the Hindu Kush Himalaya.

The Himalayas, comprising a major portion of the Hindukush-Himalayan range, are often referred to as the "Roof of the World" or the "Pulse of the Planet," highlighting their global ecological significance. They form an integral part of both regional and global ecosystems, and their conservation contributes to the preservation of ecosystems within Nepal and beyond. Mountains matter in the country not only because they define the physical landscape, but because they underpin its ecology, culture, and economy in fundamental ways.

The mountains are not just a geographical feature but rather a representation of glacial formations, mountain ecosystems, and the enduring harmony of highland and lowland civilizations shaped across the ages. Formed approximately 50 million years ago as a result of

उचाइ हाम्रो चुलिन्छ कहाँ हिमालै नरहे

(Had the Himalayas not stood, what measure would there be of  
our rise ?)

---National Poet Madhav Ghimire

tectonic forces, this region encompasses the youngest mountain range on Earth. Human presence, established around 12,000 years ago, has further contributed to shaping its cultural and ecological identity (Corvinus, 1985).

Sagarmatha, the highest peak on Earth, represents the pinnacle of mountainous regions. It embodies the profound significance of mountain civilizations, serves as the origin of vital water systems, and is the initial point of receipt for solar energy on the planet. Consequently, it is the foremost geographical location to experience the impacts of climate change. The burdens, challenges, and solutions we build will herald the experience of climate change for the world. The mountains, along with their interconnected lowlands, are traditionally venerated as Devabhumi, the “land of the gods and goddesses” and Tapobhumi, the “land of penance” or a “place for meditation.” These mountainous regions are home to thousands of monasteries and meditation caves, serving as sanctuaries for Buddhist practitioners in pursuit of enlightenment. Such appellations underscore the region’s profound historical and spiritual significance as a site of numerous sacred places.

The country exhibits remarkable geographical variation, ranging from 60 meters to 8,848.86 meters above mean sea level. This wide altitudinal range has significant implications for biodiversity and climate change. From a biodiversity perspective, altitudinal variation creates diverse climatic conditions, as even small changes in altitude result in noticeable differences in temperature. These variations greatly enhance an exceptional diversity of genes, species, and ecosystems within a relatively small geographic area due to its pronounced mountain elevations and microclimates. The entire country is situated within the Eastern Himalaya region and is recognized as one of the 36 global biodiversity hotspots. This rich biodiversity supports a wide range of agro-ecology, thereby also contributing to cultural diversity. Together, biodiversity, agro-ecology, and cultural diversity form the foundation of mountain society and the mountain-based economy. Hence, altitudinal variation plays a positive role in sustaining biodiversity and its associated benefits.



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At the same time, this pronounced variation in altitude makes the country hydrologically suitable for mountain ecosystems and the mountain-based economy under normal climatic conditions. As altitude increases, temperatures decrease, leading to the formation of snow and ice in high mountain regions. These cold conditions sustain glaciers, which melt gradually and feed perennial rivers flowing downstream across the country. This slow glacial melt also replenishes high-altitude wetlands. The perennial rivers serve as the primary source of hydropower generation, one of Nepal's most promising economic sectors.

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<sup>3</sup> Photo Credit: Juan Carlos Luna Cuevas

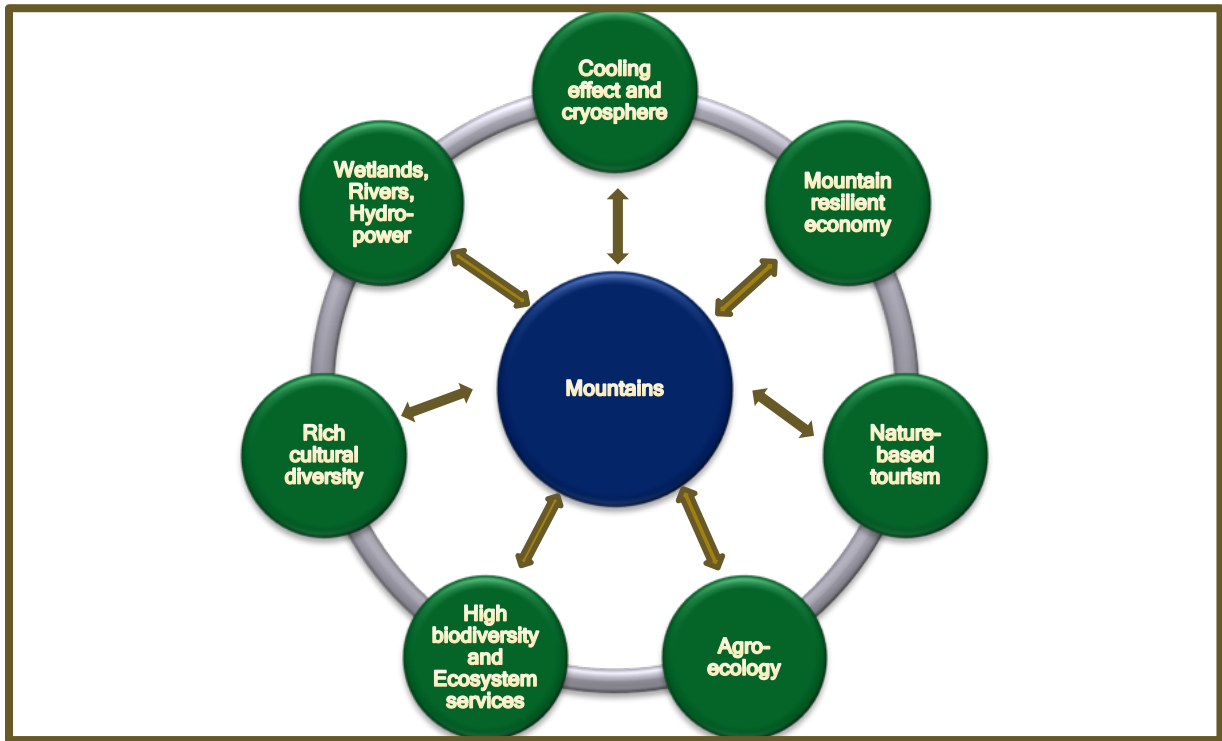


Fig 1. Mountains in normal climatic conditions

Under climate change scenarios, paradoxically, rising and uneven temperatures accelerate glacial melting. This results in the formation of numerous glacial lakes, increases the risk of glacial lake outburst floods, and ultimately threatens the permanent loss of snow and ice reserves. While altitudinal variation currently has positive effects on biodiversity and water systems, increasing temperatures under changing climatic conditions are expected to have severe negative impacts on mountain ecosystems, which may ultimately undermine cultural diversity and the mountain-based economy. Therefore, the same mountain characteristics that strengthen ecosystems, culture, and the economy under normal climatic conditions make the country more vulnerable under a changing climate. Hence, mountains matter in Nepal because they sustain biodiversity, provide water and energy, support livelihoods and cultural identity, and play a central role in the country's resilience or vulnerability to climate change.

The image of sacred places in the mountains has been increasingly overshadowed by various political, socio-economic, and environmental changes in recent years. The triple planetary crises, defined as climate change, biodiversity loss, and pollution pose significant threats. These are further exacerbated by internal challenges such as unplanned or haphazard infrastructure development, the outmigration of people, especially youth, abandonment of agricultural land, the spread of imported and unsustainable food systems, reliance on fossil-

fuel-based transportation, poverty, and gender and socio-cultural inequalities. Collectively, these factors endanger the sustainability of the country's mountain ecosystems as they affect the synergetic relationship between people and their land.

Recent assessments warn that Hindu Kush Himalayan glaciers could lose up to 80% of their current volume by 2100 on high-emissions pathways, and that glacier mass loss accelerated by about 65% in the 2010s relative to the 2000s. Water availability is likely to peak mid-century and then decline, heightening risks for food systems, hydropower and downstream ecosystems.

In the context of climate change, the complexities of mountain systems demand a unified and strategic approach. Both state and non-state actors must cultivate a shared understanding and work collaboratively, placing the mountains and their downstream effects at the center of planning and decision-making. Current efforts to conserve mountain biodiversity, strengthen mountain economies, and safeguard the region's diverse cultural heritage, often remain inadequate and fragmented. These initiatives need to be streamlined, upscaled, and integrated into a coherent framework that advances a shared vision for sustainable mountain development that is resilient and adaptive to the accelerating impacts of climate change.

## Living Sagarmatha

Living Sagarmatha is Nepal's call to reimagine its mountains as living systems at the heart of our shared future. Sagarmatha, known to the world as the Mount Everest, is more than the highest peak on Earth. It is a symbol of resilience, cultural identity, and natural heritage for Nepal and for humanity. The rivers that flow from its glaciers sustain life far beyond the Himalaya, nourishing fields, forests, and millions of people across South Asia. Yet these fragile highlands now stand at the frontline of the climate crisis, with melting glaciers, rising risks of floods and droughts, and the slow erosion of traditions and biodiversity that have endured for centuries. Living Sagarmatha embodies a vision of hope and responsibility: to safeguard mountain ecosystems, empower communities, and create a shared pathway of resilience that connects the summits of Nepal to the plains downstream. It is not only about protecting landscapes but about protecting life itself for the present generation and for those yet to come.

Nepal's mountains embody living cultures and knowledge. The Living Sagarmatha programme proposes to integrate glacier literacy into school curricula, support youth-led monitoring and storytelling, and bring together cultural leaders during the World Day for Glaciers to highlight

indigenous stewardship. By linking Sagarmatha’s story with UN observances and the Cryosphere Decade, the programme will promote a values-based and science-grounded narrative that galvanizes action both within Nepal and internationally. With projections that melt-water contributions may peak mid-century and then decline, the programme will prioritise water security through spring-source restoration, groundwater recharge, debris-flow management in upstream areas, and ecological-flow safeguards for hydropower. Communities will be engaged to co-design ‘water-smart villages’ that combine storage, efficient irrigation and catchment restoration with early warning systems and drought preparedness.

The framework places seasonal water security, disaster risk management, and climate-resilient livelihoods at the centre of Nepal’s river-basin agenda. Under the Early Warnings for All (EW4All) initiative, Nepal hosted a national Common Alerting Protocol (CAP) training in April 2025, led by WMO with the Department of Hydrology and Meteorology and partners, and committed to developing a national CAP implementation plan with standard operating procedures. Building on the 2023 national consultation, the Living Sagarmatha programme proposes to adopt CAP-compliant, impact-based warnings for floods, landslides and GLOFs, harmonize SOPs across federal, provincial and local levels, and conduct annual reviews of warning reach and community response. Two municipalities will pilot community-based flood management systems that link CAP dissemination with anticipatory action.

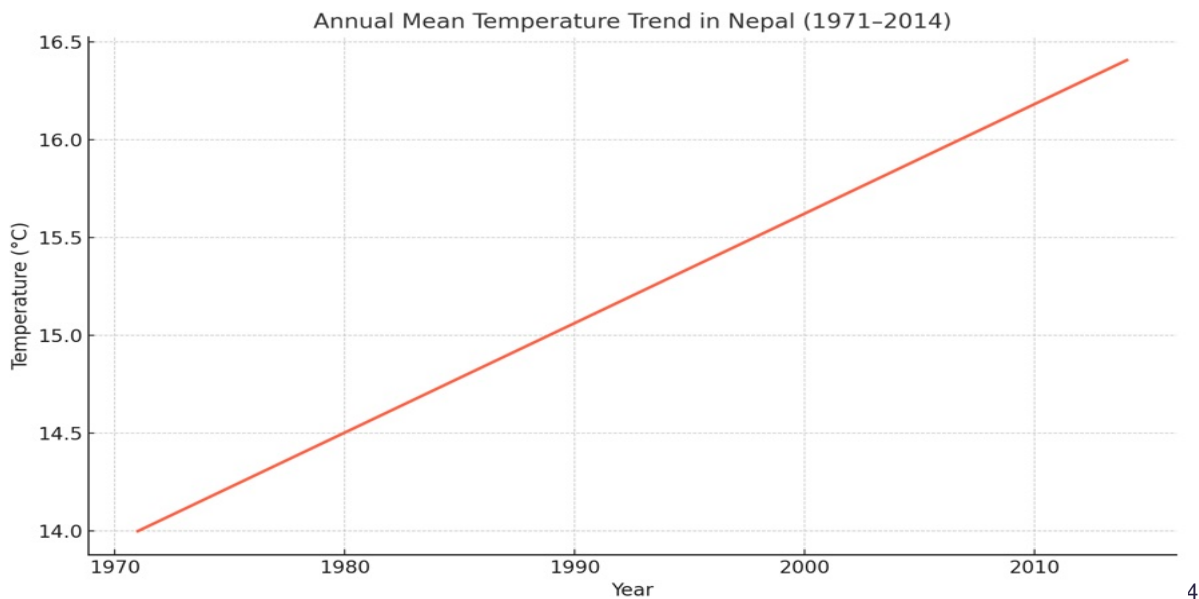
Since 2021, Nepal and its partners have advanced the Green, Resilient and Inclusive Development (GRID) platform, endorsing the Kathmandu Declaration and agreeing a Strategic Action Plan. The programme will align priority actions—resilient transport, water security, nature-based solutions and adaptive social protection—with GRID’s policy levers and financing mechanisms, and with the Sixteenth Plan (FY 2024/25-2028/29) so that ministries can budget, deliver, and track results effectively.

Mountain transport will be designed to be climate-resilient and hazard-aware. Road siting and maintenance will apply multi-hazard risk maps that account for landslides, GLOFs, and flood corridors, with CAP-compliant alerting for closures and diversions. Priority corridors serving schools, health posts and markets will be strengthened through slope stabilization, nature-based buffers and low-disruption drainage. Investments will be assessed against GRID principles to avoid brittle assets and to maximize co-benefits for safety, equity, and livelihoods.

## Witness to Change

Nepal's Himalaya sustains agriculture, drinking water, and hydropower through snow and glacial melt that contributes 70 to 80 percent of Nepal's dry-season river flows. From the mountain villages of Dolpa to the plains of the Terai, every Nepali life is touched by these highlands.

Today, this life-giving system is in decline. The average temperature in Nepal has risen by 0.06°C per year since the 1970s, with higher warming rates observed in elevated areas (NAPA 2010). Glaciers once seen as eternal are retreating at alarming rates. The Hindu Kush Himalaya (HKH) Snow Update 2025 warns that up to 50 percent of glacial volume may disappear in some catchments by the century's end under high-emission scenarios (ICIMOD 2025). In Mustang, apple harvests are failing due to insufficient chilling hours (Rana & Poudel, 2024). In Sindhupalchok, a study found that out of 412 natural springs, 75 had completely dried and 125 had decreased water volume as a result of the 2015 earthquake (Chapagain, Ghimire, & Shrestha, 2019).



<sup>4</sup> Based on long-term climate trend data from the Department of Hydrology and Meteorology (DHM), Nepal and peer-reviewed estimates (Sigdel et al., 2022), showing an average temperature increase of 0.056°C per year between 1971-2014. See also IWAP Journal, *Examining Trends in Temperature and Precipitation in the Gandaki Basin* (2023), and MDPI Atmosphere, *Observed Warming in the Central Himalayas* (2022).

## The Science Beneath our Feet

*“The mountains of Nepal are not just the roof of the world—they are the heart of a people, the spine of our rivers, and the soul of our climate future. If we fail to protect them, we lose more than*

Nepal is home to over 6,500 glaciers and 3,000 glacial lakes, which take up nearly 5 percent of the national area. Tsho Rolpa alone has grown by over 200 percent since the 1950s and now threatens the Rolwaling Valley with glacial lake outburst floods (ICIMOD 2025).

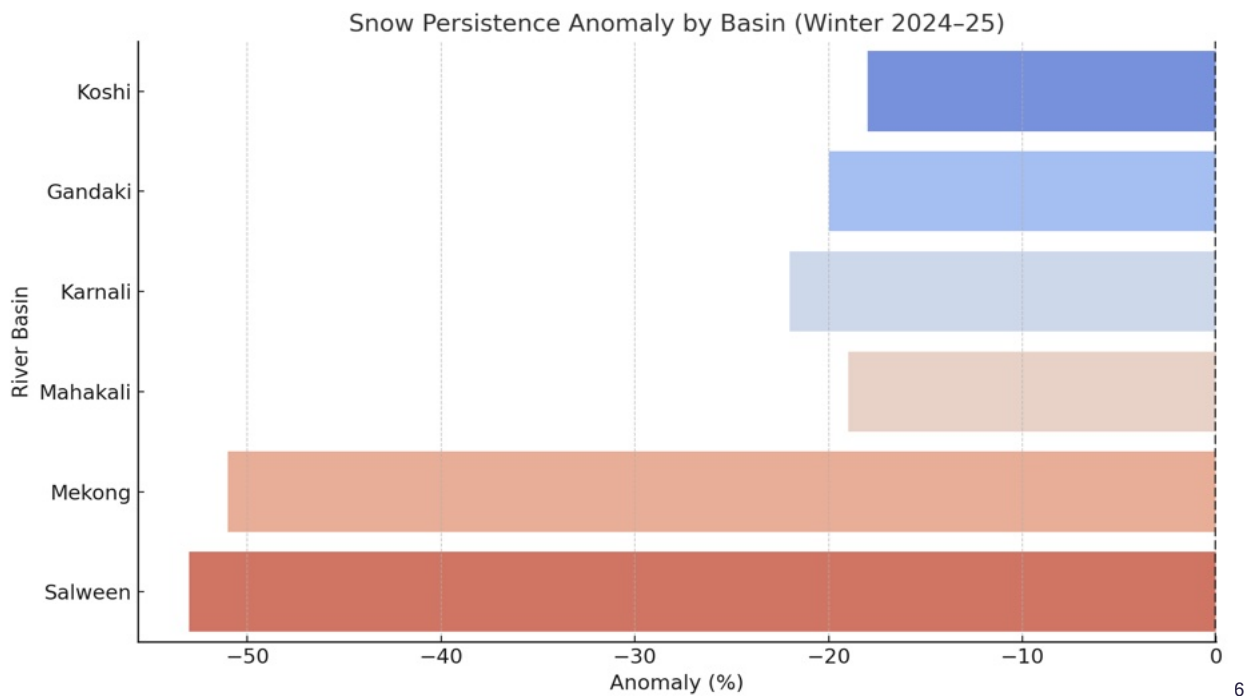
Key climate data from the Department of Hydrology and Metrology show:

- A 3 percent drop in average annual precipitation in the west, and a 6 percent rise in the east (1971-2020).
- Fifteen of Nepal’s twenty most extreme rainfall days occurred after the year 2000.
- Floods and landslides are becoming more frequent and deadly, with over 300 fatalities in 2021 alone.

It has been confirmed that glaciers are losing 0.3 to 1.0 metres of water equivalent annually<sup>5</sup> (ICIMOD, 2023). Over 220 glacial lakes now meet “potentially dangerous” thresholds. The monsoon now arrives erratically, starting up to three weeks earlier or later than usual.

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<sup>5</sup> Water, ice, society, and ecosystems in the Hindu Kush Himalaya (HKH-WISE) Report - Executive Summary,” ICIMOD (2023).  
PDF link: [https://hkh.icimod.org/wp-content/uploads/sites/2/2023/07/Executive\\_\\_Summary\\_HKH-WISE-Report.pdf](https://hkh.icimod.org/wp-content/uploads/sites/2/2023/07/Executive__Summary_HKH-WISE-Report.pdf)



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These trends point to a volatile water future. Flood control, reservoir planning, sediment management, and early warning systems must now become central to Nepal's development strategy.

## Trends and Projections in Nepal's Mountain Biophysical Systems

Observed climatic trends in Nepal indicate a consistent rise in temperature across all physiographic regions. The Department of Hydrology and Meteorology recorded an annual maximum temperature increase of  $0.056^{\circ}\text{C}$  per year between 1971 and 2014. Downscaled CMIP6 projections show an increase in average annual temperature of  $0.9$  to  $1.1^{\circ}\text{C}$  by 2030 and  $1.3$  to  $1.8^{\circ}\text{C}$  by mid-century. By the end of the century, mean annual temperature is projected to increase by  $2.4$  to  $4.3^{\circ}\text{C}$  under SSP2-4.5 and SSP5-8.5. Warming is strongest in high mountain areas and during winter and post-monsoon seasons.

<sup>6</sup> Derived from ICIMOD, *Hindu Kush Himalaya (HKH) Snow Update 2025*, which recorded the lowest snow persistence in 23 years. The anomaly across 12 HKH basins ranged from -18% in the Koshi Basin to -53% in the Salween. (ICIMOD, 2025 Snow Update, available at: <https://lib.icimod.org/record/36485>)



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Glacier and snowpack data confirm rapid cryosphere change. Nepal has more than 6,500 glaciers and approximately 3,000 glacial lakes covering nearly 5 percent of the national area. ICIMOD reports annual glacier mass loss of 0.3 to 1.0 metres water equivalent and more than 220 glacial lakes classified as potentially dangerous. Tsho Rolpa has expanded by over 200 percent since the 1950s. The Hindu Kush Himalaya Snow Update 2025 projects a loss of up to 50 percent of glacier volume in several catchments by the end of the century. Communities in Taplejung, Ghunsa and Solukhumbu report earlier seasonal snowmelt and shrinking high-altitude lakes, confirming modelled trends.

Precipitation patterns show spatial and seasonal changes. Between 1971 and 2020, annual precipitation declined by 3 percent in western Nepal and increased by 6 percent in eastern Nepal. Fifteen of Nepal's twenty most extreme rainfall days occurred after 2000. Downscaled projections indicate that annual precipitation may increase by 7 to 37 percent, with the largest increases expected in northern Mustang and the Humla-Bajhang-Darchula region. Winter precipitation is projected to decline by 11 to 16 percent, while monsoon rainfall is projected to

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<sup>7</sup> Photo Credit: Juan Carlos Luna Cuevas

rise by 16 to 43 percent. The number of rainy days is expected to remain similar, although the intensity of very wet and extremely wet days will increase. Longer dry spells and warmer nights and days are expected.

Hydrological instability is increasing. Snow and glacier melt currently supply 70 to 80 percent of dry-season flows. Springs are declining in many mid-hill areas, including 75 dried springs and 125 reduced-flow springs recorded in Sindhupalchok after the 2015 earthquake. Groundwater levels in Banke and Lumbini are falling by 0.3 to 0.6 metres per year. Streamflow variability is increasing due to more frequent short-duration high-intensity rainfall events. The monsoon onset now varies by two to three weeks.

Observed hazard events reflect these biophysical trends. The 2021 Indrawati-Melamchi flood caused USD 326 million in damage in Melamchi and USD 62 million in Helambu and displaced 360 families. A 2024 glacial lake outburst flood in Thame displaced 130 residents. Another lake-burst in Humla in 2025 displaced 33 people. A supraglacial lake flood in the Bhotekoshi in July 2025 resulted in 19 missing persons, seven confirmed fatalities and 55 rescued individuals. In the same month, Madhesh Province experienced a six-week drought during the monsoon period and was declared a Disaster Crisis Zone. These events show a pattern of concurrent and cascading climate hazards.

Anthropogenic pressures, including unplanned infrastructure, road expansion, forest degradation and unmanaged resource extraction, interact with climatic drivers and increase exposure and sensitivity across the mountain system.

## Sectoral Impacts

### Water Resources

Changing precipitation patterns and the retreat of the cryosphere are altering water availability in all seasons. Dry-season flows are increasingly dependent on diminishing glacier reserves. Many mid-hill settlements are experiencing seasonal or permanent spring depletion. Women and children spend more time collecting water in districts such as Ramechhap and Kavre. Declining groundwater availability in the Tarai forces deeper pumping. Intense rainfall events increase sediment load and damage water supply infrastructure. The Melamchi disaster demonstrated the vulnerability of major drinking-water systems to extreme events.

### Agriculture and Food Security

Agricultural productivity is becoming more variable due to irregular rainfall, dry spells, heat stress and increased pest pressure. Farmers in Baglung, Bhojpur, Rolpa and Chitwan are shifting to shorter-duration and climate-tolerant crops. Fifty-six percent of farmers in Baglung have already adopted alternative crops. Mustang's apple yields are declining because of insufficient chilling hours. The simultaneous occurrence of floods in mountain districts and drought in southern plains, as seen in 2025, threatens national food security. Income loss and indebtedness are reported in rural farming households.

### **Biodiversity and Ecosystem Services**

<sup>8</sup>Forest fragmentation, drying of forest springs and the loss of pollinators are affecting ecosystem stability. Buffer zones around protected areas are becoming more vulnerable. Altered hydrological cycles affect wetlands and rangelands. Upward movement of grazing lands due to snowmelt changes has been reported in Taplejung. Expansion of glacial lakes increases downstream risks to ecosystems and settlements. Wetlands, many already degraded, face additional stress from intensified rainfall patterns and higher temperatures.



### **Economy and Infrastructure**

Climate hazards have significant economic implications. Hydropower installations, particularly in glacier-fed basins, face increased risks from debris flow, sedimentation and sudden high-flow events. Transport networks in the Mahabharat and Chure zones are frequently affected by landslides and road blockages. Tourism infrastructure in high-mountain settlements, including areas such as Thame and Humla, is increasingly exposed to climate events. Reconstruction costs after extreme events place pressure on public budgets.

### **Society, Culture and Population Movement**

Settlement patterns in highlands are beginning to shift. Water scarcity contributed to the relocation of Samjung in Upper Mustang. Communities in Bardiya, Baglung and Solukhumbu report significant changes in seasonal conditions and access to natural resources. Cultural

<sup>8</sup> Photo Credit: Juan Carlos Luna Cuevas

practices linked to lakes, springs and seasonal cycles are being disrupted. Children are highly exposed to multiple hazards, and Nepal is ranked among countries with the highest climate risk for children under UNICEF's Climate Risk Index.

### **Governance, Coordination and Preparedness**

Despite multiple policy frameworks, interventions remain fragmented across sectors. Fewer than half of Nepal's high-risk municipalities have operational early-warning systems or evacuation plans. Stakeholders consistently highlight the need for a unified mountain framework aligned with NAP, NDCs and the GRID platform. Insufficient coordination across federal, provincial and local institutions limits effective response to emerging climate risks.



## Local Voices, Everyday Resilience

Across the country, action has already begun.

Students in Baglung are tracing glacier outlines.

Women in Bhojpur are co-managing water cooperatives.

Technicians in Dolakha are reinforcing dams near glacial lakes. Farmers in Jhapa are switching to resilient crops. These actions must be scaled, supported, and celebrated.

In Taplejung, villagers describe how grazing land has emerged where glacier ice once dominated. In Bardiya, farmers stir cracked soil and wait longer each year for rain, but when it rains floods are the common phenomena. These signals are not isolated, they are the voice of the Himalaya changing.

In Ghunsa, snow used to linger until May. Now, the same slopes are dry by April. In Solukhumbu, Sherpa communities say that Dudh Pokhari, their summer grazing lake, has shrunk by a third of its original size in living memory. They have begun constructing community ponds to cope, though they live with the fear of sudden overflow during storms.

In Ramechhap, women walk for hours for water when nearby springs dry. In Kavre, once-reliable forest springs have declined. In Baglung, 56 percent of farmers now grow alternative crops with shorter seasons. In Banke of Lumbini province, deeper tube wells are needed annually to reach falling groundwater tables, which drop by 0.3 to 0.6 metres each year (DHM, Groundwater Bulletin 2024).

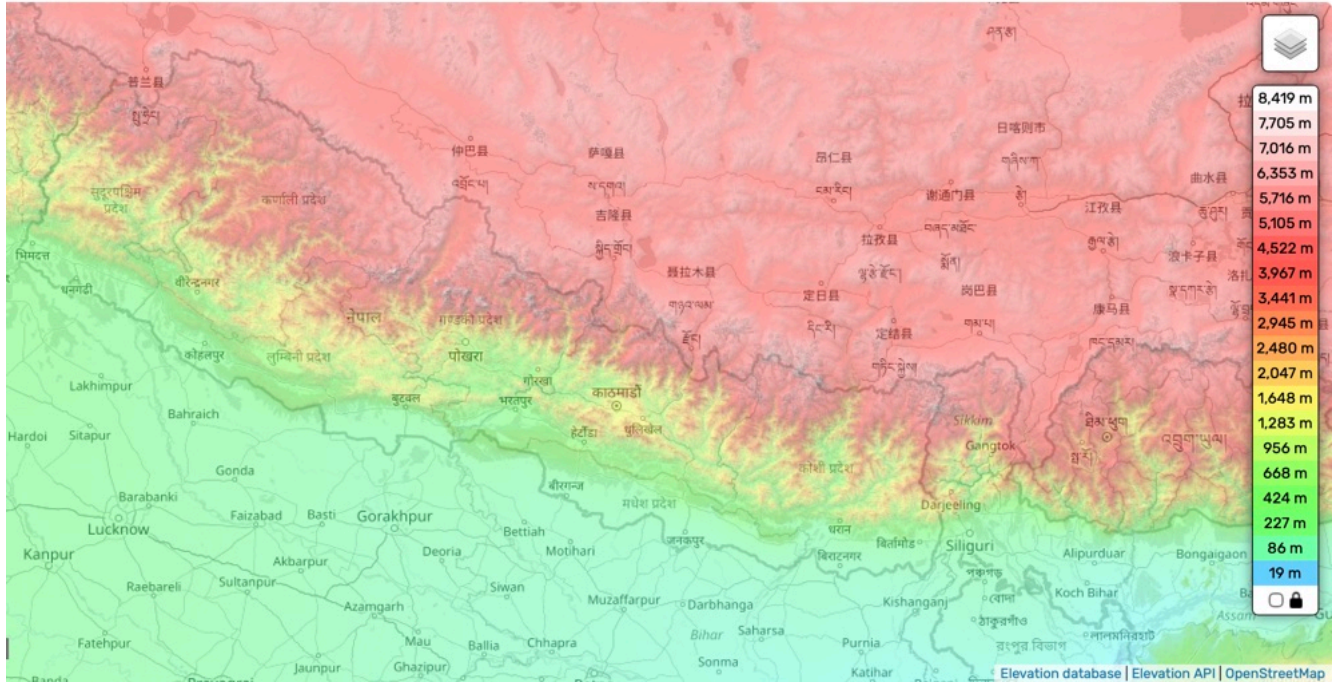
Farmers in Chitwan rebuild canals and switch to millet and sorghum, while in Bhojpur, senior citizens and schoolchildren now map seasonal spring flows. In Rolpa, communities have restored bamboo-lined irrigation canals. These are not just signs of crisis, they are acts of resilience rooted in Nepali knowledge and adaptation.



The Living Sagarmatha is not merely a symbolic gesture, it is a commitment by Nepal to its mountains, rivers, and future generations. It is a national recognition that our fate is tied to the glaciers, springs, and rains that shape this land.

The Himalaya is changing. So must we.

Living Sagarmatha (जीवन्त सगरमाथा) is Nepal's promise to listen and to act.



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<sup>9</sup> <https://en-bw.topographic-map.com/map-lxrtP/Nepal/?center=28.19793%2C85.25391>

# SYNTHESIS OF POLICIES, STRATEGIES, INSTITUTIONAL FRAMEWORKS AND GAPS

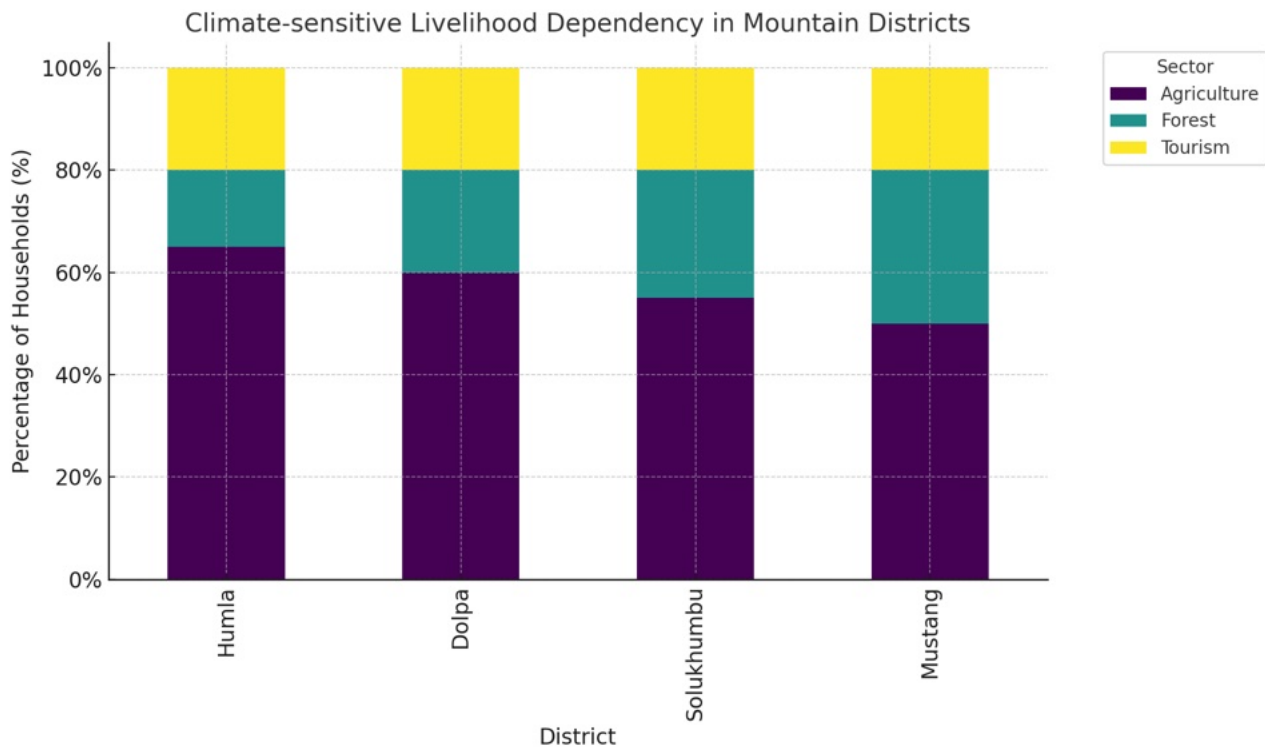
## Goals and Priorities in the Context of National and Sectoral Development

Across Nepal's national frameworks, a consistent set of goals underpins long-term development and climate resilience. Several policies, including the *National River Basin Management Strategy 2023*, the *Nationally Determined Contributions (INDC, NDC 2016, NDC 2.0 in 2020, and NDC 3.0 in 2025)*, the *Long-term Strategy for Net Zero Emissions 2021*, the *National Adaptation Programme of Action (2010)*, the *National Adaptation Plan (2021)*<sup>10</sup>, the *National Biodiversity Strategy 2002 and Action Plan 2006-10*, the *Nepal Biodiversity Strategy and Action Plan 2014-20*, the *Agriculture Perspective Plan 1995*, the *Agriculture Development Strategy 2015-2035* and the *National Disaster Risk Reduction Policy 2018* outline the country's commitment to sustainable, inclusive and climate-resilient development.

These policies identify core national priorities, including sustainable water resources, resilient agriculture and food systems, protection of mountain ecosystems, clean energy expansion, biodiversity conservation, reduced disaster mortality, improved urban systems and strengthened local governance. The *National River Basin Management Strategy 2023* sets a long-term vision for integrated watershed management across the Koshi, Gandaki, Karnali and Mahakali basins. The NDCs and the *Long-term Strategy for Net Zero Emissions* outline ambitions for clean energy, low-carbon transport, sustainable land use and decarbonisation pathways by 2045. The NAP (2021) sets national adaptation priorities across ten climate-vulnerable sectors and emphasises institutional strengthening, capacity building and financing.

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<sup>10</sup> Estimated from Central Bureau of Statistics (CBS) district profiles, Nepal Multiple Indicator Cluster Survey (MICS 2019), and sectoral livelihood vulnerability sections of the National Adaptation Programme of Action (NAPA 2010). Data reflects the proportion of rural households reliant on agriculture, forests, and tourism in mountain districts.



Biodiversity strategies define conservation priorities across mountain, forest, rangeland, wetland and agro-ecosystems. Agriculture plans recognise the importance of altitude-specific production and the role of hills and mountains in national food systems. Disaster risk reduction frameworks highlight the need for risk-informed development. These documents together reflect Nepal's aspiration to integrate climate resilience into national prosperity and the wellbeing of mountain and downstream communities.

## Geographical Areas and Prioritization of Sectors

The major policies collectively prioritise three key geographical systems: the high Himalaya and cryosphere, the mid-hill watersheds including Mahabharat and Chure, and the river basins feeding into the Terai. The *National River Basin Management Strategy 2023* operationalises this by focusing on the Koshi, Gandaki, Karnali and Mahakali basins and establishing a multisectoral steering committee.

Sectoral prioritisation appears consistently across policies. The NDCs set targets for renewable energy generation (including 12,000 MW hydropower by 2030, 2,100 MW solar, 220 MW bioenergy), sustainable transport, REDD+, climate-resilient agriculture, waste management and emission reductions across energy, AFOLU, IPPU and waste sectors. The NAP 2021

identifies ten sectors including agriculture, forestry, water, energy, health, tourism, urban development and disaster risk reduction.

<sup>11</sup>Biodiversity strategies prioritise mountain ecosystems and elevation-driven genetic diversity and call for protected area management, community forestry and ecosystem restoration. The *Agriculture Perspective Plan* and the *Agriculture Development Strategy* emphasise agro-ecological zoning, high-value crops in mountains, improved irrigation, seed systems and



commercialization pathways.

The *National Disaster Risk Reduction Policy 2018* proposes 59 measures related to multi-hazard resilience, risk governance and protection of natural and cultural heritage. Institutional frameworks include regional engagement through ICIMOD, global alliances like the Mountain Partnership, the Group of Friends of Mountainous Countries and the Ambition on Melting Ice initiative. Local efforts include Community Forestry User Groups (23,000 CFUGs managing 2.4 million ha), indigenous customary practices, LAPA implementation and conservation area management.

Collectively, these policies propose integrated watershed management, cryosphere monitoring, nature-based solutions, resilient infrastructure, improved early warning, sustainable agriculture, ecosystem restoration and enhanced regional and global cooperation.

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<sup>11</sup> Photo Credit: Juan Carlos Luna Cuevas

## Key Gaps and Challenges Identified

Across the reviewed policies, several gaps persist. Many frameworks are insufficiently resourced and dependent on external support, as highlighted in NDC 3.0 which requires USD 73.74 billion by 2035 with approximately 85 percent expected from international financing. Technological gaps include limited glacier and cryosphere monitoring, incomplete hydrometeorological data networks, gaps in digital early warning systems, insufficient use of climate-smart agricultural technologies and limited application of geospatial tools for integrated planning.

Capacity gaps occur at all levels. Many local governments implementing LAPAs lack technical expertise. Institutions including ministries have limited human resources trained in climate science, hydrology, biodiversity monitoring and hazard modelling. The *National Disaster Risk Reduction Policy 2018* does not sufficiently recognise mountain-specific disaster risks, leaving landslides, permafrost thaw, and GLOFs under-addressed.

Institutional fragmentation is a persistent challenge. The *National River Basin Management Strategy 2023* highlights the siloed nature of water, forest, irrigation and urban policies. Biodiversity strategies are not fully integrated with climate planning. Agricultural plans and climate frameworks remain partially aligned. There is no dedicated mountain authority, and the Participatory Forestry Division within MoFE is currently the national focal point for mountain issues, resulting in fragmented delivery.

Programme-level gaps include limited political engagement in regional institutions, underutilisation of the Mountain Partnership platform and insufficient follow-up to high-level diplomatic efforts at COP24, COP26, COP28 and COP29. Despite active advocacy, Nepal's global mountain diplomacy lacks sustained institutional grounding.

## Sagarmatha Call for Action

The Government of Nepal has advanced the mountain agenda for several years, both nationally and internationally, particularly in the context of climate change. The most recent and prominent initiative is the *Sagarmatha Sambah: Climate Change, Mountains and the Future of Humanity*, an international conference held in Kathmandu in May 2025. This dialogue resulted in a 25-point declaration entitled the *Sagarmatha Call for Action*.

The declaration underscores the need for dedicated mountain-focused actions, including the development of policies, institutions, and programmes at local, regional, and global levels, to address the growing existential threats to mountain ecosystems, economies, cultures, and civilizations under the impacts of climate change.

## **COP30 and the Formal Recognition of the Mountain Agenda**

At COP30 (Belém, 2025), Parties adopted the first formal UNFCCC decision on “Mountains and Climate Change”. The decision requests the Chairs of SBSTA and SBI to convene a dedicated dialogue on mountains during the sixty-fourth sessions of the subsidiary bodies in June 2026, appoint co-facilitators from both developing and developed country Parties, and prepare a summary report for consideration at COP31. This procedural step, although modest in scope, represents the first time mountains have been recognised in the formal agenda of the UNFCCC process. It provides an institutional entry point for advancing evidence, priorities and coordinated action on mountain systems and offers Nepal an opportunity to align national efforts, including the Living Sagarmatha Strategic Framework, with emerging global processes on mountains and climate resilience.

## **Approaches and Frameworks Suggested**

The reviewed policies propose several mechanisms to strengthen coherence and implementation effectiveness. The *National River Basin Management Strategy 2023* promotes integrated basin-scale governance and the formation of a National River Basin Management Steering Committee. The NAP (2021) recommends whole-of-society approaches, mainstreaming climate adaptation into planning and budgeting, strengthening local implementation capacity, promoting multi-hazard early warning systems and creating a national MEL framework.

Biodiversity strategies emphasise ecosystem-based management, restoration of degraded areas, conservation of genetic diversity, community co-management and improved biodiversity monitoring. Agricultural frameworks propose agro-ecological zoning, climate-resilient crops, improved irrigation, agricultural mechanization and value chain development for mountain products.

The *Long-term Strategy for Net Zero Emissions 2021* proposes pathways for clean energy transition and decarbonisation across energy, AFOLU, IPPU and waste sectors. The *National*

*Disaster Risk Reduction Policy 2018* suggests hazard mapping, nature-based slope stabilization, risk-informed infrastructure design and improved preparedness systems.

Institutional frameworks suggest enhancing global and regional cooperation through ICIMOD, the Mountain Partnership and the Group of Friends of Mountainous Countries. Locally led mechanisms like CFUGs, indigenous knowledge systems and LAPAs demonstrate effective bottom-up resilience approaches. Programmatic initiatives, including the International Year of Mountains (2002 and 2022), Sagarmatha Sambad (2025), and the International Dialogue on Mountains, People and Climate (2023), provide platforms for coordination and knowledge exchange.

## What if Current Efforts Remain Unchanged?



If current fragmented and under-resourced approaches continue, Nepal will face increasing risks across climate, environment, economy and society. Mountain-specific challenges,

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<sup>12</sup> Photo Credit: Juan Carlos Luna Cuevas

including accelerated glacier retreat, permafrost thaw, expanding glacial lakes, increased GLOF frequency, landslides, drying springs, water scarcity, biodiversity loss, agricultural decline and rising disaster impacts, will remain inadequately addressed.

Policy misalignment will persist, reducing the effectiveness of the *National River Basin Management Strategy 2023*, the NDCs, NAP 2021, biodiversity strategies, agriculture plans and disaster risk policies. Institutional fragmentation will continue without the establishment of a dedicated mountain authority. Resource inefficiencies and duplication will remain common, and critical opportunities for integrating climate, biodiversity, tourism, pastoralism, agriculture and cultural systems will be missed.

Communities in high-risk mountain and downstream areas will be increasingly exposed to climate-induced shocks. Water scarcity will worsen. Rural livelihoods will become more vulnerable. Public health risks related to floods, heat, and vector-borne diseases will rise. Nepal's global mountain diplomacy will lose momentum without national coherence, reducing credibility in advocating for mountain priorities at UNFCCC forums.

In summary, without corrective measures, existing gaps will widen, vulnerabilities will deepen and Nepal's capacity to protect lives, ecosystems and development gains will be compromised. A detailed view of the problem matrix is given below:

### Mountain problem matrix

Thematic Areas	Sector	Key Problem	Justification for Intervention
Mountain biodiversity and ecosystems	Forests	Deforestation and forest degradation, forest fragmentation, unmanaged forests, increased human-wildlife conflicts	Buffer zones around national parks are under pressure. ICIMOD notes habitat fragmentation and species decline, threatening forest-dependent livelihoods.
	Wetlands	Eutrophication, invasive plants, pollution	Wetlands are vital ecosystems to conserve biodiversity and support local livelihoods.
	Rangelands	Expansion of woody vegetation in high altitude pastures due to over control in grazing; overmature grasslands in the Terai due to decreased grass collection by local people and	High altitude pastures are major sources or livelihoods in the mountains. The terai grassland is crucial for retaining wildlife within forests and protected areas, so the human-wildlife conflicts are minimized along with the

		subsequently being converted to woody land.	conservation of habitats and wild animals.
	Agro-ecosystems	Reduction in indigenous varieties of crops and livestock; buildup of toxic chemicals in farmland and poultry (fertilizers, pesticides and feeds).	Indigenous local crops and livestock are climate adaptive. It can address long term soil productivity and health implication in human.
Climate Change	Glaciers & Cryosphere	Accelerated glacier retreat, formation of new glacial lakes, increasing GLOF risks	Nepal has over 3,000 glaciers and more than 1,500 glacial lakes. ICIMOD identifies 47 as potentially dangerous, with accelerated retreat due to climate change.
	Floods & GLOFs	Frequent flash floods, intensified monsoon, more GLOF events in the high Himalayas	EM-DAT and national disaster data show a sharp increase in flood events and damages; the 2021 Melamchi floods exemplify compound climate risks. Disruption of Tangible and Intangible Cultural Heritage, which is an identity and livelihood of the indigenous communities living in the mountain
	Water Resources & Scarcity	Seasonal water stress, drying springs, high rural dependence on groundwater	Over 70% of households in hilly Nepal rely on springs, many of which are drying. Surveys confirm increasing seasonal scarcity and disproportionate burdens on women and children.
	Disaster Risk & Early Warning	Low coverage of early warning systems in remote areas, gaps in risk communication	Less than half of vulnerable municipalities have functional warning systems. Nature-based slope stabilization and flood-buffering measures offer cost-effective mitigation and preparedness.
Mountain economy, culture and prosperity	Agriculture & Food Security	Erratic rainfall, prolonged dry spells, pest outbreaks, declining crop yields, land/ soil degradation	Agriculture employs 60% of Nepal's population. FAO and WorldClim project a 10-30% decline in major crop yields. Permaculture-based methods show promise for soil health and water retention.
	Urbanization & Pollution	Urban flood and extreme heat impacting infrastructure. Air and river pollution in Kathmandu Valley and other towns, poor solid waste management, poor water sanitation and hygiene (WASH) services	89 urban municipalities have very high to high vulnerability to climate change, including those in mountainous regions. Kathmandu's PM2.5 levels exceed WHO limits by 8-10 times. Untreated waste contaminates major rivers like the Bagmati. Nature-based solutions can help restore air and water quality.
	Public Health	Rising vector-borne disease and water-borne outbreaks after floods	Climate-exacerbated floods increase disease risk (e.g., cholera, dengue). Rising temperatures expand transmission ranges.

Cross-cutting	Gender & Inclusion	Disproportionate burden on women, adolescents and marginalized groups during climate shocks	Women, adolescents and marginalized groups face increased workload and exclusion during crises. Gendered adaptation strategies improve effectiveness and equity.
	Peace and Regional Security	Increased resource conflict risk, transboundary water tensions, and fragile border livelihoods. Climate induced migration and displacement	Peaceful cooperation over shared river basins and fragile ecosystems is essential for national and regional climate resilience. Border communities need inclusive planning and conflict-sensitive programming.

The challenges are further analysed in Annex II

The prevailing fragmented approach to climate, biodiversity, and environmental initiatives in mountain ecosystems has proven to be insufficient. Addressing the gaps and challenges created by these uncoordinated efforts requires the development of a strategic framework that integrates policies, institutions, and programmes relevant to mountain regions.

The Strategic Framework for Sustainable Mountain Development is expected to deliver a range of environmental, economic, social, and policy benefits by aligning diverse sectors and stakeholders toward a shared vision for mountain areas. The following key advantages are anticipated from the adoption of this shared vision:

### 1. Unified Mountain Actions

Disparate projects would be consolidated under a shared framework, fostering synergies and reducing duplication of efforts to improve the impact of expenditure and applied resources. Mountain-specific activities outlined in various policies, strategies, and plans would be coordinated within a coherent and integrated structure with multistakeholder oversight.

### 2. Institutional Coordination

Institutions engaged in mountain-related initiatives from different perspectives would be better positioned to collaborate for greater impact. The shared vision and its accompanying strategic framework would create structured opportunities for programme alignment, information sharing, and mutual benefits through multi-level collaboration.

### 3. Engagement of Mountain Stakeholders

Currently, state and non-state actors, including government bodies, civil society organizations, and the private sector, operate without a common policy platform for integrated mountain development. The proposed framework would bring these actors together, strengthening partnerships and amplifying their collective contributions.

#### **4. Bridging Research Gaps**

The framework would address existing gaps in research and development on mountain issues. By integrating policies, institutions, and programmes relating to climate, biodiversity, the economy, and communities in both mountain regions and connected lowlands, it would help identify priority research areas and inform evidence-based action.

#### **5. People as Drivers of Mountain Solutions**

Fragmented policies and institutions often portray mountain communities as contributors to environmental degradation. A coordinated framework would instead recognize women, Indigenous Peoples, local communities, children and youth as champions of sustainable mountain solutions. While these groups are among the most affected by climate change and biodiversity loss, both in mountain regions and downstream, they are also key agents for leading collective, locally driven responses to climate-induced crises.

#### **6. Opportunities for Climate and Biodiversity Finance**

The framework provisions for additional integrated mountain projects that could serve as strong proposals for accessing diverse climate and biodiversity financing mechanisms, including the Green Climate Fund (GCF) and the Global Environment Facility (GEF).

#### **7. Enhanced Biodiversity, Climate Action, and Socio-Economic Benefits**

Once implemented, the framework would make significant contributions to biodiversity conservation, climate action, and socio-economic development in mountain regions. It would strengthen ongoing initiatives while introducing new projects, thereby amplifying overall impact and resilience.

## Why Mountain Strategy Document?

**Policy Gap:** Absence of mountain-specific policy documents in Nepal

**Purpose:** Provides a unified narrative for policymakers and negotiators on why Nepal emphasizes *mountains* in international fora.

**Scope:** Serves as a comprehensive mountain strategy highlighting the significance of mountains for biodiversity, socio-cultural systems, economy, and climate change.

**Urgency:** Underscores existential threats to Nepal and downstream regional effects if mountain ecosystems are neglected.

**Focus:** Prioritizes mountain-specific (not generic) interventions 'in Nepal'.

**Topic:** Exhibits Nepal specific mountain symbol

# TOWARDS LIVING SAGARMATHA

## Vision

**Nature-aligned, climate-resilient, inclusive, and economically prosperous Mountains and interconnected lowlands.**

## Mission

Foster sustainable development in mountain and interconnected lowland regions by restoring ecosystems and biodiversity, enhancing climate resilience, promoting inclusive social, cultural and economic systems, and advancing a carbon-neutral, nature-based economy.

## Objectives

- All ecosystems and biodiversity in the mountains and interconnected lowlands are restored and sustainably maintained.
- Human and natural systems in the mountains and interconnected lowlands are effectively adapted to climate change.
- The social harmony and cultural heritage of the mountains and interconnected lowlands is preserved and promoted.
- A carbon-neutral and gender and socio-cultural inclusive economy is fostered in the mountains and interconnected lowlands.
- The country's leadership in mountain advocacy is enhanced through common understanding among state and non-state actors in the mountain agenda.
- Regional and global partnership in the country's mountain development is strengthened.

## Building Blocks to Achieve the Shared Vision

### a. Policy, Governance and Institutions

Together with the shared vision, this Strategic Framework will also serve as the fundamental mountain policy of Nepal. A sectorally defined and separated governance structure has proved itself to perpetuate existing gaps and challenges of fragmentation associated with mountain problems. To address these issues, a unified system of governance is recommended. For this

initiative, a dedicated Mountain Authority is proposed under the Ministry of Forests and Environment or as an autonomous entity. This entity will coordinate and collaborate with institutions and actors engaged in different aspects of mountain programs and activities. International Centre for Integrated Mountain Development (ICIMOD) plays a critical role as an anchoring institution in this scenario as it brings its interregional mandate to support the strategy.

Capacity building of actors and institutions directly engaged in mountain activities such as mountain tourism, local biodiversity conservation and climate adaptation and mitigation is essential. The Mountain Authority will collaborate with respective training institutions to carry out capacity building activities of the relevant actors and organizations. Research is another area that needs to be considered important for sustainable mountain development.

This framework also recommends a monitoring framework that combines satellite information, community knowledge, and inclusive feedback systems.

### **b. Programmes and Projects**

A number of projects need to be brought on as interventions to achieve the shared vision of this Framework. There will be three categories of projects. First, ongoing projects or those in the pipeline that address mountain problems. Secondly, ongoing projects that are being implemented at a certain mountain scoping area and are successful. These projects will be scaled up in the rest of the areas. Finally, new projects are proposed. While designing the new projects, the following principles will be adopted:

GEDSI, including children and youth inclusion as non-negotiable principles.

- Community ownership as the implementation backbone.
- Peace and regional security as a cross-cutting necessity.
- Data and governance as enablers

### **c. Partnership**

The programmes and projects will be implemented in partnership with government institutions, UN agencies, development partners, civil society organizations, and

community-based institutions at various levels and scales. At the regional level, International Centre for Integrated Mountain Development will serve as the lead partner.

## Project Interventions

S.No	Thematic Area	Intervention Title	Coverage (Zones)	Basin	Status	Priority	Timeframe	Community Engagement	SDG / Policy Links	Indicative Cost
1	Mountain biodiversity & ecosystems	Expand Community Forestry for Climate & Livelihood Resilience	High Mts: 0; Mahabharat: 1000; Terai: 200	Koshi, Karnali	Scale Up	Must Have	Short	High	SDG 5, 13, 15; NDC Forestry	\$100–500m
2		Sustainable Management of Community Forests	High Mts: 500; Mahabharat: 2000; Terai: 1000	All	Scale Up	Must Have	Medium	High	SDG 5, 13, 15; NDC	\$100–500m
3		Sustainable solutions to the management of mountain landscapes including protected areas for prosperity	High Mts: 11; Mahabharat: 2; Terai: 7	All	Scale Up	Must Have	Medium	Medium	SDG 15; NDC; NBSAP	\$500 m– 2 billion
4		Expand Ramsar Network (5 new sites)	High Mts: 3; Mahabharat: 2; Terai: 0	Koshi, Gandaki, Karnali	New	Should Have	Short	Medium	SDG 6, 15; NDC Wetlands; NBSAP	<\$10m
5		Improve Ramsar Site Management	High Mts: 4; Mahabharat: 2; Terai: 4	Koshi (3), Gandaki (4), Karnali (3)	Scale Up	Must Have	Medium	High	SDG 6, 15; NDC	\$10–50m
6		Establish Biosphere Reserve (Kanchenjunga)	High Mts: 1; Mahabharat: 0; Terai: 0	Koshi (1)	New	Should Have	Medium	Medium	SDG 15; NBSAP	<\$10m
7		Biodiversity Documentation & Registration (Municipal Level)	50 Municipalities each (High Mts, Mahabharat, Terai)	Koshi (50), Gandaki (50), Karnali (30),	New	Must Have	Short	High	SDG 15; NBSAP Data/Monitoring	<\$10m

				Mahakali (20)						
8		Pilot Basin-level Watershed Management	High Mts: 1; Mahabharat: 1; Terai: 1	1 Basin	New	Must Have	Medium	High	SDG 6, 13, 15; NDC	\$100–500m
9		Sagarmatha Afforestation Mega Campaign	Mahabharat 10 Chure 15 Terai 20	4 Basin	New	Must Have	Long	High	SDG 15	\$100–500m
10	Climate Change	Monitoring Cryosphere & Glacial Health	High Mts: 4; Mahabharat: 0; Terai: 0	All	3 New + 1 Scale Up	Must Have	Long	High	SDG 13; NDC Adaptation	\$10–50m
11		Early Warning Systems for Floods, GLOFs, Fire & Disasters	High Mts: 4 GLOFs / 4 Floods / 4 Fire; Mahabharat: 4 Floods / 4 Fire	Basin-wide	New	Must Have	Short	High	SDG 13, 11; NDC DRR	\$100–500m
12		Pilot GLOF Risk Reduction Projects	High Mts: 4; Mahabharat: 0; Terai: 0	All	1 Pipeline + 3 New	Must Have	Short	High	SDG 13; NAP; NDC Cryosphere	\$100–500m
13		River Basin Climate Frameworks (Piloting)	High Mts: 0; Mahabharat: 2; Terai: 2	All	1 Scale Up + 3 New	Must Have	Medium	Medium	SDG 13; NAP; NDC	<\$10m
14		Local Adaptation Plans of Action (LAPAs) in All Municipalities	100 each (High Mts, Mahabharat, Terai)	All	New	Must Have	Medium	High	SDG 13, 11; NDC	\$10–50m
15		Climate & Security Framework (Piloting)	High Mts: 2; Mahabharat: 2; Terai: 2	Koshi, Gandaki, Karnali	1 Pipeline + 5 New	Should Have	Medium	Medium	SDG 16, 13; NDC	\$10–50m
16		Water harvesting dams and recharge ponds	Terai 700	All	100 repair+600	Must have	Short	High	SDG13; Adaptation	\$10–50m

17	Mountain economy, culture & prosperity	Waste and Sanitation Management Pilots in Mountain Cities	High Mts: 20; Mahabharat: 20; Terai: 20	All	10 Scale Up + 50 New	Must Have	Short	High	SDG 11, 12, 13; NDC; NAP	\$100–500m
18		Regulate Mountain Urban and Rural Settlement Planning and Infrastructure Development	High Mts: 30; Mahabharat: 40; Terai: 10	All	New	Must Have	Medium	Medium	SDG 9, 11, 13; NDC	\$100–500m
19		Flood risk and water stress management in cities and settlements, including	High Mts: 10; Mahabharat: 20; Terai: 20	All	New	Must Have	Medium	High	SDG 11, 13, NAP	\$100–500m
20		Promote Nature-based Tourism in PAs	High Mts: 3; Mahabharat: 1; Terai: 3	Koshi (1), Gandaki (1), Karnali (4), Mahakali (1)	New	Should Have	Medium	High	SDG 8, 11, 15; NAP; NDC	\$10–50m
21		Medicinal & Aromatic Plants and High Value Crops Enterprise Expansion	High Mts: 3; Mahabharat: 0; Terai: 5	Koshi (1), Gandaki (3), Karnali (3), Mahakali (1)	Scale Up	Must Have	Medium	High	SDG 15, 8; ADS; NAP	\$10–50m
22		Support High Altitude Pastoralism	High Mts: 4; Mahabharat: 0; Terai: 0	All	New	Must Have	Long	High	SDG 2, 15; NBSAP; ADS; NAP Livelihoods	\$50–100m
23		Forest-based Enterprises Development and	High Mts: 200; Mahabharat: 100; Terai: 300	All	New	Must Have	Medium	High	SDG 8, 15; NAP; NDC	\$50–100m

		local job creation for youth and women								
24		Promote social harmony, Indigenous Languages, Culture & Traditions	High Mts: 4; Mahabharat: 4; Terai: 4	All	New	Should Have	Long	High	SDG 11, 15,16; NDC Inclusion	<\$10m
25		Promotion of Permaculture and AgroForestry	High Mts: 4; Mahabharat: 4; Terai: 4	All	New	Should Have	Medium	High	SDG 2, 13, 15; ADS; NDC NAP Agriculture	\$10–50m
26		Capacity Building for Climate & Biodiversity Funding	High Mts: 0; Mahabharat: 1; Terai: 0	Gandaki	New	Should Have	Short	Medium	SDG 13, 15, 17; NDC Finance	<\$10m
27		International Mountain Tourism Alliance (IMTA)--World Famous Mountain Tourism Certification Initiative	High Mountain 8 Mahabharat: 10 Chure: 20	All	New	Must Have	Medium	High	SDG 8, 12, 13, 15	\$10-50m
28	Cross-cutting	Gender Integration in Climate & Biodiversity Actions	High Mts: 1; Mahabharat: 5; Terai: 4	All	New	Must Have	Short	High	SDG 5, 13; 15; 17 NDC Gender	<\$10m
29		Recognition of Indigenous Peoples and Local Communities in Climate & Biodiversity (Pilots)	High Mts: 1; Mahabharat: 3; Terai: 1	All	New	Must Have	Medium	High	SDG 13, 15, 16; NDC Indigenous	<\$10m
30		Youth Mobilisation in Mountain Action (Pilots)	High Mts: 2; Mahabharat: 5; Terai: 5	All	New	Must Have	Short	High	SDG 13, 16; NDC Youth	<\$10m
31		Mountain education and awareness in secondary school curricula (Piloting)	High Mts: 4 Mahabharat 4	All	New	Must Have	Medium	Medium	SDG 13, 15, Youth	<\$10m

32		Establishment and Operation of Mountain University	High Mts: 1	Karnali	New	Should Have	Medium	Medium	SDG 4, 13 and 15	\$10–50m
33		Establish Mountain Authority (Institutional)	All	All	New	Must Have	Medium	Medium	SDG 16, 13; NDC Governance	\$50–100m
34		Regional Partnership: Ministerial Council of HKH Countries	All	All	New	Should Have	Medium	Medium	SDG 17; NDC Regional Coop	<\$10m
35		Global Partnerships in Mountain Agenda (COPs, Platforms)	All	All	Scale Up	Must Have	Medium	Medium	SDG 13, 15, 17; NDC International	<\$10m

## Cost Summary by Flagship vs Supporting Interventions

To operationalize the Mountain Agenda as a credible and bankable investment portfolio, the **35 interventions** identified in the indicative costing framework have been classified into **Flagship** and **Supporting** categories. This structuring follows international investment practice (e.g. *Living Indus Investment Prospectus*), where **large-scale, system-transforming investments** are distinguished from **enabling, catalytic, and pilot-scale actions**.

### Classification Criteria

**Flagship Interventions** are defined as interventions with:

- **Financial scale of USD 50 million and above**, including very large investments up to USD 2 billion;
- **Systemic and multi-sectoral impact** across provinces, basins, or national programmes;
- **Transformational outcomes** for ecosystems, livelihoods, climate resilience, and green growth;
- **Strong alignment** with Nepal's NDCs, SDGs, and national mountain priorities (forestry, adaptation, disaster risk reduction, sustainable cities, and nature-based solutions).

These interventions form the **core backbone** of the investment framework and account for the **majority of total financing requirements**.

**Supporting Interventions** are defined as interventions with:

- **Financial scale below USD 50 million**;
- **Targeted, pilot, or catalytic scope**, often designed to test, enable, or prepare for scale;
- **Enabling and cross-cutting functions**, including governance, capacity building, gender equality, youth engagement, Indigenous Peoples, culture, and knowledge systems;
- **Regional and global cooperation roles** that leverage partnerships and platforms.

These interventions act as **enablers and accelerators**, strengthening the institutional, social, and knowledge foundations required for effective implementation of Flagship investments.

### Flagship Interventions (USD 50 million and above)

Based on the costing framework, **15 interventions** qualify as **Flagship Interventions**, comprising all programmes within the following cost bands:

- **USD 50-100 million**
- **USD 100-500 million**
- **USD 500 million-2 billion**

These Flagship interventions represent the **system-transforming core** of the Mountain Investment Framework.

Indicative examples include:

- Integrated sustainable management of community forests and buffer zones
- Sustainable solutions to the management of mountain landscapes
- Large-scale ecosystem restoration and watershed management
- Nationwide implementation of locally-led adaptations
- Integrated waste management systems in mountain cities
- Forest-based enterprises and green value chains
- Commercial-scale medicinal and aromatic plants development
- Cryosphere, snow, and GLOF monitoring systems
- Multi-hazard early warning and disaster risk reduction systems

The **largest Flagship intervention—Sustainable Solutions to the Management of Mountain Landscapes including Protected Areas for Prosperity** accounts for the **single biggest investment allocation**, reflecting the scale required to secure biodiversity, ecosystem services, and climate resilience across Nepal's mountain regions.

Estimated investment envelope: approximately USD 3.3-3.5 billion, **representing** around 80-85 percent of the total portfolio value.

### **Supporting Interventions (Below USD 50 million)**

The remaining **20 interventions** are classified as **Supporting Interventions**, comprising all programmes in the **USD 10-50 million** range. These interventions play a catalytic and enabling role, strengthening institutions, inclusion, innovation, and cooperation.

**Indicative examples include:**

- New Ramsar site designation and biosphere reserve preparation
- Indigenous culture, language, and knowledge preservation
- Permaculture and nature-based solution pilots
- Youth mobilisation and leadership initiatives
- Gender-responsive planning and budgeting support
- Knowledge platforms, innovation hubs, and data systems
- Regional and global mountain cooperation initiatives

**Estimated investment envelope: approximately USD 0.55-0.75 billion, accounting for 15-20 percent of total investment needs.**

## Overall Portfolio

In total, the **35 interventions** included in the Mountain Investment Framework require an estimated **USD 4.08 billion**, as reflected in the attached Excel costing framework. The **15 Flagship interventions**, each costing **USD 50 million or more**, anchor long-term, system-level investments in **protected area and landscape management, ecosystem resilience, climate adaptation, disaster risk reduction, and sustainable mountain economies.**

The **20 Supporting interventions**, each below **USD 50 million**, deliver **high-impact, catalytic outcomes** that strengthen governance, inclusion, innovation, culture, and regional cooperation. Together, the portfolio reflects a **two-tier investment strategy**: mobilizing large-scale climate and biodiversity finance while simultaneously nurturing enabling conditions and social transformation at multiple levels.

### Resource Mobilization

Financing for the Mountain Investment Framework will be mobilized through a **blended and phased approach**, drawing on the following sources:

#### 1. Domestic Public Finance

Allocations from **Federal, Provincial, and Local Government budgets** will provide the foundational financing layer. The Mountain Authority will coordinate intergovernmental alignment through annual planning and budgeting processes.

#### 2. International Climate and Development Finance

External financing will be sought from sources including:

- Green Climate Fund (GCF)

- Global Environment Facility (GEF)
- Adaptation Fund (AF)
- Fund Responding to Loss and Damage (FRLD)
- Climate Investment Funds (CIFs)
- Mitigation Action Facility (MAF)
- International Climate Initiative (IKI)
- International Financial Institutions (IFIs)
- Bilateral Fundings
- Philanthropies and Trust Funds

### 3. Sagarmatha Trust Fund

The proposed **Sagarmatha Trust Fund (STF)** will serve as a dedicated vehicle to pool domestic and international resources and ensure long-term financing sustainability. Until STF becomes operational, **existing national mechanisms**, including the **Forest Development Fund**, will be used as interim financial platforms.

### Implementation Plan

A detailed breakdown of the programmes/projects and the corresponding implementation plan is given as Annexe II.

## Closing Reflections

The interventions under the *Living Sagarmatha Action Portfolio* represent Nepal's most comprehensive and inclusive national response to the climate crisis. Mapped directly to the problem areas identified in Chapter 2, these 35 interventions are not theoretical, they are action-ready and rooted in evidence, community experience, and institutional ambition.

What makes these interventions transformative is not only their technical soundness but their social architecture. Every programme integrates **women's leadership**, **youth innovation**, children welfare and **community stewardship** as central pillars and not peripheral beneficiaries. This is reflected in the added engagement analysis, where more than two-thirds of the portfolio rates 'High' on community, women, and/or youth involvement.

The table illustrates that Nepal's climate response cannot rely on top-down policies alone. Whether it's a glacial alert system in Rasuwa, a medicinal plant corridor in Dolpa, or sponge cities in Butwal, **local ownership**, **intergenerational leadership**, and **gender equity are essential for success**. Climate adaptation must speak the language of the Himalayas: resilience, collectivism, and groundedness.

This chapter concludes with clarity and urgency: the *Living Sagarmatha* vision is not a wish list—it is a national mandate. The road ahead requires financing, coordination, and political will. The foundation however, is set. With this portfolio, Nepal is poised to lead a mountain-centered adaptation agenda not just for itself, but for the region and the world.

# UPHOLDING THE HIMALAYAS' COVENANT

Nepal's mountains are not just landscapes, they are lifelines, teachers, and sentinels of the changing climate. From the melting glaciers of Langtang to the drying springs of Ramechhap, from urban floods in Kathmandu to deserted farmlands in Dailekh, the message is clear: the Himalaya is speaking and Living Sagarmatha is Nepal's answer.

This report is not a declaration of crisis alone. It is a declaration of **readiness**.

Across these chapters, we have traced:

- The urgency and clarity of the Himalayan climate signal.
- The structural problems mapped across critical sectors.
- The pathways Nepal must pursue, rooted in equity, evidence, and tradition.
- And a full-fledged **Living Sagarmatha -Action Portfolio** of 35 transformative interventions—designed not just to respond, but to regenerate.

These interventions are designed for **inclusivity**, for **scale**, and for **local stewardship**. Women are not side participants, they are leaders. Youth are not recipients, they are designers of the future. And community institutions, from Guthis through community forestry user groups to cooperatives, are not nostalgic, they are the frontline of resilience.

But this vision cannot stand alone.

## Towards an implementation compact

To make Living Sagarmatha - Parvat Jeevan real, Nepal must now pursue:

- **Sagarmatha Trust Fund**, anchored in transparency and governed by women, youth, and community voices;
- **Basin Level Action Plans** aligned with the 35 interventions and tailored to local vulnerabilities;
- **International Partnerships** that honour Nepal's mountain leadership and enable pipeline-ready investments;
- **Monitoring and Evaluation Frameworks** that combine satellite data, community reporting, and inclusive feedback systems.

Each programme outlined here can feed into NDC implementation, SDG targets, and long-term climate resilience indicators under the National Adaptation Plan (NAP). Living Sagarmatha - Jeevanta Sagarmatha is not a parallel process rather it is a convergence platform. (A detailed breakdown of projects and implementation plan is in Annex III).

## Nepal's Promise

As the world looks toward COP31 and beyond, Nepal can raise a different flag, not one of despair, but of determination. The mountains may be melting, but the resolve of those who live with them is stronger than ever.

Let this report be read not just as analysis, but as a **call to co-create**. To ministries, donors, UN agencies, civil society, communities, and private sector: let this be an invitation to you.

Let Living *Sagarmatha* rise ridge by ridge, watershed by watershed, life by life.



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# ANNEX I: EXISTING POLICIES AND PROGRAMMATIC REVIEWS

## National River Basin Management Strategy 2023

The Government of Nepal approved the 'National Basin Management Strategy, 2023' on 27 November, 2023. This is the most recent policy document adopted by Nepal as part of its integrated approach to mountain development, focusing on river systems and watershed management. The strategy encompasses four major basins, namely Koshi, Gandaki, Karnali, and Mahakali, which collectively include all of the nation's river systems and their respective watersheds. These river systems ultimately pour into the Ganges, one of the ten major river systems of the Hindu Kush Himalayan region.

The Government has justified the formulation and endorsement of this strategy by highlighting the limitations of previous fragmented and sector-specific approaches that ultimately siloed and reduced expenditure impact. These earlier strategies were inadequate in addressing the complex and interconnected issues related to natural resources such as water, forests, and land. The new strategy seeks to adopt a more holistic, ecosystem-based approach to natural resource governance. The Strategy references several existing sectoral policies, namely, the National Water Resources Policy (2020), Irrigation Policy (2014), National Urban Water and Sanitation Sectoral Policy (2009), and Hydropower Development Policy (2001), as fragmented and uncoordinated frameworks. It underscores the need for sustainable watershed management to serve as a unifying foundation for these disparate policy areas.

The Strategy articulates a long-term vision focused on the multipurpose and sustainable management of watershed resources to ensure the continued provision of ecosystem services and contribute to national prosperity. To achieve this vision, the document outlines six key strategic areas accompanied by a set of actions, each with implementation timeframes ranging from five to ten years, aimed at the sustainable management of river basins and major watersheds nationwide. Furthermore, the Strategy establishes an institutional framework by forming a multisectoral National River Basin Management Steering Committee, chaired by the Minister for Forests and Environment and co-chaired by a Member of the National Planning Commission. This committee is tasked with overseeing and coordinating watershed management initiatives at the national level.

However, the Strategy also presents certain limitations. It lacks a clear assignment of responsibilities to specific institutions and does not include detailed budget estimates or identify concrete funding sources necessary for implementation. Furthermore, it fails to integrate river basin systems within the broader mountain framework, which distinguishes mountainwatersheds from those elsewhere.

## Nationally Determined Contributions

### INDC

Under the Paris Agreement, Nepal submitted its Intended Nationally Determined Contribution (INDC) to the UNFCCC Secretariat in February 2016. The submission identified Nepal as one of the country's most vulnerable to the adverse impacts of climate change, particularly water-induced disasters and extreme hydro-meteorological events such as droughts, storms, floods, inundations, landslides, debris flows, soil erosion, and avalanches. However, the INDC did not quantify the expected reduction in greenhouse gas (GHG) emissions, nor did it include a defined timeframe. It served primarily as a precursor to the Nationally Determined Contribution (NDC), as outlined by the Paris Agreement.

### NDC

Nepal submitted its first Nationally Determined Contribution (NDC) in October 2016, thereby formally becoming a Party to the Paris Agreement. Although the document lacks a clear timeframe, it outlines several policy targets to be achieved by 2050. Key mitigation actions include clean energy development, afforestation and carbon sequestration, sustainable transportation, climate-resilient agriculture, waste management, air pollution control, and the adoption of greener building codes.

In the area of clean energy, the NDC sets ambitious goals: generating 4,000 MW of hydroelectricity by 2020 and 12,000 MW by 2030, along with producing 2,100 MW of solar energy and 220 MW of bioenergy by 2030. Additionally, the document prioritizes the implementation of the REDD+ program as a key government initiative to reduce greenhouse gas (GHG) emissions.

Despite its forward-looking intentions, the first NDC had several limitations. It did not provide a specific implementation timeline, focused more on policy-level targets rather than quantifying GHG reductions, and lacked cost estimates for its proposed actions—effectively making it more

of a wish list. Moreover, it did not specify any reliance on domestic funding or external financial support.

Nevertheless, Nepal was among the leading Least Developed Countries (LDCs) to submit its first NDC within the timeline established by the Paris Agreement and the UNFCCC Secretariat.

### **NDC2.0**

Nepal submitted its second NDC in December 2020. It is more robust than the first NDC in terms of the clear time frame, quantified targets, costing and GESI integration. Although the document still lacks the quantified targets of reducing GHG emission, it has proposed a number of mitigation activity targets that reduce GHG. The document clearly spelled out its timeframe of January 2021 to December 2030. It estimates the baseline of GHG emission mainly from energy, IPPU, AFULU and Waste sectors.

### **NDC3.0**

Nepal submitted its third Nationally Determined Contribution (NDC 3.0) in May 2025. It sets mitigation targets in relation to the volume of greenhouse gas (GHG) emissions. The document organizes its mitigation targets into four main categories: Energy; Agriculture, Forestry, and Other Land Use (AFOLU); Waste; and Industrial Processes and Product Use (IPPU). The activities outlined in NDC 3.0 are predominantly dependent on external support, accounting for approximately 85% of the total estimated cost of USD 73.74 billion through 2035. The previous NDCs serve primarily as historical references. The most recent NDC 3.0, which includes updated and revised targets through 2035, is scientifically grounded, aligned with stakeholder interests, and integrates GEDSI principles. However, given Nepal's recent high-level advocacy on the mountain agenda at COP26, COP28, and COP29 of the UNFCCC, there should be a stronger coherence between all mitigation actions and the specific context of the mountains and cryosphere.

Communications and diplomacy can further be strengthened by institutionalizing an annual campaign for the World Day for Glaciers (21 March), linking national observances with the International Conference on Glaciers' Preservation in Dushanbe (29 May-1 June 2025), and embedding these efforts within the Cryosphere Decade. To bridge science, culture, and adaptation, government, academia, and communities will convene annual 'Glacier Dialogues' that showcase knowledge and solutions rooted in both evidence and tradition.

## **Long-term Strategy for Net Zero Emissions, 2021**

The strategy aims to reduce greenhouse gas emissions and to achieve net-zero emissions by the year 2045, in alignment with the broader objective of realizing the Sustainable Development

Goals (SDGs). It is more ambitious than the Nationally Determined Contribution (NDC) 2.0, which had set a target of net-zero emissions by 2050. The strategy predominantly focuses on the generation of a substantial amount of clean energy, particularly hydropower, with the intention of significantly decreasing the reliance on fossil fuels across key sectors such as industry, transportation, households, and others.

It undertakes a sectoral analysis of emissions from five major sources:

1. Energy
2. Agriculture
3. Land Use, Land Use change and Forestry (LULUCF)
4. Industrial Processes and Product Use (IPPU)
5. Waste

Two mitigation scenarios are projected in the strategy

With Existing Measures (WEM), which represents a business-as-usual pathway

With Additional Measures (WAM), which incorporates more ambitious interventions

Although the document has been commended for its ambitious mitigation targets, it inadequately addresses the role of mountainous regions as either enablers or barriers to climate change mitigation and adaptation efforts. The terms "hills and mountains" are mentioned only three times throughout the document, and solely in the context of sustainable forest management in hill and mountain forests. Given the country's strong emphasis on mountains with respect to climate change, biodiversity, cultural heritage, and the economy, the strategy still lacks sufficient integration of mountain-related considerations.

## **National Adaptation Plan of Action (2010)**

Nepal's National Adaptation Programme of Action (NAPA) was officially endorsed in September 2010 and marked the country's first comprehensive national effort to identify urgent and immediate adaptation needs in response to climate change. Developed under the guidance of the UNFCCC's Least Developed Countries Work Programme, the NAPA process was led by the Ministry of Environment (now MoFE) in collaboration with development partners and national stakeholders.

The NAPA identified six thematic areas most vulnerable to climate change:

- Agriculture and food security

- Water resources and energy
- Climate-induced disasters
- Forests and biodiversity
- Public health
- Urban settlements and infrastructure

A key output of the NAPA was a portfolio of priority adaptation projects ranging from local early warning systems to climate-resilient farming techniques costed and ready for implementation. It also introduced Local Adaptation Plans of Action (LAPAs) as a bottom-up approach, mainstreaming climate adaptation into local planning processes. This document now only serves as a historical reference, and has nothing to do with the current and future climate actions.

### **National Adaptation Plan (2021)**

In 2021, Nepal released its National Adaptation Plan (NAP) as a long-term strategy to build resilience and mainstream climate adaptation across development sectors. It responds to Article 7.9 of the Paris Agreement and was developed in alignment with Nepal's national development goals and the 15th Five Year Plan.

The NAP 2021:

- Builds on the foundations laid by NAPA and LAPAs
- Identifies priority adaptation actions across 10 climate-vulnerable sectors: agriculture, forestry, water, energy, health, tourism, urban planning, infrastructure, education, and disaster risk reduction.
- Integrates gender equality and social inclusion (GESI) in all adaptation priorities
- Focuses on institutional strengthening, capacity building, and financing mechanisms
- Proposes monitoring, evaluation, and learning (MEL) frameworks for adaptive management

This Plan emphasizes a whole-of-society approach, including strong roles for local governments in implementing adaptation actions, and alignment with Nepal's Nationally Determined Contributions (NDCs). However, the NAP (2021) presents certain challenges regarding its linkage to mountain-specific loss and damage and related adaptation measures. Given that mountains both influence climate change and are disproportionately affected by it, Nepal's NAP should explicitly address and prioritize mountain-related issues rather than remain mountain-neutral.

### **National Biodiversity Strategy 2002 and Action plan (2006-10)**

Nepal formulated its first National Biodiversity Strategy in 2002, followed by the corresponding Action Plan (2006-2010). These foundational documents catalogued the country's genetic, species, and ecosystem diversity, while also identifying the key threats to their conservation. Existing policies and measures were reviewed in light of their effectiveness in safeguarding biodiversity.<sup>13</sup>

The strategy recognizes "mountains" as one of the critical ecosystems of the country and places significant emphasis on their sustainable management. It acknowledges that mountain regions encompass various other ecosystems, including forests, rangelands, wetlands, and agro-ecosystems. Adopting a "nested" ecosystem approach, the strategy conceptualizes ecosystems as existing within larger ecosystem units. Furthermore, the document explicitly discusses "mountain biodiversity" as a distinct category, despite overlaps with other biodiversity types. While the strategy lacks complete clarity in defining mountain ecosystems and biodiversity, it nonetheless contributes meaningfully by highlighting the mountains as a vital component of biodiversity conservation in Nepal.

### **Nepal Biodiversity Strategy and Action Plan (2014-20)**

The Nepal Biodiversity Strategy and Action Plan (2014-2020) represents a more advanced strategic framework for the conservation, sustainable use, and equitable sharing of the benefits derived from ecosystems and genetic resources. It is aligned with the principles and protocols of the Convention on Biological Diversity (CBD). With regard to mountain ecosystems, the Strategy gives considerable emphasis to the term "mountains" as a central dimension of biodiversity. It acknowledges mountain elevation as a key driver of climatic variation, thereby contributing to the richness of genetic, species, and ecosystem diversity across the country. The document explicitly states that climate change will have pronounced impacts on Nepal's mountain ecosystems. It affirms the interconnectedness between mountains, climate change, and biodiversity, and advocates for an integrated approach to conserving mountain biodiversity, addressing both climatic and non-climatic stressors. Nepal is preparing NBSAP for the period of 2025-2030. Given the broad acknowledgment of mountains in recent strategies, the new Strategy must clearly articulate why and how biodiversity in mountainous regions is disproportionately impacted by climate change.

### **Agriculture Perspective Plan 1995**

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<sup>13</sup> Photo Credit: Juan Carlos Luna Cuevas

The Agriculture Perspective Plan (APP) of 1995 served as Nepal's principal strategic framework for agricultural development over a 20-year period beginning in 1995. The Plan adopts a geographical approach to agricultural production, structured around the distinct physiographic regions of the country including mountains, hills, and the Terai plains.

Accordingly, the Plan recommends cultivating different crop species based on elevation-specific agro-ecological zones. For instance, it prioritizes citrus cultivation across the mid-hills, apples in the inner Himalayan zone, vegetables and flower seed production in the hills and mountains, beekeeping in the hills and mountains, and raw silk production in the hill regions. This approach reflects a nuanced understanding of agro-ecological zoning, particularly in mountain areas. The Plan is organized around four core components: inputs, outputs, impacts, and implementation mechanisms associated with agricultural production. It identifies irrigation, fertilizers, technology, roads, and energy as essential inputs to increase agricultural productivity. As for outputs, it emphasizes livestock, high-value crops, agribusiness, and forestry. In terms of impacts, the Plan highlights poverty and food security, the environment, and the distinct regions of the hills and mountains, and the Terai. By recognizing "hills and mountains" as a key impact area, the Plan underscores their importance within the broader mountain economy and acknowledges their critical role in shaping agricultural outcomes.

### **Agriculture Development Strategy (2015-2035)**

The Agriculture Development Strategy (ADS) envisions the development of a self-reliant, sustainable, competitive, and inclusive agricultural sector that drives economic growth and enhances livelihoods, food and nutrition security, ultimately contributing to the realization of food sovereignty in Nepal. Similar to the Agriculture Perspective Plan (APP), the ADS embraces the country's agroecological diversity, recognizing the Terai plains, hills, and mountains as key altitudinal zones that influence agricultural productivity and the potential for commercialization. The strategy acknowledges that the hills and mountains, while ecologically important, present significant challenges to agricultural commercialization. These include rugged terrain, inadequate infrastructure, and agroclimatic constraints, which collectively hinder efficient production and market access.

Importantly, the ADS recognizes both the facilitating and limiting roles of mountain regions in agricultural development. Like its predecessor, the ADS recommends the cultivation of crop species adapted to specific altitudinal zones. For instance, in high mountain areas, it promotes the production of high-value commodities such as essential oils, wool, medicinal and aromatic plants, and temperate fruits like apples. In this regard, the strategy affirms that mountain

regions play a significant role in Nepal's agricultural landscape, and their specific characteristics are integral to the implementation of the ADS. If effectively implemented, this Strategy could strengthen agriculture as a key component of the mountain economy, thereby contributing to the overall development of mountain regions.

## **National Disaster Risk Reduction Policy 2018**

The National Disaster Risk Reduction Policy (2018) seeks to contribute to sustainable development by transforming Nepal into a nation that is well-protected against disaster risks and more effectively adapted and resilient to the impacts of climate change. The Policy outlines six objectives, is guided by seven core principles, and sets forth fifty-nine distinct policy measures. Its primary aim is to substantially reduce losses and damages to human life, property, livelihoods, productive assets, physical and social infrastructure, as well as cultural and natural heritage resulting from both natural and human-induced disasters.

However, the policy falls short in recognizing mountain regions as either disaster-prone areas or zones disproportionately impacted by various types of hazards. Apart from a single reference to the implementation of a Master Plan for Siwalik protection, the document remains largely mountain-neutral. This is a significant omission, considering growing evidence in recent years linking mountain areas with increased vulnerability to hazards such as landslides, glacial lake outburst floods (GLOFs), thermokarst-induced floods, and mountain flash floods. Given these emerging risks, the National Disaster Risk Reduction Policy still needs to explicitly incorporate mountain regions as key disaster risk zones and prioritize them for targeted interventions and resilience-building measures.

## **Institutional Efforts**

### **Collaboration at Global Level**

#### *UN Group of Friends of Mountainous Countries*

Group of Friends of Mountainous Countries was formed on 29 August 2019 as a network of countries with significant portion of their geography under mountains. The main objective of this group is to draw global attention to the mountainous countries which are adversely affected by climate change, biodiversity loss and other threats. The network mainly organizes the mountainous countries to collectively voice for the betterment of mountain ecosystems, economy and culture mainly in the UN negotiations. There are 26 members of the Group of Friends of Mountainous Countries, which are Afghanistan, Andorra, Austria, Albania, Armenia, Azerbaijan, Bangladesh, Bhutan, Bolivia, Canada, Georgia, Greece, Kyrgyzstan, Lebanon,

Liechtenstein, Morocco, Nepal, Norway, Romania, Tajikistan, Turkey and Switzerland. Nepal is the founding member of this group. However, the Group has not been as vibrant as was expected during its formation.

### *Mountain Partnership*

The International Partnership for Sustainable Development of Mountain Regions, shortly known as the Mountain Partnership was formed during the World Summit on Sustainable Development in Johannesburg in 2002, which was also declared as the International Year of Mountain. It is an international voluntary alliance of members dedicated to improving the lives of mountain peoples and protecting mountain environments around the world. The Mountain Partnership envisions a world with empowered mountain communities and increased public and private sector commitment and investment in sustainable mountain development to address the climate and biodiversity crises in mountains and to ensure the social and economic livelihood and well-being of mountain people, leaving no one behind, as well as the conservation and sustainable use of mountain ecosystems and resources, for the benefit of people and planet. It is a network of members from governments, sub-national authorities, intergovernmental organizations and major groups organizations. Currently there are 68 governments and nearly 500 members from other categories in the Alliance. The global meetings are the highest body of the Mountain Partnership and are held every four years. The Government of Nepal represented by the Ministry of Forests and Environment is the government member, while more than two dozens of civil society organizations are also members from major groups organizations from Nepal.

### *Ambition on Melting Ice*

The Ambition on Melting Ice (AMI) is a high-level group focused on sea-level rise and mountain water resources, established by 20 government ministers during COP27 in Egypt. Nepal is among the founding members of this initiative, which was launched under the leadership of co-chairs Chile and Iceland. AMI aims to raise global awareness and urgency regarding the need for accelerated emissions reductions to prevent worsening and irreversible impacts caused by cryosphere loss. Since its inception, five additional countries have joined the initiative as of 2024. The group underscores that even minor increases in global temperatures, especially those exceeding 1.5°C, pose significant risks, as evidenced by the latest cryosphere science published since the signing of the Paris Agreement.

However, Nepal's global efforts largely remain fragmented and disconnected from the broader, more influential international advocacy initiatives with which the country aligns alongside other nations.

### *Collaboration at Regional Level*

Nepal is one of the founding members of the regional initiative known as the International Centre for Integrated Mountain Development (ICIMOD), an intergovernmental knowledge and learning centre established in 1981. Headquartered in Kathmandu, ICIMOD serves eight member countries in the Hindu Kush Himalayan (HKH) region: Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan. The Centre is committed to addressing the distinctive challenges and opportunities faced by mountain regions. Its mission is to generate and disseminate knowledge that informs regional policies and actions, while catalyzing investments to support the HKH countries and communities in transitioning toward greener, more inclusive, and climate-resilient development pathways.

Despite the Centre's role as a research and knowledge hub, strong political commitment from member countries remains lacking. While the governing board is fully represented by all member states, establishing a council of climate and environment ministers from the region could be instrumental in fostering more effective regional collaboration on mountain-related actions across the HKH.

### **National Institutions**

#### *Ministry of Forests and Environment*

Since 2002, the International Year of Mountains, the Ministry of Forests and Environment (MoFE) has been coordinating mountain-related activities in Nepal. Despite the country's sustained advocacy for the mountain agenda over the years, there is currently no dedicated government institution solely responsible for mountain-specific actions. Within MoFE, the Participatory Forestry Division has been designated to oversee programs related to mountain development. This Division also serves as the National Focal Point for the Mountain Partnership and represents Nepal in both national and international mountain-related initiatives.

Although the Ministry is partially engaged in mountain-related national and international activities, there is no dedicated institution solely focused on integrated mountain development. This absence has resulted in the disjointed and fragmented nature of several policies, institutions, and programmes dedicated to mountain issues. Establishing a designated

mountain authority as a national entity under the Ministry or independently engaging government, civil society, and the private sector would be essential to consolidate these fragmented efforts and deliver more effective mountain solutions.

### *Locally led mountain institutions*

#### *Community forestry*

Nepal is internationally recognized as a pioneer in initiating and promoting community forestry to restore degraded mountain ecosystems. Spurred by the alarming warnings of Eckholm (1976) and the widely debated 'Theory of Himalayan Environmental Degradation' (Ives & Messerli, 1989), Nepal emerged as a global focal point for deforestation, forest degradation, and unsustainable land use. The World Bank (1979) even projected that the country's mountains could be entirely deforested by 1990.

In response, the Government of Nepal introduced the Master Plan for the Forestry Sector in 1989, which revitalized the concept of community forestry as a key strategy for ecological restoration. Under this initiative, government-owned forest areas were handed over to legally recognized Community Forestry User Groups (CFUGs), empowering local communities to conserve, manage, and sustainably utilize forest resources.

The Forest Act of 1993 formally institutionalized this approach, creating legal and economic incentives for communities to rehabilitate degraded lands and safeguard existing forests. As of 2024, approximately 23,000 CFUGs are managing around 2.4 million hectares of forest, predominantly in mountainous regions (DOFSC, 2025). Over the past two decades, community forestry in Nepal has been widely acclaimed for its substantial contributions to the restoration of mountain ecosystems (NASA, 2023; Van Den Hoek et al., 2021).

Similarly, there are various forms of community-based conservation initiatives. These include conservation area management, buffer zone management around national parks and wildlife reserves, and community-based leasehold forestry programmes, which are predominantly implemented in the mountain regions. In contrast, collaborative forest management and forest conservation areas are largely concentrated in the lowland regions, which are also connected to the mountains.

#### *Indigenous customary practices*

There are 125 ethnic groups and 142 living languages identified in the country. Out of them, the Government of Nepal has recognized 59 ethnic groups as 'Indigenous Peoples' of the

country. These indigenous peoples have several unique customary practices that are climate resilient and protective to mountain biodiversity for generations. Some examples include, Amchi medicine, Shagya customary practice of non-violence, high altitude pastoralism, mountaineering, keepat (collective) land tenure, wood carving and sustainable fishing. According to NEFIN (2025), there have been several challenges to sustain indigenous customary practices under the shadows of globalization, market and climate change. These practices are local solutions to climate change, land degradation and biodiversity loss in the mountains. In conjunction with science and data-driven diagnostics, indigenous customary practices have proven to be effective and cost-efficient solutions for addressing climate change and ecosystem degradation.

### Local Adaptation Plan of Actions (LAPA)

Local Adaptation Plan of Action (LAPA) has been practiced as a locally led climate action in Nepal. The 16th Periodic Plan of the Government has made a target to formulate LAPA in each of the 753 municipalities by 2028. The Ministry of Forests and Environment (MoFE) has revised the LAPA Framework in 2020 and used it as a guideline for formulating LAPA at local governments. It customizes climate actions at local or community level first by carrying out vulnerability assessment followed by prioritization of adaptation activities in a bottom-up process.

### Programmatic efforts

#### *Celebration of Mountain Years (2002, 2022)<sup>14</sup>*

The United Nations General Assembly designated the year 2002 as the International Year of Mountains (IYM) to draw the attention of the global community to the unique opportunities and challenges associated with mountain regions worldwide. In commemoration of IYM 2002, the Bishkek Global Mountain Summit was convened, resulting in the formulation of the Bishkek Mountain Platform. Nepal actively participated in both the summit and the development of the platform. Additionally, the Mountain Partnership emerged as a key outcome of the 2002 World Summit on Sustainable Development, held in Johannesburg. The Government of Nepal, through the Ministry of Forests and Environment, has since been a state member of the Mountain Partnership.

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<sup>14</sup> Photo Credit: Juan Carlos Luna Cuevas

Similarly, after 20 years, the International Year of Sustainable Mountain Development, 2022 was observed in Nepal through a series of events and workshops conducted throughout the year. The celebrations culminated in the International Mountain Dialogue, which adopted the “Mustang Declaration on Sustainable Mountain Solutions: A Call for Action, 2022.” The Declaration outlines several critical actions, including the development of a national mountain strategy for Nepal and the establishment of the Hindu Kush Himalaya Council of Environmental Ministers.

### *Cabinet meeting at Sagarmatha Basecamp*

To raise global awareness about the impacts of climate change on the Himalayas, the Government of Nepal convened a Cabinet meeting of the Council of Ministers at an altitude of 5,200 meters in Kalapatthar, a base camp of the Mount Everest expedition, in December 2009. This event was strategically held just prior to the 15th Conference of the Parties (COP15) to the United Nations Framework Convention on Climate Change in Copenhagen. Inspired by the Maldives' underwater Cabinet meeting, which symbolized the existential threat posed by rising sea levels to small island nations, Nepal's high-altitude Cabinet meeting was intended to underscore the alarming rate at which Himalayan glaciers are melting as a result of global warming.

### *International Mountain Dialogues in Nepal*

- *International Dialogue on Mountains, People and Climate*

The Government of Nepal organized an International Dialogue on Mountains, People, and Climate on May 22-23, 2023, in Kathmandu. The event was attended by government representatives from other mountainous countries, as well as conservationists, experts, and policymakers, who engaged in discussions on the impacts of climate change in mountain regions. To underscore the Government's commitment to the mountain agenda, the Prime Minister and other Cabinet Ministers were also present at the event. The dialogue issued a call to the global community to acknowledge and address the adverse effects of climate change on mountain ecosystems and their interconnected lowland areas, which are facing significant social, environmental, and economic consequences.

- *Sagarmatha Sambad*

The Government of Nepal organized another International Dialogue titled Sagarmatha Sambad under the theme “Climate Change, Mountains, and the Future of Humanity,” held from May 16 to 18, 2025, in Kathmandu. The event was inaugurated by the Prime Minister, Mr. K.P. Sharma Oli, and attended by ministers from several countries, including China,

India, and the United Kingdom. This high-level forum brought together global leaders, policymakers, researchers, experts, and mountain stakeholders to discuss the impacts of climate change on mountain regions and the resulting consequences for downstream areas. The Sambad concluded with the adoption of a 25-point declaration, the Sagarmatha Call for Action. Among its key proposals was the establishment of a multi-stakeholder international platform on mountains and climate change, for dialogue, innovation and empowerment, with the aim of amplifying the voices of mountain communities in global climate processes.

### **High level interventions in UNFCCC COPs (COP24, 26, 28, 29, 30)**

Although Nepal began advancing its mountain agenda in global climate dialogues as early as COP15, through initiatives such as holding a Cabinet meeting in the Sagarmatha region and organizing a march of 50 Nepali Everest summiters in Copenhagen to raise awareness among COP participants, the agenda gained further momentum during COP24, COP26, COP28, COP29 and COP30.

At COP24, held in 2018 in Katowice, Poland, the President of Nepal, Ms. Bidya Devi Bhandari, participated in the high-level segment and delivered a national statement. In her address, she emphasized the critical importance of global partnerships in safeguarding mountain ecosystems from the adverse impacts of climate change.

At COP26, held in 2021 in Glasgow, the Prime Minister of Nepal, Mr. Sher Bahadur Deuba, led the Nepali delegation and also delivered a national statement during the high-level segment. He called on world leaders to recognize the unique climate vulnerabilities of high mountain regions and urged that the mountain agenda be given high priority in all climate-related negotiations.

At COP28, held in 2023 in Dubai, United Arab Emirates, the Government of Nepal hosted a high-level roundtable event titled "Call of the Mountains: Who Saves Us from the Climate Crisis?" The roundtable was chaired by Prime Minister Pushpa Kamal Dahal 'Prachanda' and featured several distinguished speakers, including United Nations Secretary-General António Guterres. During the discussion, world leaders acknowledged that mountain regions are disproportionately affected by climate change and emphasized the need for targeted global attention and action. Prime Minister Prachanda also addressed the World Climate Action

Summit and the first part of the high-level segment for heads of state and government. In his remarks, he called on the international community to recognize the severe impacts of climate change on mountain ecosystems and appealed for global support for mountain restoration efforts.

At COP29, held in 2024 in Baku, Azerbaijan, the Government of Nepal hosted a high-level event titled "Mountains in Peril: Loss and Damage in the Himalaya," chaired by President Ram Chandra Poudel. The event featured addresses by several world leaders, including the President of Kyrgyzstan, who emphasized the urgent need to protect mountain ecosystems from the impacts of climate change. President Poudel also delivered remarks at another high-level event on "Mountains and Climate Change," hosted by the Government of Kyrgyzstan. In addition, he addressed the World Leaders Climate Action Summit, part of the high-level segment of COP29. During the conference, Nepal placed a strong focus on the nexus of climate change, mountain ecosystems, and loss and damage, highlighting recent catastrophic events such as floods, landslides, and glacial lake outburst floods triggered by extreme weather events in the Himalayan region.

At COP30, held in 2025 in Belém, Brazil, Nepal actively advocated in collaboration with mountainous countries from the region and across the world for the inclusion of mountain-specific agendas in the official decisions. Consequently, COP30 has emerged as the most significant forum to date in adopting a dedicated decision on mountain issues. Parties adopted the first formal UNFCCC decision on "Mountains and Climate Change". The decision requests the Chairs of SBSTA and SBI to convene a dedicated dialogue on mountains during the sixty-fourth sessions of the subsidiary bodies in June 2026, appoint co-facilitators from both developing and developed country Parties, and prepare a summary report for consideration at COP31.

Through various policies, institutions, and programmes, Nepal is engaged in activities related to climate change, biodiversity, agriculture, and socio-cultural practices in both the mountains and connected lowlands. However, none of these initiatives are explicitly mountain-specific, nor do they adopt a coordinated, holistic, and system-wide approach to integration. These gaps and challenges become particularly evident in the context of mountain regions. Moreover, a comprehensive strategic framework to unify and guide all mountain-related actions remains largely absent.

## ANNEX II: CHALLENGES FOR PROJECT INTERVENTIONS

Nepal's climate and ecological risks span from high mountain glaciers to the Terai plains, with the problem matrix identifying critical challenges and corresponding interventions. Rapid glacial retreat and expansion of glacial lakes pose severe threats to water security, infrastructure, and downstream communities, requiring systematic glacier monitoring, community stewardship, and early warning systems. Shared river basins such as the Koshi, Gandaki, and Mahakali face increasing risks of water-related tensions, highlighting the need for conflict-sensitive programming and regional water governance frameworks. The frequency of floods and glacial lake outburst floods has intensified, necessitating the expansion of flood early warning systems, urban drainage improvements, and watershed retention measures. Agriculture, on which 60% of the population depends, is undermined by erratic rainfall, droughts, and crop pests, justifying a shift toward resilient grains, conservation agriculture, and revitalised seed banks. Water scarcity driven by drying springs and declining groundwater calls for investment in recharge infrastructure and urban harvesting systems, while biodiversity loss and forest degradation demand co-managed forests, native species restoration, and biodiversity monitoring. Rapid urbanisation adds pressures of plastic waste, untreated effluents, and pollution, requiring enforcement of pollution controls and promotion of green infrastructure. Public health is increasingly vulnerable to climate-sensitive diseases, underscoring the importance of integrating risk into health systems, awareness campaigns, and protective facilities. Early warning coverage remains incomplete, with fewer than half of high-risk municipalities protected, requiring expansion to at least 100 municipalities. Finally, gender inequality is embedded across all sectors, and institutionalised inclusion—through women's training, gender audits, and women-led cooperatives—is central to achieving equitable resilience. Collectively, these interventions provide a comprehensive agenda for biodiversity protection, climate resilience, and inclusive socio-economic transformation under Parvat Jeevan. Given below are the region wise challenges for each intervention based on the regions.

The Koshi Basin				
Thematic areas	Intervention	High mountains	Mahabharat	Chure and the Terai
Mountain biodiversity and ecosystems	Expand Community Forestry for Climate & Livelihood Resilience	High	High	High
	Sustainable Management of Community Forests	High	Moderate	Low
	Sustainable solutions to the management of mountain landscapes including protected areas for prosperity	Low	Moderate	High
	Expand Ramsar Network (5 new sites)	N/A	N/A	N/A
	Improve Ramsar Site Management	High	Low	High
	Establish Biosphere Reserve (Kanchenjunga)	Low	High	High
	Biodiversity Documentation & Registration (Municipal Level)	High	High	High
	Pilot Basin-level Watershed Management	High	High	High

Climate change	Monitoring Cryosphere & Glacial Health	High	N/A	N/A
	Early Warning Systems for Floods, GLOFs, Fire & Disasters	High	High	High
	Pilot GLOF Risk Reduction Projects	High	N/A	N/A
	River Basin Climate Frameworks (Piloting)	High	Moderate	Low
	Local Adaptation Plans of Action (LAPAs) in All Municipalities	High	High	High
	Climate & Security Framework (Piloting)	High	Moderate	Low
Mountain economy, culture and prosperity	Waste Management Pilots in Mountain Cities	High	High	Low
	Regulate Mountain Rural Infrastructure	High	High	High
	Promote Nature-based Tourism in PAs	Moderate	Moderate	Moderate
	Medicinal & Aromatic Plants and High Value Crops Enterprise Expansion	High	Moderate	Moderate
	Support High Altitude Pastoralism	Moderate	N/A	N/A

	Forest-based Enterprises Development	High	Moderate	Low
	Promote Indigenous Languages, Culture & Traditions	High	High	High
	Promotion of Permaculture and AgroForestry	High	High	High
	Capacity Building for Climate & Biodiversity Funding	N/A	N/A	N/A
Cross-cutting	Gender Integration in Climate & Biodiversity Actions	High	High	High
	Recognition of Indigenous Peoples and Local Communities in Climate & Biodiversity (Pilots)	High	High	High
	Youth Mobilisation in Mountain Action (Pilots)	High	High	High
	Establish Mountain Authority (Institutional)	N/A	N/A	N/A
	Regional Partnership: Ministerial Council of HKH Countries	N//A	N/A	N/A
	Global Partnerships in Mountain Agenda (COPs, Platforms)	N/A	N/A	N/A



The Gandaki Basin				
Thematic areas	Challenges	High mountains	Mahabharat	Chure and the Terai
Mountain biodiversity and ecosystems	Expand Community Forestry for Climate & Livelihood Resilience	High	High	High
	Sustainable Management of Community Forests	High	Moderate	Low
	Sustainable solutions to the management of mountain landscapes including protected areas for prosperity	Low	Moderate	High
	Expand Ramsar Network (5 new sites)	High	High	N/A
	Improve Ramsar Site Management	High	High	High
	Establish Biosphere Reserve (Langtang)	High	High	High
	Biodiversity Documentation & Registration (Municipal Level)	High	High	High
	Pilot Basin-level Watershed Management	High	High	High
Climate change	Monitoring Cryosphere & Glacial Health	High	N/A	N//A
	Early Warning Systems for Floods, GLOFs, Fire & Disasters	High	High	High
	Pilot GLOF Risk Reduction Projects	High	N/A	N/A

	River Basin Climate Frameworks (Piloting)	High	Moderate	Low
	Local Adaptation Plans of Action (LAPAs) in All Municipalities	High	High	High
	Climate & Security Framework (Piloting)	High	Moderate	Low
Mountain economy, culture and prosperity	Waste Management Pilots in Mountain Cities	High	High	Low
	Regulate Mountain Rural Infrastructure	High	High	High
	Promote Nature-based Tourism in PAs	Moderate	Moderate	Moderate
	Medicinal & Aromatic Plants and High Value Crops Enterprise Expansion	High	Moderate	Moderate
	Support High Altitude Pastoralism	Moderate	N/A	N/A
	Forest-based Enterprises Development	High	Moderate	Low
	Promote Indigenous Languages, Culture & Traditions	High	High	High
	Promotion of Permaculture and AgroForestry	High	High	High
	Capacity Building for Climate & Biodiversity Funding	Moderate	N/A	N/A
Cross-cutting	Gender Integration in Climate & Biodiversity Actions	High	High	High

	Recognition of Indigenous Peoples and Local Communities in Climate & Biodiversity (Pilots)	High	High	High
	Youth Mobilisation in Mountain Action (Pilots)	High	High	High
	Establish Mountain Authority (Institutional)	High	N/A	N/A
	Regional Partnership: Ministerial Council of HKH Countries	High	N/A	N/A
	Global Partnerships in Mountain Agenda (COPs, Platforms)	High	N/A	N/A

The Karnali Basin				
Thematic areas	Challenges	High mountains	Mahabharat	Chure and the Terai
Mountain biodiversity and ecosystems	Expand Community Forestry for Climate & Livelihood Resilience	High	Low	High
	Sustainable Management of Community Forests	High	Moderate	Low
	Sustainable solutions to the management of mountain landscapes including protected areas for prosperity	High	High	High
	Expand Ramsar Network (5 new sites)	High	Moderate	N/A
	Improve Ramsar Site Management	High	N/A	High
	Establish Biosphere Reserve (Shey Phoksundo and Limi)	High	High	High
	Biodiversity Documentation & Registration (Municipal Level)	High	High	High
	Pilot Basin-level Watershed Management	High	High	High
Climate change	Monitoring Cryosphere & Glacial Health	High	N/A	N//A
	Early Warning Systems for Floods, GLOFs, Fire & Disasters	High	High	High

	Pilot GLOF Risk Reduction Projects	High	N/A	N/A
	River Basin Climate Frameworks (Piloting)	High	Moderate	Low
	Local Adaptation Plans of Action (LAPAs) in All Municipalities	Moderate	Moderate	High
	Climate & Security Framework (Piloting)	High	Moderate	Low
Mountain economy, culture and prosperity	Waste Management Pilots in Mountain Cities	High	High	Low
	Regulate Mountain Rural Infrastructure	High	High	High
	Promote Nature-based Tourism in PAs	Moderate	Moderate	Moderate
	Medicinal & Aromatic Plants and High Value Crops Enterprise Expansion	High	Moderate	Moderate
	Support High Altitude Pastoralism	Moderate	N/A	N/A
	Forest-based Enterprises Development	High	Moderate	Low
	Promote Indigenous Languages, Culture & Traditions	High	High	High
	Promotion of Permaculture and AgroForestry	High	High	High
	Capacity Building for Climate & Biodiversity Funding	N/A	N/A	N/A

Cross-cutting	Gender Integration in Climate & Biodiversity Actions	High	High	High
	Recognition of Indigenous Peoples and Local Communities in Climate & Biodiversity (Pilots)	High	High	High
	Youth Mobilisation in Mountain Action (Pilots)	High	High	High
	Establish Mountain Authority (Institutional)	N/A	N/A	N/A
	Regional Partnership: Ministerial Council of HKH Countries	N/A	N/A	N/A
	Global Partnerships in Mountain Agenda (COPs, Platforms)	N/A	N/A	N/A

The Mahakali Basin				
Thematic areas	Challenges	High mountains	Mahabharat	Chure and the Terai
Mountain biodiversity and ecosystems	Expand Community Forestry for Climate & Livelihood Resilience	High	High	High
	Sustainable Management of Community Forests	High	Moderate	Low
	Sustainable solutions to the management of mountain landscapes including protected areas for prosperity	Low	Moderate	High
	Expand Ramsar Network (5 new sites)	High	N/A	N/A
	Improve Ramsar Site Management	High	Low	High
	Establish Biosphere Reserve	High	High	High
	Biodiversity Documentation & Registration (Municipal Level)	High	High	High
	Pilot Basin-level Watershed Management	Moderate	Moderate	Moderate
Climate change	Monitoring Cryosphere & Glacial Health	High	N/A	N//A
	Early Warning Systems for Floods, GLOFs, Fire & Disasters	High	High	High
	Pilot GLOF Risk Reduction Projects	High	N/A	N/A

	River Basin Climate Frameworks (Piloting)	High	Low	Low
	Local Adaptation Plans of Action (LAPAs) in All Municipalities	High	High	High
	Climate & Security Framework (Piloting)	High	Moderate	Low
Mountain economy, culture and prosperity	Waste Management Pilots in Mountain Cities	High	High	Low
	Regulate Mountain Rural Infrastructure	High	High	High
	Promote Nature-based Tourism in PAs	High	High	Moderate
	Medicinal & Aromatic Plants and High Value Crops Enterprise Expansion	High	Moderate	Moderate
	Support High Altitude Pastoralism	Moderate	N//A	N/A
	Forest-based Enterprises Development	High	Moderate	Low
	Promote Indigenous Languages, Culture & Traditions	High	High	High
	Promotion of Permaculture and AgroForestry	High	High	High
	Capacity Building for Climate & Biodiversity Funding	N/A	N//A	N/A
Cross-cutting	Gender Integration in Climate & Biodiversity Actions	High	High	High

	Recognition of Indigenous Peoples and Local Communities in Climate & Biodiversity (Pilots)	High	High	High
	Youth Mobilisation in Mountain Action (Pilots)	High	High	High
	Establish Mountain Authority (Institutional)	N/A	N/A	N/A
	Regional Partnership: Ministerial Council of HKH Countries	N/A	N/A	N/A
	Global Partnerships in Mountain Agenda (COPs, Platforms)	N/A	N/A	N/A

## ANNEX III: COSTING FRAMEWORK FOR 35 INTERVENTIONS

This annex describes the methodology used to estimate the indicative costs for the **35 interventions** under **Living Sagarmatha**, as presented in the accompanying Excel-based costing framework. The costing approach is **policy-anchored and evidence-based**, drawing directly from a **policy comparison matrix** that aligns national climate, biodiversity, and sectoral priorities with investment needs. The framework ensures that all costed interventions are **strategically aligned, non-duplicative, and complementary** to existing national programmes and international commitments.

Costing for the 35 interventions is grounded in a **policy comparison matrix** that maps each intervention against:

- **Nepal's Nationally Determined Contribution (NDC)** priorities
- **National Adaptation Plan (NAP) Priority Programme Areas**
- Relevant **sectoral strategies and plans** (forestry, water, disaster risk reduction, urban development, agriculture, energy, tourism, and culture)

This policy mapping serves as the **primary filter for intervention selection and costing**, ensuring that investments respond directly to nationally endorsed priorities rather than stand-alone project concepts.

In addition, an **NBSAP-aligned project assessment** has been undertaken to ensure **complementarity and validation of the indicative costing** particularly for interventions related to protected areas, ecosystem restoration, biodiversity monitoring, and nature-based solutions. This avoids duplication and strengthens coherence between climate and biodiversity finance streams. As reflected in the costing framework, **most interventions are explicitly linked to one or more NAP Priority Programme Areas**, reinforcing the role of the strategy as an investment vehicle

## Costing Categories

Each intervention is costed under three standard expenditure categories:

### 1. Capital Costs

Capital costs capture **front-loaded investments** required to establish interventions, including:

- Infrastructure and construction
- Technology systems and equipment
- Monitoring and information systems
- Large-scale ecological and landscape works

These costs are typically incurred during the **initial 2-3 years** of implementation.

### 2. Operational Costs

Operational costs include **recurring expenditures** necessary to deliver outcomes over the intervention lifecycle, such as:

- Staffing and technical support
- Training and capacity development
- Community mobilisation and engagement
- Ecosystem management and maintenance
- Routine monitoring and reporting

These costs extend across the **full programme duration**.

### 3. Programme Management Costs

Programme management costs cover:

- Governance and coordination arrangements
- Monitoring, evaluation, learning, and reporting (MEL)
- Financial management and fiduciary oversight
- Communication and stakeholder engagement

Consistent with international practice, **6-8 percent of total intervention costs** have been allocated for programme management, scaled according to intervention size and complexity.

## Application of Costing

Costing assumptions for each intervention are applied in a differentiated and policy-anchored manner, with **explicit linkages to Nepal's National Adaptation Plan (NAP) Priority Programme Areas**. As reflected in the costing framework, **most interventions are mapped directly to one or more NAP Priority Programme Areas**, ensuring that Living Sagarmatha functions as an investment vehicle.

The costing approach draws on **NAP-level investment estimates** and systematically **scales these down** to fit the scope, geography, and implementation horizon of individual interventions. This scaling process ensures proportionality and avoids double counting, while maintaining consistency with nationally endorsed adaptation priorities.

Costing assumptions are applied as follows:

- **Ecosystem and biodiversity interventions** (including *Strengthen Protected Areas & Landscapes*, forest restoration, watershed management, and biodiversity monitoring) apply **Ministry of Forests and Environment (MoFE)** norms and benchmarks, such as indicative **costs per hectare, per site, or per community forest user group cycle**. Where relevant, **NAP ecosystem-related priority programme cost ranges** are used as reference points and scaled to the intervention's spatial coverage and implementation period, with assumptions documented in the Notes and Reference to Calculation column.
- **Climate, water, and disaster risk reduction infrastructure** (including cryosphere and snow monitoring systems, multi-hazard early warning systems, recharge ponds, and hydro-meteorological stations) are costed using standards and recent programme experience from the **Ministry of Energy, Water Resources and Irrigation (MoEWRI)** and the **Department of Hydrology and Meteorology (DHM)**. These estimates are anchored to **NAP priority programme investment envelopes** on climate services and DRR, and proportionately adjusted to reflect the specific infrastructure packages included under each intervention.
- **Governance, institutional strengthening, and cross-cutting interventions** (including gender equality and social inclusion, Indigenous Peoples and Local Communities recognition, and mountain governance mechanisms) apply **per-participant, per-institution, or per-policy-package** unit costs. Where such interventions correspond to **NAP enabling or institutional priority areas**, overall NAP cost envelopes are

disaggregated to derive realistic intervention-level estimates, with all assumptions recorded in the costing framework

Where nationally approved unit costs are unavailable, **conservative proxy estimates** have been applied. The justification for these proxies, the method used to scale down NAP-level costs, and any data limitations are **explicitly and transparently documented** in the **Indicative Investment Framework**

## Summation

For each intervention, total costs are calculated using the following formula:

**Total Intervention Cost = Capital Costs + Operational Costs + Programme Management Costs**

Intervention costs are then aggregated into **four thematic investment envelopes**, consistent with national policy framing:

1. Mountain Biodiversity and Ecosystems
2. Climate Change Adaptation and Resilience
3. Mountain Economy, Culture, and Prosperity
4. Cross-cutting and Enabling Interventions

This thematic aggregation mirrors the **national climate plans and international commitments** and facilitates alignment with international climate and biodiversity financing windows.

## Financing Alignment

The consolidated cost of all interventions is estimated at **USD 4.08 billion** in the Excel costing framework. This envelope is structured to align with:

- Government of Nepal budgetary allocations at federal, provincial, and local levels
- International climate and biodiversity funds, including the GCF, GEF, Adaptation Fund, and LDCF/SCCF
- Bilateral and multilateral development partners
- Private sector engagement, particularly in eco-tourism, forest-based enterprises, and green value chains

- Community and local contributions, including cooperatives, Indigenous Peoples and Local Communities (IPLCs), and local governments

## Outputs

The costing annex delivers:

- Intervention-wise budgets, grounded in policy priorities and validated against national costing norms
- Thematic investment totals aligned with NAP Priority Programme Areas
- An aggregated programme envelope of USD 4.08 billion for the 35 interventions, with a clear distinction between Flagship ( $\geq$  USD 50 million) and Supporting ( $<$  USD 50 million) interventions

These outputs provide a **credible, policy-aligned, and finance-ready basis** for investment prioritisation, donor engagement, and project preparation under the strategy

## Intervention 1: Expand Community Forestry for Climate & Livelihood Resilience

### Overview / Programme Narrative

This intervention aims to **expand the coverage and effectiveness of community forestry** across the Mahabharat and Chure-Terai ranges, with a particular emphasis on scaling up existing community forest user groups (CFUGs) and establishing new ones in under-served municipalities. Building on Nepal's globally recognised community forestry model, the programme will integrate **climate-smart forestry practices**, enhance **livelihood opportunities** (NTFPs, ecotourism, forest enterprises), and improve **ecosystem services** such as soil stability, water regulation, and carbon sequestration. The initiative will also create direct benefits for rural households by promoting sustainable harvesting and equitable benefit-sharing mechanisms, while embedding **gender equality, youth engagement, and Indigenous Peoples and Local Communities (IPLCs)** at the core.

### Justification

- Nepal has over 22,000 CFUGs managing ~2.9 million hectares, covering ~35% of national forests.
- Expansion potential remains high: degraded forest areas in the Mahabharat and Chure belts are critical for **erosion control, groundwater recharge, and climate adaptation**.
- Current pressures (illegal logging, overharvesting, invasive species) threaten biodiversity and water security.
- Strengthening community forestry contributes directly to Nepal's **NDC target of maintaining 45% forest cover** and supports SDG 13 (climate action) and SDG 15 (life on land).

### Stakeholders

- **Principal Implementer:** Ministry of Forests and Environment (MoFE)
- **Supporting Agencies:** MoFAGA, Provincial Governments, Municipalities and associations (MuAN and NARMIN), Division Forest Offices **Partners from UN Agencies** : TBC
- **International Partners:** TBC
- **Civil Society & Academia:** TBC
- **Private Sector:** TBC

- **Communities:** TBC

### Indicative Costing

USD 165 million (Establishment and five-year maintenance of 1,200 community forests, including nurseries, planting, annual maintenance, protection, fire lines, monitoring, project management overhead, and contingency. Additional investment considers techniques such as Miyawaki and syntropic forestry.)

Cost horizon: 5 years

## Intervention 2: Sustainable Management of Community Forests

### Overview / Programme Narrative

This intervention focuses on **scaling up sustainable management practices** in community forests across all ecological zones, covering high mountains, Mahabharat, and the Chure-Terai. It will upgrade forest inventories, implement **climate-smart silviculture**, and strengthen community forest user groups with modern governance tools, digital monitoring, and certification for forest products. The initiative also promotes **payment for ecosystem services (PES)** and **carbon finance mechanisms**, enabling communities to benefit directly from climate and biodiversity funding streams.

### Justification

- Community forests cover **~2.9 million hectares**, yet less than half are managed under formal sustainable forest management (SFM) guidelines.
- Improved SFM increases **carbon sequestration, biodiversity conservation, and timber productivity** by up to 30%.
- Strengthening governance of CFUGs supports Nepal's **NDC forestry and carbon neutrality goals**.

### Stakeholders

- **Principal Implementer:** Ministry of Forests and Environment (MoFE)
- **Supporting Agencies:** Provincial governments, municipalities, CFUG federations
- **Partners from UN Agencies :** TBC
- **International Partners:** TBC
- **Civil Society & Academia:** TBC
- **Private Sector:** TBC

- **Communities:** TBC

### Indicative Costing

USD 483 million (Maintenance of 3,500 existing community forests – 1,000 in Terai, 2,000 in Mahabharat, 500 in High Mountains. Baseline costs per CF adjusted for regional differences: 20% higher in Mahabharat, 40% higher in High Mountains. Includes project management overhead and contingency.)

Cost horizon: 7 years

## Intervention 3: Sustainable solutions to the management of mountain landscapes including protected areas for prosperity

### Overview / Programme Narrative

Nepal's 20 protected areas safeguard globally significant biodiversity but face **tourism pressures, poaching, invasive species, and climate change threats**. This intervention will strengthen **protected area (PA) governance**, implement **integrated landscape management**, and enhance linkages between PAs and buffer zones. Activities will include strengthening **anti-poaching units, digital monitoring systems, wildlife corridors, and ecotourism services** to balance conservation and community benefits.

### Justification

- PAs cover **23% of Nepal's land area**, yet connectivity between landscapes is weak.
- Climate impacts are shifting habitats; over **70% of flagship species habitats** are projected to shrink.
- Integrated PA-landscape management ensures both biodiversity protection and **sustainable livelihoods for ~3 million people living in buffer zones**.

### Stakeholders

- **Principal Implementer:** Department of National Parks and Wildlife Conservation (DNPWC), MoFE
- **Supporting Agencies:** Division Forest Offices, buffer zone committees, municipalities and associations (MuAN and NARMIN)
- **Partners from UN Agencies :** TBC
- **International Partners:** TBC
- **Civil Society & Academia:** TBC

- **Private Sector:** TBC
- **Communities:** TBC

### Indicative Costing

USD 1.4 billion (Based on NAP allocation of USD 500 million for six Himalayan PAs; regional cost adjustments applied: full cost for High Mountains, 20% lower for Mahabharat, 40% lower for Terai. Covers 20 PAs across the country, including operational costs over seven years.)

Cost horizon: 10 years and beyond

## Intervention 4: Expand Ramsar Network

### Overview / Programme Narrative

This intervention will prepare and submit nominations for **five additional wetlands to the Ramsar Convention**, focusing on under-represented ecosystems in Koshi, Gandaki, and Karnali basins. Activities include ecological surveys, community consultations, management plan development, and institutional strengthening of wetland user committees. The goal is to secure **global recognition and protection** while mobilising international resources for sustainable wetland management.

### Justification

- Nepal currently has **10 Ramsar sites**, but several wetlands of global importance remain unlisted.
- Ramsar designation provides access to **international funding, technical support, and stronger conservation leverage**.
- Wetlands are vital for **fisheries, irrigation, groundwater recharge, and migratory bird habitats**.

### Stakeholders

- **Principal Implementer:** MoFE (Environment and Biodiversity Division), DNPWC
- **Supporting Agencies:** Municipalities and associations (MuAN and NARMIN), provincial governments, wetland user groups
- **Partners from UN Agencies :** TBC
- **International Partners:** TBC
- **Civil Society & Academia:** TBC
- **Private Sector:** TBC

- **Communities:** TBC

### **Indicative Costing**

Indicative cost: USD 9.5 million (Conservation of five new Ramsar sites – 3 High Mountain, 2 Mahabharat with a 40% premium for High Mountain sites due to remoteness and ecological fragility. Includes management and monitoring costs.)

Cost horizon: 5 years

## **Intervention 5: Improve Ramsar Site Management**

### **Overview / Programme Narrative**

Building on the expansion of Ramsar sites, this intervention strengthens the **management of existing and new wetlands** in Koshi, Gandaki, and Karnali basins. It will operationalise **integrated wetland management plans**, enhance **community-based monitoring**, and support sustainable livelihoods (eco-fisheries, bird-based tourism, reed-based crafts). Special emphasis will be placed on addressing threats like **encroachment, pollution, and water diversion**.

### **Justification**

- Many Ramsar sites in Nepal lack **updated management plans and adequate enforcement**.
- Encroachment and urbanization have reduced wetland area by **over 30% in some basins**.
- Effective management safeguards biodiversity and secures **ecosystem services for irrigation, flood control, and livelihoods**.

### **Stakeholders**

- **Principal Implementer:** MoFE, DNPWC, Division Forest Offices
- **Supporting Agencies:** Wetland user committees, municipalities and associations (MuAN and NARMIN), provincial governments
- **Partners from UN Agencies :** TBC
- **International Partners:** TBC
- **Civil Society & Academia:** TBC
- **Private Sector:** TBC
- **Communities:** TBC

## Indicative Costing

USD 25 to 35 million (Restoration of 10 Ramsar-scale sites – 4 High Mountain, 2 Mahabharat, 4 Terai. Anchored with NAP- PPA 17, with 20-40% regional cost adjustments. Covers operational, restoration, and monitoring activities over seven years.)

Cost horizon: 7 years

## Intervention 6: Establish Biosphere Reserve (Kanchenjunga)

### Overview / Programme Narrative

This intervention seeks to nominate **Kanchenjunga Conservation Area** as Nepal's next **UNESCO Biosphere Reserve**, showcasing its unique ecosystems, rich biodiversity, and Indigenous stewardship. The programme will strengthen **biosphere reserve governance**, prepare nomination dossiers, and develop zonation schemes (core, buffer, transition zones) that balance conservation with livelihoods. The approach integrates **traditional knowledge, eco-tourism, and scientific research**, positioning Kanchenjunga as a **global model of mountain resilience**.

### Justification

- Kanchenjunga is among the world's most biologically rich and culturally diverse regions, yet remains under-recognised in UNESCO frameworks.
- Biosphere Reserve designation enhances **international visibility, research collaboration, and financing opportunities**.
- This supports Nepal's strategy of expanding global designations (Ramsar, World Heritage, Biosphere Reserves) for conservation leverage.

### Stakeholders

- **Principal Implementer:** MoFE, Department of National Parks and Wildlife Conservation (DNPWC)
- **Supporting Agencies:** Kanchenjunga Conservation Area Management Council, municipalities, local communities
- **Partners from UN Agencies :** TBC
- **International Partners:** TBC
- **Civil Society & Academia:** TBC
- **Private Sector:** TBC
- **Communities:** TBC

### Indicative Costing

USD 7 million to USD 9 million (Scaled-down investment based on the Sundarbans Biosphere Reserve in India – proportional to area and adjusted for a shorter seven-year horizon. Covers management, monitoring, conservation, and operational costs for the 203,500-hectare Kanchenjunga Conservation Area.)

Cost horizon: 7 years

## Intervention 7: Biodiversity Documentation & Registration (Municipal Level)

### Overview / Programme Narrative

This intervention involves **comprehensive biodiversity documentation and registration** in 200 municipalities across Koshi, Gandaki, Karnali, and Mahakali basins. It will establish **municipal biodiversity registers (MBRs)**, supported by local research institutions and citizen science platforms. The initiative ensures systematic **recording of flora, fauna, and genetic resources**, aligned with the Nagoya Protocol, while empowering municipalities and IPLCs as custodians of biodiversity data.

### Justification

- Nepal is home to **over 20,000 plant and animal species**, yet less than 50% are properly documented at municipal level.
- Municipal registers improve **local planning, land-use decisions, and equitable access and benefit-sharing (ABS)**.
- This supports Nepal's **Post-2020 Global Biodiversity Framework** commitments.

### Stakeholders

- **Principal Implementer:** MoFE (Biodiversity Division)
- **Supporting Agencies:** Municipalities, provincial governments, universities, National Herbarium, MoFAGA and associations (MuAN and NARMIN)
- Partners from UN Agencies : TBC
- International Partners: TBC
- Civil Society & Academia: TBC
- Private Sector: TBC
- Communities: TBC

### Indicative Costing

USD 7.5 million (Covers 150 municipalities across High Mountain, Mid Hills, and Terai. Each municipality funded at USD 50,000, reflecting GEF Small Grants Programme benchmarks for local biodiversity inventories, registers, training, and validation.)

Cost horizon: 5 years

## Intervention 8: Pilot Basin-level Watershed Management

### Overview / Programme Narrative

This intervention pilots **basin-level watershed management** in one site each of the High Mountains, Mahabharat, Chure, and Terai regions. Activities include **integrated watershed planning, soil conservation, spring revival, rainwater harvesting, and afforestation**. It will establish **multi-stakeholder watershed platforms** linking upstream and downstream users, ensuring equitable water sharing and sustainable ecosystem services.

The year 2025 marks a turning point for the global cryosphere agenda. The United Nations has designated 21 March as the first World Day for Glaciers within the International Year of Glaciers' Preservation, elevating glaciers from a specialized scientific concern to a recognised global policy priority. Under the leadership of UNESCO and the World Meteorological Organization (WMO), coordinated actions now call for stronger glacier monitoring, early warning systems for glacier-related hazards, and sustained investment in the resilience of mountain communities. By aligning with these observances, Nepal can place Sagarmatha and the wider Himalaya at the centre of a worldwide effort to safeguard the water towers that sustain billions of people.

In parallel, the UN General Assembly has endorsed the Decade of Action for Cryospheric Sciences (2025-2034), officially launching in 2025. This Decade aims to close observation gaps in high-mountain regions, strengthen forecasting, and translate cryosphere science into concrete adaptation policies and financing mechanisms. By explicitly engaging with the Decade, this framework positions Nepal as a flagship for science-policy integration and community-driven adaptation across the Hindu Kush Himalaya.

### Justification

- Nepal's watersheds are highly degraded: **over 60% of Chure catchments suffer severe erosion.**
- Basin-level management ensures cross-sectoral coordination (agriculture, hydropower, urban water).
- Supports the National River Basin Management Strategy (2023).

### Stakeholders

- **Principal Implementer:** Ministry of Energy, Water Resources and Irrigation (MoEWRI), MoFE
- **Supporting Agencies:** River Basin Authorities, municipalities, Water User Associations
- **Partners from UN Agencies :** TBC
- **International Partners:** TBC
- **Civil Society & Academia:** TBC
- **Private Sector:** TBC
- **Communities:** TBC

### Indicative Costing

USD 135 million (Pilot covering ~1,500 households and 1,200-1,500 hectares across High Mountains, Mahabharat, and Terai. Includes watershed planning, soil conservation, afforestation, spring revival, rainwater harvesting, climate-resilient livelihoods and infrastructure, institutional strengthening, and monitoring. Costs are anchored to NAP and previous Karnali Water Activity benchmarks.)

Cost horizon: 7 years

## Intervention 9: Sagarmatha Afforestation Mega Campaign

### Overview / Programme Narrative

This intervention launches a large-scale afforestation and ecological restoration campaign across the Sagarmatha region and adjoining mountain landscapes. Activities will focus on reforesting degraded slopes, restoring alpine pastures, promoting agroforestry, and establishing climate-resilient community forests. The campaign will integrate local stewardship with modern monitoring systems, engaging youth, women, and indigenous communities in tree planting, nursery development, and ecosystem maintenance. It aims to enhance carbon sequestration, reduce landslide and flood risks, and preserve sacred landscapes central to cultural identity and tourism.

## Justification

- Forest loss and land degradation in mountain ecosystems exacerbate landslides, soil erosion, and water scarcity.
- Afforestation contributes to Nepal's updated NDC targets and supports carbon neutrality goals.
- Strengthening ecological buffers around Sagarmatha safeguards both biodiversity and communities reliant on tourism, trekking, and ecosystem services.
- Aligns with the National Forest Policy (2019) and REDD+ Strategy.

## Stakeholders

- **Principal Implementer:** Ministry of Forests and Environment (MoFE)
- **Supporting Agencies:** Sagarmatha National Park Authority, local municipalities, community forest user groups, youth and women's cooperatives
- **Partners from UN Agencies :** TBC
- **International Partners:** TBC
- **Civil Society & Academia:** TBC
- **Private Sector:** TBC
- **Communities:** TBC

## Indicative Costing

USD 210 million (Nationwide tree-planting initiative targeting 30 million saplings annually for 20 years. Average cost per sapling, including operational requirements, is estimated at USD 7 per tree. Cumulative program cost over 20 years would be approximately USD 4.2 billion.)

Cost horizon: 10 years and beyond

## Intervention 10: Monitoring Cryosphere & Glacial Health

### Overview / Programme Narrative

This intervention strengthens **cryosphere monitoring systems** across Nepal's mountain basins. It will install **automated weather stations, glacier mass balance monitoring sites, and high-altitude hydro-meteorological stations**. The data will feed into a **national cryosphere database**, linked to early warning and climate modelling systems. Community-based glacier observers will complement scientific monitoring.

## Justification

- Nepal has over **6,000 glaciers and 3,000 glacial lakes**, but monitoring is limited to fewer than 30 sites.
- Cryosphere melt contributes **~15% of dry season flows** in major rivers – vital for irrigation and hydropower.
- Strengthened monitoring supports **risk management, GLOF preparedness, and water security**.

## Stakeholders

- **Principal Implementer:** Department of Hydrology and Meteorology (DHM)
- **Supporting Agencies:** MoFE, MoEWRI, provincial governments, local governments
- **Partners from UN Agencies :** TBC
- **International Partners:** TBC
- **Civil Society & Academia:** TBC
- **Private Sector:** TBC
- **Communities:** TBC

## Indicative Costing

USD 15 million to USD 20 million (10-year intervention in four high mountain areas, scaled from NAP. Focuses on cryosphere and glacial health monitoring, high-altitude climate services, hazard surveillance, and community engagement. Costs reflect higher technology requirements and site-specific investments.)

Cost horizon: 10 years and beyond

## Intervention 11: Early Warning Systems for Floods, GLOFs, Fire & Disasters

### Overview / Programme Narrative

This intervention establishes a **multi-hazard early warning system (EWS)** across all major basins. It integrates flood, GLOF, forest fire, and landslide monitoring into a **digital platform linked with municipalities and local responders**. Activities include installation of **EWS equipment**, training of community responders, and development of **last-mile communication tools** (SMS, radio, sirens, mobile apps).

### Justification

- Floods and landslides cause **~350 deaths annually** in Nepal.
- GLOFs are increasing, with **21 potentially dangerous glacial lakes identified**.
- Fire risk has escalated: in 2021, Nepal recorded its **highest forest fire incidents in two decades**.
- Effective EWS reduces loss of lives and damages by up to **60%** when coupled with community preparedness.

## Stakeholders

- **Principal Implementer:** NDRRMA; Ministry of Home Affairs (MoHA); DHM
- **Supporting Agencies:** MoFE, MoFAGA, provincial governments, municipalities, associations (MuAN and NARMIN), Red Cross
- **Partners from UN Agencies :** TBC
- **International Partners:** TBC
- **Civil Society & Academia:** TBC
- **Private Sector:** TBC
- **Communities:** TBC

## Indicative Costing

USD 200 million (Five-year intervention covering 20 multi-hazard EWS in High Mountains and Mahabharat regions, scaled from NAP-54. Includes system infrastructure, community engagement, and proportional share of national-level infrastructure such as cell broadcast systems and alert protocols.)

Cost horizon: 5 years

## Intervention 12: Pilot GLOF Risk Reduction Projects

### Overview / Programme Narrative

This intervention will pilot **Glacial Lake Outburst Flood (GLOF) risk reduction projects** in priority high-risk sites identified by the Department of Hydrology and Meteorology (DHM). Activities include **lake level monitoring, controlled drainage, construction of protective dams and early warning systems**, and capacity-building of local disaster management committees. Community preparedness drills and integration with basin-level disaster response frameworks will also be emphasised.

### Justification

- Nepal has **over 21 potentially dangerous glacial lakes**.
- Past GLOF events (e.g. Dig Tsho, 1985; Seti, 2012) caused catastrophic damages to hydropower, infrastructure, and lives.
- GLOF pilots demonstrate effective technical and social measures, building models for replication across basins.

### Stakeholders

- **Principal Implementer:** DHM, MoFE
- **Supporting Agencies:** MoHA, MoEWRI, provincial governments, municipalities, community disaster management committees
- **Partners from UN Agencies :** TBC
- **International Partners:** TBC
- **Civil Society & Academia:** TBC
- **Private Sector:** TBC
- **Communities:** TBC

### Indicative Costing

SD 275 million (Five-year pilot covering four glacial lakes, anchored to NAP and the recently approved GCF GLOF project . Includes lake lowering, Eco-DRR measures, early warning systems, real-time monitoring, and institutional strengthening at national scale.)

Cost horizon: 5 years

## Intervention 13: River Basin Climate Frameworks (Piloting)

### Overview / Programme Narrative

This intervention supports piloting **climate resilience frameworks** for river basins, integrating land, water, biodiversity, and disaster risk management. It aligns with the National River Basin Management Strategy (2023), and activities include **basin-level vulnerability assessments, adaptation measures, stakeholder platforms, and basin adaptation plans**. The pilots will generate models for replication across all major basins.

### Justification

- Nepal's river basins (Koshi, Gandaki, Karnali, Mahakali) face **compound pressures of floods, droughts, sedimentation, and climate risks**.

- Basin frameworks ensure **cross-sectoral planning** and upstream-downstream cooperation.
- Provides a foundation for long-term **Integrated River Basin Climate Action Plans**.

### Stakeholders

- **Principal Implementer:** MoEWRI, MoFE
- **Supporting Agencies:** River Basin Authorities, municipalities, provincial governments, Water User Associations
- **Partners from UN Agencies :** TBC
- **International Partners:** TBC
- **Civil Society & Academia:** TBC
- **Private Sector:** TBC
- **Communities:** TBC

### Indicative Costing

USD 5 to 10 million (Pilot interventions covering physical river training, watershed restoration, disaster information integration, and social protection measures. Costs reflect upfront investments, systemic integration, and learning-focused pilot scale, anchored to NAP.

Cost horizon: 7 years

## Intervention 14: Local Adaptation Plans of Action (LAPAs) in All Municipalities

### Overview / Programme Narrative

This intervention ensures that **all 753 municipalities in Nepal prepare and implement Local Adaptation Plans of Action (LAPAs)**. The programme will provide **technical guidelines, capacity-building, and financing mechanisms** for municipalities, ensuring LAPAs integrate **gender, youth, and IPLCs perspectives**. Implementation will be supported through **climate funds, local resource mobilisation, and sectoral coordination**.

### Justification

- LAPAs are a proven model for **localising adaptation**; over 100 were piloted under earlier programmes.

- Scaling to all municipalities ensures **nationwide coverage** and directly supports Nepal's NAP and NDC commitments.
- Locally owned adaptation planning increases **resilience of communities to floods, droughts, landslides, and climate shocks**.

### Stakeholders

- **Principal Implementer:** MoFE, Ministry of Federal Affairs and General Administration (MoFAGA)
- **Supporting Agencies:** Provincial governments, municipalities, associations (MuAN and NARMIN) and local planning committees
- **Partners from UN Agencies :** TBC
- **International Partners:** TBC
- **Civil Society & Academia:** TBC
- **Private Sector:** TBC
- **Communities:** TBC

### Indicative Costing

USD 40 to 50 million with USD 135,000 per LAPA (Covers climate risk and vulnerability assessments, training, adaptation planning, and stakeholder awareness. Cost based on NAP-62, applied to targeted municipalities for adaptation planning and policy integration.)

Cost horizon: 7 years

## Intervention 15: Climate & Security Framework (Piloting)

### Overview / Programme Narrative

This intervention pilots a **Climate and Security Framework** in selected basins (Koshi, Gandaki, Karnali), addressing the intersection of **climate risks and human security**. Activities include conflict sensitivity assessments, community dialogue platforms, and measures to reduce competition over natural resources. The pilots will connect climate resilience with **peacebuilding and disaster risk reduction**, feeding into regional diplomacy in the Hindu Kush Himalaya.

### Justification

- Climate change intensifies risks of **resource conflicts, migration, and instability** in mountain areas.
- Nepal's mountain communities face **water scarcity, pasture degradation, and cross-border issues**, making climate-security linkages vital.
- This aligns with global recognition of climate as a **“threat multiplier”** in fragile regions.

### Stakeholders

- **Principal Implementer:** MoFE, MoHA, Ministry of Defence
- **Supporting Agencies:** MoWS, Provincial governments, municipalities, security agencies, peacebuilding CSOs
- **Partners from UN Agencies :** TBC
- **International Partners:** TBC
- **Civil Society & Academia:** TBC
- **Private Sector:** TBC
- **Communities:** TBC

### Indicative Costing

USD 40 million to USD 50 million (Covers risk identification, capacity building, community-based interventions, policy integration, peace-building, and monitoring and evaluation. Six pilots distributed across the three physiographic regions.)

Cost horizon: 7 years

## Intervention 16: Water Harvesting Dam and Recharge Ponds

### Overview / Programme Narrative

The intervention aims to establish 600 recharge ponds and repair 100 in all the river basin primarily focused in the Terai region.

### Justification

Terai livelihoods and key production systems are increasingly exposed to erratic monsoon patterns, longer dry spells, and localized flooding, which together reduce reliable water availability and accelerate pressure on shallow aquifers. Recharge ponds provide a practical, nature-based measure to retain monsoon water, enhance infiltration, reduce runoff peaks, and improve dry-season access for household use and climate-resilient agriculture. Rehabilitation

of degraded ponds restores existing assets at lower cost while improving functionality, safety, and maintenance systems.

## Stakeholders

- **Principal Implementer: Government of Nepal** - Ministry of Energy, Water Resources and Irrigation (MoEWRI), **implemented through the** Department of Water Resources and Irrigation (DWRI)/Department of Irrigation, **in coordination with** provincial line ministries and local governments (municipalities/rural municipalities) **in the Terai river basins.**
- **Supporting Agencies:** Water and Energy Commission Secretariat (WECS) (**basin planning/coordination**), Department of Hydrology and Meteorology (DHM) (**hydro-met data**), Ministry of Forests and Environment (MoFE)(**nature-based solutions alignment**), Ministry of Agriculture and Livestock Development (MoALD) (**CSA linkages**), National Disaster Risk Reduction and Management Authority (NDRRMA) (**risk-informed design**), **relevant River Basin Offices, and community institutions including** Water User Associations, Community Forest User Groups, and **local cooperatives; technical support from** ICIMOD, **universities and engineering partners as needed.**
- **Partners from UN Agencies :** TBC
- **International Partners:** TBC
- **Civil Society & Academia:** TBC
- **Private Sector:** TBC
- **Communities:** TBC

## Indicative Costing

USD 10 to 20 million with USD 21,500 per pond for new construction; USD 7,000 per pond for repairs (Average pond size 3 hectares, cost based on GCF BRCRN experience. Covers excavation, lining, water management, and routine maintenance.)

**Cost horizon:** 5 years

## Intervention 17: Waste and Sanitation Management Pilots in Mountain Cities

### Overview / Programme Narrative

This intervention introduces **integrated waste and sanitation management systems** in selected mountain cities, focusing on **solid waste segregation, recycling, composting, and plastic reduction, including safely managed sanitation for disposal of grey and black water.** Activities will include **establishing material recovery facilities, promoting circular economy enterprises, and introducing user-fee systems** for sustainability. This also includes establishment of fecal sludge management system, including innovative technologies for mountain climatic zones. The intervention will also link waste management with **tourism and local green jobs.**

### Justification

- Mountain towns such as Pokhara and Namche face **growing waste crises due to urbanisation and tourism.**
- **Over 40% of municipal waste remains uncollected or improperly disposed of.**
- Integrated systems reduce pollution, protect rivers, and generate local income through recycling chains.
- **Safely management sanitation system needs to be developed for mountain climatic zones, to ensure lower impact of human waste on environment and health.**

### Stakeholders

- **Principal Implementer:** Ministry of Urban Development (MoUD), Ministry of Water Supply (MoWS), municipalities
- **Supporting Agencies:** MoFE, tourism authorities, private operators, waste worker associations, MuAN and NARMIN
- **Partners from UN Agencies :** TBC
- **International Partners:** TBC
- **Civil Society & Academia:** TBC
- **Private Sector:** TBC
- **Communities:** TBC

### Indicative Costing

USD 250 million with USD 3.5 million per unit (Covers establishment and operation of Material Recovery Facilities (MRFs), source segregation, recycling, and productive end use, including waste-to-energy and fertilizer facilities commissioned in Nepal. Costs are informed by past development partner-supported projects and interventions by Alternative Energy Promotion Centre)

Cost horizon: 5 years

## Intervention 18: Regulate Mountain Urban and Rural Settlement Planning and Infrastructure Development

### Overview / Programme Narrative

This intervention focuses on **regulating urban and rural settlement planning as an entry point for risk informed expansion of the human settlements, to further ensure resilient infrastructure development in fragile mountain environments**, particularly rural and urban roads, irrigation canals, water supply and sewerage or drainage systems, bridges, houses and public buildings, and small hydropower. It will establish **guidelines for climate resilient and environmentally friendly construction**, introduce **EIAs at municipal level**, and strengthen enforcement against haphazard, non-engineered construction which are a major driver of increased vulnerability. The programme also promotes **green infrastructure approaches**, such as bio-engineering, slope stabilisation, green and blue infrastructure for adaptation, and climate-resilient design standards.

### Justification

- Over **60% of recent landslides in the mid-hills are linked to poorly built rural roads**.
- Billions of rupees are lost annually in repairs and damages.
- Climate impact is becoming more frequent and derailing infrastructure development in urban and rural settlements
- Regulated and climate-smart infrastructure will protect ecosystems and **reduce disaster losses**, while supporting mobility and livelihoods.

### Stakeholders

- **Principal Implementer:** Ministry of Physical Infrastructure and Transport (MoPIT), MoFE, MOUD

- **Supporting Agencies:** Municipalities, provincial governments, associations (MuAN and NARMIN)
- **Partners from UN Agencies :** TBC
- **International Partners:** TBC
- **Civil Society & Academia:** TBC
- **Private Sector:** TBC
- **Communities:** TBC

### Indicative Costing

USD 145 million with 2 million to USD 5 million per unit (Covers climate-resilient building design, construction practices, and technology dissemination. Anchored to NAP-31 with total program allocation of USD 500 million, scaled down for pilot interventions.)

Cost horizon: 7 years

## Intervention 19: Flood Risk and Water Stress Management in Cities and Settlements

### Overview / Programme Narrative

This intervention addresses rising urban vulnerabilities by integrating flood risk reduction and water security measures in Nepal's rapidly growing cities and mountain settlements. Activities include urban flood modelling, improved drainage and rainwater harvesting systems, recharge parks, green-blue infrastructure, and resilient building codes. It will promote integrated urban water management (IUWM), combining stormwater retention, wastewater reuse, and sustainable groundwater extraction. Community-based early warning systems will be scaled up, with special focus on informal settlements, schools, health centres, and heritage areas at risk of flooding or water scarcity.

### Justification

- Urban areas such as Kathmandu Valley, Pokhara, Biratnagar and Tarai towns face recurrent floods and seasonal water shortages
- Climate change increases risks of intense rainfall, flash floods, and prolonged dry spells, putting pressure on water supply and drainage systems
- Aligns with the National Urban Development Strategy (NUDS), the National Disaster Risk Reduction Strategic Action Plan (2018-2030), and IUWM principles.

- Reduces economic losses and health impacts while enhancing resilience of vulnerable communities.

### Stakeholders

- **Principal Implementer:** Ministry of Urban Development (MoUD), Ministry of Energy, Water Resources and Irrigation (MoEWRI)
- **Supporting Agencies:** Local municipalities, Department of Water Supply and Sewerage, National Disaster Risk Reduction and Management Authority (NDRRMA)
- **Partners from UN Agencies :** TBC
- **International Partners:** TBC
- **Civil Society & Academia:** TBC
- **Private Sector:** TBC
- **Communities:** TBC

### Indicative Costing

USD 175 million with 1.75 million per sub-intervention (Based on NAP-34 allocation of USD 350 million. Includes capacity building, local technical adaptation, and demonstration units.)

Cost horizon: 7 years

## Intervention 20: Promote Nature-based Tourism in Protected Areas

### Overview / Programme Narrative

This intervention promotes **nature-based and eco-tourism** in protected areas (PAs) and adjoining landscapes. It will develop **community-based homestays, trekking routes, wildlife tourism, and cultural tourism**, ensuring benefits are equitably shared with IPLCs and buffer zone communities. Training in guiding, hospitality, and green certification will be provided. Special focus is given to linking tourism revenues with **PA management and biodiversity conservation**.

### Justification

- Tourism contributes **~8% of Nepal's GDP**, with PAs as primary attractions.
- However, mass tourism risks degrading fragile ecosystems.
- Nature-based tourism provides **low-impact livelihoods**, strengthens conservation, and enhances Nepal's global green tourism branding.

### Stakeholders

- **Principal Implementer:** MoCTCA (Tourism Ministry), DNPWC
- **Supporting Agencies:** Municipalities, Nepal Tourism Board, CFUGs, buffer zone committees
- **Partners from UN Agencies :** TBC
- **International Partners:** TBC
- **Civil Society & Academia:** TBC
- **Private Sector:** TBC
- **Communities:** TBC

### Indicative Costing

USD 30 to 40 million (Intervention scaled from NAP-40 with total investment of USD 100 million until 2045. Covers resilient infrastructure, climate-proofing municipal facilities, and associated training.)

Cost horizon: 7 years

## Intervention 21: Medicinal & Aromatic Plants and High Value Crops Enterprise Expansion

### Overview / Programme Narrative

This intervention supports **sustainable harvesting, cultivation, and value-chain development of medicinal and aromatic plants (MAPs)** in Koshi, Gandaki, Karnali, and Mahakali basins. Activities include community-based conservation, **domestication of high-value MAPs**, development of certification and traceability systems, and establishment of small-scale processing enterprises. The programme will link mountain farmers with **regional and global herbal product markets**.

### Justification

- Nepal hosts over **1,900 species of MAPs**, but unsustainable harvesting threatens biodiversity.
- The sector contributes significantly to **exports and traditional medicine**, yet most products leave Nepal as raw material.
- Value addition in-country can **triple revenues and create local jobs**.

### Stakeholders

- **Principal Implementer:** MoICS; MoFE, Department of Plant Resources; HPPCL

- **Supporting Agencies:** (Industry, Commerce and Supplies), municipalities, cooperatives
- **Partners from UN Agencies :** TBC
- **International Partners:** TBC
- **Civil Society & Academia:** TBC
- **Private Sector:** TBC
- **Communities:** TBC

### Indicative Costing

USD 40 million to USD 50 million (7-year intervention focused on aromatic plants within broader NTFP program. Cost scaled proportionally from NAP-19 allocation of USD 1,000 million over 25 years. Includes cultivation, processing, capacity building, and market development.)

Cost horizon: 7 years

## Intervention 22: Support High Altitude Pastoralism

### Overview / Programme Narrative

This intervention promotes **sustainable high-altitude pastoralism** as both a livelihood and cultural heritage system. Activities include pastureland management, **improving yak and sheep breeds, veterinary support, pasture rotation systems**, and developing dairy and wool-based enterprises. It also integrates Indigenous pastoralist knowledge into local and basin planning, helping to **conserve rangelands and reduce conflicts with wildlife**.

### Justification

- Pastoralism supports **over 50,000 households in high mountains**.
- Rangelands are degrading due to overgrazing and climate change, threatening livelihoods and biodiversity.
- Sustainable systems enhance resilience, conserve alpine ecosystems, and secure mountain cultures tied to pastoralism.

### Stakeholders

- **Principal Implementer:** MOALD
- **Supporting Agencies:** Local governments, associations (MuAN and NARMIN), pastoralist cooperatives

- **Partners from UN Agencies** : TBC
- **International Partners**: TBC
- **Civil Society & Academia**: TBC
- **Private Sector**: TBC
- **Communities**: TBC

### Indicative Costing

USD 80 million to USD 100 million (Management of ~20,000 hectares of pasture and meadows across four High Mountain units. Includes investments in fodder banks, climate-smart grazing practices, training, and supporting infrastructure.)  
**Cost horizon:** 10 years and beyond

## Intervention 23: Forest-based Enterprises Development & Green Jobs Promotion

### Overview / Programme Narrative

This intervention scales up **community-led forest enterprises** producing timber, non-timber forest products (NTFPs), and eco-friendly goods (bamboo, rattan, resin, honey). Activities include training in **enterprise management, product diversification, certification, and linking to markets**. Emphasis will be given to **women- and youth-led enterprises**, creating rural jobs and enhancing the role of forests in Nepal's green economy.

### Justification

- Nepal's forests provide **80% of rural household energy** and significant income, but enterprises remain underdeveloped.
- Sustainable enterprises incentivise **forest conservation while creating green jobs**.
- Potential to mobilise climate finance (carbon credits, green value chains).

### Stakeholders

- **Principal Implementer**: MOICS, Province Ministries
- **Supporting Agencies**: MOFE, municipalities, cooperatives, women's groups
- **Partners from UN Agencies** : TBC
- **International Partners**: TBC
- **Civil Society & Academia**: TBC
- **Private Sector**: TBC

- **Communities:** TBC

### **Indicative Costing**

USD 75 million (Development of 600 enterprises across ecological zones: 200 High Mountain units at USD 150,000, 100 Mahabharat units at USD 120,000, and 300 Terai units at USD 100,000. Includes startup capital, equipment, training, certification, market linkages, PPP facilitation, working capital, mentorship, inclusion for women/youth, and MRV.)  
**Cost horizon:** 7 years

## **Intervention 24: Promote social harmony, Indigenous Languages, Culture & Traditions**

### **Overview / Programme Narrative**

This intervention promotes the **revitalisation of Indigenous languages, cultures, and traditions** across Nepal's mountain regions. It will support **documentation, curriculum integration, cultural festivals, and community learning centres**. The programme strengthens cultural identity, intergenerational knowledge transfer, and the role of traditional institutions in biodiversity and climate resilience.

### **Justification**

- Nepal is home to **over 125 languages**, many at risk of extinction.
- Loss of languages and traditions equates to loss of **oral histories, ecological knowledge, and cultural diversity**.
- Cultural identity is integral to sustainable mountain livelihoods and social cohesion.

### **Stakeholders**

- **Principal Implementer:** Ministry of Culture, Tourism and Civil Aviation (MoCTCA)
- **Supporting Agencies:** MoFE, municipalities, Indigenous councils, academies of language and culture
- **Partners from UN Agencies :** TBC
- **International Partners:** TBC
- **Civil Society & Academia:** TBC
- **Private Sector:** TBC
- **Communities:** TBC

### Indicative Costing

USD 10 million (Across Nepal's ecological zones: High Mountains USD 3.89 million, Mahabharat USD 3.33 million, Terai USD 2.78 million. Activities include community dialogue platforms, customary practice and language documentation, digital archiving, cultural festivals, youth/women leadership training, and establishment of cultural centers or digital tools. Anchored to GCF Readiness TLK support program.)  
 Cost horizon: 10 years and beyond

## Intervention 25: Promotion of Permaculture and AgroForestry

### Overview / Programme Narrative

This intervention expands **permaculture farming practices** in mountain communities to promote climate-smart agriculture. It focuses on **diverse cropping systems, soil regeneration, water harvesting, agroforestry, and organic farming certification**. Training and demonstration plots will be established in all mountain regions, linking with youth and women cooperatives for scaling.

### Justification

- Climate change threatens food security in mountains; **erratic rainfall and soil degradation** reduce yields.
- Permaculture increases **productivity, water efficiency, and soil fertility**, while reducing dependency on chemicals.
- Supports Nepal's transition to **sustainable, low-carbon agriculture**.

### Stakeholders

- **Principal Implementer:** Ministry of Agriculture and Livestock Development (MoALD)
- **Supporting Agencies:** MoFE, municipalities, farmer cooperatives, permaculture networks
- **Partners from UN Agencies :** TBC
- **International Partners:** TBC
- **Civil Society & Academia:** TBC
- **Private Sector:** TBC
- **Communities:** TBC

### Indicative costing:

USD 30 to 40 million (Pilot across 12 local levels, scaled from NAP-7's full program covering 753 local levels. Covers breed development, livelihood diversification, training and capacity building, infrastructure support, and circular economy initiatives. Higher per-unit costs reflect demonstration and proof-of-concept requirements.)

Cost horizon: 7 years

## Intervention 26: Capacity Building for Climate & Biodiversity Funding

### Overview / Programme Narrative

This intervention strengthens **institutional capacity at national and provincial levels** to access and manage international climate and biodiversity finance. Activities include **training ministries and municipalities on proposal writing, fiduciary standards, safeguards, and monitoring**, while creating a **national roster of experts** to support pipeline development.

### Justification

- Nepal has accessed only a **small fraction of global climate and biodiversity funds** available.
- Weak capacity to prepare competitive proposals is a major barrier.
- Building in-country expertise ensures **direct access to funds** and reduces dependence on external consultants.

### Stakeholders

- **Principal Implementer:** Ministry of Finance, MoFE
- **Supporting Agencies:** MoFAGA, provincial planning commissions, municipalities

### Development Partners

UNDP, FAO, UNEP, GCF, GEF, World Bank, bilateral donors, UNFCCC financial mechanisms

### Indicative Costing

USD 10 million (Five-year program adapted from GCF Readiness Preparatory Support, covering capacity building (30%), pipeline development (60%), and knowledge management (10%). Strengthens institutional readiness, accelerates project pipelines, and consolidates learning for climate and biodiversity action.)

Cost horizon: 5 years

## Intervention 27: World Famous Mountain Tourism Certification Initiative

## Overview / Programme Narrative

This intervention partners with the International Mountain Tourism Alliance (IMTA) to establish a “World Famous Mountain Tourism” certification for Nepal’s iconic mountain destinations, including Sagarmatha, Annapurna, Langtang, and Mustang. The initiative will set international benchmarks for sustainable mountain tourism, ensuring that ecological integrity, cultural authenticity, and community benefit are central to destination branding. Certification will promote eco-friendly trekking routes, waste-free mountain lodges, climate-resilient infrastructure, and cultural preservation programmes. By aligning tourism practices with global sustainability standards, the intervention seeks to reinforce Nepal’s leadership in mountain tourism while safeguarding the fragile Himalayan environment.

## Justification

- Nepal’s mountain tourism is a major economic driver but faces pressures from overcrowding, waste generation, and climate risks.
- Certification strengthens Nepal’s competitive advantage in global tourism markets and assures visitors of sustainable, high-quality experiences.
- Supports the National Tourism Policy (2009, updated 2024) and aligns with NDC commitments through low-carbon tourism.
- Enhances cultural pride, local livelihoods, and resilience of tourism-dependent communities.

## Stakeholders

- **Principal Implementer:** Ministry of Culture, Tourism and Civil Aviation (MoCTCA)
- **Supporting Agencies:** Nepal Tourism Board, provincial and local governments, community tourism cooperatives, trekking and mountaineering associations
- **Partners from UN Agencies :** TBC
- **International Partners:** TBC
- **Civil Society & Academia:** TBC
- **Private Sector:** TBC
- **Communities:** TBC

## Indicative Costing:

USD 40 million (Seven-year program covering 38 sites: High Mountain 8, Mahabharat 10, Chure 20. Cost per site USD 1.05 million, supporting climate-resilient infrastructure, certification, sustainable tourism strategy, and cataloguing cultural and natural assets. Anchored to NAP-39.)

Cost horizon: 7 years

## Intervention 28: Gender Integration in Climate & Biodiversity Actions

### Overview / Programme Narrative

This intervention ensures **systematic integration of gender perspectives** across biodiversity and climate projects. It will develop **gender action plans, sex-disaggregated indicators, and gender-responsive budgeting frameworks**. Capacity-building for line ministries, municipalities, and community forestry groups will ensure women's voices and leadership are embedded in decision-making.

### Justification

- Women constitute **over 70% of agricultural labour** in mountains, but are underrepresented in climate and biodiversity leadership.
- Gender-blind projects risk reinforcing inequality.
- Gender-responsive planning enhances effectiveness, equity, and accountability.

### Stakeholders

- **Principal Implementer:** Ministry of Women, Children and Senior Citizens (MoWCSC)
- **Supporting Agencies:** MoFE, MoALD, municipalities and associations (MuAN and Narmin), FECOFUN, women's cooperatives
- **Partners from UN Agencies :** TBC
- **International Partners:** TBC
- **Civil Society & Academia:** TBC
- **Private Sector:** TBC
- **Communities:** TBC

### Indicative Costing

USD 10 million (Five-year investment covering 11 units: 5 units at USD 700,000/year and 6 units at USD 910,000/year. Supports gender mainstreaming, capacity building, policy

integration, and inclusive programming across ecological zones.)

Cost horizon: 5 years

## **Intervention 29: Recognition of Indigenous Peoples and Local Communities in Climate & Biodiversity (Pilots)**

### **Overview / Programme Narrative**

This intervention pilots mechanisms for **formal recognition of Indigenous Peoples and Local Communities (IPLCs)** in biodiversity and climate governance. Activities include **participatory mapping of customary territories, recognition of traditional practices, and establishing IPLC-led councils** in pilot sites. The intervention will also test **benefit-sharing frameworks** from ecosystem services and biodiversity conservation.

### **Justification**

- IPLCs are custodians of Nepal's biodiversity, but remain marginalised in decision-making.
- Recognition strengthens **stewardship, equity, and alignment with CBD and Paris Agreement safeguards**.
- Builds social legitimacy and ownership for conservation programmes.

### **Stakeholders**

- **Principal Implementer:** MoFE (Environment and Biodiversity Division)
- **Supporting Agencies:** MoFAGA, municipalities and associations (MuAN and Narmin), Indigenous federations, customary institutions
- **Partners from UN Agencies :** TBC
- **International Partners:** TBC
- **Civil Society & Academia:** TBC
- **Private Sector:** TBC
- **Communities:** TBC

### **Indicative Costing**

USD 10 to 15 million (Five-year pilot for five sites: High Mountain 1, Mahabharat 3, Terai 1. Covers participatory mapping of customary territories, establishment of IPLC-led councils,

benefit-sharing frameworks, climate-resilient infrastructure, and knowledge hubs. Scaled from NAP-39 national program.)

Cost horizon: 7 years

## Intervention 30: Youth Mobilisation in Mountain Action (Pilots)

### Overview / Programme Narrative

This intervention pilots structured programmes to **mobilise youth in biodiversity and climate actions** in mountain areas. It will establish **youth-led climate action groups, green volunteer corps, and eco-innovation hubs**. Activities will include skill development, start-up incubation for green enterprises, and youth participation in decision-making platforms at local and provincial levels. Foster urban-rural market linkages, and job creation targeting youth and women, for sustaining population and vibrancy of the mountain economy.

### Justification

- Over **40% of Nepal's population is below 25 years**, yet youth remain underutilised in formal climate and biodiversity programmes.
- Youth mobilisation enhances innovation, strengthens local ownership, and reduces outmigration by creating opportunities.
- Youth migration and overall declining population in 32 mountain and hill districts of Nepal is alarming, linking to lack of economic opportunities and disaster induced displacements.
- A pilot approach helps design scalable models for **youth-driven climate leadership**.

### Stakeholders

- **Principal Implementer:** Ministry of Youth and Sports (MoYS), Ministry of Women and Children, MoFE
- **Supporting Agencies:** Municipalities, youth councils, academic institutions
- **Partners from UN Agencies :** TBC
- **International Partners:** TBC
- **Civil Society & Academia:** TBC
- **Private Sector:** TBC
- **Communities:** TBC

### Indicative Costing

USD 7 to 10 million (Includes publications USD 200,000, interministerial coordination USD 200,000, provincial/local coordination USD 1 million, international/regional coordination USD 1.5 million, workshops USD 300,000, policy/regulation support USD 500,000. Covers employment creation, capacity building, and coordination mechanisms.)

**Cost horizon:** 5 years

## **Intervention 31: Mountain education and awareness in secondary school curricula (Piloting)**

### **Overview / Programme Narrative**

This initiative aims to integrate mountain education into the curriculum of Grades 8, 9, or 10 in at least two schools within each of the four river basins. Since local municipalities have the authority to introduce context-specific topics, collaboration with municipal governments will be central to this effort. In addition, the Curriculum Development Centre under the Ministry of Education, Science, and Technology will serve as a key partner. The intervention will be implemented as a pilot project, with the intention of scaling it up across both mountain and lowland regions based on the outcomes and lessons learned.

### **Justification**

- Mountain education is particularly important for high school students in Nepal due to the country's unique geography, cultural heritage, and development challenges.
- At present, Nepal's secondary school curriculum does not include subjects specifically focused on the significance of mountains.
- Educating students from an early age about the importance of mountains can shape their perspectives and positively influence development planning as they become future leaders and decision-makers.

### **Stakeholders**

- **Principal Implementer:** Concerned municipalities
- **Supporting Agencies:** MoEST; CDC; MOFE
- **Partners from UN Agencies :** TBC
- **International Partners:** TBC
- **Civil Society & Academia:** TBC
- **Private Sector:** TBC

- **Communities:** TBC

### Indicative Costing

USD 9.5 million (Includes mountain learning systems USD 2.1 million, virtual classrooms and digital portal USD 2.45 million, hostels for students with disabilities USD 1.75 million, monitoring private schools USD 1.05 million, workshops USD 0.7 million, innovation USD 0.75 million. Supports equitable, inclusive, and accessible mountain education.)

**Cost horizon:** 7 years

## Intervention 32: Establishment and Operation of Mountain University

### Overview / Programme Narrative

This initiative aims to establish and operationalize a state-of-the-art mountain university in the high altitude of Karnali Province. The Ministry of Education, Science, and Technology will serve as a key partner. The university will provide specialized education and research in areas such as mountain biodiversity conservation, disaster risk reduction, high-altitude agriculture, rangeland and high-altitude pastoralism and matter related to climate change mitigation and adaptation. The university establishment will have climate resilient infrastructure strengthening institutional capacity, create employment opportunities and promote inclusive growth in Nepal's high mountain regions, contributing to national priorities on education, climate adaptation and socio-economic transformation.

### Justification

- Karnali Province and high-mountain regions have limited access to higher education, forcing students to migrate or drop out. The university ensures equitable educational opportunities.
- The mountains face serious challenges due to climate change exacerbating biodiversity loss, disaster risks and livelihood. A dedicated university can develop expertise in mountain expertise in mountain sciences, climate resilience, and sustainable development.
- Aligns with Nepal's education and climate adaptation strategies, SDGs, and global commitments on biodiversity and resilience, while serving as a hub for international collaboration in high altitude research.

### Stakeholders

- **Principal Implementer:** MoEST
- **Supporting Agencies:** MoCTCA; CDC
- **Partners from UN Agencies:** TBC
- **International Partners:** TBC
- **Civil Society & Academia:** TBC
- **Private Sector:** TBC
- **Communities:** TBC

### Indicative Costing

USD 25 million (Includes establishment and operation cost for the period of 7 years, covering approximately 120,000 square feet of built-up area at an average rate of USD 50 per square foot. This covers academic blocks, laboratories, library, student housing and operating cost essentials adapted for high altitude conditions.)

Cost horizon: 7 years

## Intervention 33: Establish Mountain Authority (Institutional)

### Overview / Programme Narrative

This intervention proposes the establishment of a dedicated **Mountain Authority of Nepal** to coordinate policies, programmes, and investments for mountain ecosystems and livelihoods. The authority will serve as a **nodal institution**, integrating biodiversity, climate change, disaster risk reduction, tourism, and cultural preservation into a unified framework. This authority will also provide a governing body and can act as regulatory and financial control authority.

### Justification

- Current institutional arrangements are fragmented across multiple ministries.
- A Mountain Authority would provide **coherence, stronger policy enforcement, and visibility** to Nepal's mountain agenda.
- Builds on global models of dedicated mountain institutions and aligns with Nepal's leadership role in the HKH region.

### Stakeholders

- **Principal Implementer:** Government of Nepal (Cabinet approval required)
- **Supporting Agencies:** MoFE, MoCTCA, MoALD, MoUD, provincial governments

- **Partners from UN Agencies** : TBC
- **International Partners**: TBC
- **Civil Society & Academia**: TBC
- **Private Sector**: TBC
- **Communities**: TBC

### **Indicative Costing:**

USD 55 to 60 million (Seven-year investment with annual budget USD 8.5 million. Covers staffing, infrastructure, research and monitoring systems, conservation programs, and coordination across government agencies, including NDRRMA. Supports institutionalization of mountain governance.)

**Cost horizon:** 7 years

## **Intervention 34: Regional Partnership: Ministerial Council of HKH Countries**

### **Overview / Programme Narrative**

This intervention establishes a **Ministerial-level Council among Hindu Kush Himalaya (HKH) countries**, with Nepal taking a leading role. The council will foster **policy dialogue, joint research, transboundary conservation, and climate adaptation cooperation**. Nepal will also host periodic **Mountain Summits** to sustain high-level political momentum.

### **Justification**

- The HKH spans **8 countries and supports nearly 2 billion people downstream**.
- Shared challenges (glacier retreat, biodiversity loss, floods) require **regional solutions**.
- A ministerial council would institutionalise cooperation and strengthen **Nepal's diplomatic leadership** in the region.

### **Stakeholders**

- **Principal Implementer**: Ministry of Foreign Affairs (MoFA), MoFE
- **Supporting Agencies**: ICIMOD, SAARC Secretariat, national governments of HKH countries
- **Partners from UN Agencies** : TBC
- **International Partners**: TBC
- **Civil Society & Academia**: TBC

- **Private Sector:** TBC
- **Communities:** TBC

### Indicative Costing

USD 10 million (Covers establishment and operation of Secretariat USD 3 million, periodic Mountain Summits and ministerial meetings USD 2 million, joint research USD 1.5 million, policy dialogue and regional workshops USD 1.5 million, capacity building and knowledge dissemination USD 1 million, M&E USD 0.5 million. Supports governance, policy coordination, and transboundary collaboration.)

Cost horizon: 7 years

## Intervention 35: Global Partnerships in Mountain Agenda (COPs, Platforms)

### Overview / Programme Narrative

This intervention scales up Nepal's participation in **global mountain platforms, UNFCCC COPs, CBD COPs, and other biodiversity-climate negotiations**. It will ensure consistent **advocacy for mountain issues**, promote Nepal's model interventions internationally, and build alliances for **finance mobilisation and technical cooperation**.

### Justification

- Mountains remain **underrepresented in global climate and biodiversity frameworks** despite their global significance.
- Nepal's leadership (e.g. Sagarmatha Sambad, Mountain Initiatives at COP) has created strong momentum.
- Scaling global engagement can unlock **greater climate and biodiversity finance** while positioning Nepal as a **global mountain champion**.

### Stakeholders

- **Principal Implementer:** MoFE, MoFA
- **Supporting Agencies:** MoF, MoCTCA, CSOs, research institutions
- **Partners from UN Agencies :** TBC
- **International Partners:** TBC
- **Civil Society & Academia:** TBC

- **Private Sector:** TBC
- **Communities:** TBC

### **Indicative Costing**

USD 10 million (Covers participation in COPs, CBD, and other negotiations USD 3 million, hosting international platforms USD 2 million, advocacy and knowledge dissemination USD 1.5 million, strategic alliance building USD 1.5 million, capacity building of negotiators USD 1.5 million. Strengthens Nepal's global leadership and influence in mountain and climate diplomacy.)

**Cost horizon:** 7 years