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Royal Government of Bhutan
Ministry of Energy and Natural Resources
Department of Forests and Park Services

BRIEFING NOTE

Advancing Bhutan's conservation strategy

Unlocking the potential of Natural Capital Accounting for protected areas

KEY MESSAGES

Natural Capital Accounting (NCA) is a tool that can help measure the full extent of a country's balance sheet of natural assets, according to the World Bank.

NCA for Protected Areas (PAs) enables the quantification of ecosystem services provided by PAs, recognising their value to people and society. It supports better decision-making, helping to sustain and enhance the benefits derived from these areas by ensuring their importance is factored into national economic planning. Bhutan's extensive conservation efforts, with over half of its land area designated as PAs, have created a strong foundation for NCA.

NCA for PAs aligns with Bhutan's unique Gross National Happiness (GNH) vision, which integrates sustainable growth, social well-being, and environmental stewardship. It supports the country's 13th Five-Year Plan by recognising the immense value of Bhutan's rich natural resources and integrating this value into national economic planning.

The work is guided by the standards set by the global System of Environmental-Economic Accounting (SEEA), ensuring it meets international benchmarks for environmental and economic data integration.

A pilot ecosystem accounting exercise for Jigme Dorji National Park (JDNP) revealed that the total annual flow of ecosystem services was valued at BTN 1,043 million (USD 12.42 million) in 2017, and BTN 1,066 million (USD 12.70 million) in 2023¹. The largest contributor was non-wood forest products, accounting for 53% of the total value in 2017, and 39% in 2023¹. These preliminary results underscore the significant role of PAs in Bhutan's economy and highlight the value of expanding NCA to cover all 11 PAs and 9 biological corridors.

The development of the guidelines for NCA for PAs has been a participatory and inclusive process, engaging a wide range of stakeholders to ensure the approach is meaningful, context-specific, and aligned with Bhutan's current commitments to conservation and global contribution as a carbon-negative country.

In its formative stage, this work is a collaborative effort between the Department of Forests and Park Services and the International Centre for Integrated Mountain Development (ICIMOD).

This briefing note aims to advocate for the systematic implementation of NCA within Bhutan's PAs to formally recognise their significant contributions to the national economy. By quantifying the extent and conditions of ecosystems and ecosystem services provided by PAs, NCA is designed to demonstrate the value of these natural assets and emphasise the need for sustained government support in their protection and management while also opening prospects for leveraging global environmental finances to strengthen conservation efforts by Bhutan.

This briefing note calls on policymakers to prioritise NCA as a strategic tool for safeguarding Bhutan's rich natural heritage and appropriately accounting for its economic growth potential.

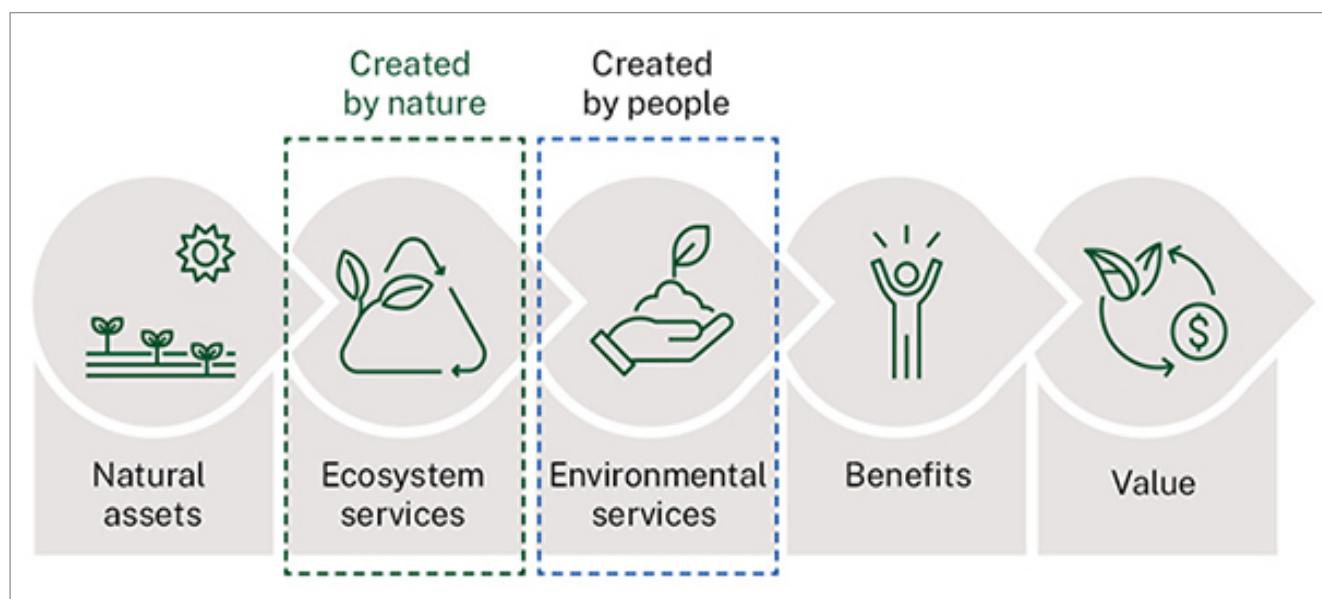
What is natural capital?

Natural capital refers to the world's stock of natural resources, including geology, soil, air, water, and all living organisms. It provides a wide range of ecosystem services (flows) that are essential for human survival and well-being, such as clean air, water, food, and materials, as well as regulating services like climate regulation, carbon sequestration, and flood control. Natural capital (stock) underpins economic activity, and its proper management ensures the sustainability of ecosystems and the benefits they provide for current and future generations. Figure 1 depicts how natural assets deliver ecosystem services and how these are converted into benefits and value.

¹ This estimated value, generated during a preliminary exercise on the JDNP account with the Technical Working Group based on available data, should be viewed as approximate. The figures are only to provide an initial understanding and will require further refinement as the NCA work progresses for PAs in Bhutan.



FIGURE 1: ELEMENTS OF NATURAL CAPITAL, ASSETS AS STOCK, AND SERVICES AS FLOWS



What is Natural Capital Accounting?

Natural Capital Accounting (NCA) measures and keeps track of the natural resources and services provided by ecosystems in a specific area, such as a country or region. It helps us see nature as an important asset that must be protected and managed responsibly – with its contributions integrated into the economy and societal well-being.

By using the NCA approach, we can better understand how natural capital supports our economy and society, and how its contributions can be reflected in national economic planning. This is to ensure that values of natural capital are fully recognised nationally and globally.

NCA is necessary for:

Valuation of ecosystem services: NCA helps quantify the economic value of ecosystem services, such as water purification, carbon sequestration, and biodiversity conservation.

Informed decision-making: By integrating natural capital into national accounts, policymakers can make informed decisions that balance economic growth with environmental sustainability.

Sustainable development: NCA supports the achievement of Bhutan's sustainable development goals by highlighting the economic benefits of conservation.

SEEA Framework: A global move towards environmental accounting

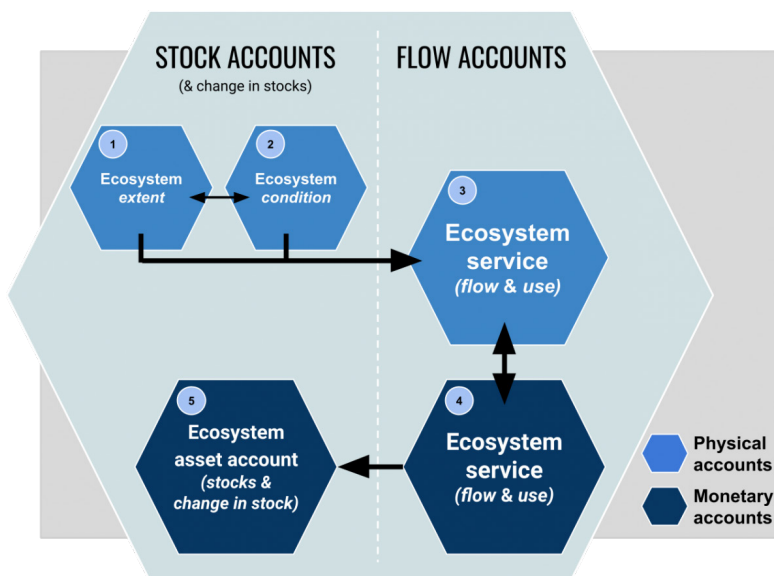
NCA is increasingly recognised in the global conservation agenda, especially in relation to climate change, biodiversity loss, and degradation of ecosystem services. NCA provides comprehensive statistics on natural resources and their conditions – enabling impetus for their sustained management.

The System of Environmental-Economic Accounting (SEEA), adopted by the United Nations Statistical Commission in 2012, serves as the global framework for NCA. The types of SEEA Ecosystem Accounts include (Figure 2):

Assets: Measure the stock of natural resources, such as forests, water bodies, and minerals in terms of their quantity and quality and changes over time.

Ecosystem extent: Track changes in size and types of ecosystems over time, such as the extent of forests, wetlands, and grasslands.

FIGURE 2: TYPES OF ECOSYSTEM ACCOUNTS IN THE SEEA FRAMEWORK



Ecosystem condition: Assess the health and function of ecosystems using indicators such as biodiversity, soil, and water quality.

Ecosystem services: Quantify the flow and economic value of ecosystem services, such as carbon sequestration, water purification, and recreation.

Monetary accounts: Converts physical measures of natural capital into monetary terms, highlighting the economic value of natural resources (assets) and ecosystem services.

Global practices

According to the 2023 UN Global Assessment of Environment and Economic Accounting, 90 countries have adopted SEEA to account for the contribution of natural assets to the System of National Accounting. This supports informed decisions for sustainable development, environmental monitoring, and integration of ecosystem services into economic planning. Table 1 outlines how countries across the globe have implemented SEEA Ecosystem Accounting for diverse purposes, with various implications:

TABLE 1. EXAMPLES OF NCA FROM DIFFERENT COUNTRIES HIGHLIGHTING THEIR SIGNIFICANCE IN ADVANCING CONSERVATION POLICIES AND ECONOMIC DECISIONS

Country/Region	Findings
CHINA (Guangxi Province)	Total value of ecosystem services was CNY 914.1 billion (USD 129.3 billion) in 2016 and CNY 879.45 billion (USD 124.4 billion) in 2017, making up 56.7% and 49.4% of their respective gross domestic product (GDP). SEEA accounts were essential in designing the eco-compensation scheme for the Xijiang River Basin, and aligned with China's Gross Ecosystem Product (GEP) to monitor conservation policies.
INDIA	Developed a biodiversity thematic account including species, protected areas, and biodiversity expenditure. SEEA indicators measured progress on 39 out of 43 Sustainable Development Goals (SDGs) showing their value in tracking national development.
SOUTH AFRICA	PA covers 9.2% of the total country with forests being the largest biomes. Experimental ecosystem accounts for KwaZulu-Natal province revealed that ecosystem services were worth South African rand (ZAR) 52.5 billion (USD 2.98 billion) in 2011 representing 12% of the province's GDP.
UNITED KINGDOM	The ecosystem asset value was over GBP 1.5 trillion (USD 1.9 trillion) in 2021 while the annual value of ecosystem services was GBP 47 billion (USD 59.7 billion). Health benefits from recreation contributed GBP 445 billion (USD 565.5 billion), making it the largest component of the ecosystem asset.
EUROPEAN UNION	Seven ecosystem services were valued at EUR 172 billion in 2021 with water purification service contributing EUR 55.6 billion, and forests providing 47% of the services. Ecosystem accounts for pollinator services helped quantify their economic contribution, supporting the EU Pollinators Initiative and underscoring their crucial role in agriculture.

Is Bhutan ready for NCA?

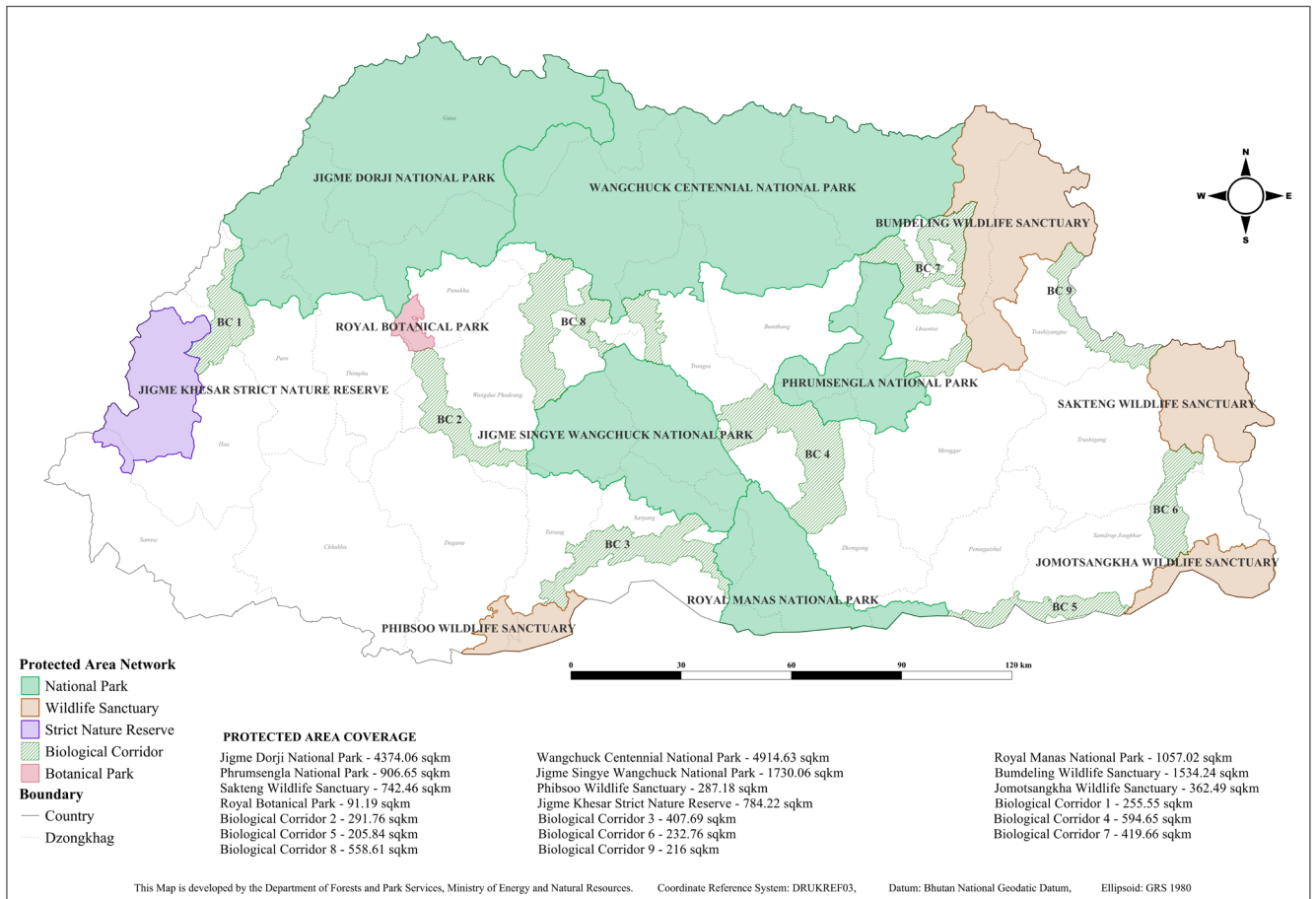
Unique approach to growth: Bhutan has redefined its development philosophy by prioritising citizen well-being and happiness over traditional economic indicators. Instead of focusing solely on GDP, Bhutan introduced Gross National Happiness (GNH), a concept pioneered by His Majesty the Fourth King Jigme Singye Wangchuck and enshrined in the country's 2008 constitution. Environmental conservation, one of the four pillars of GNH, highlights the central role of NCA in integrating environmental sustainability into Bhutan's holistic vision.

Rich in natural capital: Bhutan has been declared one of only three carbon-negative countries in the world, as it sequesters more carbon than it emits. This is in large part due to the fact that nearly 70% of the country is under forest cover, showcasing its global leadership in environmental protection. Additionally, over 52% of the country is designated as PAs, underscoring Bhutan's strong commitment to biodiversity conservation. NCA aims to help quantify the contributions of these vast resources to the national economy.

A global conservation leader: Bhutan has enacted forward-looking conservation laws and policies, such as the Forest and Nature Conservation Act of 2023, which recognises its PAs as both national and global assets. The 13th Five-Year Plan emphasises the interconnected goals of people, progress, and prosperity, with NCA playing a key role in monitoring and mapping natural resources for sustainable development. Additionally, NCA is essential to achieving milestone 13 of the Bhutan for Life initiative, which focuses on maintaining healthy ecosystems. The country's leadership in innovative conservation policies positions it as a global example of sustainable growth.

Adoption of the SEEA Framework: Bhutan adopted SEEA as the official national accounting framework in 2012. Building on this, Bhutan has prepared a national implementation plan for SEEA (2024–2029), outlining NCA integration into national accounting practices. This plan further aligns Bhutan's NCA objectives with its broader development goals, ensuring that the country continues to lead by example in integrating environment into economics and accounting.

FIGURE 3: PROTECTED AREA NETWORK IN BHUTAN



Significance of Bhutan's PAs

PAs, which cover over 52% of the country, are vital for maintaining an ecological balance, supporting livelihoods, and fostering sustainable development. Bhutan's PA network comprises five national parks, four wildlife sanctuaries, one strict nature reserve, one botanical park, and nine biological corridors (Figure 3).

The evolution of Bhutan's PA system represents a globally significant landscape conservation model. Today, Bhutan has successfully protected vital ecosystems, safeguarded critical wildlife corridors, and ensured the uninterrupted movement of species. Additionally, its PA network shields crucial headwater sources that support both local livelihoods and Bhutan's hydropower-driven economy.

Why NCA for Bhutan's PAs?

Ensuring sustainable development: By recognising and valuing natural assets, Bhutan can balance economic growth and environmental conservation. PAs provide essential ecosystem services (e.g. water regulation, carbon sequestration, and biodiversity conservation).

Support climate resilience: NCA helps understand and mitigate climate change impacts by valuing ecosystem services that contribute to climate regulation. NCA highlights the economic value of ecosystem services to local communities and national economies (tourism, agriculture, etc.).

Promotes long-term well-being: Integrating natural capital into national accounts ensures that future generations enjoy the benefits of Bhutan's rich biodiversity and natural resources.

Facilitates innovative finance mechanisms: NCA can generate robust data for mechanisms such as carbon credits, biodiversity credits, and payment of ecosystem services (PES) schemes. Data on the extent and condition of ecosystems can be instrumental in developing credit mechanisms and schemes that attract international investors and incentivise the conservation and management of PAs.

Thematic accounts under SEEA: PAs cover more than half of Bhutan, which not only highlights the conservation efforts made by the country but also shows the dependence of local communities on PAs. This can provide an impetus to develop a separate thematic account for PAs that Bhutan can pioneer under the SEEA. This will help Bhutan focus on specific ecosystems or services offered by PAs and the international community to implement further conservation efforts.

In essence

NCA quantifies the economic contributions of Bhutan's PAs, including critical services like water regulation, carbon sequestration, and biodiversity conservation, making the value of PAs visible in the System of National Accounts (SNA).

By valuing natural capital, NCA informs more efficient and equitable allocation of resources, guiding investments in areas where ecosystem services are most vital to the economy and local livelihoods.

NCA highlights the direct economic and social benefits of PAs for local communities, promoting inclusive and community-based approaches to conservation, which enhances livelihoods and strengthens conservation efforts.

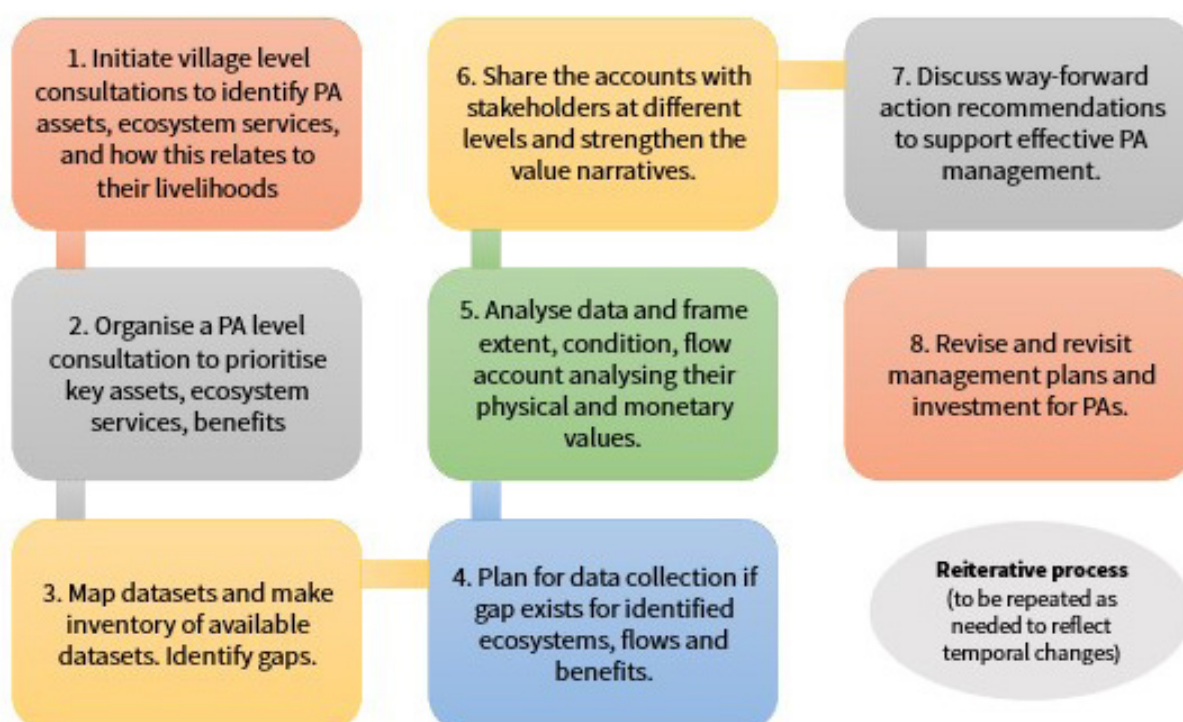
NCA strengthens Bhutan's ability to meet international commitments, such as the Sustainable Development Goals (SDGs), by systematically accounting for natural capital contributions to economic growth, poverty reduction, and environmental sustainability.

Preparing the guidelines for NCA for PAs

Developing NCA requires a participatory approach involving a wide range of stakeholders – from policymakers to local communities – to ensure the process is inclusive and representative of diverse perspectives (Figure 4).

At the village level, a consultation held in Barshong with communities and local leaders was crucial to capture the local stakeholders' perceptions of value. At the PA level, local government leaders and PA officials had a consultative meeting to identify key management perspectives and their impacts on key natural assets and ecosystem services. These processes helped define the most important PA assets and ecosystem services linked to livelihoods and economic development.

FIGURE 4: PROCESS OF NCA GUIDELINES FOR PAS IN BHUTAN



A critical step in the NCA process was mapping available data and assessing its relevance for environmental accounting. Realising that the data was scattered across different government departments and that their validation for quality would necessitate the engagement of experts from various departments, an interdisciplinary Technical Working Group (TWG) was formed comprising members from the Department of Forests and Park Services, the Land Commission, Agriculture, Livestock, Water, Tourism, Soil, and the National Statistical Bureau. This TWG was responsible for driving the technical work, while a Steering Committee (SC) consisting of Directors and Directors General from relevant departments was established to provide strategic oversight. The national NCA guidelines outline the roles and responsibilities of these institutional mechanisms.

To give the TWG practical experience in developing environmental accounts, we used existing datasets for Jigme Dorji National Park (JDNP), the second-largest PA in Bhutan. This hands-on exercise helped familiarise the group with the process of NCA, understanding different types of accounts, and what they indicate in terms of value propositions.

Experimental accounts for JDNP

The preliminary NCA exercise for JDNP used land use and land cover data from 2017 and 2023. The results and insights presented here are based on discussions held by the TWG and stakeholders during a meeting in Haa, western Bhutan, on 25 September 2024. These accounts are still in draft form, and final pilot accounts will be developed once the National NCA guidelines are endorsed by the government.

Ecosystem extent account

Six ecosystems were analysed – forests, croplands, wetlands, grasslands, settlements, and other lands – using geographic information system (GIS) and remote sensing (RS) analysis (Figure 5).

Despite the indication of a slight reduction in forest land (1%), Bhutan's ongoing commitment to maintaining a high percentage of forestland is evident, with the forest ecosystem showing relative stability. Changes in other ecosystems would require further analysis. The ecosystem extent accounts depict the trends in land use and ecosystem distribution that can inform policy decisions on conservation and sustainable land management.

Ecosystem condition account

The condition of two major ecosystems, forests and agricultural lands, was evaluated using specific metrics.

Forests: The average forest patch size decreased from 93.11 hectares in 2017 to 87.1 hectares in 2023, indicating fragmentations due to land-use changes. Declining regeneration rates and growing stock suggest some concerns about forest health. However, the annual growth rate of forest carbon stock has remained stable, indicating that the carbon storage capacity of forests has not been significantly affected.

Agriculture: While there is an increase in total cropping area, the intensity and diversity of cropping seem to have decreased. Irrigated land area has also been reduced.

FIGURE 5: CHANGE IN ECOSYSTEM EXTENT (2017 TO 2023)

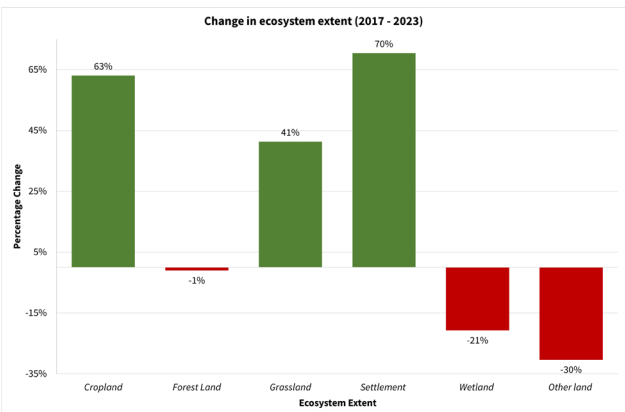
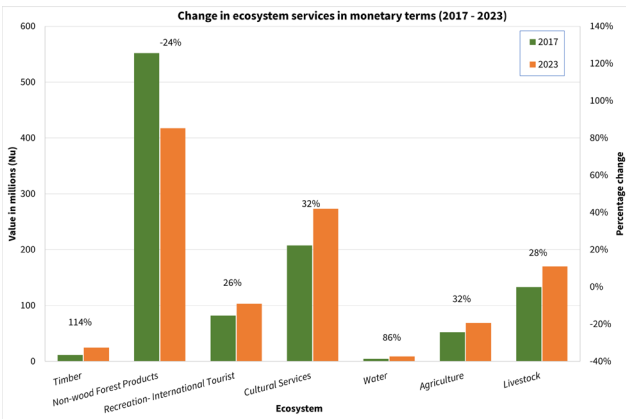


FIGURE 6: ECOSYSTEM SERVICES IN MONETARY TERMS



Ecosystem services account

Seven key ecosystem services were assessed for their annual flows in both physical and monetary terms.

The total value of the annual flow of ecosystem services was estimated at Nu. 1,043 million (\$12.42 million) in 2017 and Nu. 1,066 million (\$12.70 million) in 2023, which is 28 times the park's allocated budget of Nu. 37.87 million for the fiscal year 2023/24.

Available data on Cordyceps indicated a significant decline in their collection, with the value declining by 50.25%, from BTN 392 million (USD 4.67 million) in 2017 to BTN 195 million (USD 2.32 million) in 2023.

Regarding cultural services flow, despite a decline in tourist numbers, the value of international tourism increased from BTN 82 million (USD 976,000) in 2017 to BTN 103 million (USD 1.23 million) in 2023 (Figure 6).

Call to Action

We urge policymakers, conservationists, and stakeholders to prioritise the adoption of NCA in Bhutan's PA systems. To do so, a number of reinforcing actions are necessary:

Establish a centralised comprehensive data repository and data management systems that consolidate information about biodiversity, ecosystem services, and natural resources. This repository should be readily accessible to policymakers, researchers, and the public to ensure transparency and data-driven decision-making for effective PA management. The system should integrate data from various sectors and allow for real-time monitoring of the natural assets of PAs.

Empower the Technical Working Group (TWG) to enhance data sharing and collaboration among agencies. An interdisciplinary team from different sectors should be engaged in the collection, compilation, and analysis of data to produce accurate, comprehensive ecosystem accounts. The TWG should be equipped with the capacity, tools, and resources to lead the effort.

Broaden stakeholders' engagement to scale NCA to all PAs. This entails building partnerships between government agencies, academia, and international support groups to help Bhutan advance the process of NCA to formalise a thematic account for PA. With successful learning from the JDNP process, a comprehensive multistakeholder discussion process should be initiated to identify various ecosystem services that PAs provide.

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For further information please contact

Karma Tenzin, Director, DoFPS

Sangay (T), UWIFORT, DoFPS

Bandana Shakya, ICIMOD

karmatenzin1@moenr.gov.bt.

sangay@uwice.gov.bt

bandana.shakya@icimod.org

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International Centre for Integrated Mountain Development

GPO Box 3226, Kathmandu, Nepal

T +977 1 5275222 | E info@icimod.org | www.icimod.org