



SAMTSE



Divisional Forest Office Management Plan



(January 2026 – December 2035)

Divisional Forest Office, Samtse

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



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Approval Sheet

Period of the Plan

This plan is valid for the period of 10 years from 2026 to 2035

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Foreword



Forests have long been central to the livelihoods of the Bhutanese people and are deeply interwoven with the country's social, cultural, and traditional values. Beyond their contribution to socio-economic development, forests play a critical role in climate regulation and the provision of essential ecosystem services. Recognizing this importance, Bhutan is among the few countries to enshrine environmental conservation in its Constitution. Article 5 of the Constitution mandates that at least 60 percent of the country's land area be maintained under forest cover for all time. Bhutan has further reinforced its global environmental leadership by committing to remain

carbon neutral at the 15th Conference of Parties to the UNFCCC in 2009, a pledge reaffirmed through its Intended Nationally Determined Contribution submitted in 2015 under the Paris Agreement.

Currently, forests cover over 69.7 percent of Bhutan's total land area, making them an indispensable national asset. These forests sequester an estimated 8.5 million tonnes of carbon annually, sustain reliable water flows critical for hydropower generation, and provide essential resources such as timber and firewood to citizens. In light of Bhutan's national and international commitments, as well as the social, cultural, economic, and ecological benefits derived from forests, sustainable forest resource management remains imperative, particularly through targeted and effective interventions at the Divisional level.

Accordingly, this Divisional Forest Management Plan has been developed as a comprehensive framework for sustainable forest management within the Divisional Forest Office. The plan takes stock of existing management initiatives and presents the current status of forest area, biodiversity conservation, growing stock, resource allocation, local socio-economic conditions, and human-wildlife conflict. It prescribes strengthened conservation measures, sustainable resource utilization, climate change adaptation and mitigation actions, and human-wildlife conflict management, supported by a phased implementation plan, financing framework, and monitoring system. Developed through broad stakeholder consultation, the plan ensures shared ownership and institutional endorsement. The Division Forest Office is commended for this important milestone toward advancing sustainable forest management and biodiversity conservation.

Tashi Delek!

A handwritten signature in blue ink, consisting of several loops and a long horizontal stroke.

Director

Acknowledgement

The Divisional Forest Office Management Plan is the result of a collective and dedicated effort by the staff of the Divisional Forest Office, Samtse. The Division sincerely acknowledges the commitment, professionalism, and teamwork demonstrated by all officers and staff who contributed their time, experience, and technical inputs toward the successful formulation of this plan. Their sustained engagement throughout the planning process ensured that the document is comprehensive, practical, and grounded in field realities.

The formulation of this Management Plan was made possible through the unwavering support and guidance of the IKI Task Force Members under the IKI Project. The Division is deeply grateful for their strategic direction, technical advice, and continuous encouragement throughout the planning process. The Division further expresses its sincere gratitude to the IKI Project, “Living Landscapes: Securing High Conservation Values in South-Western Bhutan,” for its generous financial support, which enabled the conduct of comprehensive socio-economic and field surveys. The data generated through these assessments formed a critical foundation for evidence-based planning and significantly informed the management prescriptions contained in this plan. WWF–Bhutan, together with the Project Coordination Unit, played a pivotal role in facilitating the timely procurement of essential equipment and field gear, and in delivering capacity-building programs both within and outside the country. These interventions greatly strengthened the technical capacity of the field teams involved in the assessment.

The Division would like to extend special appreciation to Mr. Tshering Gyeltshen of DFO, Samtse, who played a crucial leadership role in guiding and coordinating the formulation of this Management Plan. His dedication, technical oversight, and leadership were instrumental in bringing the planning process to completion. Finally, the Division extends its heartfelt thanks to all individuals, institutions, and stakeholders who, in various capacities, contributed to the development of this Management Plan. Their collective efforts have resulted in a key milestone that will guide sustainable forest management and biodiversity conservation in the Division in the years to come.

Abbreviations

AAC	.....	Annual Allowable Cut
AGB	.....	Above Ground Biomass
BAB	.....	Biodiversity Act of Bhutan
BC	.....	Biological Corridor
BGB	.....	Below Ground Biomass
BMG	.....	Biodiversity Monitoring Grids
BTFC	.....	Bhutan Trust Fund for Environmental Conservation
C2C	.....	Conflict to Coexistence
CF	.....	Community Forest/Community Forestry
CFMG	.....	Community Forest Management Group
CFO	.....	Chief Forestry Officer
cft	.....	Cubic foot/feet
CWD	.....	Coarse Wood Debris
DFO	.....	Divisional Forest Office
DGM	.....	Department of Geology and Mines
DoFPS	.....	Department of Forests and Park Services
ESS	.....	Environmental and Social Safeguards
FIRMS	.....	Forest Information Reporting and Monitoring System
FMCB	.....	Forest Management Code of Bhutan
FMID	.....	Forest Monitoring and Information Division
FMIS	.....	Forest Monitoring and Information Section
FMP	.....	Forest Management Plan
FMU	.....	Forest Management Unit
FNCA	.....	Forest and Nature Conservation Act
FNCRR	.....	Forest and Nature Conservation Rules & Regulations
FRPMD	.....	Forest Resources Planning and Management Division
FRPMS	.....	Forest Resources Planning and Management Section
G2C	.....	Government to Citizen
GBCL	.....	Green Bhutan Corporation Limited
GIMS	.....	Government Inventory Management System
GIS	.....	Geographic Information System
GLOF	.....	Glacier Lake Outburst Flood
GNH	.....	Gross National Happiness
GPS	.....	Global Positioning System
ha	.....	Hectare
HCVA	.....	High Conservation Value Area
HWC	.....	Human Wildlife Conflict
IUCN	.....	International Union for Conservation of Nature

JKSNRJigme Khesar Strict Nature Reserve
 KBAKey Biodiversity Area
 kmkilometer
 LEDSLow Emission Development Strategies
 LFMALocal Forest Management Area
 LFMPLocal Forest Management Plan
 LGLocal Government
 LULCLand Use and Land Cover
 M & EMonitoring and Evaluation
 M3Cubic meter
 maslMeter above sea level
 METT+Management Effectiveness Tracking Tool
 mmmillimeter
 MoENRMinistry of Energy and Natural Resources
 NAPNational Adaptation Plan
 NBSAPNational Biodiversity Strategy and Action Plan
 NCHMNational Center for Hydrology and Meteorology
 NCSNature Conservation Section
 NDC.....Nationally Determined Contribution
 NFINational Forestry Inventory
 no.Number
 NRDCLNatural Resources Development Corporation Limited
 NuNgultrum
 NWFPNonWood Forest Produce
 OFSOnline Forestry Services
 OP.....Operational Plan
 PAProtected Areas
 PFPrivate Forest
 PMCProfessional and Management Category
 PRAParticipatory Rural Appraisal
 PRL.....Private Registered Land
 RBARapid Biodiversity Assessment
 RBMRiver Bed Materials
 RGoBRoyal Government of Bhutan
 RNRRenewable Natural Resources
 SMARTSpatial Monitoring and Reporting Tool
 SOCSoil Organic Carbon
 sq. kmsquare kilometer
 SRFLState Reserved Forest Land
 TACTechnical Advisory Committee

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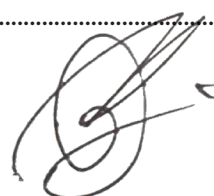
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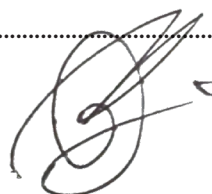


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Executive summary

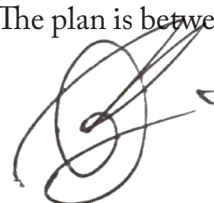
The Divisional Forest Office, Samtse was the first field division that was established along with the establishment of the Department of Forest in 1952. In the earlier decades the division was manned by Indian foresters on deputation due to shortage of national capacities. The administrative jurisdiction of the division corresponds to Samtse district boundary covering an area of 1,300.85 sq. km which extends from 26°43' to 27°18' latitude and 89°15' to 89°49' longitude. The division shares international borders with the Indian State of Sikkim and West Bengal in the west and south, respectively, Jigme Khesar Strict Nature Reserve (JKSNR) and some parts of Haa district in the north; and Chhukha district in the east.

The jurisdiction comprises 15 gewogs and is administratively divided into two Drungkhags; Tashicholing and Dorokha with one municipal area. With a population of 62,590, people are primarily dependent on agriculture as the main source of livelihood. Samtse and Tashicholing are the main urban centers with Pendeling (Gomtu) concentrated with industries. Similarly, the development of Norbugang industrial estate is in progress.

The division encompasses 78.75% of the total area under forest cover occupying an area of 99, 786.39 Ha dominated by subtropical, warm broadleaved, cool broadleaved forest, evergreen oak forest and small proportions of conifer species. It is home to 340 plant species (RBA, 2024), 371 species of birds, 120 insects, 43 mammals, 40 species of herpetofauna, 13 species of macroinvertebrates and 16 species of fishes. Additionally, the division has also demarcated 3 Key Biodiversity Areas (KBAs) and one High Conservation Value Area (HCVA) for the conservation of biodiversity.

The division faces challenges in striking a delicate balance between meeting the needs of the people and uplifting the economy while at the same time maintaining conservation integrity for the future. Activities such as opening of forest for power transmission lines, access roads and infrastructure development, land lease and replacement pose considerable challenges towards sustainable management. The division also has many mining and dredging activities along the river banks, especially concentrated along Diana, Damdum and Khanabarti rivers making significant contributions to the national economy. Furthermore, the demand for resources such as timber, firewood and NWFPs has increased pressure on the existing forest. Human wildlife conflict with species such as elephants, leopards, wild pigs cause significant threat to the peoples' livelihood.

The DFO management plan aims to build a climate resilient action plan that is not only in alignment with existing acts and policies but also details management prescriptions in addressing pertinent issues, threats and challenges in terms of forest resource management. A total estimated budget of Nu. 114 million will be required to implement the plan including management of HCV under the Division through 17 strategies and 72 activities. The development of the DFO management plan is a landmark achievement in itself as it is a first ever plan document prepared for a period of 10 years for a field division. The plan will guide the division in sustainable management of forest resources towards catering to the needs of the people and at same time to address impending challenges and building resilience towards various threats. The plan is between 2026 to 2035.



Key facts of DFO, Samtse

Sl. No.	Field Offices		
1	Divisional Forest Office	No.	1
2	Range Offices	No.	4
3	Beat Offices	No.	7
Sl. No.	Forest statistics		
1	Total Forest Area	ha	99,786.39
2	Forest Cover Percent	%	78.75
3	Broadleaved Forest	%	98.1
4	Conifer Forest	%	1.9
5	Basal area per hectare	m ² /ha	23.76
6	Growing stock per hectare	m ³	217.88
7	Carbon estimate per hectare (AGB, BGB, CWD, Litter & SOC)	t/ha	145.09
Protected Areas			
1	Key Biodiversity Areas	no.	3
2	High Conservation Value Area	no.	1
3	Recreational Area	no.	1
Sustainable Forest Management Regimes			
1	Total Community Forest	no.	66
2	Local Forest Management Area	no.	1
3	NWFP Groups	no.	2
4	Wood-based industries	no.	35



Chapter 1: Background

Rationale

Bhutan, in spite of being small in size is widely recognized around the world for environmental stewardship and is one of the only few carbon negative countries in the world. The intact and pristine forest resources are a testimony to the farsighted leadership of our forefathers and successive monarchs. Over the decades the focus has been shifted from protection towards conservation and sustainable management. Although scientific management of forest has long been practiced, it has become imperative than ever before in the light of climate change and its impacts. Today the threats of climate change loom over far and wide across the regions with an uncertain future. As Bhutan is located in the fragile mountainous ecosystem in the Himalayas, the consequences of climate change could be much severe. Article 5 of the Constitution of the Kingdom of Bhutan reflects commitment to ensure that, in order to conserve the country's natural resources and to prevent degradation of the ecosystem, a minimum of sixty percent of Bhutan's total land shall be maintained under forest cover for all time.

The Divisional Forest Offices (DFOs) are the custodian of forest resources in the Country and play a pivotal role in conservation and management of our forest resources. DFOs translate conservation policies into actions and commit towards not only catering the needs of the people but also in maintaining a minimum 60% forest cover for all times to come and to remain carbon neutral. To achieve sustainable forest management, scientific practices must be adopted by setting long term goals and objectives including plans to address threats and challenges. Therefore, the Divisional Forest Office (DFO) Management Plan is a very important document that will guide in prioritizing the plans and activities for the next 10 years to achieve the intended goals and objectives for the Division.

The Divisional Forest Office (DFO), Samtse faces several emerging challenges, such as forest degradation, pollution, solid waste management issues, and Human Wildlife Conflict (HWC), all of which require effective intervention to ensure the sustainable management of resources and the conservation of biodiversity and other environmental values. In addition, climate change poses a growing concern, as the Division's close proximity to the international border increases the risk of the spread of pests, diseases, and invasive species in the near future. Thus, a holistic DFO management plan is essential to guide the Division in strengthening preparedness and mobilizing resources to address these threats and other associated challenges.

1.1 History and Significance

1.1.1 Importance of Forests

As per Article 5 of the Constitution of the kingdom of Bhutan "Every Bhutanese is a trustee of the kingdom's natural resources and environment". The constitution mandates the Government to conserve and improve the environment and safeguard the country's biodiversity. It also aims to ensure sustainable development while promoting economic

and social development simultaneously. The Constitution of Bhutan requires the government to maintain a minimum of 60% of the country's land under perpetual forest cover. Bhutan is one of the few carbon negative countries in the world with its forest sequestering more carbon than what it actually emits.

Under the farsighted and visionary leadership, environmental conservation has always been a top priority in steering sustainable development. Bhutan is well known for conservation of forest and environment that has not only benefited the country but also in maintaining and preserving fragile ecosystems in the region. Indeed, Bhutan has received many accolades for environmental stewardship in the field of conservation. This has subsequently resulted in opening opportunities in terms of generating a green economy such as hydropower, promotion of high value ecotourism and preservation of its unique culture and tradition. However, with urbanization and the increase in population, the demand and exploitation of resources have increased at an unprecedented scale.

1.1.2 Overview of the sustainable forest management

As per the National Forest Policy (NFP) of Bhutan, 2011 the goal of managing Bhutan's forest resources shall be to produce a wide range of social, economic and environmental goods and services for the equitable benefit of all the citizens while ensuring sustainable management and conservation of biodiversity and natural environment. The policy aligns in fulfilling the Gross National Happiness (GNH) pillars of 'conservation of the natural environment'. The Department of Forests and Park Services (DoFPS) has the mandate to manage and conserve State Reserved Forest Land (SRFL) land through establishment of various management regimes such as Protected Areas (PAs), Biological Corridors (BCs), Community Forests (CFs), Local Forest Management Areas (LF-MAs), Working Scheme Areas, Watershed, Wetland and others under the Forest and Nature Conservation Act (FNCA) 2023. Currently there are 10 PAs, 9 BCs, 839 CFs, 73 LF-MAs and 21 FMUs in the country.

Divisional Forest Office, Samtse emphasizes on sustainable management of the forest and natural resources within the Dzongkhag and aims to achieve the goals by bringing a larger extent of area into different management regimes. The Division has currently established 66 CFs, 2 NWFP Groups and 1 LFMA. In addition, other management areas such as Key Biodiversity Area (KBA) and High Conservation Value Area (HCVA) are designated in the jurisdiction. In the past, forests along the foothills were harvested to meet the demands of local wood based industries. However over time, the growing human population across the border particularly near Samtse has exerted tremendous pressure on forest resources, leading to significant degradation of forest areas along the border. Some of the degraded areas inside have been brought under plantation through afforestation schemes by the Division in collaboration with erstwhile Dzongkhag Forestry Sector, Natural Resources Development Corporation Limited (NRDCL) and Green Bhutan Corporation Limited (GBCL). Additionally, recreational sites such as Sangacholing Recreational Area under Sangacholing Gewog, Bukay Mahakal Dham under Bukay CF in Samtse Gewog and Numlakha viewpoint are under strategic management of the Division.

One of the significant milestones of the Division includes the first ever record of a tiger from one of the camera stations in 2021. Similarly, the Division captured tiger images of two individuals from four camera stations in 2024. The Division is also home to some of

the rare and critically endangered plant species such as *Bazzania bhutanica* and *Paphiopedilum fairrieanum*. The sites of these species have been delineated as KBAs. Besides it, through the fund support of Bhutan Trust Fund for Environmental Conservation (BT-FEC) project, the Division successfully radio collared one elephant in Samtse to study migratory and movement patterns to mitigate human elephant conflict in 2022. In addition, the project has supported the construction of a new Range Office in Tashicholing Gewog. The Division has also participated in the nation-wide conduct of two National Forest Inventories in 2015 and 2022. As per the NFI Report 2023, Samtse has a forest cover of 78.75 %. Towards achievement of sustainable forest management DFO, Samtse has mapped the whole area of the jurisdiction into three functions namely protection, production and non-production areas during the plan period.

1.2 Policies and legislations

1.2.1 National Forest Policy, 2011

In order to keep up with the evolution of forest management concepts of the SRFL and the changing time, the National Forest Policy was brought into action in 2011. From providing “free access” to almost “no access” and then to “managed access”, the management of SRFL has undergone several transitions since 1957. The NFP 2011 requires scientific management approaches to all of Bhutan’s forest and biodiversity resources to achieve conservation goals and for a sustainable utilization that respects the cultural and spiritual values of the forests. The NFP 2011 is inclusive of local communities, aiming at enhancing the livelihood of the people depending on forests and resources through poverty reduction without compromising the constitutional mandate.

The policy, while stating about different management regimes, also has provisions on the forest-based industries and need for proper utilization and marketing in developing private sector and rural communities. Some of the main features of the policy include a science-based participatory approach to forest governance and sustainable forest management with emphasis on efficient and environment friendly technologies for value-addition and waste minimization.

1.2.2 Forest and Nature Conservation Act of Bhutan (1969, 1995 and 2023)

The Bhutan Forest Act, 1969 passed by the Royal Government of Bhutan (RGoB) is a milestone in committing to conservation. The Act nationalized “all land under which no person has acquired a permanent heritable and transferable right of use and occupancy” as forests. It further identified and provided directives regarding the forest rights, uses, royalties and penalties. The Act stipulated that at least 60% of the country shall remain forested at all times.

The Bhutan Forest Act 1969 was repealed by the FNCA of Bhutan 1995. It identified and outlined the requirement of a management plan for production and protection of forest and wildlife. The FNCA 1995 stipulated the Department to manage SRFL including CFs, protect and conserve wildlife, soil and water and related natural resources of Bhutan.

The revised act highlighted the need for community participation in the conservation plat-

form hence much emphasis was given to community and social forestry. The participation of community and individuals were encouraged to involve local stakeholders in the planning and conservation of the environment. The Act also provided the legal basis for defining management restrictions in the process of forest planning and function mapping.

The FNCA 1995 remained in use for almost 28 years until a revised Act known as the FNCA 2023 was passed. The new act recognizes the value of protection, conservation, and preservation of areas of natural landscape and cultural heritage of national importance; sustainable management of forest and conservation of flora, fauna, and natural resources as an integral conservation regime for sustainable development, and as mitigation and adaptation to the impacts of climate change. Furthermore, it upholds Bhutan's commitment as a member of the International Conventions and Treaties on ecological and biological diversity.

The current Act emphasizes on ensuring sustainable use of natural resources for the benefits of national, regional, and global communities by developing various management regimes and through an effective governance of the SRFL. In addition, the current Act also mandates the government to ensure 60% forest cover of the total land for all times to come.

1.2.3 Forest and Nature Conservation Rules and Regulations of Bhutan (2000, 2003, 2006, 2017, 2020, 2023, 2024)

To exercise the power and duties vested under FNCA 1995 rules were formulated at the start of the millennia known as the FNCR 2000 and to further accommodate a broader scope, certain aspects were incorporated in the revised rules of 2003 and later further revised in 2006. The FNCR 2006 issued authority and provisions for the preparation of management plans for PAs, Forest Management Units (FMUs), CFs, NWFPs, and Soil and Water conservation. In line with the provisions of NFP 2011, numerous amendments were made to the FNCR 2006 with changes in time. Furthermore, since 2010 the revised rule adopted allotment of rural timber as per the implementation of the G2C services program.

The last revision of FNCR 2006 was done in 2017 with adoption of FNCRR 2017 which incorporated all the amendments and the provision on the Rules on BCs 2007, which defined the protection status and prescription of the BC plan. The FNCRR 2017 also underwent numerous amendments with changes in the fishing provisions and the changes in forestry clearance. The FNCRR 2017 was also revised in 2023 to include all later amendments and in line with the FNCA 2023. The amended FNCRR 2024 introduced targeted refinements to the FNCRR 2023 to address implementation challenges, clarify procedures, and simplify processes, enhancing practicality and efficiency without altering the core conservation objectives.

1.2.4 Land Lease Rules and Regulations of Bhutan, 2018

The Land Lease Rules and Regulations of Bhutan 2018 implement the provision of the Land Act of Bhutan 2007 and the amendments of Rules and Regulations for Lease of Government Reserved Forest Land and Government Land, 2009. The Land Lease Rules and Regulations 2018 entail the requirement of forestry clearance for issuance of

lease of SRFL. Furthermore, it strongly discourages and restricts lease of land registered under government institutions and areas that are under different management namely designated Parks, Nature Reserves, PAs, BCs, Buffer Zones, CFs, Critical Watershed, Wetland, High Risk Zones, Nyes, religious sites and important monuments and Restricted Zones. However, the Secretariat can make exemptions for only those critical infrastructures of national importance and public need under only special circumstances as deemed relevant by it.

1.2.5 Biodiversity Act of Bhutan, 2003

The Biodiversity Act of Bhutan (BAB) 2003 provides for the conservation and sustainable utilization of biological resources and associated traditional knowledge and ensures distinctive protection of plant varieties. It also authorizes the implementation of the Access and Benefit-sharing regime to derive additional benefits in a fair and equitable manner. The BAB 2003 was later revised in 2022 in keeping with the Nagoya Protocol on access and benefit sharing. The Act recognizes the importance of rich biological diversity which has been protected by the wise and far-sighted leaderships, Bhutanese traditional beliefs, socio-cultural outlook, and the overarching development philosophy of GNH. Furthermore, the Act emphasizes on securing economic value of Bhutan's biological and genetic resources for national development and biodiversity conservation through sustainable use of biological and genetic resources, in research and development of products, compounds, and substances that have medicinal, industrial, agricultural, and other applications.

1.2.6 Land Act of Bhutan, 2007

The Land Act of Bhutan 2007 enables the leasing of state land for economic and various other activities. All Tsamdro (grazing) and Sokshing (forest land for collection of leaf litter) rights shall revert back to the State and convert to leasehold uses with management plans giving preference to previous rights holders.

1.2.7 National Environment Protection Act, 2007

The National Environment Protection Act 2007 provides for the establishment of an effective system to conserve and protect the environment through the National Environment Commission or its successors, designation of competent authorities and constitution of other advisory committees, so as to independently regulate and promote sustainable development in an equitable manner. The Act also calls for conservation and protection of wetlands, alpine regions, watersheds, and other vulnerable ecosystems in addition to the existing protected areas. Furthermore, it emphasizes on achieving sustainable development while not degrading the natural resources such as forest, water, air, biodiversity, soil, minerals and the overall integrity of the environment in the due process of development.

1.2.8 Waste Prevention and Management Act of Bhutan, 2009

The Waste Prevention and Management Act of Bhutan 2009 promotes reduction of waste volume and management of waste in an environmentally sound manner in the country through the 3 Rs approach (Reduce, Reuse and Recycle). The Act further identifies different agencies for regulation of waste in the country wherein it empowers the MoENR to ensure prevention and management of waste with respect to the agricultural sector, including livestock and forestry.

1.2.9 Climate Change Policy of the Kingdom Bhutan, 2020

Bhutan, a landlocked country in the Eastern Himalayas, is highly vulnerable to the impacts of climate change due to its fragile mountain ecosystems, dependence on climate-sensitive sectors (like agriculture, hydropower, and forestry), and limited adaptive capacity. Despite being a net carbon sink—absorbing more greenhouse gases than it emits—Bhutan faces increasing risks from climate-induced disasters such as glacial lake outburst floods (GLOFs), erratic rainfall, landslides, and droughts.

To address these challenges and align with its international commitments under the United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Agreement, Bhutan adopted the Climate Change Policy of Bhutan 2020. This policy provides a strategic framework for coordinated action on climate change mitigation and adaptation, while ensuring that development remains sustainable and resilient. It also provides strategic guidance to ensure that Bhutan remains carbon neutral and protects the wellbeing of the people by adapting to climate change efficiently and effectively. Additionally, the policy also aims to address challenges and opportunities such as international support in the form of finance, technology, capacity building, research and awareness arising from recent developments in the national and international arena of climate change, which will be critical in implementing climate actions. This policy also ensures meaningful participation of all relevant stakeholders in climate change actions in a coordinated and coherent manner with clear roles and responsibilities.

1.2.10 Nationally Determined Contribution, 2021

Bhutan's 2nd Nationally Determined Contribution (NDC) was officially launched on June 5, 2021, coinciding with World Environment Day and ahead of COP26. It reaffirms Bhutan's pledge to remain carbon neutral, and outlines enhanced mitigation measures via sector-specific Low Emission Development Strategies (LEDS) and updates to the National REDD+ Strategy and Action Plan. Bhutan's 2nd NDC advances LEDS across multiple sectors to decouple development from emissions. It also highlights key sector specific adaptation and mitigation measures and initiatives that will be taken by Bhutan. In presenting the second NDC, Bhutan maintains the commitment to remain carbon-neutral where emission of greenhouse gases will not exceed carbon sequestration by our forests and sinks as first pledged in 2009 and reaffirmed in the first NDC. At the same time, Bhutan calls on the international community to continue and enhance the support for Bhutan's efforts to mitigate and adapt to climate change. While Bhutan's first NDC covered broad priority action areas, the second NDC further enhances our actions by elaborating priority mitigation actions in the form of LEDS, roadmaps and strategies.

1.2.11 National Adaption Plan of the Kingdom of Bhutan, 2023

The National Adaptation Plan (NAP) process was initiated by Bhutan in line with the UNFCCC Cancun Adaptation Framework (2010), which called on countries to formulate medium- and long-term strategies to address climate change impacts. While Bhutan had earlier prepared two National Adaptation Programmes of Action (NAPAs) focused on urgent and immediate needs, the NAP aims to provide a comprehensive, long-term framework for integrating climate change adaptation into national planning and development.

Bhutan began developing its NAP with support from the Green Climate Fund (GCF), the UNDP, and other partners around 2019. The objective is to identify, prioritize, and mainstream adaptation needs across key sectors such as agriculture, forestry, water resources, health, energy, and infrastructure, ensuring that climate resilience is embedded within the country's socio-economic development guided by the philosophy of GNH. The NAP process also emphasizes strengthening institutional coordination, scientific data and climate information systems, and financing mechanisms to support sectoral adaptation. Importantly, it helps Bhutan align national adaptation planning with its Climate Change Policy (2020) and the Second Nationally Determined Contribution (2021).

1.2.12 Water Act of Bhutan, 2011

The Water Act of Bhutan, 2011 provides the legal framework for the protection, conservation, development, and sustainable management of water resources in Bhutan. The Act recognizes water as a public trust and a vital national resource, ensuring its equitable and sustainable use for present and future generations. The Act establishes principles for integrated water resources management, regulates water abstraction and pollution, and sets out institutional roles for water governance at national and local levels. It also provides for the protection of watersheds, water sources, and water quality, while promoting efficient water use, conflict resolution, and environmental sustainability in line with Bhutan's development and conservation priorities.

1.2.13 Mines and Mineral Act of Bhutan, 1995 and Regulation

The Mines and Minerals Act of 1995 provide the legal framework for the exploration, extraction, management, and conservation of mineral resources in Bhutan. It recognizes minerals as a state-owned resource and aims to ensure their sustainable utilization while safeguarding the environment and supporting national development. The Act establishes licensing and permit systems for prospecting, mining, and processing of minerals, defines the roles and responsibilities of regulatory authorities, and sets out procedures for revenue collection, royalty payments, and enforcement of compliance. The Mines and Minerals Regulations operationalize the Act by detailing application procedures, safety and environmental standards, reporting requirements, and penalties for violations. Together, the Act and its Regulations aim to balance economic development, environmental protection, and responsible resource management in Bhutan.

1.2.14 Economic Development Policy of Bhutan 2016

The Economic Development Policy of Bhutan outlines the nation's strategy to achieve sustainable, inclusive, and equitable economic growth while maintaining the country's unique cultural heritage and environmental conservation priorities. Rooted in the philosophy of GNH, the policy emphasizes that economic development must contribute not only to income generation but also to social well-being and ecological balance. Key objectives include diversifying the economy, promoting private sector development and entrepreneurship, fostering rural development, enhancing human capital and skills, and ensuring sustainable use of natural resources. The policy also encourages investment in infrastructure, innovation, and trade, while prioritizing environmental stewardship and

social equity. Overall, it provides a roadmap for Bhutan to achieve balanced economic growth that aligns with its development philosophy and long-term national goals.

1.2.15 National Biodiversity Strategy and Action Plan of Bhutan, 2025

The National Biodiversity Strategy and Action Plan (NBSAP) of Bhutan is a strategic framework aimed at conserving biodiversity, promoting sustainable use of biological resources, and ensuring equitable benefit-sharing. Aligned with the Convention on Biological Diversity (CBD), the NBSAP integrates Bhutan's development priorities, traditional knowledge, and conservation commitments into a coherent national plan.

The strategy focuses on ecosystem and species conservation, habitat restoration, and protection of genetic resources, while emphasizing community participation and mainstreaming biodiversity into sectoral policies such as agriculture, forestry, and tourism. The Action Plan outlines priority activities, targets, and institutional responsibilities to achieve these goals, ensuring that biodiversity contributes to both environmental sustainability and socio-economic development in Bhutan.

1.3 Purpose and Objectives

1.3.1 Vision

Contribute to a Sustainable Forest Ecosystems for the People, Nature and Economy.

1.3.2 Mission

Contribute to conserve and manage Bhutan's natural resources through the adoption of innovative technologies to ensure socio-economic and environmental well-being, while maintaining a minimum 60% of the land under forest cover for all times to come.

1.3.3 Purpose

The vision and mission of the DoFPS are set on the basis of constitutional mandates and the requirements of FNCA, 2023. The vision and mission of the Department serve as a guiding principle for all the DFOs and the Parks. To achieve the departmental vision and missions, activities such as periodic assessments of forests resources (NFIs), establishment and operation of different management regimes (LFMA, CF, PF and NWFP) applying principles of scientific management considering health and ecosystem, scientific thinning and sanitation operations are incorporated in the DFO management plan which will ensure sustainable management and utilization of the forest resources.

Chapter 2:

Current status

2.1 Boundary and Area

Divisional Forest Office, Samtse is situated in the south-western part of Bhutan extending from 26°43' to 27°18' latitude and 89°15' to 89°49' longitude. The Division covers an area of 1,300.85 sq. km with the elevation ranging between 200 to 4,400 meters above sea level. The Division shares borders with the Indian States of Sikkim and West Bengal in the west and south, and in the north, it shares borders with JKSNR and parts of Haa district and Chhukha district in the east.

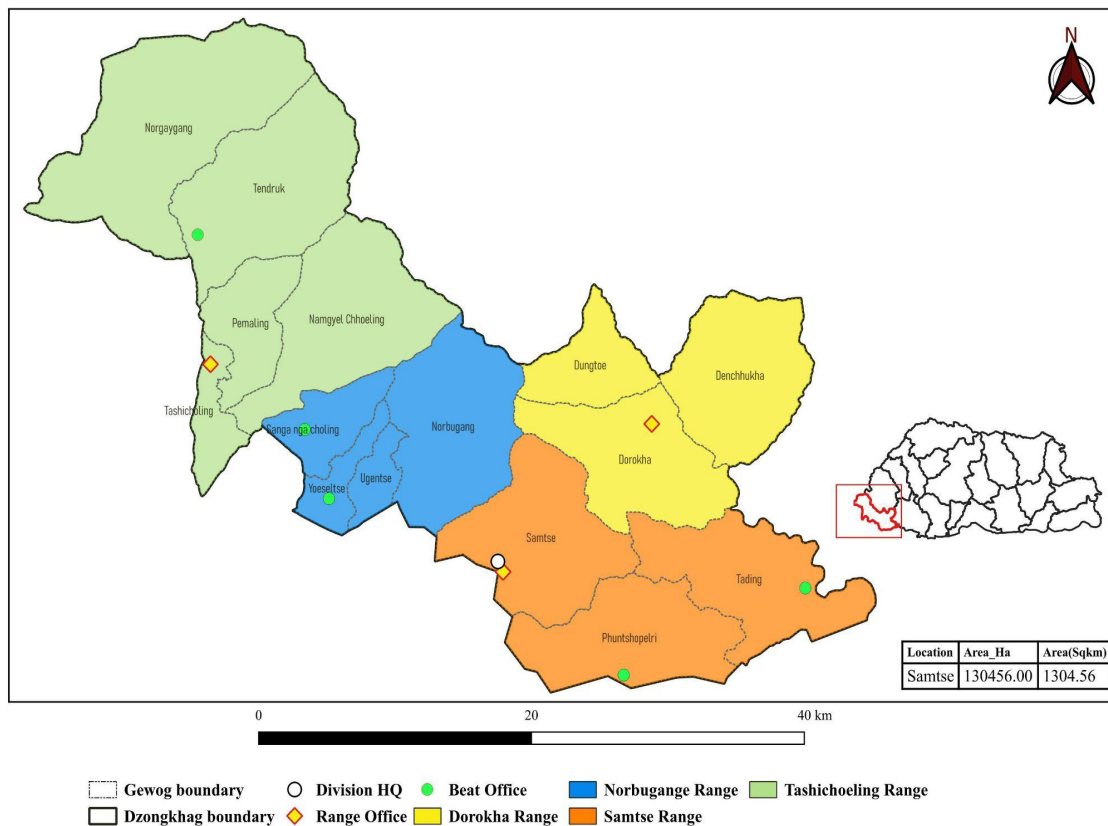


Figure 1: Map of Divisional Forest Office, Samtse showing jurisdictional offices

According to the land use and land cover map of Bhutan 2016, DFO, Samtse is mostly dominated by forest, with 80.53% of land under forest cover. The major forest types include subtropical, warm broadleaved, and cool broadleaved forests. The general topography of the Division is marked by flood plains along the border that becomes more rugged on ascending to the higher elevation with characteristic changes in the vegetation and climate. The Division is also home to rich biodiversity, including some of the rare

and endangered species. Agriculture covers 11.39 % of the land, boasting the highest amongst all Dzongkhags as per LULC 2016. The farmers mainly cultivate rice, maize, ginger, wheat, and millet with emphasis on cash crops such as oranges, areca nuts, cardamom, and bananas. Other categories of land cover include 4.35% of shrub-land indicating transitional areas between forest and open areas. The jurisdiction also has 1.64% of water bodies with major rivers such as Amo Chu, Diana, and Jaldakha and other rivers such as Damdum, Sukreti, Sukti, Pugli, Jitti, Kuchi Diana, Chumpathang, Khanabarti and Lori khola flowing through the district.

Furthermore, the Division has built up areas of 0.24% comprising rural and urban settlements, roads, infrastructures such as schools, offices, institutions etc. and non-build up areas of 0.12 % comprising mainly of mines, stone quarries and dredging activities. The other area coverage includes 0.19 % of meadows, 0.48 % of landslides, 0.01 % of Alpine scrub, and 0.01 % of rocky outcrops.

As depicted in Figure 2, most of the anthropogenic activities are concentrated in the southern belt of the jurisdiction. This is attributed to the warm and fertile land and easy accessibility. Figure 2 also shows various land usage categories under the Division and the overall percentage of coverage under each category.

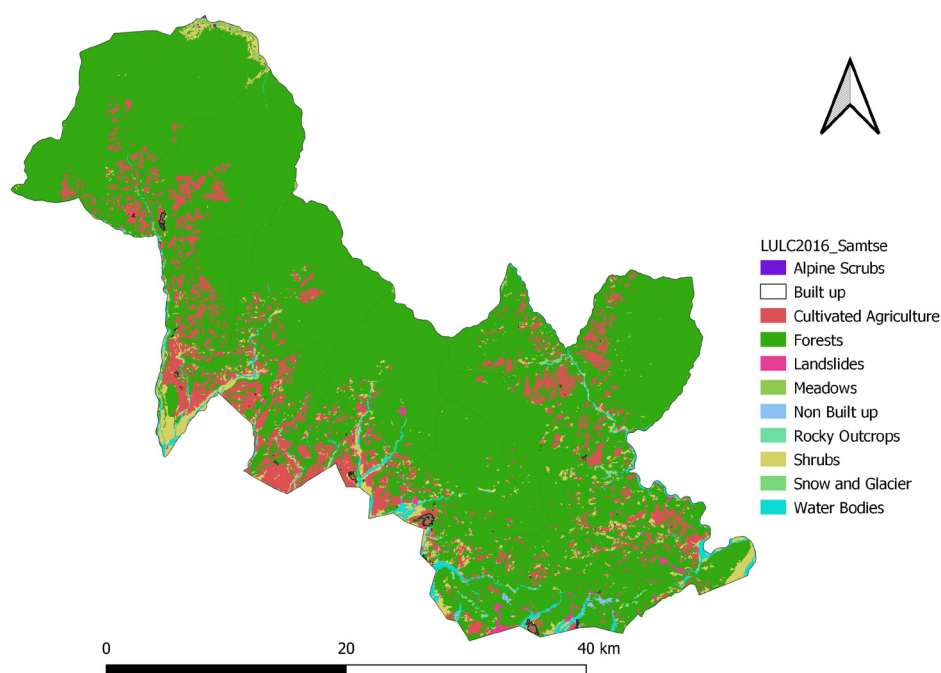


Figure 2: Land use and Land Cover Map of Divisional Forest Office, Samtse

2.2 Administration

2.2.1 Administrative set up

Divisional Forest Office, Samtse is one of the oldest field divisions that was established along with the establishment of the department in 1952. During its inception period and until the early 1980s, the department was manned by foresters from India on deputation

in the absence of national capacities. The first Bhutanese Director to lead the department was Late Lyonpo Chenkyab Dorji from 1983-1985. The division was headed by Indian officers on deputation in the early three decades of its establishment with Mr. S. Sittling as the first DFO and Mr. R. C. Joshi was the seventh and last DFO who headed the division on deputation from India. Mr. Tshering Tashi took charge as the first Bhutanese DFO of Divisional Forest Office, Samtse in 1982. Mr. Kuenley Gyeltshen is the incumbent and 21st chief of the Division.

The Division headquarter is located at the heart of Samtse town at Litchibari. The Division headquarter consist of administrative and technical sections. The technical section comprises three classifications: Forest Resources Planning and Management Section (FRPMS), Forest Monitoring and Information Section (FMIS) and Nature Conservation Section (NCS). The diagrammatic representation of the organizational structure of the Division office is shown in Figure 3.

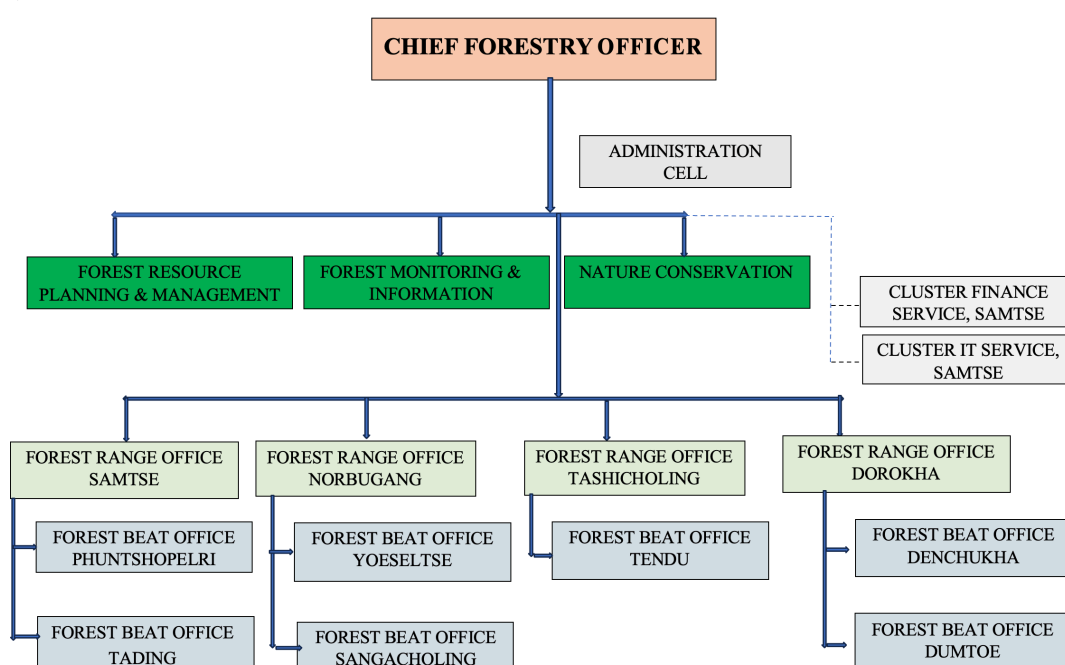


Figure 3: Organogram of the Division

At the field level, the Division is further divided into four Range Offices, namely Samtse, Norbugang, Tashicholing and Dorokha Range, headed by a Range Officer. For the ease of service delivery, the Division has seven Beat Offices; Phuntshapelri and Tading under Samtse Range, Yoeseltse and Sangacholing under Norbugang Range, Denchukha and Dumtoe under Dorokha Range and Tendruk under Tashicholing Range.

Samtse Range is one of the oldest offices under the Division covering three Gewogs namely; Samtse, Tading and Phuentshopelri with relatively huge population and many developmental activities within the jurisdiction. Activities such as mining, dredging, and stone quarry are mainly concentrated within this range area. Major urban areas such as Samtse and Gomtu towns are also located under the range jurisdiction.

Initially the Range headquarter of Norbugang Range was established at Yoeseltse in the early 1970s. However, in the early 1990s, the office was shifted to its current location at Norbugang Gewog and the erstwhile Yoeseltse Range was downgraded to Beat Office. The existing Range Office at Norbugang was established in 2007 and it caters services to four Gewogs: Norbugang, Ugyentse, Yoeseltse, and Sangacholing. The Range is characterized by the presence of Teak, Sal and Agarwood plantations. The Sangacholing recreational area at Sangacholing Gewog has high potential to develop into an ecotourism destination. The boundaries of the Range jurisdiction also share porous borders with India with occasional incidents of illegal activities along the border. The Range area can be entered and exited through Jitti border checkpoint located at Sangacholing Gewog.

Tashicholing Range was established in the 1970s. The range looks after Norgaygang, Tendruk, Pemaling, Tashicholing and Namgaycholing Gewogs. The range jurisdiction overlaps with the area of Tashicholing Drungkhag. Some of the major urban centers under the jurisdiction include Tendruk and Tashicholing towns. The Gyalsung academy at Jamtsholing is also located within Tashicholing Range. Due to the vast area of the Range, there is a need to establish a new beat office at Norgaygang.

Dorokha Range covers three Gewogs, namely; Dophuchen, Dumtoe and Denchukha. The current Range Office was constructed in the year 2014. The range is situated at a relatively higher elevation and it is also home to the Lhop community with its distinctive culture and tradition. River Amo chu flows through range jurisdiction and has very high potential for the development of ecotourism and promotion of NWFPs management. The range jurisdiction shares a border with Haa district in the north and Chhukha district in the east.

Table 1: Location and area coverage of field offices under DFO, Samtse

Sl no.	Name	Gewog	Year of Establishment	Latitude	Longitude	Area (sq. km)
1	Divisional Forest Office, Samtse	Samtse	1952	26.89897	89.095252	1,300.85
2	Dorokha Range Office	Dophuchen	1985	26.99475	89.208718	256.46
3	Norbugang Range Office	Norbugang	1975	26.93538	89.0328	191.42
4	Samtse Range Office	Samtse	1952	26.891678	89.099072	326.65
5	Tashicholing Range Office	Tashicholing	1980	27.036205	88.88328	525.30
6	Denchukha Beat Office	Denchukha	2022	27.022015	89.236948	104.03
7	Dumtoe Beat Office	Dumtoe	2022	27.043807	89.17803	48.27
8	Phuntshoperli Beat Office	Phuntshoperli	1980	26.821407	89.226085	102.45
9	Sangacholing Beat Office	Sangacholing	2007	26.990778	88.952886	38.25
10	Tading Beat Office	Tading	1980s	26.880675	89.322042	108.68
11	Tendruk Beat Office	Tendruk	1997	27.126338	88.874008	319.92
12	Yoeseltse Beat Office	Yoeseltse	1975	26.942814	88.97044	39.60

2.2.2 Mandates

The Division is mandated to sustainably manage and conserve forest and wildlife resources to support socio-economic development while maintaining ecological integrity. The Office is responsible for implementing scientific and community-based forest management, facilitating forest resource utilization and SRFL services through Online Forestry Services(OFS), restoring degraded forest landscapes and sustainable management of forest.

The Division also manages wildlife outside PA. It ensures effective conservation of biodiversity, wetlands, and wildlife habitats. Law enforcement and anti-poaching is one important mandate of the Division and it is done through SMART patrolling that collects information on illegal activities, wildlife poaching, biodiversity etc. that is used in planning and decision making. The Division also delivers efficient Government-to-Citizen(G2C) forestry services, supports research, monitoring, and information dissemination, and promotes community livelihoods and nature-based ecotourism in line with national policies and international commitments. Thus, in order to carry out the functions and mandates the division has three main Sections, Forest Resource Planning and Management Section, Forest Monitoring and information Section, Nature Conservation Section along with an Administrative Cell (Figure 3) with clear mandates, roles and responsibility.

2.2.2.1 Forest Resources Planning and Management Section (FRPMS)

The FRPMS is responsible for planning and managing the SRFL under different forest management regimes as per FNCRR, 2023. The Section overlooks forest resource planning, effective utilization and management of pests and diseases including Forest Fire control. Besides the section is also mandated to perform any other duties assigned by the management in the interest of the Division.

I. Forest Resource Planning

1. Resource mapping, planning and assessment in the Division for CF, NFI, Scientific Thinning Area, PF, NWFP & LFMA
2. Plan silvicultural operation and extraction of timbers for Rural, Commercial, Institutional and Thromde
3. Provide technical support to Range Offices in resource assessment, plan writing and seeking approval from the Department for CF, PFs and NWFP groups.
4. Plan Annual Work Plan for CFs and NWFP groups in line with the CFMP.
5. Plan annual plantation and nursery activities in the Division and coordinate in the implementation of the annual work plan including records maintenance.
6. Plan and coordinate landscaping and beautification of the compounds.
7. Plan and coordinate the Forest Extension services such as awareness, meetings, promotion of forestry services.

II. Forest Resource Utilization

1. Coordinate in seeking approvals from the Department for any silvicultural operations, extraction areas and LFMPs including scientific thinning.
2. Assist management in processing approval for adhoc timber extraction and other forest produce.
3. Coordinate in processing permits for timber allocation , disposal and utilization.
4. Facilitate the registration of Wood-based Industries and monitoring their activities
5. Non-Wood Forest Produce Allocation and Utilization
6. Community Based Forest Enterprise establishment through planning and monitoring of operations

III Forest Fire and Pest Management

1. Plan and conduct Surveillance on Forest Pest and Diseases in the division in coordination with the field offices
2. Lead Forest Pest and Disease management and control
3. Coordinate implementation of Gewog and Dzongkhag Forest Fire Management Plans.
4. Coordinate and conduct awareness and advocacy on forest fire and pest management.
5. Coordinate procurement of forest fire-fighting equipment

2.2.2.2 Forest Monitoring and Information Section

The FMIS under DFO, Samtse is mandated to ensure regular and periodic monitoring of forestry programs while providing accurate and reliable data to support evidence-based planning, decision-making, and sustainable management of forest resources. To ensure operational efficiency and contribute to the Department's mission, vision and planned programmes, FMIS is mandated with the following activities of the division.

I. Forestry Services

1. FMIS is responsible for coordinating the processing and approval of Forestry Service of the Division
2. FMIS is responsible for processing and approval of all the applications in OFS.
3. FMIS is responsible for processing and approving the G2C services through the G2C portal.

II. Information and Data Management

1. FMIS is responsible for data management through Forest Information Monitoring System (FIRMS).
2. Should also coordinate with progress reporting activities of the Division.
3. Coordinating publications and information dissemination activities.
4. Manage and maintain Spatial Data of the Division.

III. Forest Enforcement

FMIS is responsible for Enforcement of FNCA 2023 through implementation of FN-CRR 2023 through:

1. Coordinate protection and surveillance system
2. Coordinate SMART Patrolling and publish periodic reports
3. Coordinate the monitoring of illegal wildlife and timber trade
4. Maintain records of forest offence and cases

IV Forest Monitoring & Evaluation

FMIS is responsible for coordinating the Monitoring and Evaluation of forest management regimes under the division

1. Coordinate annual Monitoring of Forest Management regimes
2. Coordinate mid-term Monitoring & Evaluation of forest management regimes
3. Coordinate final Monitoring & Evaluation of forest management regimes

V Online systems management

1. Manage all the systems under the Department (OFS, G2C, and FIRMS)

VI Periodic inventories of forests

1. Coordinate activities related to inventories of forests (NFI)

2.2.2.3 Nature Conservation Section

The NCS is responsible for promoting Flora and Fauna Conservation in the Division and providing the technical backstopping related to protection and conservation of wild flora and fauna to the field offices. The NCS is custodian of the DFO Management Plan of the Division and ensures implementation of the plan. The core function of the NCS is to carry out the species monitoring and conservation activities to improve species diversity and population to manage the balanced eco-system. Thus, the section is mandated to carry out the following activities.

I. Divisional Forest Office Management Plan

1. Providing technical guidance/assistance to the management and field offices in implementation of the plan
2. Ensure annual activities are budgeted and included in Annual Work Plan
3. Monitoring the HCVA periodically through survey and research
4. Monitoring KBA and submit report periodically through survey and research
5. Monitoring Biodiversity Monitoring Grids (BMG) and submit report periodically through survey and research

II. Species Conservation and Monitoring

1. Wildlife habitat management through creation of grassland, waterholes and mineral licks
2. Monitor the species population through periodic surveys.
3. Implement the Conflict to Co-existence(C2C) Strategy to minimize HWC and promote co-existence
4. Conduct wildlife rescue operation and ensure transit management until rehabilitated or handed over to nearby Wildlife Rescue and Rehabilitation Center
5. Process and maintain records of Research Permit in the Division

III. Integrated Conservation Development

The improvement of people's livelihood is most important for successful conservation and the section is mandated to carry out the Integrated Conservation Activities.

1. Promotion of nature-based recreation area and wildlife-tourism for rural livelihood improvement.
2. Create awareness on conservation and environment education.
3. Develop strategies for mitigation of HWC management of those wildlife species that comes in conflict.
4. Coordinate and provide rapid response to the HWC incidences in and around the division.

2.2.2.4 Administrative and store cell

The Administrative Cell of the division assists the management in providing comprehensive administrative, human resource, store, and accounts-related support to ensure the smooth and efficient functioning of the Division. The Section works under the supervision of the management and in close coordination with all sections. The key responsibilities of Administrative Assistant of the Division are as follows.

I. General Administration

1. Provide administrative support for the day-to-day operations of the Division.
2. Assist the Management in implementing administrative decisions, directives, and instructions.
3. Prepare, process, and maintain official correspondence, circulars, office orders, and notifications.
4. Maintain proper filing systems and records in both physical and electronic formats.
5. Coordinate and organize official events and act as Divisional protocol officer

II. Human Resource and Personnel Management

1. Maintain and update staff records, personal files, and service-related documents.
2. Assist in maintaining attendance and leave records in accordance with Bhutan Civil Service Rules.

3. Assist the management in induction, transfer, and separation-related administrative processes.
4. Management of the ESP and GSP under the Division.

III. Procurement, Store and Asset Management (GIMS)

1. Coordinate in procurement and supply of goods and services as per government procurement rules.
2. Coordinate tendering, quotation, and auction processes in collaboration with relevant committees.
3. Maintain inventory records in Government Inventory Management System (GIMS)
4. Ensure proper custody, issuance, and disposal of office assets.
5. Coordinate construction-related administrative processes and registration requirements.
6. Perform any other duties assigned by the Management in the interest of the Division.

IV. Management of online HR systems

1. The section is responsible in managing the online HR systems (MaxRCSC, ZeST,)

2.2.3 Human Resources

The total strength of the staff under the Division stands to a count of 75 heads with a total of 61 technical staff and 14 non-technical staff as shown in Table 2 as of June 2025.

Table 2: Overall staff strength of the Division

Name of Office	Technical staff (Nos.)	Non-Technical (Nos.)
Division HQ	5	6 (2 drivers, 3 ESP and 1 Adm. Assistant)
Samtse Range	24	3 (ESP)
Tashicholing	9	2 (ESP)
Norbugang	17 (excluding 1 deputation)	2 (ESP)
Dorokha	6 (excluding 1 EOL)	1 (ESP)
Total	61	14

In the Professional Management Category (PMC), the Division has a total of seven staff, five in the Division and one each at Tashicholing and Samtse Range Office respectively and the other two Ranges are led by Supervisory and support (SSC), Forest Rangers. The five personnel (CFO and three Section Heads, including one on probation) are based at the Division headquarter steering the overall targets and mandates of DFO, Samtse. The strategic planning, budgeting, reporting, data compilation, including handling of projects and correspondence with external agencies falls under the purview of Division head office. The Division headquarter is supported by two PMC officers based at Samtse and Tashicholing Range Offices. Other staff categories under the Division includes 16 Senior Supervisor (SS) level staff and 48 Supervisor (S) level staff working with dedication and integrity under various field offices.

The field staff are mainly engaged with works such as land inspection and assessment for issuance of forestry clearance, marking of timber, conduct of SMART patrol to curb illegal activities, responding to human wildlife cases, periodic monitoring of activities such as CFs, NWFPs, LFMA, and plantations. One of the main mandates of the Division is catering the needs of forestry services to the public. The field offices such as the Range and Beat are indeed the immediate centers for public service delivery. The effort and output of field offices help in achieving the section target which finally contributes to achieving Divisional Annual Work Plan (AWP) targets. The Division is also supported by one S-category ADM, two O category staff (drivers) and 11 ESPs.

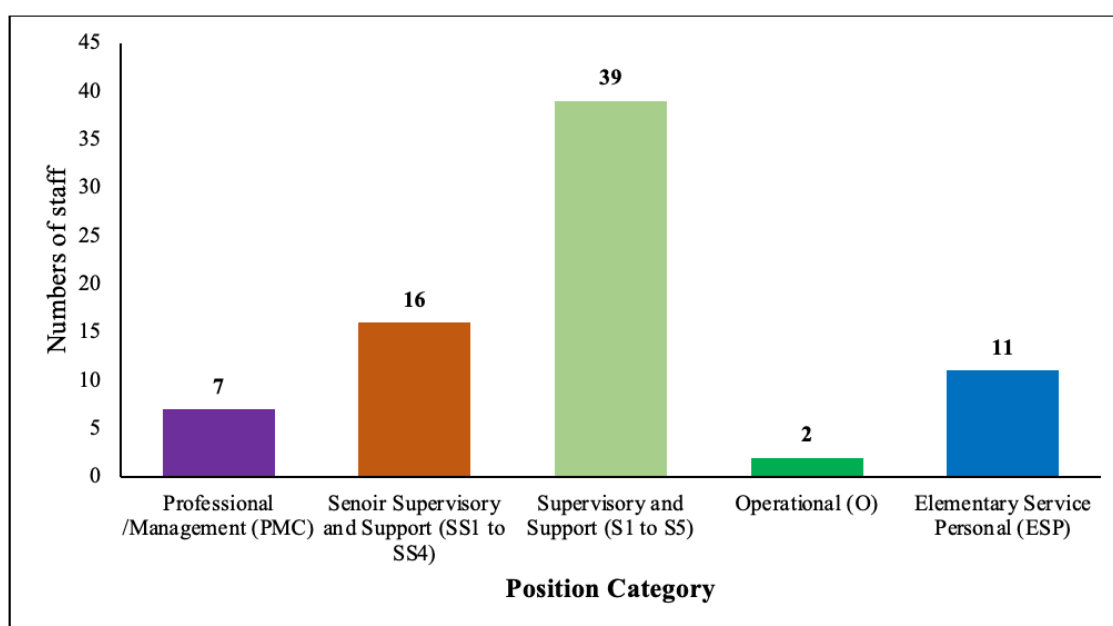


Figure 4: Staff composition under different position categories under the Division

The main emphasis of the Division is to provide services to the public with utmost efficiency and professionalism. Some of the common services catered by the division are; issuance of forestry clearances, processing and marking of RHBT and firewood, facilitation on removal of timber and NWFPs from Private Registered Land (PRL). In the year 2024 alone, the Division had issued 307 FCs for various purposes such as stone quarry, land exchange, satshab (substitute land), and roads, approved 1,36,580.85 cft of timber for both rural and commercial purposes, provided 2,05,004.21 cft of firewood for rural and 1,93,108.98 cft of firewood for commercial purposes and facilitated 405 of applications for removal of forest produce from PRL indicating significant people availing forestry services. Furthermore, the Division is also involved in carrying out budgeted activities as per the annual work plan in an effort to achieve sustainable forest management and to ensure conservation. As Samtse is being identified as a prospective district for development of industries especially in Norbugang area and with the establishment of Gyalsung academy in Tashicholing, the division has seen an increased number of activities requiring diligent attention. In addition to these activities, the division is also frequented by occurrences of HWC especially in the form of human-elephant conflict, leopard, wild pigs, gaur, Himalayan black bear and monkey incidents on a regular basis. The Division is also often confronted with outbreaks of zoonotic diseases which spreads

from wildlife to livestock owing to the close proximity to the Indian border posing a major concern and threat to the management and the communities.



Figure 5: View of Norbugang Industrial estate

The current working strength of 61 technical staff is observed to be a shortage under the Division. This is further reflected in the report of Organizational Development Exercise which recommends 74 technical staff under the division and not having the full capacity of staff is becoming a challenge to the field offices as they face shortages while catering to all the mandated tasks. The need for staff is most crucial especially during heavy service delivery often facing challenges during winter. Ideally, a minimum of five staff is desired for the Beat Office for its smooth operation. Similar issues can be seen in all the other field offices.

The staff also face challenges in terms of coping with changes in the system due to continuous upgrades and improvements. Constant capacity building programs need to be in place to address this issue and challenges. Furthermore, shortage of dedicated pool vehicles across field offices significantly hinders efficient and timely delivery of services especially in emergency situations such as responding to HWC and wildlife rescue operations.

Despite these issues and challenges, the management has put forth its best efforts to cater to the needs for sustainable management of resources. Moreover, due to close proximity to the Indian border, close ties are well maintained with the Indian counterparts and benefits through meaningful exchanges.

2.2.4 Infrastructure

Office structures

Divisional Forest Office, Samtse has a total of eleven office structures under its jurisdiction. Though the Division was established in the year 1952, the office was shifted to the current location at Litchibari in Samtse in the early 2000. The head office has a two-story building that was established in 2004 which was constructed 20 years ago and is in good condition with occasional maintenance carried out over the years. The recent maintenance work was carried out in 2024 replacing old wooden window frames, color coating the CGI roof, repainting works and replacement of roof structures.

The Range office at Samtse was established in the early 1950s along with the establishment of the Department. As the office structure is in poor and dilapidated condition modest maintenance works have been carried out with need to reconstruct if budget is made available.

The most recent office constructed is the Phuntshopelri BO in 2026. The office has all the amenities and it is in the best conditions, catering to the needs of people under the Gewogs.

Similarly, the Range Offices at Dorokha and Norbugang are also in good condition with regular maintenance. The Division has currently four Range Offices and seven Beat offices. The two Beat Offices of Dorokha Range have no separate structures to date though they have a protocol to work as separate Beat Offices as per official mandates.

The management has carried out routine maintenance of the existing Beat Offices of Tading, Phuntshopelri, Yoeseltse, Sangacholing, and Tendruk with available maintenance budget obtained and also through initiatives of the staff. However, major maintenance and restructuring are required for most of the Beat Offices. The Beat Office at Yoeseltse has undergone maintenance in 2024 and needs to be upgraded to Range Office for spacious compound from Norbugang area and requires maintenance for both offices. Further, there is no office structure for the Beat Office at Dumtoe and Denchukha.

Table 3: Inventory of office buildings under DFO, Samtse

Name of building	Building Type	Year of construction	Remarks
Divisional Forest Office	Double storey RCC building	2004-2005	Good There is a need for conference hall (50 head capacity) and reconstruction of forest transit camp
Samtse Range Office	Bungalow type brick building with CGI sheet roofing	1965-1966	Poor The office needs new office construction similar to the design of the Tashicholing Range office. There is also a requirement of compound fencing, and modeling the old structure as a transit camp.
Tashicholing Range Office	Single story RCC bungalow with CGI sheet roofing	2021-2022	Excellent Restructuring of the old staff quarter to transit camp is required for the office.

Norbugang Range Office	Single storey bricks wall with CGI sheet roofing double unit	2005-2006	Good There is a need for major renovation with an additional conference hall.
Dorokha Range Office	RCC bungalow with CGI sheet roofing single unit	2013-2014	A need for relocation of office to a new compound with a compound fencing and an improved approach road. The old structure can be used as a transit camp.
Phuntshopelri Beat Office	Permanent Brick Bungalow type double unit	2016-2017	Good New office constructed with fund support from SMCL.
Tading Beat Office	Permanent Brick Building double unit	2015-2016	Good Major renovation and extension is required with a compound fencing.
Yoeseltse Beat Office	Brick building with CGI sheet roofing single unit	1958-1959	Good This structure is now converted to office after major renovation in 2024
Sangacholing Beat Office	RCC bungalow with CGI roofing double unit	2006-2007	Good Relocation and new construction is required
Tendu Beat Office	Bungalow type	1998-1999	Obsolete Relocation and new construction is required
Dumtoe Beat Office	No structure	NA	There is a need for a new structure.
Denchuka Beat Office	No structure	NA	There is a need for a new structure.

Housing structures

Currently, the Division has a total of twenty-six staff quarters of which fifteen are under Samtse Range colony, seven under Norbugang, one under Dorokha and three under Tashicholing. The housing structures under all the Ranges require major maintenance of which priority needs to be given to Samtse Range. The housing structures at other Ranges also require major renovation.

Previously all the residential structures under Samtse Range area were under DoFPS. However, later some were handed over to National Housing Development Corporation Limited (NHDCL) including the CFO's residence. While the management had discussed with NHDCL and requested for prioritizing the allotment to forestry staff given the nature and sensitivity of work, there is no guarantee that it will be honored in future. Generally, the residential quarters in the field are inadequate for the staff and the existing facility needs major renovations given the old age and insufficient maintenance budgets in the past.

Table 4: Inventory of residential building under DFO, Samtse

Name of residential building	Building Type	Quantity (Nos.)	Year of construction	Remarks
Samtse Range	Brick bungalow with CGI sheet roofing Class III Qtr. (double unit)	1	1965-66 (1 unit)	Poor Samtse Range Colony The structures are quite old with leakage of rain water from the roof and ceiling
	Brick building with CGI sheet roofing Class IV qtr. (double unit)	2	1965-66 (2 units) 1967-68 (1 unit)	Poor Samtse Range Colony The structures are quite old with leakage of rain water from the roof and ceiling
	Class III Qtr. six nos (Single unit) One unit was established later	7	1965-66 (1 unit) 1965-67 (3 units) 1965-68 (2 units)	Poor Samtse Range Colony The structures are quite old with leakage of rain water from the roof and ceiling
	Brick building with CGI sheet roofing class III qtr. (Four unit)	1	1998	Poor Samtse Range Colony The structures are quite old with leakage of rain water from the roof and ceiling
	Permanent Brick Building Bangalow type single unit		1960	Poor Above Lower Secondary School The structures are quite old with leakage of rain water from the roof and ceiling
Phuentshopelri Beat	Permanent Brick Bangalow type double unit	1	2016-17	Office-and-Residence
	Permanent Brick Building (double unit)	2	1965-66	Obsolete
Tading Beat	Double unit stone wall structure	1	Early 2000	Surrendered both land and structure and relocated to the current site.
Norbugang Range	Single storey bricks wall with CGI sheet roofing double unit	1	2005-06	Office-cum-Residence
	Brick single storey 2 nos	1	1960 1967-68	Poor condition Currently occupied by staff
	Wooden wall building (store)	1	1960	Poor Used as store

Yoeseltse Beat	Brick building with CGI sheet roofing single unit	1	1958-59	Obsolete
	RCC bungalow with CGI sheet roofing	1	2014-2015	Good The structure was used as an office earlier, however it was converted to a transit camp in 2024 after major maintenance
	Brick building with CGI sheet roofing single unit	1	1958-59	Obsolete (Store)
Sangacholing Beat	Brick building with CGI sheet roofing double unit	1	2006-2007	Poor Cracked walls and floor Office cum residence
Tashicholing Range	Single storey bricks wall with CGI sheet roofing double unit	1	2004-05	Poor Needs major renovation Currently used as residential Qtr.
	Brick wall with CGI sheet roofing	1	1965-66	Obsolete Residential Qtr.
	Brick building Bungalow type	1	1998-99	Obsolete Office-cum-Residence
Dorokha Range	Brick building with CGI sheet roofing single unit	1	2013-2014	Poor Cracked walls and floors Residential Qtr.
	Ekra wall structure	1	1997	Poor condition

There is a need to relocate Norbugang Range Office to the current location of Yoeseltse Beat Office and downgrade the existing Norbugang Range Office to Beat Office owing to the available space and central location for service delivery. The current Norbugang Range compound has an area of 0.35 acres only in comparison to 2.85 acres at Yoeseltse Beat Office. Similarly, there is a high probability of relocating Tendruk Beat Office to a suitable location as it falls within the Tendruk town expansion area. Furthermore, due to wide area of Tashicholing Range jurisdiction, there is a need to establish a Beat Office at Norgaygang and Namgaycholing. Similarly, new Beat Offices are also required at Dumtoe and Denchukha under Dorokha Range.

Other structures

The Bamboo house at the Division compound was established in 2014 to accommodate guests /visitors for the 111th National Day. Furthermore, to facilitate cooking in the vicinity, the kitchen for the guest house was constructed in 2015. The Division compound also has one conference hall which is made of bamboo structure.

Mobility

Currently, there are only two four-wheeler vehicles, a Toyota Hilux and a DCM truck and two motorbikes with the Division. These are used as the pool vehicles for all the offices whenever necessary. Most times the DCM is used for carrying the monthly south-eastern-border patrolling and attending to HWC.

The frequent service-related travels and the huge population under the Division demand more pool vehicles. The Division is also required to carry out frequent ad-hoc and planned patrolling owing to the risks of cross border illegal activities and to attend to the numerous HWC incidences. Further, apart from the National Highway and GC roads, the roads mostly used are in poor conditions and become worse during the monsoon season which makes mobility of small vehicles risky and challenging.

2.2.5 Budget and Revenue

The division has generated huge income in the recent past. The major share of the revenue has been generated from dredging and surface collection works. However, since these activities have been handed over to the Department of Geology and Mines (DGM), the revenue generation may drop until the commencement of the planned scientific thinning activities, table 5.

Table 5: Revenue generated and budget allocated for the Division during the last five years.

Consolidated budget and revenue sheet			
Year	Budget (Million)	Revenue (Million)	Remarks
2019-2020	33.06	28.899	The budget reflected here is the approved budget from RGoB
2020-2021		10.686	
2021-2022	41.063	37.464	
2022-2023	38.057	31.804	
2023-2024	39.554	22.043	

2.3 Biodiversity Conservation

As per the NFI report, 2023 the Division has forest cover of 78.75% occupying an area of 99,786.39 ha. The district experiences an average annual rainfall ranging from 1,500 mm to 4,000 mm mainly consisting of warm broadleaved forest. The total area of Samtse district is 1,30,484.63 Ha and the dominant forest types comprises of Warm Broadleaved Forest (31.18%), Subtropical Forest (22.78%), Cool Broadleaved Forest (20.25%), Evergreen Oak Forest (4.77%), non-forest of 19.44% and the rest (1.58%) include small proportions of conifer forest types.

2.3.1 Flora composition and diversity

Along the southern belt at an altitude range between 200 to 1000 masl the forest type is dominated by subtropical forest characterized by predominance of tropical genera and species. The forest type is characterized by formation of dense jungles with patches of Sal forests. The climate in this forest type is characterized by dry winters and wet summers with annual rainfall ranging between 2,500 to 5,000 mm. The dominant species include; *Tetrameles nudiflora*, *Duanbanga grandiflora*, *Bombax ceiba*, *Acrocarpus fraxinifolius*, *Ailanthus grandis*, *Shorea robusta*, *Crateva religiosa*, *Gmelina arborea*, *Musa sp.*, *Pandanus sp.*, *Pterospermum acerifolium*, etc.

The warm broadleaved forest is observed at higher elevation between 1,000 to 2,000 masl and experiences comparatively lower precipitation than the subtropical forest. The forest type consists of a mixture of evergreen and deciduous trees with distinctive upper, lower, and middle stories. The annual precipitation ranges between 2,300 to 4,000 mm and some of the dominant species include; *Schima wallichii*, *Alangium chinensis*, *Altingia excelsa*, *Bischofia javanica*, *Callicarpa arborea*, *Castanopsis indica*, *Engelhardia spicata*, *Dendrocalamus hookeri*, *Macaranga pustulata*, *Maesa sp.*, *Mussaenda roxburghii*, etc.

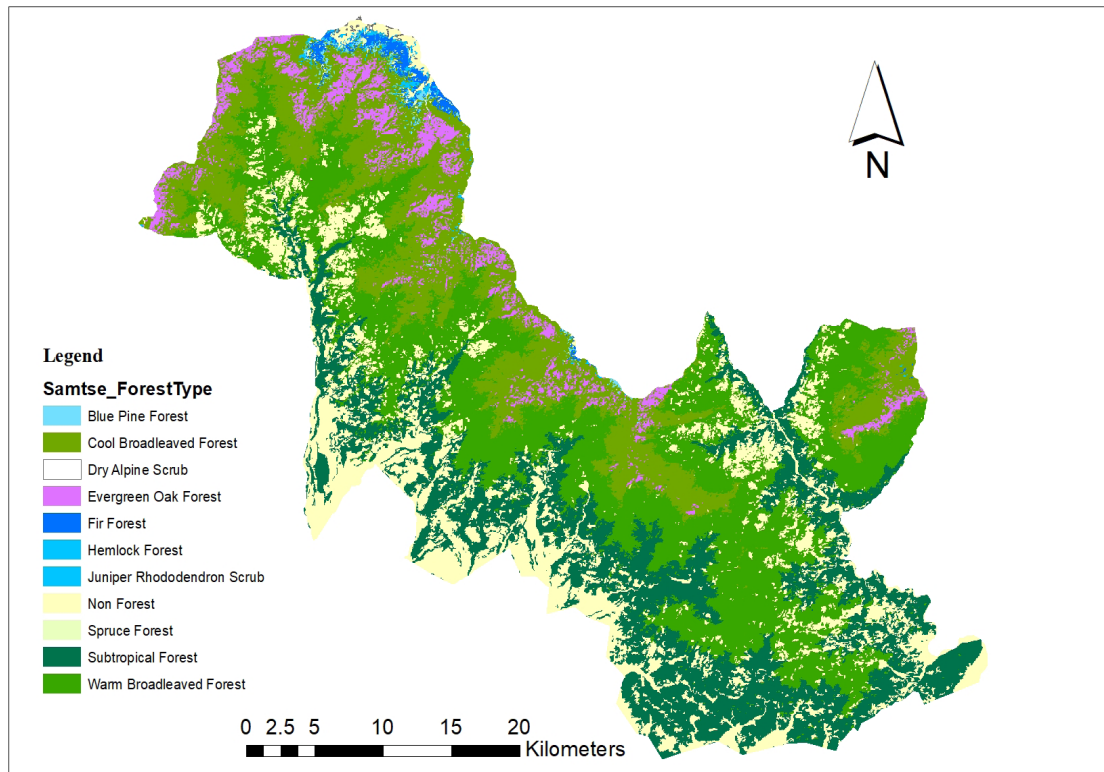


Figure 6: Forest type maps of Samtse

Typically, on moist slopes, cool broadleaved forest is also found in small patches which is a type of temperate forest ranging between 2,000 to 2,900 masl. This forest is characterized by the presence of oak species, including both evergreen and deciduous trees, dense shrubs and epiphytes. This forest type receives an annual precipitation between 2,500 and 5,000 mm. Some of the dominant species include; *Exbucklandia populnea*, *Acer campbelli*, *Betula alnoides*, *Persea clarkeana*, *Symplocus dryophila*, etc.

At an elevation range between 1,800 and 2,000 masl oak forests are found in small pockets. The tree branches are often covered with mosses and the underneath is dominated by ferns. These forest types experience annual rainfall between 2,000 to 3,000 mm. Some of the characteristic species include; *Castanopsis hystrix* and *Castanopsis tribuloides* and *Quercus lamellosa*.



Lady slipper orchid (*Paphiopedilum fairrieianum*) Bazzania (*Bazzania bhutanica*)

Figure 7: Endemic plants found in Samtse

The rapid biodiversity survey conducted in 2023 recorded 202 species under the lifeform of trees/shrubs belonging to 73 families. The groundcover (herbs) lifeform comprised 138 species belonging to 58 families.

2.3.2 Fauna composition and diversity

Mammals

In the recent past, the Division has undertaken several surveys including the National Tiger Survey, Red Panda survey, assessment of KBAs, and biodiversity monitoring of six permanent grids. These surveys aimed to evaluate the biological diversity within the division and gain insights into the various threats faced by certain species. Similarly, the RBA assessment is an endeavor to document a wide range of species found in Samtse Division, which will be crucial for effective management planning. The RBA was conducted in accordance with the Biodiversity Monitoring and Social Survey Protocol 2020 developed by the Department, while also referring to the Forest Management Code of Bhutan.



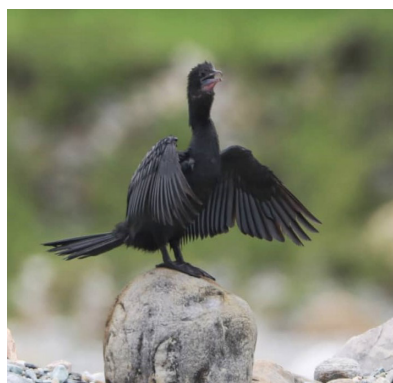
Figure 8: Red Panda captured in the camera trap during tiger survey in 2024

Avi fauna

The DFO, Samtse hosts a rich diversity of bird species. According to the Guidebook on Birds of Samtse (First Edition, 2020), the Division has recorded a total of 371 bird species, including few species documented for the first time in the country. Additionally, the Division supports species listed as Near Threatened, Vulnerable and Endangered under the International Union for Conservation of Nature (IUCN) Red List categories. The Division also spotted Indian Grey Hornbill for the first time in 2025 at Samtse. During RBA survey conducted in 2023, a total of 211 species were recorded from 120 sub-grids of 1 km x 1 km.

Table 6: Avi fauna under IUCN red list

Sl no.	Birds	IUCN
1	Steppe Eagle	Endangered
2	Great Hornbill	Vulnerable
3	Rufous Necked-Hornbill	Vulnerable
4	Beautiful Nuthatch	Vulnerable
5	Himalayan Vulture	Near Threatened
6	River Lapwing	Near Threatened
7	Chestnut-breasted Partridge	Near Threatened
8	Lesser Adjutant	Near Threatened
9	Rufous-bellied Eagle	Near Threatened



Little Cormorant
Microcarbo niger



Blue-throated Barbet
Psilopogon asiaticus



Black Kite
Milvus migrans



Indian-grey Hornbill
Ocyrceros birostris



Rufous-necked Hornbill
Aceros nipalensis

Figure 9: Birds found in Samtse

Other taxa

The rapid biodiversity survey conducted in 2023 also recorded 13 species of fishes and 16 macroinvertebrates within the jurisdiction. Additionally, the Division has recorded 40 species of herpetofauna till date.

Rivers and other water bodies

The jurisdiction also has many water bodies such as rivers, streams and lakes. Some of the major rivers under the Dzongkhag are Amochu, Jaldakha, Sipsoo and Diana. Amochu originates from Chumbi valley in Tibet, China and flows through Bhutan and joins river Brahmaputra in India before entering Bay of Bengal via Bangladesh. The river is the biggest under the jurisdiction and flows along the northern and eastern boundaries. It is home to many species of fishes such as *Devario aequipinnatus*, *Neolissochilus hexagonolepis*, *Barilius bendelisis*, *Barilius vagra*, including *Tor putitora* which is also known as tigers of rivers. Similarly, another important river is Jaldakha which is also a trans-boundary river originating from Sikkim State of India and flows through western part of the Division.

Some of the other rivers include Sipsoo, Diana and Dhamdum which originate from within Bhutan at high mountains and flow towards the flood plains. There are numerous other smaller rivers and seasonally fed streams providing life to diverse aquatic biodiversity. The rare and critically endangered liverwort species known as *Bazzania bhutanica* is found along the gorges of Lafeti stream under Samtse Gewog.

The areas along these rivers are rich with mineral deposits and have good space for infrastructural development. Some of these rivers such as Amo chu and Jaldakha have high potential to boost local economy through promotion of high-end fishing and through development of ecotourism. Currently, the value of these rivers has not been fully assessed and there is need for research to assess its biodiversity and the economic value. Furthermore, studies and assessments are necessitated to minimize the impacts as significant activities such as surface collection, dredging works and infrastructural developments have already become concentrated along the banks of some of these rivers.

The Division has also recorded drinking and irrigation water sources for all fifteen Gewogs. This was carried out mainly to take precautionary measures to avoid disturbances in the catchment areas and to initiate mitigation measures for already disturbed sites. Through the fund support of RGoB and various NGOs, the Division has conducted spring-shed mapping for some of the important water sources under Phuentshopelri, Tading and Dophuchen Gewogs. Additionally, NGOs such as Tarayana foundation have also taken similar initiatives in these areas.

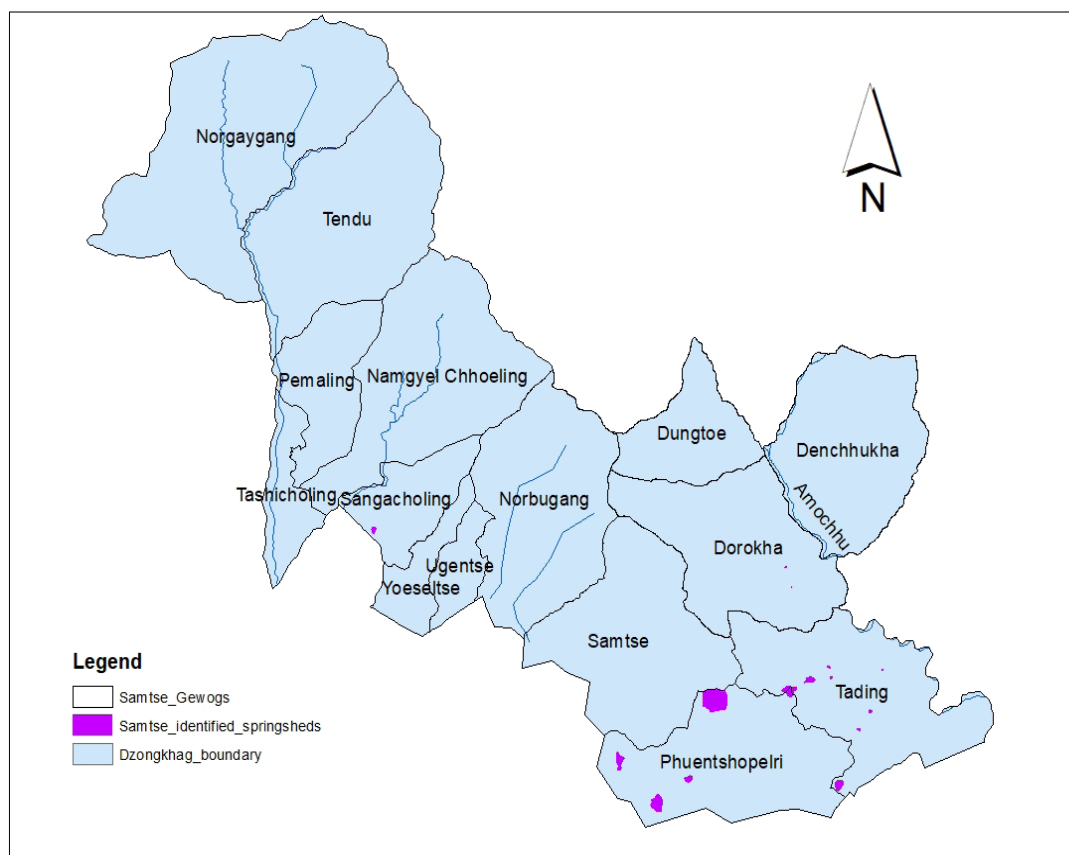


Figure 10: Major rivers and some of the identified spring-shed recharge areas under Samtse

The Division also has numerous lakes and wetlands that have very high potential for development of ecotourism and maintaining ecological niche of aquatic biodiversity. Some of the popular lakes include Mithun Lake under Dophuchen Gewog, Bindu lake under Tendruk Gewog and the Sangacholing recreational area under Sangacholing Gewog.



Figure 11: Sangacholing Recreational area with high potential for ecotourism development

As per the land use and land cover 2020, agriculture occupies 153.62 km² area under cultivation and indicates the presence of six ecological zones within the jurisdiction.

2.4 Existing Management Regimes

Under the jurisdiction the management regimes include CF, PF, and LFMA which can be grouped under area-based management regimes. Moreover, the Division also have NWFP management and KBAs including plantations that fall under cross cutting management regimes. Currently, the Division has a total of 66 CFs, 74 PFs and 1 LFMA (Table 7 and 8). The management regimes under the Division are mainly focused on sustainable management of forest resources and addressing the climate change.

The thematic representation of these management regimes is provided in Figure 12. Since its establishment, the office's mandate has been to conserve the environment while also serving the people of the locality with services related to natural resources. The protection of soil, water and forests have been kept in balance with the pressure from the people's demand for these resources for development.

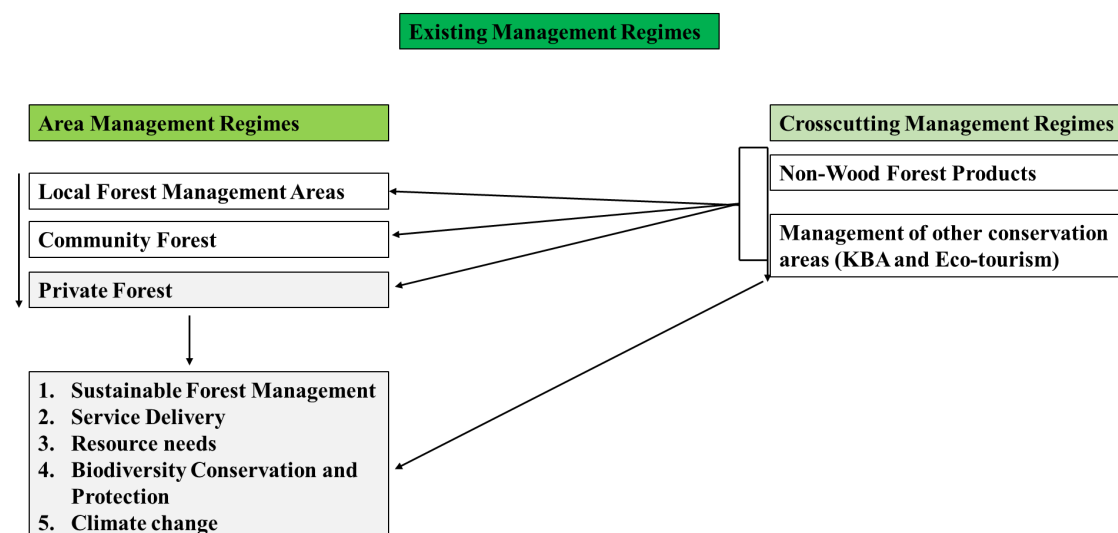


Figure 12: Representation of existing management regimes

The area-based management regimes under DFO, Samtse comprises of local forest management area, community forests and private forests. These regimes have specific plans for sustainable management of the resources.

2.4.1 Area Based Management Regimes

Local Forest Management Area

Currently, the Division has only one LFMA located at Namgaycholing Gewog, under the jurisdiction of Tashicholing Range. The LFMA was established and approved by the Department in 2022, covering an area of 2,778.11 ha. It has an annual allowable cut (AAC) of 762 m³, with a management plan period spanning from 2022 to 2032.

Community Forest

The DFO, Samtse has currently 66 CFs. Of the total CFs, 18 CFs are under Dorokha Range, 13 under Norbugang Range, 15 under Tashicholing Range and 20 under Samtse Range, Figure 13.

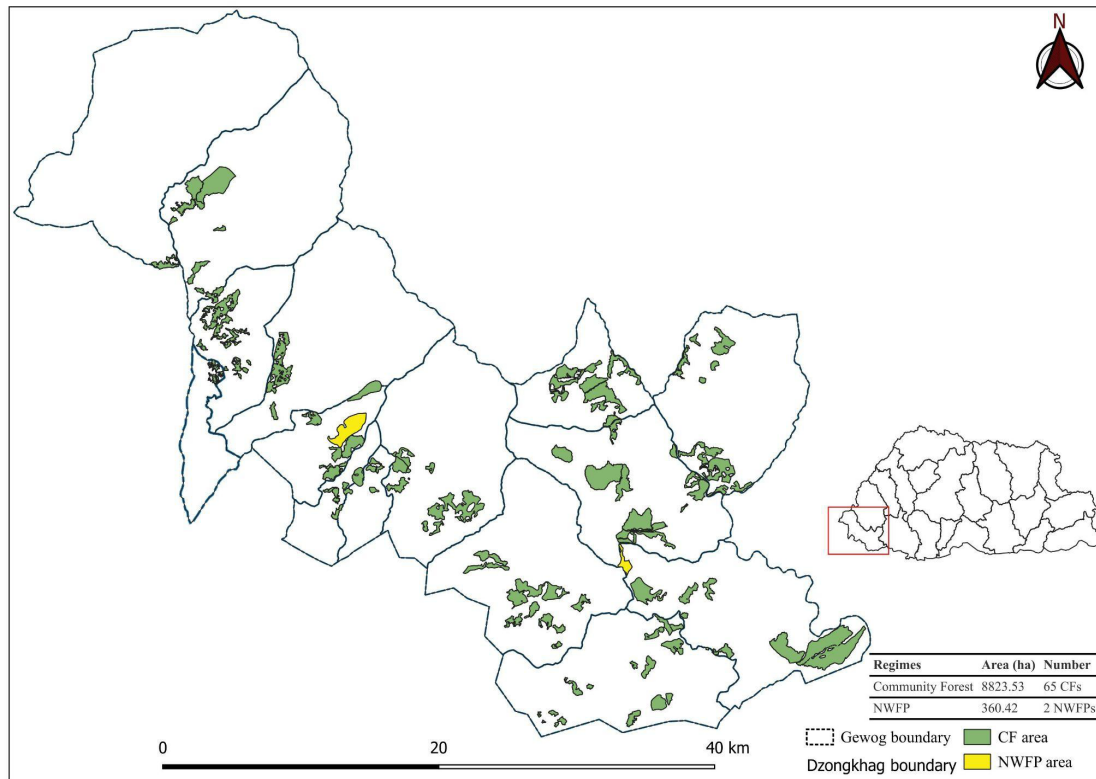


Figure 13: Map showing Community Forests and NWFP groups under DFO, Samtse

The details of community forest under DFO, Samtse are shown in Table 7.

Table 7: CFs under the Divisional Forest Office, Samtse

Sl no.	Name of CF	Year of establishment	Gewog	Area (Ha)	Annual Allowable Cut (m ³)	Members		Plan Period	Plan Cycle Type
						Male	Female		
1	Amalay	2013	Tendruk	77.4	129.9	14	7	2023-2033	1st
2	Basenty	2012	Dophuchen	76.81	171.590	22	5	2022-2032	2nd
3	Bukay A Dham	2012	Samtse	57.86	98.81	14	4	2022-2032	2nd
4	Buruk	2007	Dophuchen	225.5	77.925	24	27	2019-2029	2nd
5	Chirloogsa	2018	Samtse	57.66	46.57	15	0	2018-2019	1st
6	Demji	2019	Denchukha	85.31	389.628	15	3	2019-2029	1st
7	Deo Sahara	2010	Sangacholing	130	341.722	33	1	2020-2030	2nd
8	Dhakal Gaon	2013	Norgaygang	53.8	174.94	15	4	2013-2023	1st
9	Dogap	2015	Dophuchen	359.88	1102.849	48	31	2025-2034	2nd
10	Dumsidara	2008	Phuentshopelri	54.38	21.19	7	2	2018-2028	1st
11	Dumtoe Chungwa	2016	Dumtoed	153	366.62	31	6	2026-2035	2nd
12	Dzongsar	2017	Tendruk	70.4	103.34	31	7	2017-2027	1st
13	Fita	2011	Tendruk	19.172	72.54	11	1	2019-2029	1st
14	Ganteykha	2015	Dophuchen	71.49	24.962	31	1	2024-2034	2nd
15	Gawaling	2016	Denchukha	157.53	79.291	39	8	2026-2035	2nd
16	Ghalleygoan	2011	Yoeseltse	131.12	281.66	35	2	2021-2031	1st
17	Gourav	2014	Yoeseltse	37.95	121.3	28	8	2024-2034	1st
18	Hariyali	2021	Ugyentse	39.67	244.96	23	3	2021-2031	2nd
19	Hatikharka	2009	Pemaling	133.96	165.84	82	11	2020-2030	2nd
20	Janam Janam	2021	Samtse	230.2	1094.55	51	5	2021-2031	2nd

Divisional Forest Office, Samtse

21	Junibari	2010	Phuent-shopelri	84.93	83.19	20	4	2020-2030	2nd
22	Khalingoan	2019	Dumtoed	34.6	89.942	27	2	2019-2020	1st
23	Khempa	2019	Denchukha	233.95	274.894	32	1	2019-2029	1st
24	Khentong	2020	Tendruk	64.71	109.66	16	0	2023-2033	2nd
25	Kholakhar-ka	2019	Namgaych-hoe-ling	168.734	934.36	64	7	2019-2029	1st
26	Kirney	2021	Norbugang	211.87	754.5	38	5	2021-2031	2nd
27	Kopchey	2010	Pemaling	22.476	108.16	36	3	2021-2031	2nd
28	Kuchey	2019	Dumtoed	81.84	69.184	32	1	2019-2029	1st
29	Lapchay-goan	2021	Dophuchen	96.7	70.815	20	4	2020-2030	1st
30	Laptse-kha-Dare-phu	2015	Tading	285.43	801.48	59	3	2015-2025	1st
31	Lhakhang-pong	2016	Samtse	109.6	255	44	8	2026-2035	2nd
32	Lower Panbari	2009	Tading	65.76	391.87	53	12	2019-2029	1st
33	Lumbay	2021	Dophuchen	88.5	62.175	21	7	2021-2031	1st
34	Majuwa	2009	Ugyentse	33	42.25	17	1	2021-2031	2nd
35	Malabasay	2021	Samtse	128.67	178.6	35	4	2026-2035	2nd
36	Mayona	2016	Denchukha	111.14	63.711	34	9	2016-2026	1st
37	Medgang	2015	Dumtoed	231	333.958	56	2	2025-2034	2nd
38	Mithun Rai	2017	Dophuchen	113.3	152.893	21	1	2017-2027	1st
39	N-Bindu	2015	Tendruk	348.79	866.33	44	7	2015-2025	1st
40	Nigalay	2016	Tendruk	27.3	57.9	21	1	2016-2026	1st
41	Okkhar-boty	2016	Tendruk	62	106.13	30	3	2016-2026	1st
42	Pakhagaon	2010	Phuent-shopelri	115.89	164.61	12	5	2021-2031	2nd
43	Pakhagoan	2010	Tashichhoe-ling	22.092	15.11	28	4	2020-2030	2nd

44	Pakpay	2019	Tendruk	130.49	222.466	32	9	2019-2029	1st
45	Pangzhing Goama Ka	2019	Tading	60.2	216	36	1	2019-2029	1st
46	Pinsum	2012	Pemaling	238.23	352.538	62	19	2022-2032	2nd
47	Pugli “C”	2008	Phuent-shopelri	40.11	69.77	15	4	2026-2035	2nd
48	Pungthra	2011	Denchukha	165.48	185.819	28	2	2024-2034	2nd
49	Rai	2011	Dumtoed	160.3	518.468	43	2	2024-2034	2nd
50	Rangidara	2009	Namgaych-hoe-ling	18.514	31.47	33	5	2020-2030	2nd
51	Rong-Queng	2012	Samtse	47.82	74.11	20	2	2022-2032	1st
52	Sahakari	2012	Sangachol-ing	69	125.4	15		2022-2032	2nd
53	Sengdhen	2021	Dophuchen	214	156.947	42	20	2021-2031	1st
54	Shera-bling-To-bchenthang	2016	Tading	345.1	376.83	60	8	2026-2035	2nd
55	Shetey	2009	Yoeseltse	125.14	399.67	25	6	2019-2029	2nd
56	Suraksia	2012	Sangachol-ing	66.644	773.5	38	2	2022-2032	2nd
57	Tama-ngdara	2015	Samtse	109.6	98.34	17	4	2022-2032	1st
58	Thorila	2018	Norbugang	218	30.39	19	5	2018-2028	1st
59	Thotney	2012	Phuent-shopelri	157.35	292.71			2022-2032	1st
60	Thunwa	2012	Tading	252.83	341.46	89	5	2022-2032	1st
61	Tinteray	2023	Norbugang	159.05	275.21	45	5	2023-2033	1st
62	Titering	2012	Tading	404.09	192.91	33	6	2022-2032	1st
63	Tshering-gang	2020	Norbugang	90.99	111.33	28	5	2019-2029	1st
64	Upper Sisney	2023	Tading	64.13	110.28	19		2024-2034	1st
65	Uttarey	2016	Phuent-shopelri	97.43	115.05	21	10	2026-2035	2nd
66	Yug-Yug	2012	Yoeseltse	75.69	116.12	26	4	2022-2032	1st

The details of private forest under DFO, Samtse are shown in Table 8.

Table 8: Private Forest

Sl. No.	Details of owner		Details of Private Forests			
	Name of owner	CID no.	Gewog	Thram no.	Creation year	Total area (ha)
1	Jambay Dorji	11208002270	Yoeseltse	Plot No GD-9, 372	2006	2
2	Gom Bdr. Mongar	11213001396	Samtse	560	2006	0.22
3	Aita Singh Ghalley	11215001013	Tading	118	2008	0.2
4	Shiva Kumar Jogi	11212002100	Yoeseltse	368	2011	3
5	Suk Lal Rai	11203001096	Sangacholing	732	2012	0.41
6	Krishna Bdr Mukhia	11203001115	Sangacholing	22	2012	0.32
7	Pancha Man Limbu	11203002769	Sangacholing	263	2012	0.45
8	Nanda Raj Rai	11203002673	Sangacholing	135	2012	0.32
9	Nanda Kumar Sunwar	11203001111	Sangacholing	21	2012	0.41
10	Ram Bir Sherpa	11203002365	Sangacholing	68	2012	3.21
11	Durga Pradhan	11203000356	Sangacholing	1073	2015	0.51
12	Hari Prasad Subba	11208001962	Yoeseltse	191	2015	0.46
13	Bhim Singh Ghaley	11213003365	Samtse	273 Sept	2016	0.15
14	Passang Lepcha	11213001360	Samtse	401	2016	0.46
15	Subel Lepcha	11213001408	Samtse	946	2016	0.41
16	Samten Lepcha	11213001409	Samtse	947	2016	0.41
17	Durga Chetri	11213005108	Samtse	405	2016	0.45
18	Purna Bdr. Ghaley	11213003171	Samtse	133	2016	0.13
19	Bhakta Bdr. Ghaley	11213003161	Samtse	125	2016	1.3
20	Pirthey Ghaley	11213003339	Samtse	269 Sept	2016	0.88
21	Kinga Wangmo	11213000103	Samtse	Plot No 15	2016	0.57
22	Kul Bdr. Ghaley	11213003225	Samtse	123	2016	0.31
23	Lanam Lepcha	11213001404	Samtse	54	2016	0.2
24	Prem Singh Ghaley	11213003229	Samtse	123	2016	0.31
25	Langa Dukpa	11605002496	Samtse	173	2016	0.2
26	Jeru Babel Lepcha	11213001381	Samtse	424	2016	1.26
27	Raj Man Ghaley	11213001951	Samtse	326	2016	0.05
28	Tshewang Rinzin	11208002234	Yoeseltse	Plot No 06	2018	0.6
29	Jigme Choden	11208000536	Yoeseltse	Plot No. GB-26/180	2018	2.5
30	Dorjee Wangchuk	11208002368	Yoeseltse	Plot No GD/18	2018	0.46
31	Jamtsho	11208002364	Yoeseltse	Plot No GD/18	2018	0.5
32	Kencho Tshering	11208002371	Yoeseltse	Plot No GD/18	2018	0.46
33	Yeshe Dema	11208000547	Yoeseltse	Plot No. GB-28/66	2018	0.6

34	Purna Bdr. Ghaley	11204000364	Norbugang	275	2018	0.88
35	Bal Bdr. Rai	11204000440	Norbugang	195	2018	0.25
36	Dil Bdr. Rai	11204000534	Norbugang	227	2018	0.19
37	Bhalla Ghaley	11204002426	Norbugang	262	2018	0.07
38	Santa Bir Rai	11204001041	Norbugang	190	2018	0.06
39	Harka Bdr. Rai	11204003001	Norbugang	318	2018	0.81
40	Dil Bdr. Ghaley	11204000412	Norbugang	199	2018	0.32
41	Man Kumari Ghaley	11204001738	Norbugang	227	2018	0.55
42	Nar Bdr. Rai	11204000548	Norbugang	354	2018	0.34
43	Leptangmo	11208002655	Yoeseltse	480	2018	2.35
44	Gyeltshen	11208002350	Yoeseltse	Plot No GD/30	2020	0.4
45	Ghanashyam Kumal	11214003381	Tashichhoeling	111	2023	0.07
46	Ghanashyam Kumal	11214003345	Tashichhoeling	111	2023	0.08
47	Surja Maya Rai	11212001736	Phuentshopelri	274	2024	0.39
48	Tara Rai	11212004584	Phuentshopelri	1090	2024	0.22
49	Tara Man Rai	11212002007	Phuentshopelri	361	2024	0.23
50	Puspa Chhetri	11212004490	Phuentshopelri	28	2024	0.05
51	Dhan Bdr Subba	11212001312	Phuentshopelri	389	2024	0.64
52	Phul Maya Rai	11212001787	Phuentshopelri	644	2024	0.77
53	Gorey Rai	11212003125	Phuentshopelri	857	2024	0.6
54	Am Bdr Rai	11212003130	Phuentshopelri	71	2024	0.72
55	Durga Bahadur Bhujel	11212000581	Phuentshopelri	1	2024	0.12
56	Lasang Dolma Tamang	11212002808	Phuentshopelri	1273	2024	0.2
57	Tashirey Mongar	11212002869	Phuentshopelri	416	2024	1.57
58	Looti Maya Rai	11212000579	Phuentshopelri	899	2024	0.35
59	Kanchi Rai	11212002774	Phuentshopelri	25	2024	0.83
60	Tula Bulung Rai	11212002781	Phuentshopelri	25	2024	0.39
61	Bina Rai	11212000572	Phuentshopelri	489	2024	0.59
62	Lal Bdr Rai	11212002793	Phuentshopelri	25	2024	2.15
63	Pirithi Man Rai	11212000712	Phuentshopelri	17	2024	0.63
64	Chili Maya Rai	11212000580	Phuentshopelri	899	2024	0.6
65	Bal Bdr Gurung	11212001516	Phuentshopelri	Nil	2024	1.11
66	Mon Maya Rai	11212002775	Phuentshopelri	25	2024	0.06
67	Nakul Gurung	11212003068	Phuentshopelri	70	2024	0.35
68	Diwash Gurung	11212001373	Phuentshopelri	382	2024	0.61
69	Prem Bdr Mongar	11212002117	Phuentshopelri	1054	2024	0.15
70	Bir Dhoj Rai	11212001745	Phuentshopelri	274	2024	0.3
71	Purni Maya Rai	11212000713	Phuentshopelri	78	2024	0.67
72	Sanjay Dolma Tamang	11212002819	Phuentshopelri	412	2024	0.43
73	Em Bdr Gurung	11212001420	Phuentshopelri	40	2024	1.03
74	Damber Bdr Gurung	11212000253	Phuentshopelri	960	2024	0.29

2.4.2 Cross-cutting Management Regimes

The Division currently has two active NWFP Groups under Dophuchen and Sangacholing Gewogs. Majuwa Pangkha NWFP group is under Dophuchen Gewog with active membership of 41 households mainly focuses on harvesting cane and bamboo shoots, ferns and *Tupistra nutans*. The group has currently generated a sum of Nu. 40,663/- from the sale of these products. The other is Namseling NWFP group under Sangacholing Gewog managed by 24 households for sustainable collection of *Tupistra nutans*, *Elatostema* sp., *Smilax ovalifolia*, cane shoots etc. The group has generated a sum of Nu.90,000/- till date. The Division also has three KBAs for the management of *Bazzania bhutanica*, *Paphiopedilum fairrieianum* and *Indian Pangolin* which were constituted in the year 2022. Table 9 shows the details of NWFP and KBA groups under the Division.

Table 9: Cross cutting management regimes

Sl. No.	Cross Cutting Management Regimes/ Interventions	Location	Gewog	Year of operation	Total area (ha)	Key Management Interventions	Plan Period
1	Namseling NWFP Group	Namseling	Sangacholing	2019	720	Management of bamboo, canes, <i>Zanthoxylum armatum</i> and <i>Tupistra nutans</i>	10 years
2	Majuwa Pangkha NWFP Group	Majuwa-Pangkha	Dophuchen	2013	77	Management of cane and bamboo shoots, mushroom, ferns <i>Elatostema</i> sp., <i>Swertia chirayita</i> and <i>Tupistra nutans</i>	10 years
3	KBA, Lafeti Khola	Lafeti Khola	Samtse	2023	1.86	Management of <i>Bazzania bhutanica</i>	10 years
4	KBA, Kado Ngatshang	Kado Ngatshang	Ugyentse	2023	126	Management of <i>Indian Pangolin</i>	10 years
5	KBA, Pakhan Beth Bir	Pakhan Beth Bir	Tading	2023	1.68	Management of <i>Lady's Slipper orchid</i>	10 years

The Division also looks after the Sangacholing recreational area under Sangacholing Gewog. With the fund support from WWF-IKI Living Landscape project, Corporate Social Responsibility (CSR) funding and various other sources the area has been developed into a potential ecotourism site and there are also plans for further development in the future. Apart from the above designated management regimes, the Division also

takes the responsibility to look after the rest of SRFL within the jurisdiction. Periodical monitoring is essential to manage the areas. In addition, the Division has also mapped the HCV area which falls under Norgaygang and Tendruk Gewogs.

2.5 Forest Resources and Utilization

2.5.1 Forest Resources

As per NFI, Volume I (2023), 78.75% of the total forest area of Samtse Dzongkhag is under forest cover. The forest area spans to 99,786.39 ha (997.86 sq. km) with a stem count of 263 trees per hectare.

2.5.1.1 Forest Cover by Forest Type

The shape file of Forest Type Map of Bhutan 2022 was used to determine the types of forest under DFO, Samtse. As per this report the forest cover under the division is 105,083.15 Ha with the presence of 9 forest types as shown in the table no. 10.

Table 10: Forest cover by forest type

Forest Types	Forest Cover (Ha)	Forest Cover (%)	Forest Cover (%) of total area
Subtropical Forest	29722.17	22.78	33.91
Warm Broadleaved Forest	40681.86	31.18	46.42
Evergreen Oak Forest	6222.29	4.77	7.10
Cool Broadleaved Forest	26419.07	20.25	30.14
Blue Pine Forest	422.11	0.32	0.48
Spruce Forest	134.83	0.10	0.15
Hemlock Forest	142.52	0.11	0.16
Fir Forest	1002	0.77	1.14
Juniper Rhododendron Forest	336.31	0.26	0.38
Total	105,083.16	80.54	119.90

The Division is mainly dominated by warm broadleaved forest covering 31.18 % of total forest. Subtropical forest covers 22.78 % and cool broadleaved forest encompasses 20.25 %. The evergreen oak forest encompasses 4.77 % and the rest of the forest type accounts to less than 2 % of the total land cover.

2.5.1.2 Stem density by forest type

The information on the stem density was derived from the NFI, Volume I, State of Forest Report, 2023 at the Dzongkhag level to determine the tree count by forest type for the DFO, Samtse. As per the report the stem density is lowest in Samtse Dzongkhag with tree count of 263 per ha.

Table 11: Stem density by forest type

Tree count by Forest types	Forest Area (Ha)	Tree count/ha	Total tree count	Total tree count (million)
Subtropical Forest	29722.17	310	9213873	9.21
Chir Pine Forest		254	0	0.00
Warm Broadleaved Forest	40681.86	375	15255698	15.26
Evergreen Oak Forests	6222.29	417	2594695	2.59
Cool Broadleaved Forest	26419.07	417	11016752	11.02
Blue Pine Forest	422.11	426	179819	0.18
Spruce Forest	134.83	401	54067	0.05
Hemlock Forest	142.52	406	57863	0.06
Fir Forest	1002	402	402804	0.40
Juniper Rhododendron Forest	336.31	269	90467	0.09
Total	105,083.16		38,866,038	38.87

Table 11 shows that a total forest area is 105,083.16 Ha, containing 38,866,038 trees. Warm broadleaved forests contribute the most with 40,681.86 ha and 15,255,698 trees, while cool broadleaved forest contributes to 26,419.07 ha and 11,016,752. The third forest type is subtropical with 29,722.17 ha with 9,213,873 trees. However, spruce and hemlock forests are smallest with 134.83 ha and 142.52 ha areas and 54,067 trees and 57,863 trees respectively.

2.5.1.3 Basal area by forest type

The Dzongkhag level information from the NFI, Volume I, State of Forest Report, 2023 was used to determine the Basal area per hectare by forest type for the DFO, Samtse.

Table 12: Basal area by forest type

Forest Type	Forest Cover (ha)	Basal area per ha (m2)	Total Basal Area (m2)	Total Basal Area (m2) (million)
Subtropical Forest	29722.17	20.08	596821.17	0.60
Chir Pine Forest		15.14	0.00	0.00
Warm Broadleaved Forest	40681.86	27.67	1125667.07	1.13
Evergreen Oak Forests	6222.29	38.07	236882.58	0.24
Cool Broadleaved Forest	26419.07	42.89	1133113.91	1.13
Blue Pine Forest	422.11	23.14	9767.63	0.01
Spruce Forest	134.83	36.95	4981.97	0.00
Hemlock Forest	142.52	46.51	6628.61	0.01
Fir Forest	1002	44.47	44558.94	0.04
Juniper Rhododendron Forest	336.31	15.34	5159.00	0.01

Warm broadleaved forest contributes the largest share with 1,125,667 m² followed by cool broadleaved forest with 1,133,114 m², subtropical forest with 596,821 m² and evergreen oak forest with 236,882 m². The combined basal area of other forest types comprises of 71,096 m².

2.5.1.4 Growing stock by forest type

The Dzongkhag level information from the NFI, Volume I, State of Forest Report, 2023 was used to determine the volume per hectare by forest type for the DFO, Samtse.

Table 13: Volume of forest type

Forest Type	Forest Cover (ha)	Volume in m ³	Total Vol in m ³	Total vol in mil mm ³
Subtropical Forest	29722.17	160.9	4782297.15	4.78
Chir Pine Forest		116.93	0.00	0.00
Warm Broadleaved Forest	40681.86	228.03	9276684.54	9.28
Evergreen Oak Forests	6222.29	341.01	2121863.11	2.12
Cool Broadleaved Forest	26419.07	379.15	10016790.39	10.02
Blue Pine Forest	422.11	209.17	88292.75	0.09
Spruce Forest	134.83	384.84	51887.98	0.05
Hemlock Forest	142.52	442.7	63093.60	0.06
Fir Forest	1002	398.82	399617.64	0.40
Juniper Rhododendron Forest	336.31	101.04	33980.76	0.03
Total			26,834,507.92	26.83,450,792

The total growing stock of the Division across all the forest types is 26,834,508 m³. Warm broadleaved forests (40,681.86 ha) and subtropical forest (29,722.17 ha) have the highest total growing stock volumes with 9,276,684.54 m³ and 4,782,297.15 m³ respectively. In contrast, Spruce Forest has the smallest total growing stock volume of 51,887.97 m³ over 134.83 ha.

2.5.1.5 Biomass stock by forest type

The total biomass is estimated using the biomass density across all carbon pools and by forest type (as per NFI, Volume II (2023)) under the areas of the DFO. Accordingly, the total carbon stock in Samtse Dzongkhag is 14.47 million tonnes across the different carbon pools as shown in Table 14.

Table 14: Biomass stock of forest type

Biomass by Forest types	Forest area (ha)	AGB	BGB	CWD	Litter	Total biomass in tonnes	Total Bio-mass (million)
Subtropical Forest	29722.17	3242985.55	916317.26	68360.99	345371.62	4573035.42	4.57
Chir Pine Forest		0.00	0.00	0.00	0.00	0.00	0.00
Warm Broadleaved Forest	40681.86	7262653.73	1892314.68	214393.40	495505.05	9864866.87	9.86
Evergreen Oak Forests	6222.29	1.56	0.40	0.02	0.08	2.06	0.00
Cool Broadleaved Forest	26419.07	6.92	1.79	0.22	0.45	9.38	0.00
Blue Pine Forest	422.11	0.05	0.01	0.00	0.01	0.08	0.00
Spruce Forest	134.83	0.03	0.01	0.00	0.00	0.04	0.00
Hemlock Forest	142.52	0.04	0.01	0.00	0.00	0.05	0.00
Fir Forest	1002	0.24	0.06	0.01	0.02	0.34	0.00
Juniper Rhododendron Forest	336.31	25927.29	7321.73	578.45	2788.01	36615.48	0.04
		10531575.42	2815955.97	283333.11	843665.24	14474529.74	14.47

Similarly, comparison of the biomass in the different forest type shows warm Broadleaved Forests contributing to 9.86 million tonnes followed closely by Subtropical Forests with 4.57 million tonnes.

2.5.1.6 Carbon stock by forest type

Similarly, the total biomass carbon is estimated using the carbon density across all carbon pools and by forest type (as per NFI, Volume II (2023)) under the areas of the DFO. Accordingly, the total carbon stock for forest areas under DFO, Samtse is 10.11 million tonnes across the different carbon pools as shown in table 15.

Table 15: Carbon stock of forest type

Carbon stock by Forest type	Forest area (ha)	AGB	BGB	CWD	Litter	SOC	Total (tonnes C)	Total (million tonnes C)
Subtropical Forest	29722.17	1524152.88	430674.24	32099.94	162283.05	1030170.41	3179380.52	3.18
Chir Pine Forest		0.00	0.00	0.00	0.00	0.00	0.00	0.00

Warm Broadleaved Forest	40681.86	3413614.87	889305.46	100891.01	233107.06	2242790.94	6879709.34	6.88
Evergreen Oak Forests	6222.29	0.74	0.19	0.01	0.04	0.51	1.48	0.00
Cool Broadleaved Forest	26419.07	3.25	0.84	0.11	0.21	2.22	6.63	0.00
Blue Pine Forest	422.11	0.02	0.01	0.00	0.01	0.02	0.06	0.00
Spruce Forest	134.83	0.02	0.00	0.00	0.00	0.01	0.03	0.00
Hemlock Forest	142.52	0.02	0.00	0.00	0.00	0.01	0.04	0.00
Fir Forest	1002	0.12	0.03	0.01	0.01	0.10	0.26	0.00
Juniper Rhododendron Forest	336.31	12184.51	3440.45	272.41	1311.61	31192.75	48401.74	0.05
		4949956.42	1323421.23	133263.49	396701.98	3304156.98	10107500.10	10.11

Warm Broadleaved Forests have the highest carbon stock of 6.88 million tonnes followed closely by subtropical forest of 3.18 million tonnes. In contrast, Spruce Forests and Hemlock Forest have the lowest contributions.

2.5.1.7 Biomass increment by forest type

The Biomass increment is calculated and presented in table 16.

Table 16: Biomass increment by forest type

Biomass increment by Forest types	Forest area (Ha)	Biomass Increment (tonnes/ha/yr)	Total increment	Increment in million
Subtropical Forest	29722.17	2.94	87383.18	0.09
Chir Pine Forest		1.84	0.00	0.00
Warm Broadleaved Forest	40681.86	2.79	113502.39	0.11
Evergreen Oak Forests	6222.29	0.77	4791.16	0.00
Cool Broadleaved Forest	26419.07	2.13	56272.62	0.06
Blue Pine Forest	422.11	3.45	1456.28	0.00
Spruce Forest	134.83	3.20	431.46	0.00
Hemlock Forest	142.52	2.44	347.75	0.00
Fir Forest	1002	2.19	2194.38	0.00
Juniper Rhododendron Forest	336.31	0.58	195.06	0.00
Total	105083.16		266574.28	0.27

The total biomass increment across all forest types is 266,574.28 tonnes per year. Warm Broadleaved Forests contribute the highest increment of 113,502.39 tonnes, followed by Subtropical Forests with 87,383.17 tonnes and Cool Broadleaved Forests with 56,272.61 tonnes. Evergreen Oak Forest has a significant increment of 4,791.16 tonnes, while Fir Forests contribute 2,194.38 tonnes. Hemlock Forest and Spruce Forest provide 347.75

tonnes and 431.46 tonnes, respectively. Juniper Rhododendron scrub has the smallest increment, contributing just 195.06 tonnes annually.

2.5.1.8 Carbon increment by forest type

The carbon increment is calculated based on forest types as presented in table 17

Table 17. Carbon increment by forest type

Carbon Increment by Forest types	Forest area (Ha)	Carbon Increment (tonnes/ha/yr)	Total increment
Subtropical Forest	29722.17	1.38	41016.59
Chir Pine Forest		0.86	0.00
Warm Broadleaved Forest	40681.86	1.31	53293.24
Evergreen Oak Forests	6222.29	0.36	2240.02
Cool Broadleaved Forest	26419.07	1	26419.07
Blue Pine Forest	422.11	1.62	683.82
Spruce Forest	134.83	1.51	203.59
Hemlock Forest	142.52	1.15	163.90
Fir Forest	1002	1.03	1032.06
Juniper Rhododendron Forest	336.31	0.27	90.80

The total carbon increment across all forest types is 125,143.10 tonnes per year. Warm Broadleaved Forests lead with the highest carbon increment of 53,293.23 tonnes, followed by Subtropical Forests with 41,016.59 tonnes and Cool Broadleaved Forests with 26,419.07 tonnes. Evergreen Oak Forest contributes 2,240.02 tonnes, while Fir Forests provide 1,032.06 tonnes. Blue Pine Forest and Spruce Forest contribute 683.81 tonnes and 203.59 tonnes, respectively. Juniper and Rhododendron Forests have the smallest carbon increment at just 90.80 tonnes annually.

2.5.1.9 Carbon sequestration

Carbon sequestration is the process of the removal of carbon dioxide from the atmosphere and storing it in the form of biomass/carbon in plants, soils, geologic formations, and the ocean. Forests play an important role in climate change mitigation through sequestration of atmospheric carbon and storing in the form of biomass.

The total carbon sequestration rate of Samtse dzongkhag is 2.99 tonnes CO₂ ha⁻¹ yr⁻¹ sequestering 298,240.91 tonnes CO₂ annually as reported in the NFI II. However, the carbon sequestration capacity for forests under the DFO, Samtse is estimated tonnes 459,396.34 CO₂ per year as presented in table 18.

Table 18: Carbon sequestration

Area	Biomass Growth (tonnes)	Carbon Fraction	CO ₂ fraction/ equivalent	Total Carbon sequestration (tonnes CO ₂)
DFO, Samtse	266,574.28	0.47	3.67	459,396.34

2.5.2 Function Mapping

Forest function mapping is essential for biodiversity conservation, sustainable resource management, and the maintenance of key ecosystem services such as water regulation, soil stabilization, and carbon sequestration. It helps identify critical habitats, guides sustainable resource utilization, and supports climate change mitigation by identifying the areas with high carbon storage potential. The function mapping was conducted referring to the thematic representation as described in figure 14.

The mapping exercise was carried out using QGIS version 3.4.1 mapping the whole divisional landscape into three main management circles; protection, production and non-production. Some of the underlying objectives of functional mapping was to identify and map all areas that are under the existing management regimes and to assess potential timber production areas for the next ten years and at the same time to demarcate and mark areas with conservation and protection interest. For the exercise the data from LULC 2016 was used.

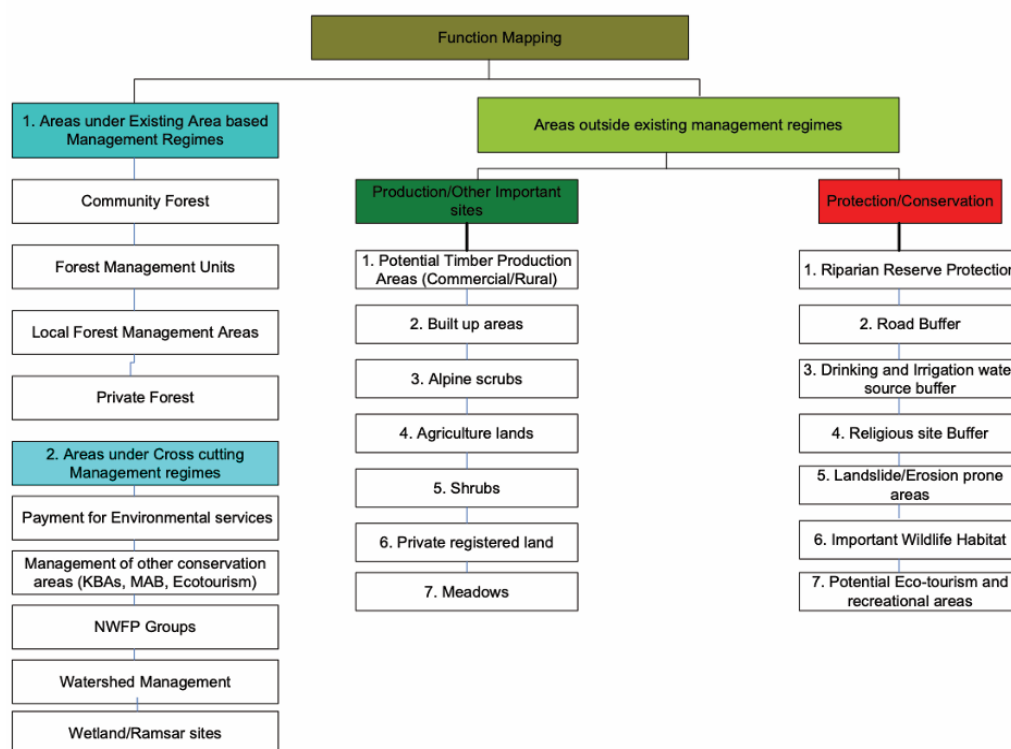


Figure 14: Thematic representation of function mapping

In the protection circle layers such as; land with slope above 45° and having area more than 5 ha were included, cultural and spiritual sites were buffered at 500 m, rivers up to 6th order and streams were buffered at 30 m, drinking and irrigation water sources were buffered at 30 m and areas demarcated as spring-shed recharge zones under Phuentshopelri, Tading and Dopchuchen Gewogs. Additionally, landslide areas within the jurisdiction were included in the protection circle including the key biodiversity area of *Paphiopedilum fairrieanum* located under Tading Gewog as the species is critically endangered. The total area of the division under the protection circle is 14,951 ha which is 11.48 % of the total area.

The production circle comprises of total forest area under the Division with potential for sustainable management of forest resources. The total area comprises of 96,166 ha which is 74.60 % of the total area.

The non-production circle comprises of the rest of the areas which include land features such as alpine scrubs, built up areas, cultivated land, landslides, meadows, non- built-up areas, shrubs, snow and glaciers and the water bodies. The total area under non production comprises of 18,131 ha which is 13.92 % of the total area.

The existing management regimes under the Division include 66 CF (8,824.64 Ha), 1 LFMA (2,779.76 Ha), scientific thinning sites (~ 42,080 Ha) which spans three years (2024-2026), 2 key biodiversity areas (127.68 Ha), plantation sites (907 Ha) and the Sangacholing recreational area (22 Ha). The Division has also an area of 587 Ha occupied with dredging, mining and surface collection activities which has been taken over by the DGM.

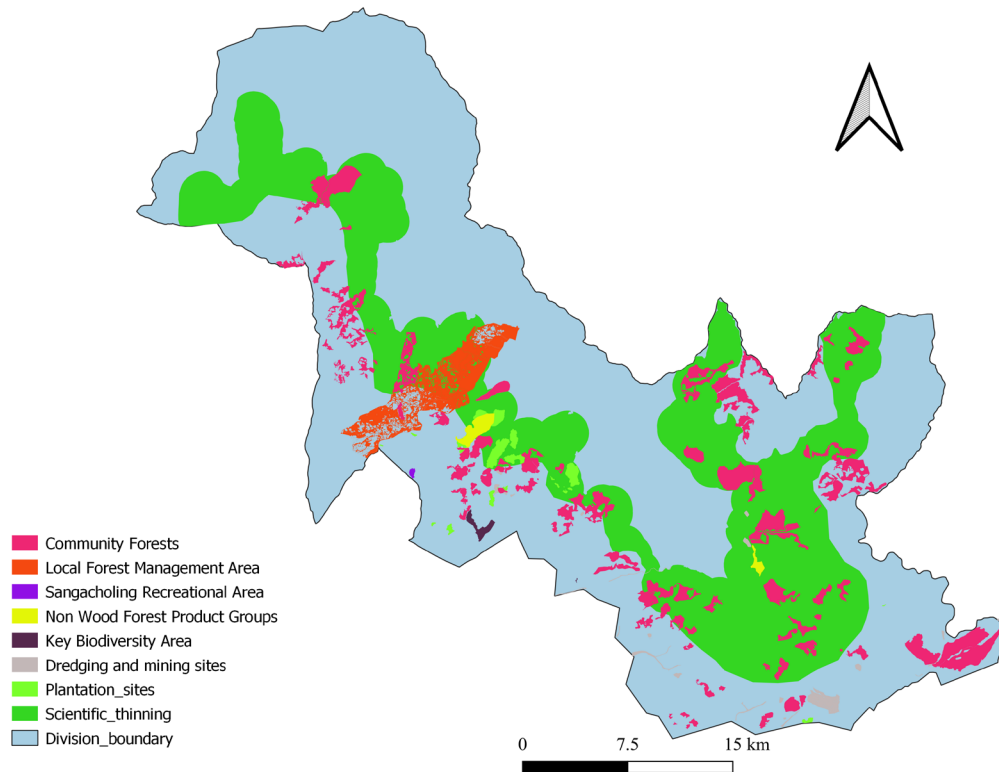


Figure 15: Overall existing management regimes

Upon finding out the total area under the existing management regimes the area outside of the it was calculated based on the three management circles. The total area outside of the existing management regime comprises of 81,525.37 ha which is 62.47 %. Within the total area outside of the existing management regimes the area under the protection is 9,915.37 ha which is 12.16 % and non-production area comprises of 12,846 ha which is 15.76 %.

The net potential production area comprises of 58,764 ha which is 72.08 % of the total area outside of the existing management regimes as show in figure 16.

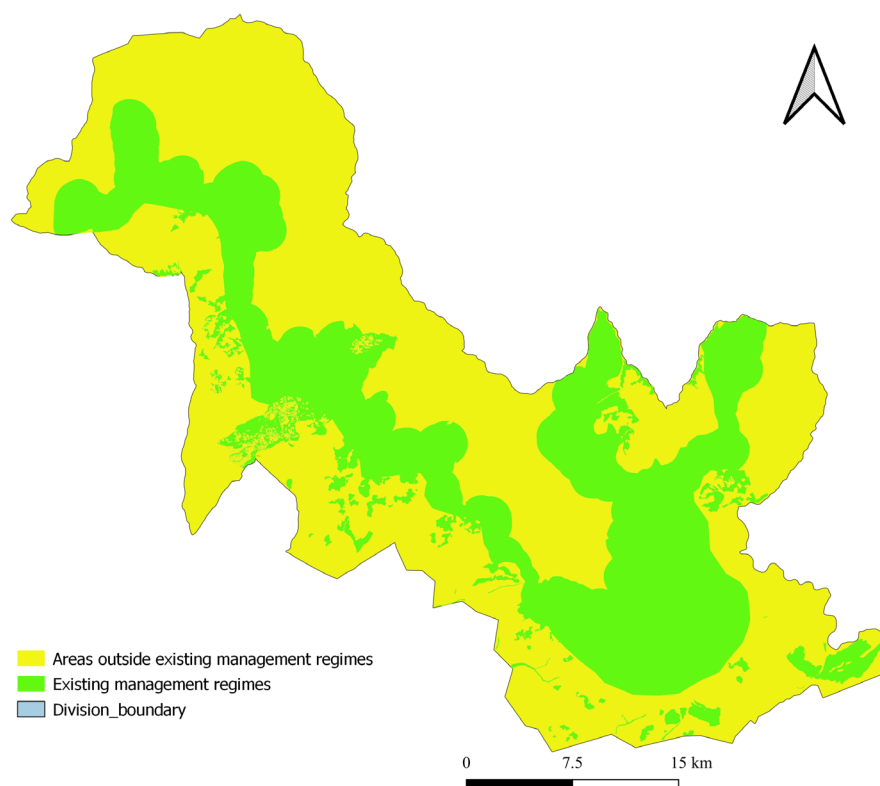


Figure 16: Areas outside existing management regimes

2.5.3 Forest Resource Utilization

The forest resource utilization record has been generated from the FIRMS for the DFO, Samtse as presented below spanning a period of five years between 2021 to 2025.

Table 19: Information on Forest Resources Utilization

Sl no.	Product	Quantity-unit	Time span (2021-2025)	Remarks
1	Volume of commercial timber allotted	9,904.17 m ³	5 years	Timber allotted on realizing commercial royalty.
2	Volume of rural timber allotted	20,406.6 m ³	5 years	Timber allotted on realizing subsidized royalty for new house construction, renovation, cowshed construction, extension and firewood allotment

3	Quantity of NWFP allotted		5 years	
	<i>Bambusa alamii</i>	2 nos.		
	<i>Bambusa balcooa</i>	80 nos.		
	<i>Bambusa nutans</i>	1930 nos.		
	<i>Bambusa</i> spp.	2064 nos.		
	<i>Bambusa vulgaris</i>	510 nos.		
	<i>Calamus and Daemonorops</i> spp.	11 head loads		
	<i>Dendrocalamus hamiltonii</i>	690 nos.		
	<i>Dendrocalamus</i> spp.	170 nos.		
	<i>Fragesia</i> sp.	2751 nos.		
	<i>Ficus</i> sp.	20 bundles		
	Large bamboo	10,207 nos.		
	<i>Piper</i> spp.	40 Kg		
	<i>Plectocomia himalayana</i>	8 head loads		
	<i>Rubia cordifolia</i>	1,500 Kg		
	Small bamboo	3,428 nos.		
	<i>Thysanolaena</i> spp.	14 head loads		
	Wood burr	13 nos.		
	<i>Yushania maling</i>	4,228 bundles		
4	Quantity of dredging and surface collection materials allotted		5 years	
	Aggregates	505,744 m ³		
	Boulder	538,656 m ³		
	Clay soil	8 m ³		
	Gravels	197,064 m ³		
	Leaf mould	16 m ³		
	Riverbed materials	856,088 m ³		
	Sand	81,160 m ³		
	Stone	276,352 m ³		
	Stone chips	86,824 m ³		
	Stone dust	15,680 m ³		
5	Total SRF land allotted for developmental activities	2,364.39 ha	5 years	This includes SRF land allotted for farm road, approach roads, transmission lines, land substitute, land exchange, land lease, land allocated for project developments etc.

6	Total forest area lost from SRF land allotted for developmental activities	692.93 ha	5 years	This is the total forest area lost from SRF land allotment under sl.no 5
7	SRF land destroyed by Forest Fires	47.35 ha	5 years	SRF land destroyed by forest fire
8	SRF land affected by pest and diseases	0.073 ha	5 years	SRF land destroyed by pest and diseases

2.6 Local People and Livelihood

Samtse is among the largest districts in Bhutan, with a population of 62,590 according to the PHCB, 2017. It is home to three primary ethnic groups: the Lhotshampas, Adibashis, and Doyaps. Furthermore, since the initiation of resettlement program in 1998, individuals from other Dzongkhags have moved into Gewogs like Norgaygang, Tashicholing, Namgaycholing, Sangacholing, Yoeseltse, Ugyentse, Norbugang, Denchukha, and Dophuchen. The highest number of households are located in Tendruk, Tading and Dophuchen Gewogs whereas least is located under Ugyentse and Dumtse Gewogs.

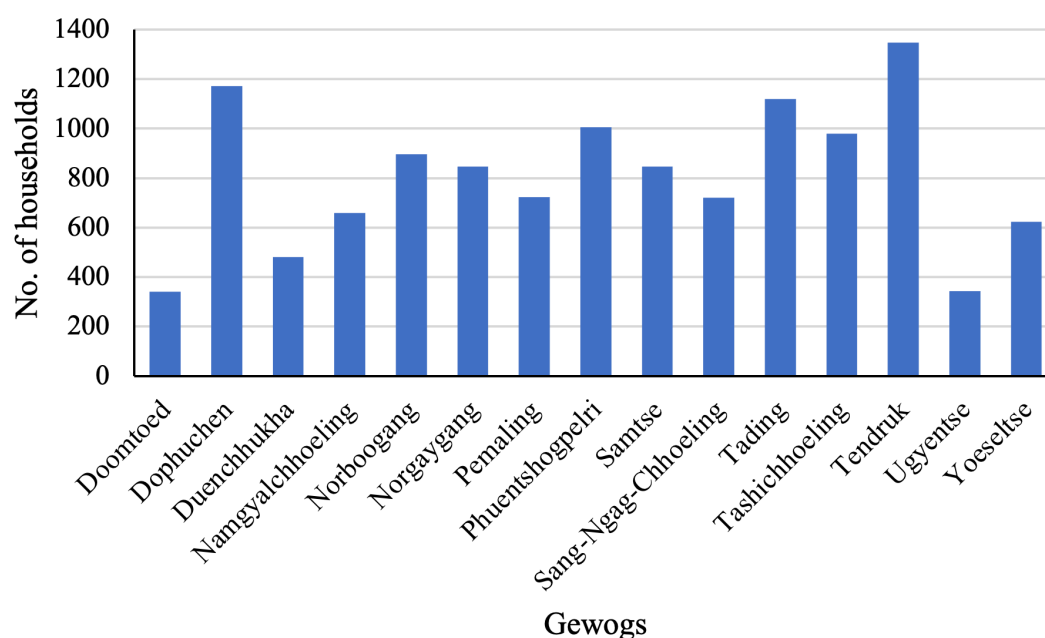


Figure 17: Households distribution across the Gewogs as per NSB, 2018

The study surveyed 1,787 households, accounting for 14.7% of the total 12,107 households. The average age of respondents was 50, with the youngest being 15 years old and the oldest 89. Women-headed households represented nearly 17% (305 households), while male-headed households made up 83% (1,484 households). Male-headed households demonstrated both higher literacy and illiteracy rates at 42.9% and 56.7%, respectively, compared to women-headed households, which showed lower rates of literacy (25.2%) and higher rates of illiteracy (74.8%). Among household heads, those with a primary education exhibited the highest literacy rate at 18.3%, followed by secondary

education at 12.6% and Non-Formal Education (NFE) at 7.3%. Other categories, including Bachelor's degrees, formal monastic education, Gomchen/lay monk training, and master's degrees, collectively accounted for 1.9%. The overall illiteracy rate among household heads was 59.8%.

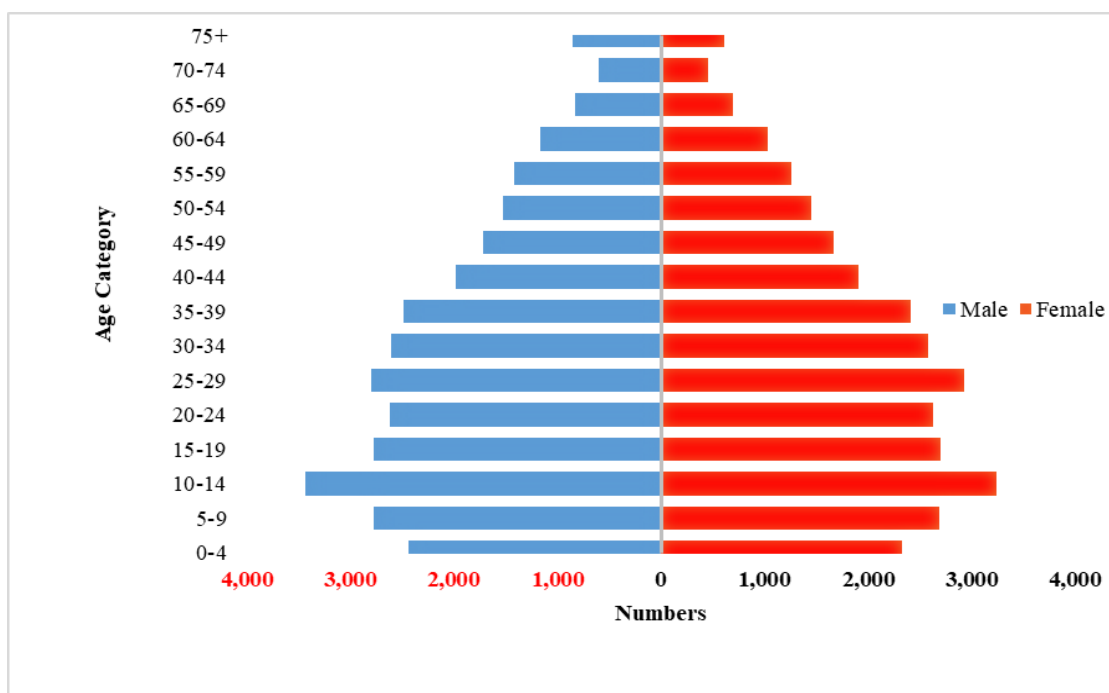


Figure 18: Population distribution by gender and age group as per PHCB, 2017

Household annual expenses were divided into 13 categories. Communities residing in the Samtse living landscapes had an average annual expenditure of Nu. 49,582. The highest share of expenses was allocated to household utilities, accounting for 40%, followed by house construction and renovation at 25.1%, and rituals at 13%. Additionally, approximately 11.8% of the total expenditure was dedicated to education.

Household income plays a key role in assessing the livelihood status of communities. The average annual income for households in the Samtse living landscapes is estimated at Nu. 51,559.6. Agriculture accounts for 16.4% of the total income, business 17.7%, labor wages 14.2%, and livestock 10.2%. The primary income source, however, comes from various other activities, comprising 35.8% of the total income. This significant proportion can be attributed to employment opportunities available in nearby towns. Notably, activities like beekeeping, the sale of non-wood forest products, and tourism contribute less than 1% to the overall income.

Within the jurisdiction of DFO, Samtse, landholdings are categorized into Chuzhing (wetland), Kamzhing (dry land), orchards, and kitchen gardens. Norgaygang Gewog has the largest area of dry land, totaling 2,946.09 acres, while Tashicholing Gewog has the smallest, with 450 acres.

For wetlands, Yoeseltse Gewog has the most extensive area, covering 1,000 acres, while Tading Gewog has the smallest, with only 50 acres. In terms of orchard land, Yoeseltse Gewog leads with 360 acres, whereas Norgaygang Gewog has the smallest area. Kitchen gardens are most prominent in Samtse Gewog, covering 265 acres.

As per the data from NSB (2021), communities living inside DFO, Samtse are growing mainly 6 varieties of cereal crops. Paddy and Maize are the most crops grown in the district with annual production of 4066.39 MT and 2951.34 MT, respectively. The other include millet, buckwheat, wheat and barley (Figure 19).

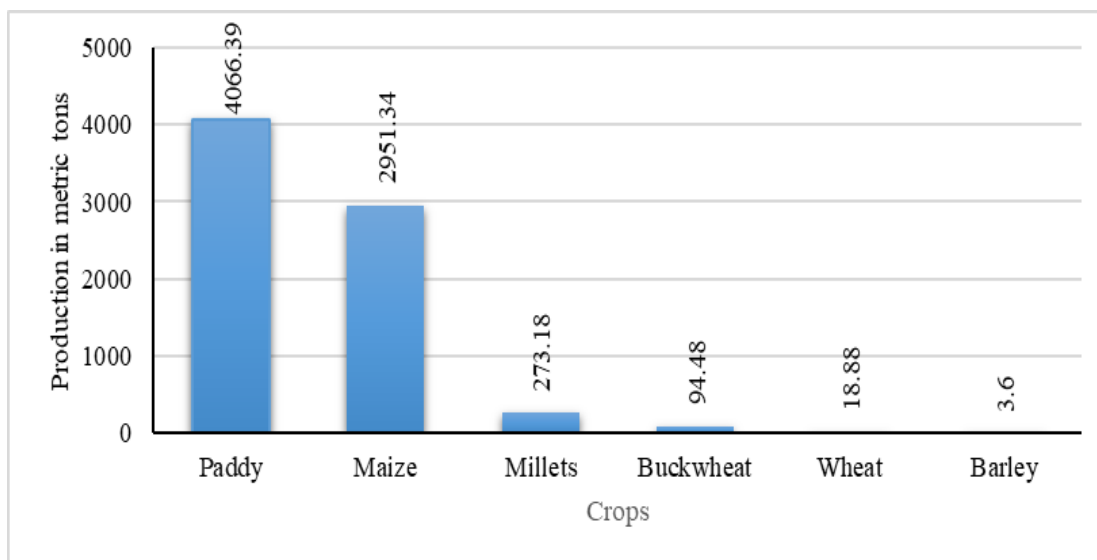


Figure 19: Varieties of cereal crops grown under Samtse Dzongkhag

Farmers were surveyed about their views on the trends of nine types of forest resources they rely on. The responses varied, with many reporting no significant changes, some noting a decrease, and others observing an increase. Regarding timber, approximately 75 households believed its availability was declining, while 50 households thought there was no change. For firewood, 225 households felt its availability remained the same, while 175 noted a decrease. Notably, the data showed higher response rates for resources like timber, firewood, and fodder, in comparison to others such as leaf litter, boulders, sand, and medicinal plants. This suggests that most farmers prioritize timber, firewood, and fodder as key forestry resources (Figure 20).

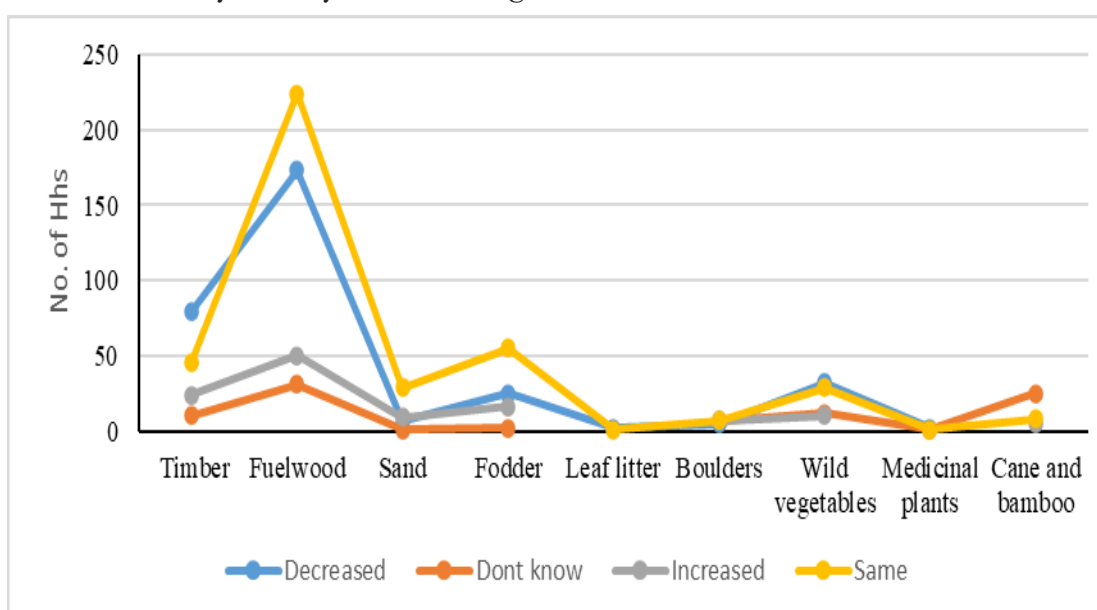


Figure 20: Perceived trend of forest resources collected by the communities

Within the jurisdiction of DFO, Samtse, local communities engage in the collection of nine types of forest resources. Among the various forest resources firewood represents the primary resource gathered, closely followed by extraction of timber. Additionally, there is a significant prevalence of fodder collection within the communities. However, the collection of wild medicine is less common in the Division. (Figure 21).

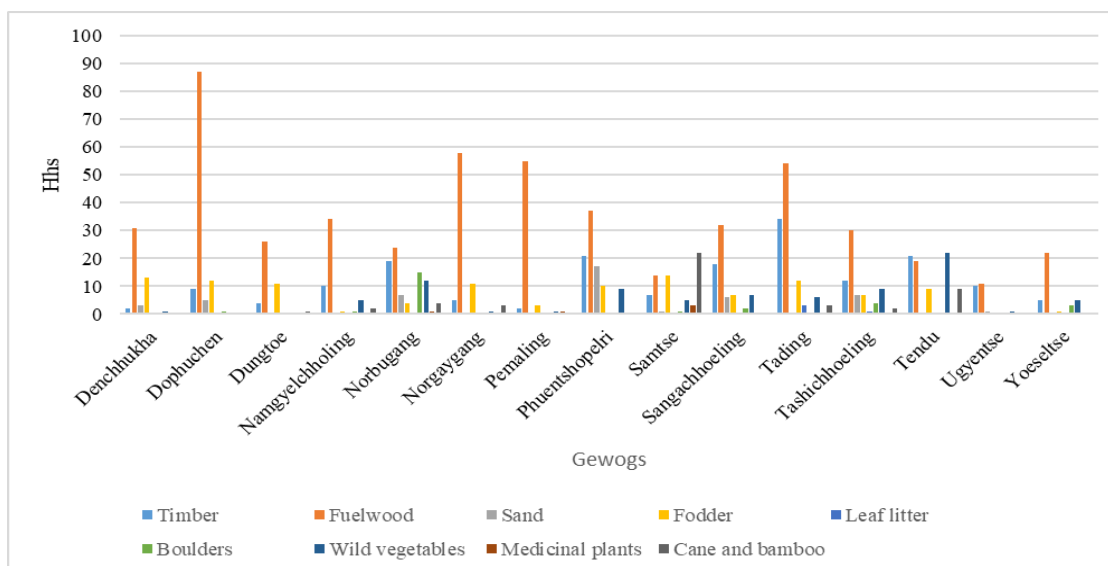


Figure 21: Different types of forest resources collected by the communities

2.7 Human Wildlife Conflict

Similar to the rest of the Divisions across the country, Samtse has been experiencing HWC. Despite many efforts from the concerned and relevant agencies, finding the best solution is yet to be released. The common predator species comprises Common Leopard, Asiatic Black Bear, Leopard Cat and Monitor lizard.

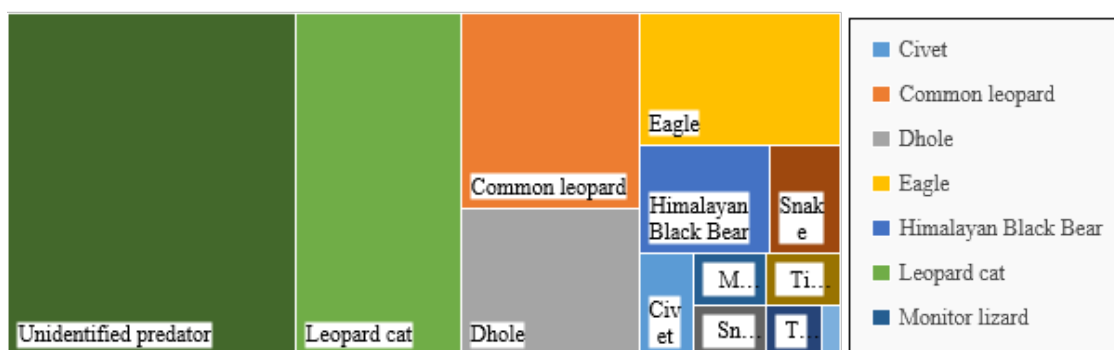


Figure 22: Types of wild predators raiding livestock

Over the last three years, from the year 2021 to 2023, the people of Samtse district lost a total of 152 numbers of livestock to 11 different types of wild predators from the household interviewed for the assessment. The highest livestock depredation was observed in the year 2022 (n = 85) and the least in the year 2021 (n = 27).

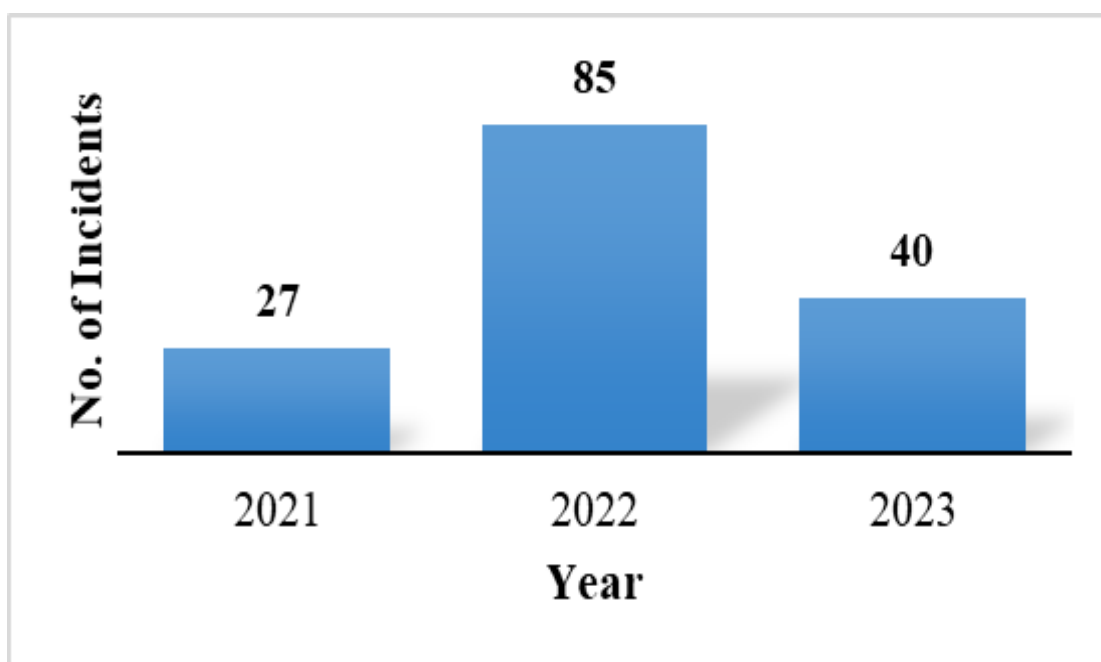


Figure 23: Number of livestock killed in last three years

As per the report 7 types of livestock were lost to the wild predators. The goat accounted the highest with 61 incidences, followed by poultry with 48 incidences, local cattle 25, jersey and sheep with 8 incidences each and two cases for a pig and one dog, table 20.

Table 20: Livestock depredation by wild predators

Species	Frequencies	Percent %
Goat	61	39.9
Poultry	48	31.4
Local breed cattle	25	16.3
Jersey	8	5.2
Sheep	8	5.2
Pig	2	1.3
Dog	1	0.7
Total	152	

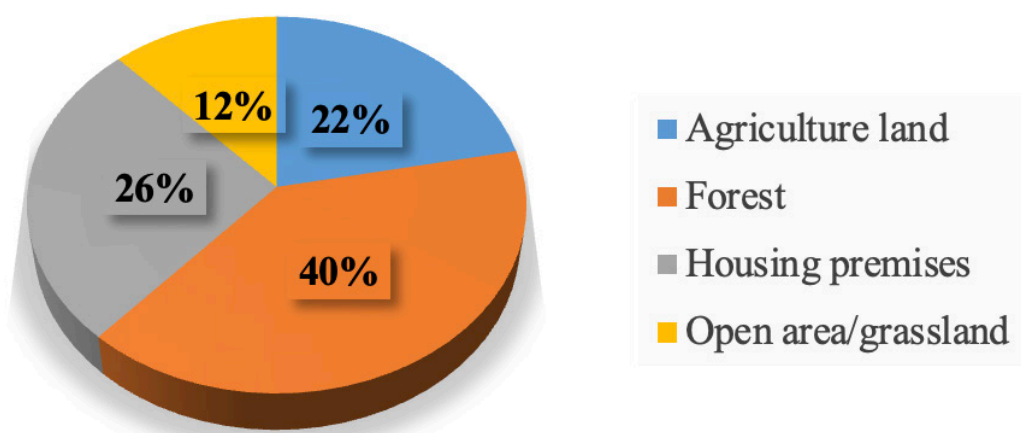


Figure 24: Locations of livestock attack by various predators

The reports of livestock killings suggest that the attacks occur regardless of the season. According to the data, these incidents appear to be most frequent between June and October. An analysis of the financial losses faced by farmers due to wild predators shows that the highest loss was Nu. 192,500/-, while the smallest was Nu. 300/-. The financial impact on farmers varies based on the breed and type of livestock, indicating that the greatest number of livestock lost does not always correspond to the largest financial loss. The attacks by common leopards and leopard cats result in particularly substantial losses. Records show that 40% of wildlife attacks occur in forests due to open grazing, followed by 26% near residential areas and 22% on agricultural land.

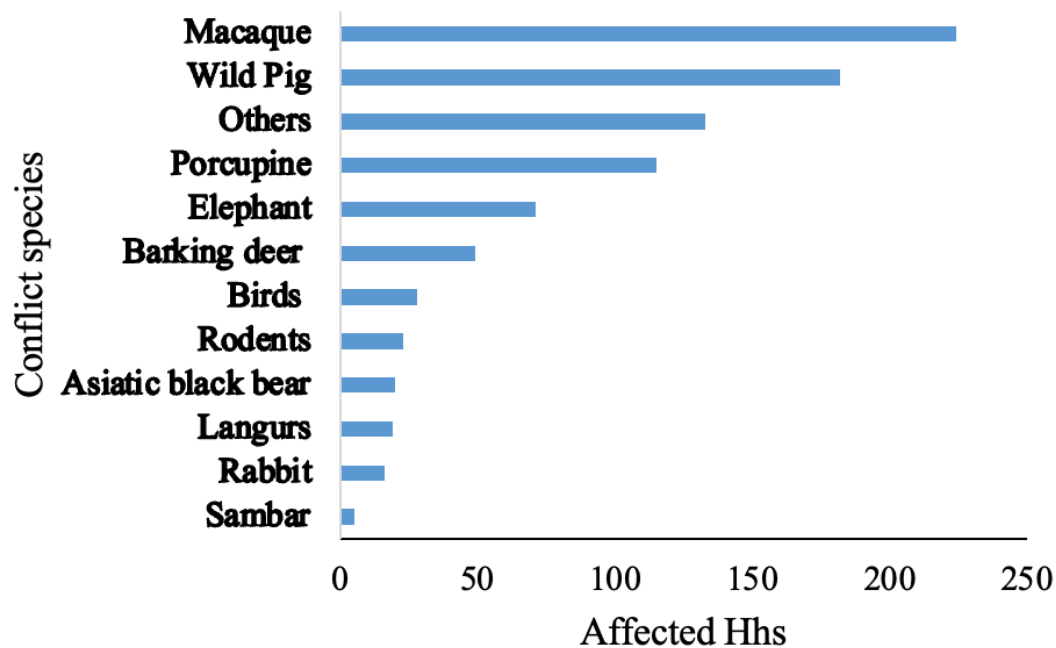


Figure 25: Conflict species

Besides the losses to livestock farmers bear the losses of crop damages by the wild animals. Figure 25 reveals 11 most common wild animals that damages crops. The wild pig, Macaque, and Porcupine are recorded as the most common conflicting species. Significant households are also affected by unidentified species of wildlife.

2.8 Climate Change and its impacts

The report on climate change and its impact was derived from the socio-economic survey and climate vulnerability and capacity assessment survey that was conducted in 2023 by maintaining 15% sampling intensity across the 15 Gewogs under the jurisdiction. This survey was carried out with the objective to assess and understand the vulnerability of Samtse living landscape and social vulnerability including identification of key issues and challenges and adaptive capacity of the local communities. The study was based on the Intergovernmental Panel on Climate Change (IPCC) 2001 framework for evaluation of vulnerability which states that vulnerability (CV) is a function of exposure (E), sensitivity (S), and adaptive capacity (AC). For the purpose of this study socio-economic approach involving the analysis of social, political and economic aspects was adopted.

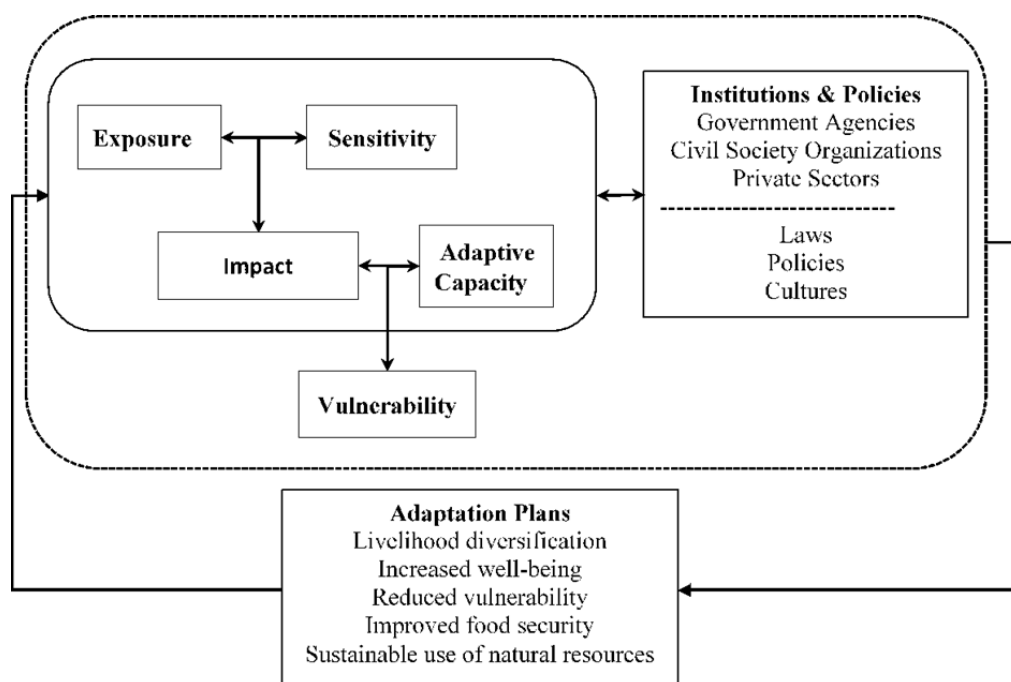


Figure 26: Conceptual framework for vulnerability assessment and developing adaptation measures

Indicators for exposure, sensitivity and adaptive capacity were identified and gathered from relevant literature on similar studies. According to O'Brien et al. (2004, p. 305), exposure is defined as “either long-term changes in climate conditions or changes in climate variability, including the magnitude and impacts of extreme events.” This study adopts this definition, with a primary focus on climate change and extreme events. Indicators of exposure include perceptions of historical climate changes, the occurrence of extreme events, and their impacts (Piya et al., 2016). Climatic variables such as temperature extremes, changes in rainfall seasonality, and the occurrence of extreme events were analyzed. The extreme events considered include landslides, flash floods, GLOFs, windstorms, seasonal droughts, and heatwaves.

Sensitivity is defined as the “degree to which a system is modified or affected by an internal or external disturbance or set of disturbances” (Gallopín, 2003, p. 4). This study adopts an approach to sensitivity that examines the cumulative impacts of past climate hazards on livelihoods as an indicator for future sensitivity. The underlying assumption is that households that have experienced greater impacts in the past are likely to be more sensitive to future climate changes. For this study, climate-sensitive sectors such as agriculture, water, livestock, forests, health, and infrastructure were analyzed to assess sensitivity. Indicators included a decrease in crop yield, increased incidences of pests and diseases, higher infestations of invasive weeds in agricultural and forest lands, changes in forest cover and composition over the past decade, variations in the availability of irrigation and drinking water, changes in wildlife populations, and fatalities due to vector or waterborne diseases.

The adaptive capacity of households was assessed as the sum of five types of livelihood assets: physical, human, social, natural, and financial assets (Gerlitz et al., 2017; Maiti et al., 2015; Piya et al., 2016). The underlying hypothesis is that livelihood outcomes de-

pend on ownership or access to these assets, with households possessing a diverse range of assets being better equipped to adapt and cope with adversity. A diversified asset base allows households to substitute between assets and shift livelihood activities in response to the impacts of climate change (Piya et al., 2016).

Physical assets were evaluated through four indicators: access to socio-economic facilities, access to basic household amenities, access to roads, and communication media. These facilities enhance adaptive capacity, particularly during climate disasters and emergencies. For instance, ownership of a mobile phone, radio, or television facilitates access to weather-related information, while proximity to roads improves adaptive capacity by enabling access to markets, income opportunities, and emergency services such as hospitals.

Human assets included four indicators: literacy of the household head, vocational skills of household members, gender of the household head, and awareness of climate change adaptation. Literacy enhances the ability of household heads to make informed decisions regarding adaptation strategies, while vocational skills enable income generation from non-farm activities, which are less sensitive to climate variability.

Social assets were represented by indicators such as household membership in community groups, the type of group, and strategies for meeting farm labor requirements, such as hiring, labor exchange, or mechanization. Labor exchange, a traditional rural practice, not only strengthens community bonds but also provides a cost-effective means to address labor shortages, enhancing adaptive capacity.

Natural assets included seven indicators: household landholdings, the condition of nearby forests and wetlands, the availability of forest resources, alternative sources of drinking and irrigation water, and household food self-sufficiency. These resources collectively increase households' resilience to climate impacts.

Financial assets comprised indicators like access to credit facilities and availability of savings, both of which enhance a household's ability to manage climate-related risks and invest in adaptation measures.

In total, 6 indicators were used for exposure, 14 for sensitivity, and 21 for adaptive capacity to assess vulnerability. Each indicator was quantified using measurable parameters. Most indicators were assigned scores ranging from 0 to 2 based on the level of impact on communities.

In total, 6 indicators were used for exposure, 14 for sensitivity, and 21 for adaptive capacity to assess vulnerability. Each indicator was quantified using measurable parameters. Most indicators were assigned scores ranging from 0 to 2 based on the level of impact on communities.

The observational data of Bhutan for temperature and rainfall is available since 1996 in NCHMS's data repository. Weather data spanning the past three decades has been gathered from 15 weather stations across the country. In Samtse Dzongkhag, data has been collected from the three weather stations namely; Tashicholing, Tendruk, and Samtse. The observational data on maximum and minimum temperature of these three stations are available from 1996 to date as depicted in Figure 27.

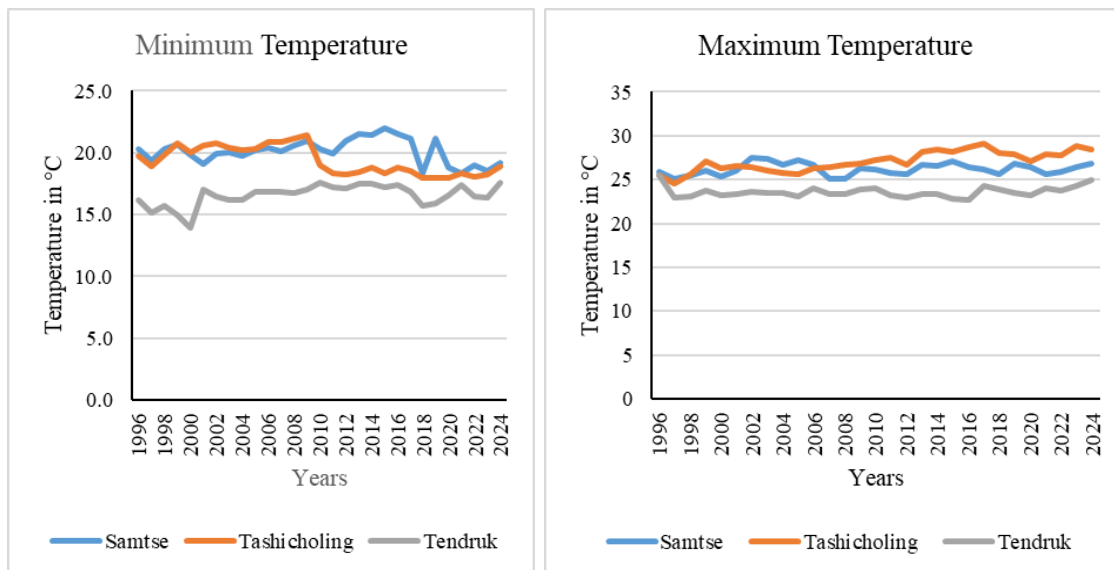


Figure 27: Average maximum and minimum temperature of Samtse

The historical rainfall pattern of Samtse landscape from 2014 to 2023 exhibits a clear seasonal trend, with pronounced spikes during wet seasons and minimal precipitation during dry periods (Figure 28). Notable peaks in 2019 and 2020 suggest periods of intense rainfall events. This variability underscores the significant role of monsoonal systems in shaping water availability, ecosystem health, and the potential impacts of climate change on these landscapes.

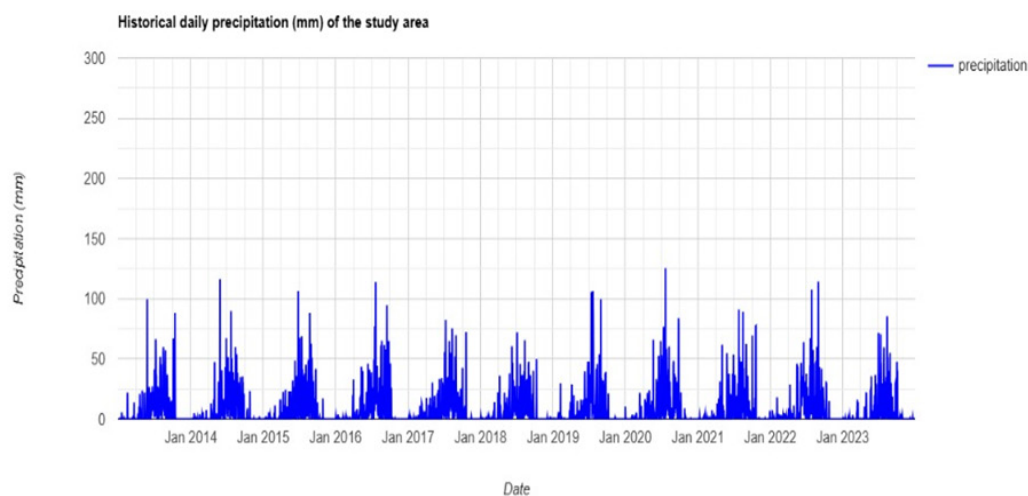


Figure 28: Precipitation of Samtse Dzongkhag (2014-2023)

To estimate exposure, six indicators were analyzed, all of which showed a statistically significant positive contribution ($p < 0.001$), as anticipated. Among these, extreme temperature impacts, rainfall seasonality, rainfall seasonality impact types, and extreme event types contributed most to the overall exposure index, surpassing the influence of temperature extremes and extreme events. Model weights revealed that the highest contribution came from rainfall seasonality impact types, followed by rainfall seasonality. The expo-

sure-index map presented in Figure 29 suggests that out of 15 Gewogs, Namgaycholing and Samtse Gewogs are more exposed to climate vulnerability while Sangacholing and Phuntshapelri are least exposed.

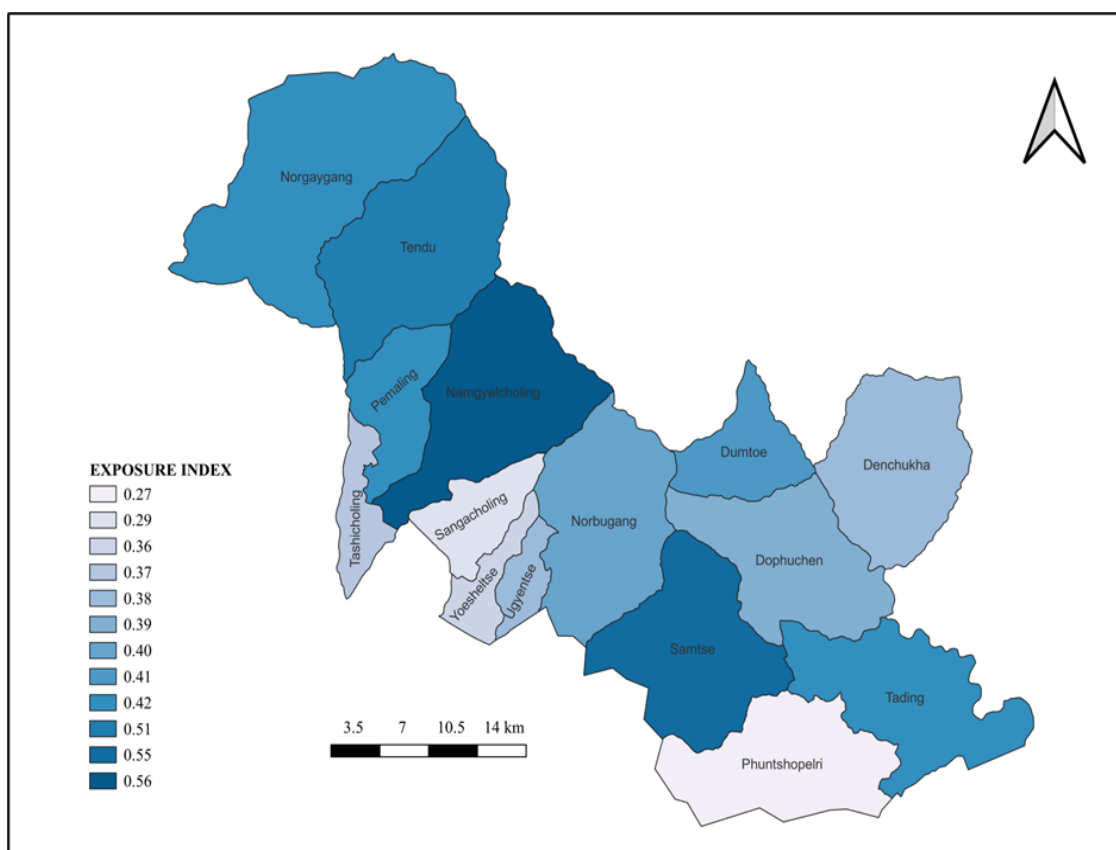


Figure 29: Normalized exposure index score map of DFO, Samtse

Sensitivity was assessed using a total of 14 indicators, all of which positively influenced the sensitivity index. However, the contribution of the wildlife population to sensitivity was statistically insignificant ($p > 0.05$). Among the indicators, the weightage of invasive weeds made the highest contribution to the sensitivity index, followed by invasive weed occurrence, pest and disease prevalence, and crop yield. In contrast, vector- and water-borne diseases contributed the least, with vector-borne diseases ranking just above them.

The sensitivity-index map presented in figure 30 suggests that out of 15 Gewogs, Samtse and Dumtoe Gewogs are most sensitive to climate vulnerability while Ugyentse and Norgaygang are least sensitive.

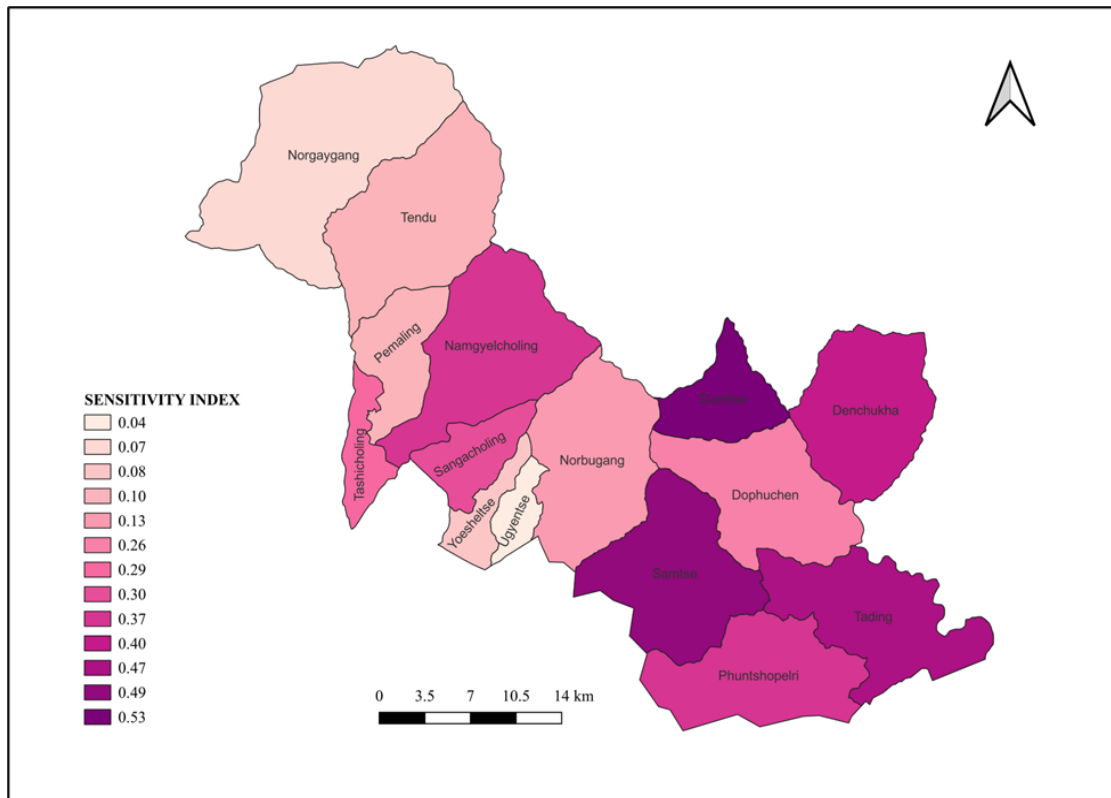


Figure 30: Normalized sensitivity score index score map of DFO, Samtse

Adaptive capacity was evaluated using a total of 20 indicators, with their respective contributions. Compared to household-head literacy, factors such as community group membership types, community group membership, vocational skills, forest produce types, access to household facilities, and credit access contributed more significantly to the adaptive capacity index. On the other hand, indicators like forest status and wetland status showed no significant contribution to the overall adaptive capacity index. These indicators were retained as the model's performance remained robust ($p < 0.001$).

The normalized adaptive capacity scores, ranging from 0 to 1, show minimal variation across Gewogs. Dumtse and Namgaycholing Gewogs achieved the highest scores on the adaptive capacity index, while Gewogs such as Norgaygang and Ugyentse scored the lowest.

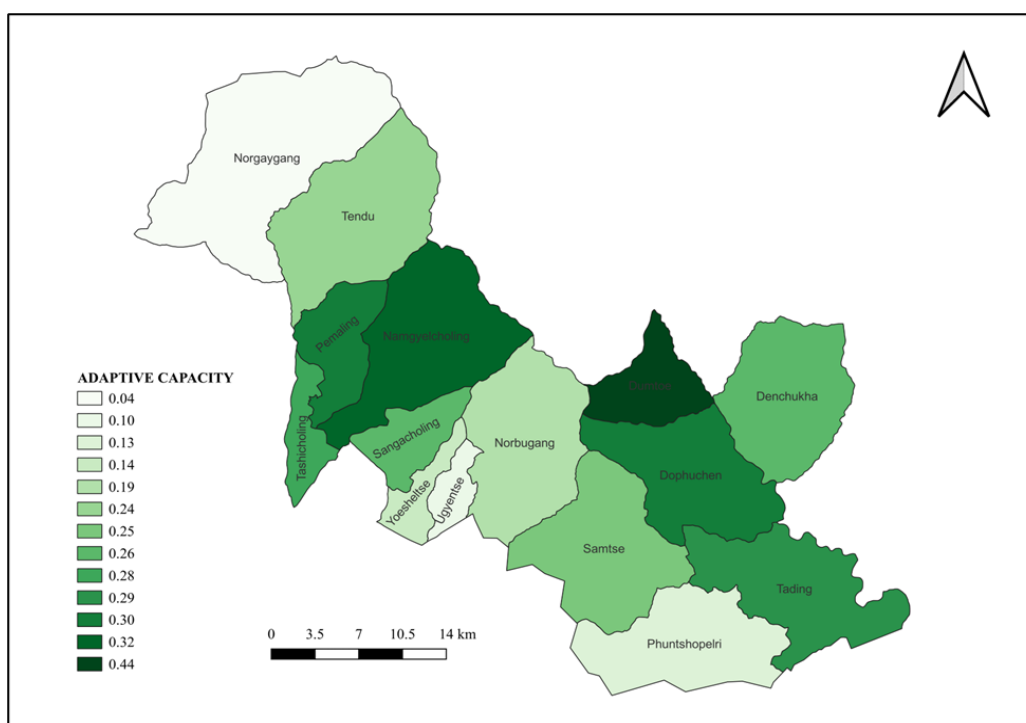


Figure 31: Normalized adaptive capacity index score map of DFO, Samtse

Overall vulnerability is calculated by subtracting of sum of exposure and sensitivity from the adaptive capacity. The vulnerability index scores of the Gewogs of DFO, Samtse are presented in Figure 32. Gewogs with higher negative scores on the vulnerability index are more vulnerable. However, a positive score of the vulnerability index does not indicate that those gewogs are not vulnerable, but are only less vulnerable.

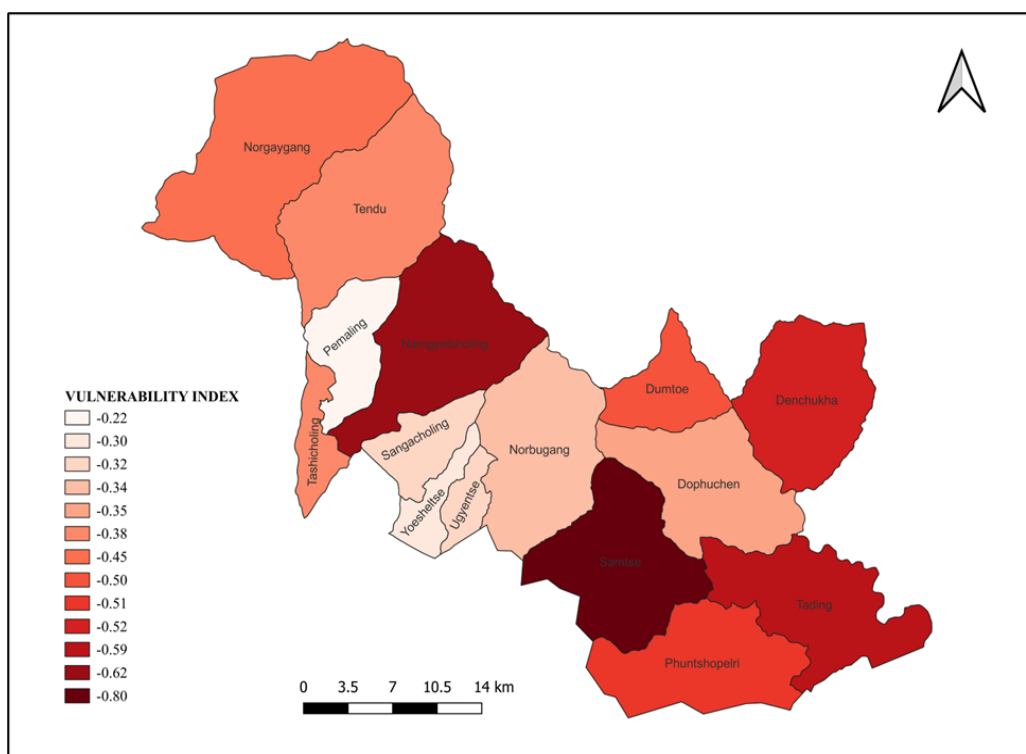


Figure 32: Normalized Vulnerability index score map of DFO, Samtse

2.9 High Conservation Value Areas

2.9.1 HCVA overview

The concept of High Conservation Value (HCV) was introduced in 1998 by the Forest Stewardship Council (FSC), a global non-profit, multi-stakeholder organization founded in 1993 to promote responsible forest management and certification. The HCV approach seeks to safeguard and enhance critical environmental, social, and cultural values through a three-step process: identification via assessments and stakeholder consultations, management through the application of appropriate measures, and monitoring to ensure the effectiveness of these measures. Over time, the approach has been widely adopted in voluntary certification schemes, particularly in forestry and agriculture, and has become an integral part of corporate sustainability policies while gaining increasing recognition in national and regional frameworks.

In Bhutan, the HCV approach plays a vital role in complementing and reinforcing conservation efforts outside protected areas. Building on international best practices set by the HCV Network, the country developed its National Interpretation of HCV in 2022. HCV management practices have since been applied across nine IKI landscapes, providing a structured mechanism to maintain and strengthen the country's environmental, social, and cultural values in line with global sustainability commitments.

Six categories of conservation values have been identified globally as stated below;

1. **Species Diversity.** Concentrations of biological diversity including endemic, rare, threatened and endangered species, that are significant at global, regional or national levels.
2. **Landscape-level ecosystems, ecosystem mosaics and Intact Forest Landscapes.** Large landscape-level ecosystems, ecosystem mosaics and IFL that are significant at global, regional or national levels, and that contain viable populations of the great majority of the naturally occurring species in natural patterns of distribution and abundance.
3. **Ecosystems and habitats.** Rare, threatened, or endangered ecosystems, habitats or refugia.
4. **Ecosystem services.** Basic ecosystem services in critical situations, including protection of water catchments and control of erosion of vulnerable soils and slopes.
5. **Community needs.** Sites and resources fundamental for satisfying the basic necessities of local communities or indigenous peoples (for livelihoods, health, nutrition, water, etc.), identified through engagement with these communities or indigenous peoples.
6. **Cultural values.** Sites, resources, habitats and landscapes of global or national cultural, archaeological or historical significance, and/or of critical cultural, ecological, economic or religious/sacred importance for the traditional cultures of local communities or indigenous peoples, identified through engagement with these local communities or indigenous peoples.

2.9.2 HCVA for DFO, Samtse

Based on the National Interpretation for the Identification of High Conservation Values in Bhutan, 2022 all the potential sites were screened within the Division. Prior to the actual screening exercise, a series of discussions were held to identify potential HCV areas under each category. The potential sites were listed based on proposals that came from the four range jurisdictions. These ideas were later used in the screening process to validate values within the jurisdiction and finalize the HCV for the Division. The Division had listed 7 proposals under HCV I (species conservation), 4 proposals under HCV 5 (community needs), 2 proposals each under HCV 4 (ecosystem service) and HCV 6 (cultural values) and 1 proposal each under HCV 2 (landscape level ecosystem services) and HCV 3 (ecosystem and habitats). These ideas were further provided with priority ranking while submitting the list to the Department.

2.9.3 Screening and Identification of the HCVA

The screening process was conducted in April 2023 following the steps mentioned in operational guideline for HCV management and monitoring.

1. Defining purpose and scope

Spatial analysis of the IKI living landscape was conducted to define the geographic scope for identification of HCVs.

2. Gathering information for analysis

With the technical support of a specialist from HCV Network data gap analysis was conducted before the actual screening process. Both primary and secondary data sources such as (Tiger, NFI, Snow Leopard) surveys including wildlife observation in SMART data for species distribution and analysis were used. Additionally, SMART data was also used for threat analysis at both national and DFO level.

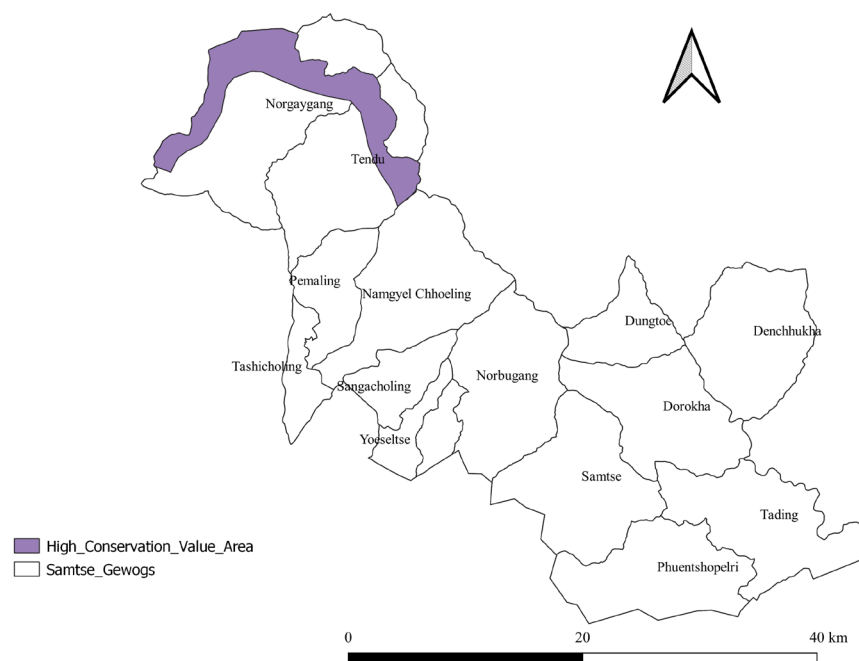


Figure 33: High conservation Area under DFO, Samtse

3. Determining the likely presence of HCV

The high probability of HCV presence within the Division was assessed using spatial analysis of critical species which involved overlaying species data identified by the DoFPS, Task Force and the Division.

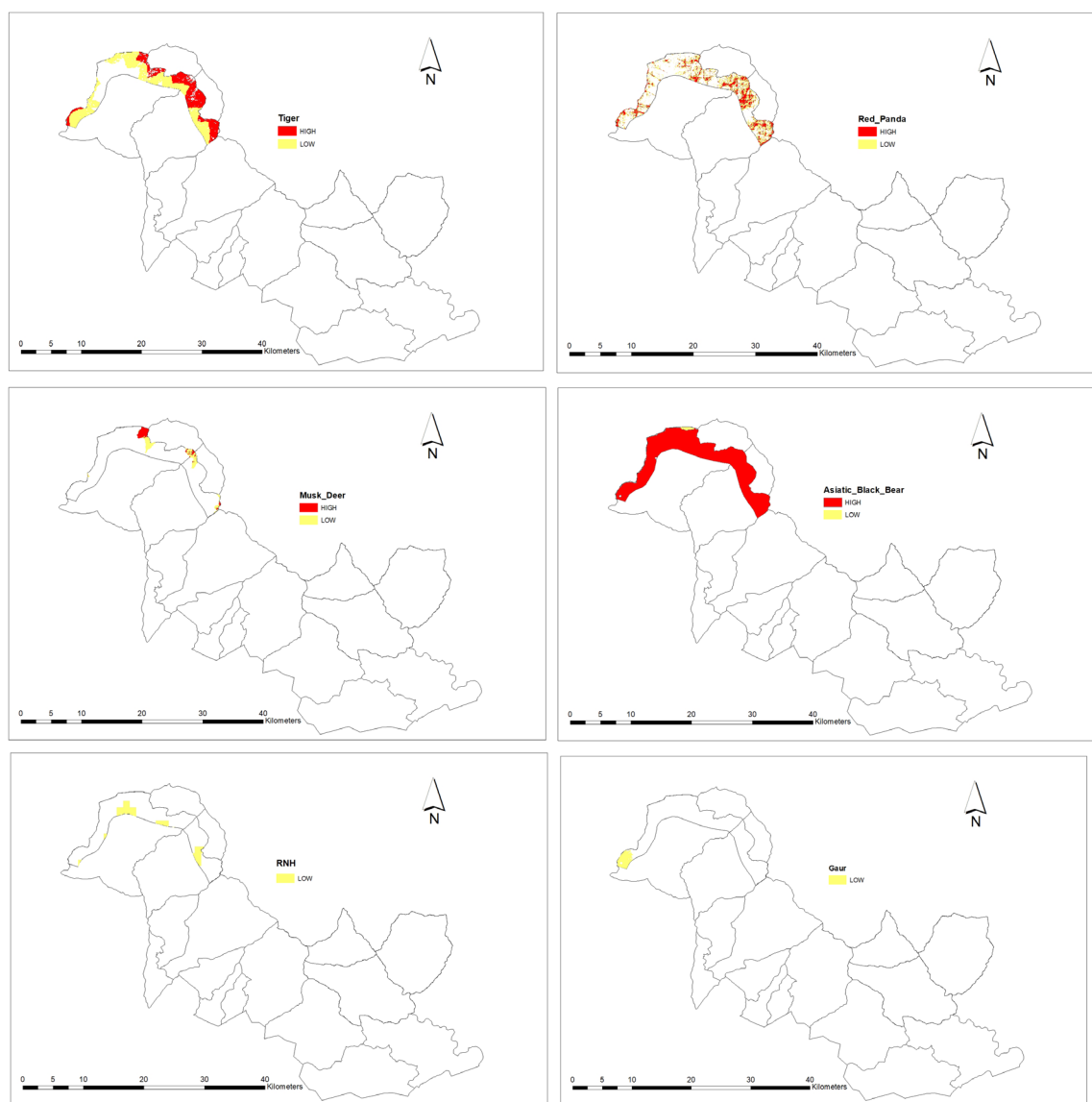


Figure 34: Spatial data analysis of HCV presence

2.9.4 Significance of HCV

The DFO, Samtse identified the conservation of Nub Dalemkha Landscape as an HCV site under category II. The area falls under Norgaygang and Tendruk Gewogs covering an area of 8,256 Ha. The rationale for identifying the area were; the proposed site is important habitat for conservation of tiger, musk deer, rufous-necked hornbill, gaur, red panda etc. The landscape connects to the Kanchenjunga Landscape of Sikkim and Chumbi valley of China. The area is of great significance as it will facilitate movement of

wildlife across the landscape. There is evidence of tiger movement across the landscape from the HCV area to Sikkim. Secondly, the site has potential for promoting ecotourism by reviving ancient trade routes and trails. Thirdly, the site is located far from the prospective industrial and developmental plans that might affect the HCV site. Finally, the proposed site also does not affect any of the important areas declared in the baseline report on National Land Use Zoning 2023.



Figure 35: High Conservation Value area

2.9.5 Threats and Strategic Approach to Mitigate the Threat

This step involved spatially overlapping presence of species with threats mapped in the Division. Based on the analysis, the HCV was mapped into four priority areas (High, Medium I, Medium II and Low). The Division is required to focus on Priority 1 areas which indicate high likelihood HCV presence and has significant threats that require the highest level of management to sustain HCVs.

Spatial analysis was carried out to also identify threats within the HCV site to assess the level of disturbance or the risk. Based on the outcome of the analysis the priority site for management and intervention was developed for the HCV.

Some of the threat parameters used for the assessment are as shown in Table 21.

Table 21: Threat parameters used for the assessment

Threats
Illegal logging
Poaching
Overfishing - Poisoning
Wildlife-Human Conflict / Retaliatory killing
Wildfire
Road Development
Overharvesting of NWFPs
Pests and Diseases

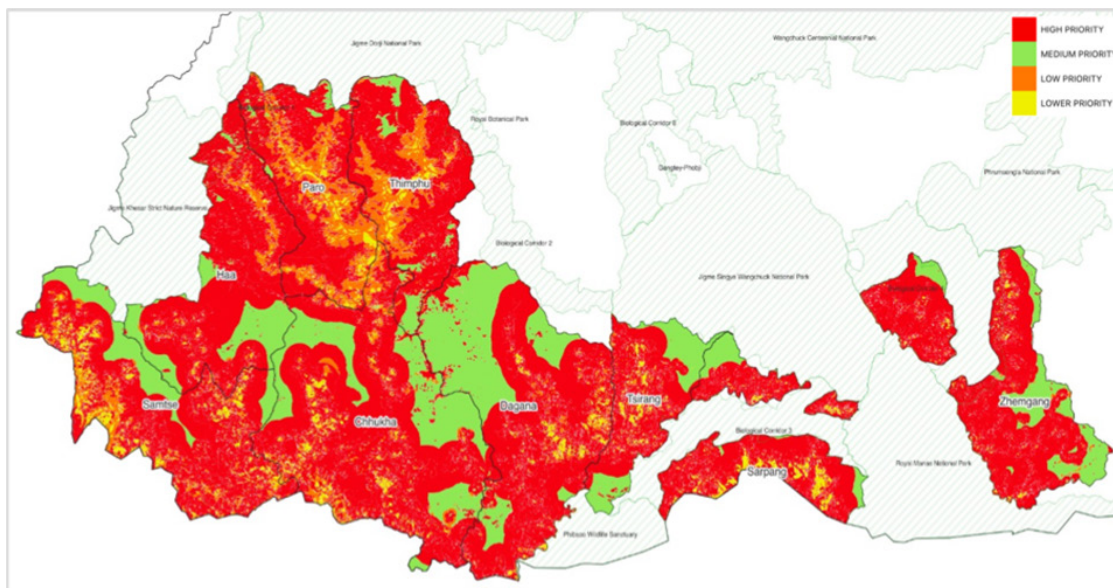


Figure 36: Threats in the IKI landscape

The spatial analysis of the threat data indicated that HCV area has significant threats from animal poaching and from the spread of pest and diseases whereas lesser threats from forest fire and illegal logging. It was observed that threats such as overfishing, HWC and overharvesting of NWFPs are negligible in the HCV area as shown in figure 37.

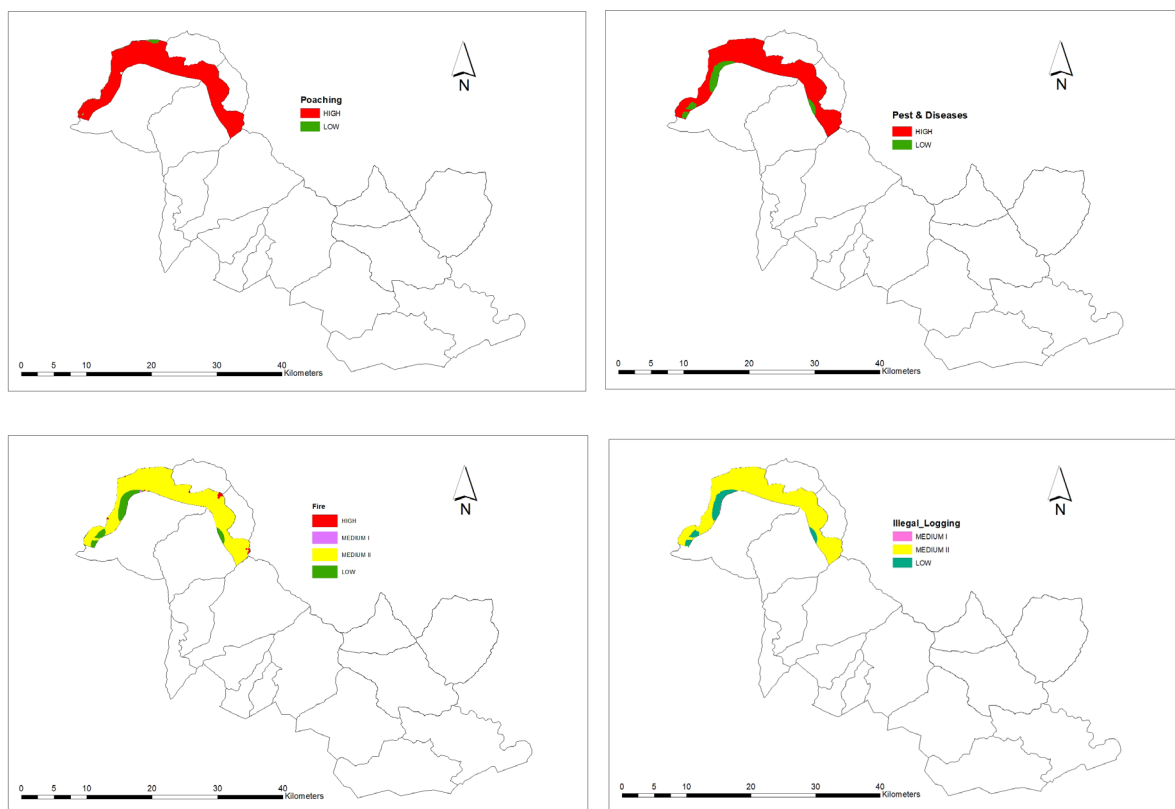


Figure 37: Threats within HCVs under the Division

Considering all the threats the area was mapped into four priority zones for initiating response as tabulated below:

Table 22: Response framework for priority HCVA produced by HCV screening

Threat level to HCVs	Probability of HCV Presence	
	Lower Probability	Higher Probability
Higher threat	Priority 3 (Low HCV Probability & High Threat) Precautionary Response	Priority 1 (High HCV Probability & High Threat) Active Response
Lower threat	Priority 4 (Low HCV Probability & Low Threat) Secondary Response	Priority 2 (High HCV Probability & Low Threat) Preventative Response

As per the directives of the taskforce the Division selected only one priority for the HCV area. For DFO, Samtse, the spatial analysis of the HCV area indicated considerable area under priority I and III as shown in figure 37. Therefore, the Division selected management intervention for priority I.

Table 23: Presence and magnitude of threats in HCVMA

HCV priority	Threats in HCVMA	Threat magnitude (H,M,L)*	Response mechanism
1	Poaching	H	Anti-poaching patrol
2	Pest and disease	M	Surveillance
3	Illegal logging	M	Patrol

* For setting a time frame for threat response, threat magnitude H must be implemented first followed by M & L in sequence (H: 1-3 years; M: 4-6 years; L: 7-10 years).

The Division shared the outcome of the screening results to relevant stakeholders that will guide in land use planning, conservation strategies and management actions. Some of the strategies that will guide in addressing the threats are;

Table 24: Threats and strategic approaches

Threats	Strategic approaches
Wild life poaching	Surveillance and monitoring; Institutional and HR Capacity; Awareness and education
Pest and diseases	Surveillance and monitoring. Conduct sanitation operations
Illegal logging	Sustainable Livelihoods; Surveillance and monitoring; Institutional & HR Capacity and Awareness and education

2.9.6 Management and monitoring of HCVA

The management and monitoring of HCVs is critical to ensuring the long-term viability and persistence of identified conservation values. Within the Division, HCV management and monitoring has been developed in line with the Operational Guidelines for the Management and Monitoring of High Conservation Value Areas in Bhutan (2025). The HCV area of Samtse Division has been designated as Priority 1, reflecting both the high likelihood of significant conservation values and the threats identified during the screening process. Accordingly, four strategies and eleven activities have been formulated to address these threats, with the aim of achieving four defined outcomes for effective management.

Similar to other management regimes, the HCV area will be subject to annual monitoring conducted by the Division using the prescribed format outlined in the national operational guidelines. In addition, the HCV area will undergo a mid-term evaluation in the first quarter of the sixth year and a final evaluation in the tenth year of the plan period. These evaluations will be coordinated and led by the Forest Monitoring and Information Division, ensuring accountability and alignment with national standards.

Chapter 3: Threats and challenges

3.1 Threats

There are several threats faced by the Division. The management plan has recorded 11 threats based on references such as Technical Need Assessment (TNA) & Capacity Building Action Plan (CBAP) 2022 and CVCA and SES report (2023) and also based on various other observations under the Division. These threats have been ranked using Miradi on the bases of scope¹, severity², and irreversibility³. As highlighted in the ranking has been done using colors and levels such as: Low, Medium, High, and Very High.

High-Priority Threats are the ones that are most urgent and serious and needs immediate actions whereas medium priority threats are those ongoing but of moderate concern which still requires steady management and monitoring. The low threats are those which are present but are not of immediate concern compared to other threats.

3.1.1 Human Wildlife Conflict

Despite continued efforts by the Division, along with support from the Dzongkhag Administration, Gewog offices, including NGOs, HWC remains a significant challenge. According to the CVCA and SES report, 2024 the Division recorded 152 cases of live-stock predation from surveyed households, resulting in estimated losses exceeding Nu. 3 million between 2021 and 2023. The main predatory species include common leopard, Asiatic black bear, civet, monitor lizard, dhole, snakes etc. This issue is especially severe along the southern border areas, where elephant-related conflicts occur throughout the year.

Crop damage is another major concern for the Division. The 2024 report identifies 11 key species responsible for the most significant destruction: macaques, wild pigs, porcupines, elephants, barking deer, birds, rodents, Asiatic black bears, langurs, hares, and sambar deer. The damage is most pronounced in border Gewogs such as Tashicholing, Samtse, Phuentshopelri, and Tading, where arecanut plantations and household properties are frequently affected.

To address these challenges, the Division has implemented various interventions over the years, including solar and electric fencing, sound-based alert systems, Quick Response Teams (QRTs), elephant collaring and radio tracking, and regular patrols and monitoring. However, the effectiveness of these measures largely depends on community involvement, making it difficult to measure their success.

With support from the WWF-IKI project, a “Conflict to Coexistence” (C2C) strategy has been developed for Tashicholing and Samtse Gewogs to tackle human-wildlife conflict. This strategy is expected to be expanded to other Gewogs in the future.

3.1.2 Solid waste

Samtse is undergoing rapid development and is poised to become a major industrial hub in Bhutan. Designated industrial zones have been identified in urban centers such as Samtse and Norbugang, with the Dhamdum and Norbugang Industrial Parks being planned respectively. Towns like Tashicholing and Pendeling (Gomtu) are also expanding significantly with ongoing development. As urbanization and population growth continue, solid waste management is becoming an increasing concern.

At present, there are only two landfill sites within the Division's jurisdiction—one located in Majathang under Samtse Gewog, and the other near the Sipsoo river in Tashicholing Gewog. These landfills pose serious challenges as they are open, unguarded, and frequently visited by livestock and wildlife, including elephants, raising the risk of zoonotic disease transmission. Furthermore, waste is not segregated at the source of collection, which adds to the problem. While there are a few scrap dealers operating in the area, waste management remains inadequate.

As part of efforts to promote a clean and green environment, the DFO conducts regular cleaning campaigns on the 2nd and 9th day of every month. The campaign on the 2nd focuses on cleaning the respective office campuses and supporting the national “Zero Waste Hour,” while the campaign on the 9th targets key locations such as highways, recreational areas, and other SRFLs. These cleanups aim not only to remove waste but also to raise awareness among the public. However, the positive outcomes of these initiatives have yet to be fully realized, as noticeable improvements are still limited.

3.1.3 Forest Degradation

The growing population and ongoing development activities are placing significant pressure on forest resources. In 2024 alone, the Division supplied 8,025.68 m³ of timber for various commercial uses, including rural house construction, renovations, and other infrastructure projects. Additionally, 1,888.40 Ha of forest land were allocated for developmental purposes such as farm roads, access roads, transmission lines, land substitution and exchange, among other projects.

According to the NFI report, 2023, the tree density in the Division stands at 263 trees per ha, one of the lowest in the country. The continued extraction of resources and expansion of infrastructure within forest areas is accelerating forest degradation and fragmentation of wildlife habitats.

Land substitution is becoming increasingly common in the Divisional jurisdiction due to government acquisition of land for development, further intensifying pressure on forest areas. Land encroachment is also becoming a growing concern in the Division. Without careful and strategic planning, the forest cover in this jurisdiction is at serious risk of degradation.

3.1.4 Pest and Diseases

Pest and disease outbreaks are not thoroughly documented at the Divisional level. However, there have been occasional reports, such as infestations of sal plantations by the sal borer and defoliation of *Castanopsis sp.* by unidentified pests. These incidents have generally been limited to small, localized areas.

As the jurisdiction is located at close proximity to the Indian border, the risk of pest and disease spread including invasive plant species is considerably high. This risk may also be exacerbated by climate change. Despite these factors, the perceived threat from pests and diseases remains low at present, and therefore it has been given a lower priority in the threat ranking.

3.1.5 Disturbance to aquatic biodiversity

Samtse Division is home to several major rivers, including Amochu, Jaldhaka, Sipsoo, and Diana, along with numerous smaller rivers. According to the latest assessment, 18 fish species and 16 types of macroinvertebrates have been recorded within the Division's jurisdiction.

However, some rivers such as Dhamdum, Khanavarti, Kalapani, Sukti, and Diana have experienced significant disturbances due to ongoing river dredging and surface collection. These activities have led to considerable disruption of aquatic habitats. Currently, there are 18 operational dredging and mining sites within the Division, contributing to the degradation of river ecosystems.

3.1.6 Pollution

Towns like Pendeling (Gomtu) are facing serious challenges related to dust and air pollution. According to a BBS news report dated 19th August, 2019, there has been a noticeable rise in cases of dust-related health problems in the town, including eye, skin, and respiratory issues.

The daily permissible limit for respirable particulate matter is 200 micrograms per m³ in industrial areas, 100 in mixed-use areas, and 75 in sensitive zones. However, emissions from local factories appear to exceed these standards, though the absence of a proper testing facility makes it difficult to confirm with certainty.

In addition, unpaved and dusty roads in towns like Pendeling and Samtse further contribute to poor air quality. Long-term exposure to dust is a significant health concern, potentially leading to various waterborne and pollution-related illnesses.

3.1.7 Poaching

Poaching continues to pose a major threat to the Division, although only a few cases have been officially detected. The 135 km stretch of porous international border from Tading to Norgaygang presents a significant challenge in preventing the illegal entry of individuals using unauthorized routes. Illegal fishing is especially frequent along these border areas, as offenders can cross the boundary with ease.

The southern foothills, which support populations of elephants, sambar deer, and wild pigs, are particularly vulnerable to poaching. Similarly, the northern regions are critical habitats for key species such as tigers, musk deer, Asiatic black bears, and red pandas. The poaching of these species could have severe impacts on population dynamics and ecosystem balance.

Evidence of poaching, such as snares and traps, is frequently encountered during SMART patrols and other service delivery. Efforts to curb poaching are challenged by the vast and rugged terrain, as well as the clandestine nature of such activities and underreporting of incidents.

3.1.8 Climate Change

Climate change poses a significant global threat, with fragile mountain ecosystems like Bhutan being particularly vulnerable. The country faces increasing risks from GLOFs, flash floods, landslides, seasonal droughts, and various extreme weather events.

According to the Climate Change Projection Report of Bhutan 2024, a rise in temperature has been evident since the 1960s, with a more pronounced increase in both maximum and minimum temperatures observed during the period from 1991 to 2020. The projections further indicate that both seasonal and annual precipitation are expected to rise throughout the century.

The CVCA and SES 2024 highlight that the Division is already experiencing climate-induced impacts such as flash floods, landslides, pest outbreaks, the spread of invasive plant species, and erratic rainfall patterns. Additionally, due to the Division's proximity to the Indian border, there is a heightened risk of cross-border transmission of diseases and invasive species. Climate change may also result in crop failures, affecting food security and livelihoods.

3.1.9 Retaliatory kill and injury

Retaliatory killing and injuring of wild animals is often a direct consequence of severe crop damage and livestock predation. In the Division, cases of livestock depredation are likely underreported, possibly due to people's fear of incurring fines or penalties. Evidence of retaliatory actions is visible through the presence of traps and snares set up along the edges of farmlands.

Species such as civets and monitor lizards are frequently targeted in retaliation, particularly for attacking poultry. In higher altitudes, cattle herders frequently encounter threats from common leopards and wild dogs, often resulting in negative interactions that lead to the animals being injured or killed. If this issue is not addressed, it could lead to declines in wildlife populations and disturb overall species dynamics. Additionally, snake killings are also frequently reported within the Division's jurisdiction.

3.1.10 Illegal trade of species

The DFO, Samtse shares an extensive and porous border with India, making it highly vulnerable to the illegal trade and movement of timber and wildlife. In the past, activities such as timber smuggling and wildlife trafficking were prevalent along this border. However, the establishment of OPs has significantly curbed these illegal practices. Despite this progress, the Division needs to continue implementing precautionary measures and ensure that all entry points are thoroughly monitored to further reduce illicit trade.

3.1.11 Loss of biodiversity

The Division is rich in biodiversity and harbors several critically endangered species such as *Paphiopedilum fairrieanum* and *Bazzania bhutanica*, along with endangered species in-

cluding *Panthera tigris*, *Manis crassicaudata*, and *Elephas maximus*. However, biodiversity in the jurisdiction faces significant threats, mainly due to forest loss from urbanization and infrastructure development, leading to habitat destruction and fragmentation. The Division is also vulnerable to the impacts of climate change, which can alter habitat conditions, promote the spread of pests, diseases, and invasive species. Additionally, the rising human population intensifies pressure on forest resources, increasing the risk of overexploitation.

3.2 Challenges

3.2.1 Porous border

The long porous border with India presents a significant challenge in the conservation of forest resources. The Division shares 135 km long stretch border with India enabling illegal collection of timber, fodder, wildlife and medicinal plants. Vast areas and thick forest along border not only facilitate easy access for the loggers and poachers but also pose challenges in apprehension of the offenders as they easily escape through secret routes. Although the installation of observation posts along the border has greatly curbed the illegal activities, cases of illegal logging, trespassing of Indians and livestock grazing are frequented during routine patrol programs. As grassland along the southern borders are very important wildlife habitats and corridor for movement it is very important to ensure its protection for long term sustainability. Approaches such as garnering support from the local communities, strengthening surveillance along the border through SMART patrol and enhancing cross border cooperation with the counterparts shall be crucial step towards addressing the issue effectively.

3.2.2 Inadequate Services Facilities

Efficient public service delivery relies heavily on adequate infrastructure. The Division must establish well-equipped field offices, complete with essential facilities such as office buildings, reliable internet connectivity, and vehicles to meet the needs of the public. With most services now offered online, dependable internet access is vital for effective service provision. To improve conservation and management efforts, investing in public service infrastructure especially in remote areas is crucial. Efforts in infrastructure development will not only support local communities but also advance conservation objectives, encouraging community involvement in the sustainable management of natural resources within the Division.

3.2.3. Connectivity (Roads)

Dedicated pool vehicles are crucial for delivering efficient and timely public services. Currently, the Division has only four vehicles one Hilux, one DCM, and two motor-bikes which is insufficient, particularly for addressing critical issues like HWC, especially involving elephants in the Tashicholing Range. Adequate pool vehicles also play a key role in the prompt detection and prevention of illegal activities. However, limited vehicle availability, coupled with distant field offices, makes responding to HWC cases particularly difficult. The rugged terrain and poor road conditions further compound these challenges. Therefore, the Division urgently requires well-equipped pool vehicles

to support timely service delivery, including monitoring, patrolling, inspection for forestry clearances, and safeguarding biodiversity within its jurisdiction.

3.2.4 Balancing Conservation and Development.

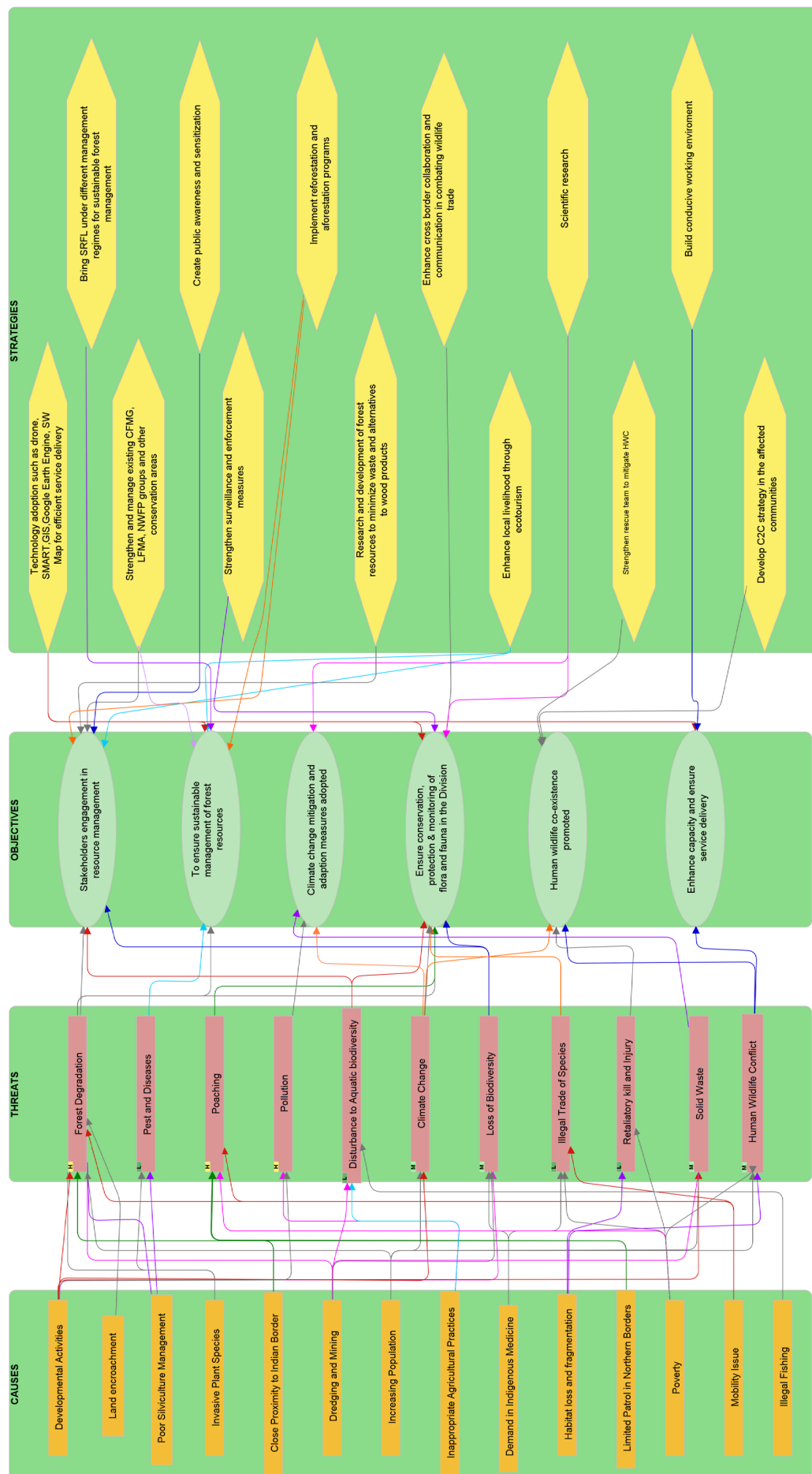
The growing population and rapid pace of development present significant challenges in maintaining a balance between conservation and economic growth. Development activities are largely concentrated in the foothill areas such as Gomtu, Dhamdum, Samtse, Diana, Norbugang, and Tashicholing. Several of these locations have been designated as industrial zones, hosting activities like mining, quarrying, and river dredging. The continued expansion of infrastructure and urban areas further complicates efforts to strike this balance.

It is essential to carefully manage and balance biodiversity conservation with development needs within the Division's jurisdiction. When facilitating forestry clearances, the Division must exercise caution and sound judgment, thoroughly assessing the potential impacts with clauses of FNCRR.

Table 25: Threat Rating of DFO-Samtse

Threats/ Targets	Engagement of stakeholders in resource management		To ensure sustainable management of forest resources		To address climate change and its impacts		Ensure conservation, protection and monitoring of flora and fauna in the Division		To promote coexistence between humans and wildlife		Enhance capacity and ensure service delivery		Summary Threat Ranking	
Forest Degradation		High		High				High				Low	High	
Pollution						Very High							High	
Disturbances to aquatic biodiversity		Low		Medium				High					Medium	
Climate Change						Medium		Medium		Medium		Medium	Medium	
Loss of biodiversity		Medium						Medium					Medium	
Illegal trade of species								Medium					Low	
Retaliatory kill and injury										Medium			Low	
Solid waste						High							Medium	
Pest and diseases				Low									Low	
Poaching								High					Medium	
Human wildlife conflict										Medium		Medium	Medium	
Summary Target Ratings:	Medium		Medium		High		High		Medium		Medium		Overall project rating	High

Figure 38: Management prescription of DFO, Samtse



Chapter 4: Management prescription

The Division's overarching purpose will be to enhance sustainable management of forest resources and to ensure improved service delivery for the public while maintaining integrity of wildlife habitats and species conservation. The management prescriptions have been broadly categorized into three; services, technical and institutional. Under each of these categories the objectives, strategies and actions have been set to achieve the Division's overall goal. The strategies and action plans are targeted towards mitigating the threats and challenges as described under Figure 38. For the 10-year plan period, a total of 7 objectives, 18 strategies, 66 activities have been identified as mentioned in the following tables.

4.1 Management prescriptions

The services include facilitation for land lease, kidu, and substitution including allotment of forestry products such as timber and NWFPs. To enhance and to achieve efficient service delivery leveraging on modern technology and building the capacities of staff is very important. Therefore, the objective 1 focuses on enhancing capacity of staff to ensure efficient service delivery. Additionally, the objective also focuses on development of good infrastructures and facilities. There are two strategies to fulfill the objective one.

Objective 1: Enhance capacity and ensure service delivery

Strategy 1.1 Technology adoption such as drone, SMART, GIS, Google Earth Engine, SW Map for efficient service delivery

Activity 1.1.1 Provide online forestry services via G2C and OFS system within the turnaround time. Field assessment and facilitation of service

Activity 1.1.2 Capacity building training of staff on basic drone handling, operation and image processing and produce real time data.

Conduct training for staff on basic drone handling and operations. Subsequently the training on images processing will be carried out.

Activity 1.1.3 Capacity building and training of staff on SMART application

Conduct training for staff on SMART data collection, data transfer and report generation.

Activity 1.1.4 Basic training of staff on GIS, Google Earth Engine, SDSS and SW Maps

Conduct training of staff on basic concepts of Q-GIS, Google Earth Engine, SW Map and its application.

Activity 1.1.5 Advanced training on GIS and remote sensing

Conduct capacity development training on advanced usage of GIS, Google Earth Engine, SDSS and SW Maps. Habitat mapping of red panda, golden mahseer, rufous-necked hornbill and *Nanorana* sp. to be conducted with the help of SW Map, GIS and Google Earth Engine followed by hotspot mapping for developing species distribution model.

Activity 1.1.6 Provide training on data management

Training on basic data analysis tools and techniques such as Excel (pivot table, sorting), and FIRMS for generating quality report and publications

Activity 1.1.7 Conduct awareness on relevant conservation and land use laws and policies

Strategy 1.2 Build conducive working environment

Activity 1.2.1 Maintenance of Beat Office at Tading

Activity 1.2.2 Relocation and new construction of Range Office at Yoeseltse

Activity 1.2.3 Maintenance of Range Office at Norbugang

Activity 1.2.4 Maintenance of Range Office at Dorokha including approach road and compound fencing

Activity 1.2.5 Construction of 70 heads capacity conference hall at Division compound

Activity 1.2.6 Set up of specimen repository lab in the Division for educational purpose

Activity 1.2.7 Maintenance of transit camp at Division

Activity 1.2.8 Maintenance of the old heritage cottage site at Yoeseltse

Activity 1.2.9 Maintenance of Tendruk Beat Office

Activity 1.2.10 Maintenance of vehicle and fuel

Objective 2: To ensure sustainable management of forest resources**Strategy 2.1 Bring SRFL under different management regimes for sustainable forest management**

Activity 2.1.1 Establish local forest management areas.

Create four LFMAs in 13th FYP and five in the latter half of the DFOMP covering major areas of SRFL under the Division.

Activity 2.1.2 Forest area brought under scientific thinning

The activity is planned from FY: 2023-2024 for three years. The program will be operational until 2025-2026.

Activity 2.1.3 Conduct research on NWFPs such as *Paris polyphylla*, *Tupistra nutans*, *Plectocomia sp.*, *Pipla* and Mushrooms (*Mulberry mushroom*) etc.

Study to assess on resources availability, current practice of harvesting, and its sustainability, access to market, and value chain analysis.

Activity 2.1.4 Number of new NWFP management plans prepared

Three new NWFP groups have been planned in 13th FYP and one planned to be created in the latter half of the DFOMP. The feasible areas where the groups can be established are sites near to HCV, Norbugang Gewog (Pipla), Phuntshopelri (Bamboo), Norgaygang (*Rubia cordifolia*, broom). For the 14th FYP, one group in Pemaling (broom) has been planned. However, the group formations shall be dependent on the sustainable management of these NWFP and interest of the communities.

Activity 2.1.5 Conduct training on gender mainstreaming for stakeholders

Conduct training on gender mainstreaming to CFs and NWFP groups to ensure active engagement and participation of both the genders

Activity 2.1.6 Conduct Forest Inventory as part of NFI

The activity shall be conducted as a part of national program.

Strategy 2.2 Strengthen and manage existing CFMG, LFMA, NWFP groups and other conservation areas

Activity 2.2.1 Provide educational tours to the CFMG and NWFP groups (with gender representation)

Providing educational tours outside the jurisdiction to progressive CFs in order to motivate and to enhance and adopt good management practices.

Activity 2.2.2 Strengthen existing CF and NWFP groups through capacity building

Building a robust CFMG and NWFP committee for better accountability and transparency. Involvement of all the CF members and NWFP members in the planning, mapping and bylaws preparation. Maintenance of the financial records of the CFs and NWFPs for proper usage of the groups. Strengthen existing CF and NWFP groups through capacity building such as training on record and book-keeping, silvicultural operations, good governance, gender mainstreaming.

Activity 2.2.3 Revision of existing CFs and NWFP plans

Conduct revision of the CF and NWFP plans that have completed its tenure.

Activity 2.2.4 Develop Payment of Ecosystem Services in potential areas.

Tading and Samtse (Develop PES for Tamang Dara community forest group and the beneficiaries since the water source falls inside Tamangdara CF and PES for Kalishore water source and its beneficiaries based on feasibility assessment)

Activity 2.2.5 Monitor and evaluate management regimes

Monitoring the performances of KBAs, LFMAs, CFs and NWFPs annually to determine the progress of the management regimes.

Activity 2.2.6 Monitor SRFL allotted to applicants after issuance of forestry clearance

Regular monitoring of the allotted lands to ensure that the activities are aligned with terms and conditions reflected in FC

Activity 2.2.7 Conduct METT+ review of the Division to assess performance

Strategy 2.3. Implement reforestation and afforestation programs

Activity 2.3.1 Creation of new plantation

These activities include 40 Ha plantation creation within the DFO Management Plan period. The formalities like site selection, cost estimation and seeking technical approval from the Department need to be completed before the execution of plantation works. The annual plantation creation target is 4 ha based on the availability of site within four range offices. The budget for compensatory plantation should be borne by individual companies of the stone quarry or mining. The other plantations include enrichment plantations inside CFs. Some of the species include; Neem (*Azadirachta indica*), Angarey (*Phoebe* sp.), Teak (*Tectona grandis*), Sal (*Shorea robusta*), Khamari (*Gmelina arborea*), Phampal (*Persea fructifera*), Simal (*Bombex ceiba*), Kimbu, (*Morus sp.*), bamboos etc. (The compensatory plantation to focus on native species)

Activity 2.3.2. Plantation maintenance work

Need to carry out plantation maintenance from the second year after the plantation creation

Activity 2.3.3. Create and maintain nurseries for production of seedlings

Nursery to be established by all field offices and produce seedlings for supply to local institutions and general public. (Species: *Persea fructifera*, *Elaeocarpus* sp., *Mangifera sylvatica*, *Terminalia bellirica*, *Terminalia chebula*, *Zanthoxylum* sp. *Morus alba*, *Cinnamomum glaucescens*, *Syzigium cumini*, *Gmelina arborea*, *Ficus bengalensis*, *Bombex ceiba*, *Neolamarckia cadamba*.)

Ensure active participation of women in consultation and decision-making during project planning and implementation

Objective 3: Ensure conservation, protection and monitoring of flora and fauna in the Division

Strategy 3.1 Strengthen surveillance and enforcement measure

Activity 3.1.1 Conduct regular SMART patrolling to detect and deter illegal activities
Plan and carry out regular monthly patrolling in the jurisdiction-Foot patrols, vehicle patrols and/or drone patrols. Identify illegal hotspots with the use of SMART, camera traps, drones and prepare hotspot maps

Activity 3.1.2 Conduct drone surveillance twice in a month
Use drone for conducting surveillance at least twice in a month

Activity 3.1.3 Carryout biodiversity monitoring in six permanent grids annually
Carry out biodiversity surveys to monitor the population and threats to flora and fauna. Annual monitoring of BMG of identified grids.

Activity 3.1.4 Carry out tiger population survey as a part of the nationwide tiger population revalidation surveys every five years

Activity 3.1.5 Determine the population or abundance Musk Deer as a part of the nationwide survey

Activity 3.1.6 Conduct eDNA survey as a part of the nationwide eDNA survey

Strategy 3.2. Enhance cross border collaboration and communication in combating wildlife trade

Activity 3.2.1 Conduct meetings to discuss with Indian counterpart on combating wildlife trade
Schedule meetings with Indian counterpart-SSB, Forest office, (include RBP and Indian police)

Objective 4: Engagement of stakeholders in resource management

Strategy 4.1. Create public awareness and sensitization

Activity 4.1.1. Conduct consultation meetings with stakeholders (NRDCL, GBCL, dredgers, loggers, Wood Based Industries, Dzongkhags, local leaders)
Hold meetings with relevant stakeholders to plan and discuss conservation strategies (sustainable resource management practices, legal frameworks, and conservation techniques)

Activity 4.1.2. Conduct public consultation to initiate conservation activities supported projects by engaging communities and stakeholders
Initiate and explore Corporate Social Responsibility projects with stakeholders, such as reforestation programs, anti-poaching campaigns, and habitat restoration projects

Activity 4.1.3. Carry out educational campaigns
Implement educational programs in educational institutions and communities to teach the importance of biodiversity and conservation

Activity 4.1.4. Create public awareness on illicit trade of wildlife and its' parts
Public awareness to educate communities on the impacts of wildlife trade, FNCRR and the importance of conservation

Activity 4.1.5 Create public awareness on waste & pollution management, invasive plants, pest and diseases, and Human Wildlife Conflict.

Activity 4.1.6. Conduct training on women's leadership and empowerment in resource management regimes and governance.
The training needs to be conducted to ensure women's position in community based natural resource management groups.

Activity 4.1.7. Create awareness on forest fire
Dophuchen, Titiring under Tading,

Activity 4.1.8 Conduct Zero waste hour to minimize waste



Strategy 4.2. Enhance local livelihood through ecotourism

Activity 4.2.1 Develop hiking trail connecting Dzongsar ruins under Tendruk to Batasay, Dupidara, Thulo Gairi, and Sangacholing

1. Survey (feasibility study on camping sites connecting to settlement and recreational areas)
2. Infrastructure development (Walking trail, resting areas, restroom, signages)

Activity 4.2.2 Develop Sangacholing lake into potential ecotourism destination
Package-coffee restaurant in the middle of the lake, boating, tree houses, animal rescue center, picnic spot, stalls for showcasing traditional and indigenous handicrafts, live/photographic display of rich biodiversity in the campus, eco-trail, labeling of flora in the area with QR codes

Activity 4.2.3 Develop Bukay Dham as ecotourism and pilgrimage destination
Safety railings, visitor resting place, parking area, signboards, restroom, footpath development, solar lighting, extension of puja hall, residential place, homestay with cultural and traditional folk songs, dances and cuisines.

Activity 4.2.4 Develop birding trail from Numlakha to Phuntshopelri (Old Phuntshopelri GC road)

Activity 4.2.5 Promote women's group formation and skills development training on NWFPs management, eco-tourism and other alternative income generating initiatives.

Objective 5: Climate change mitigation and adaption measures adopted

Strategy 5.1 Explore and research on efficient use of forest resources to minimize waste and seek alternatives to wood products

Activity 5.1.1. Promote bamboo production and explore market for sale of bamboo
Encourage bamboo plantation and use as an alternative for flagpoles, fencing posts and construction.

Strategy 5.2. Scientific research

Activity 5.2.1. Conduct research on key species for conservation and develop check list and pictorial guide for the Division

Conduct research on conservation of

Insects diversity study (all Ranges)

Herpetofauna (all Ranges) including *Nanorana* sp. at Dophuchen in 2026)

Golden Mahseer in Amo chu

Study on distribution of pangolin

Explore new habitat of *Bazzania bhutanica*

Activity 5.2.2 Risk assessment and monitoring using drone

Conduct mapping of areas affected or prone to pest and diseases, prone to natural calamities, forest fires, illegal hotspots, HWC hotspots through use of drones for monitoring of risk in the SRFL once in five years

Objective 6: Humans wildlife co-existence promoted

Strategy 6.1 Strengthen rescue team to mitigate HWC

Activity 6.1.1 Procure equipment for rescue of big animals such as wild pigs, gaur, leopard, Asiatic black bear to be distributed to each Range Office.

Activity 6.1.2 Procure snake handling equipment and distribute them in the field offices for conducting snake rescue operations

Activity 6.1.3 Procure equipment for use in responding to human elephant conflicts.

Strategy 6.2 Develop C2C strategy in the affected communities

Activity 6.2.1 Develop C2C strategy in the Gewogs

The focus for development of C2C strategy will prioritize in the elephant conflict areas

Activity 6.2.2 Assessment of the effectiveness of the HWC intervention in the two hotspot Gewogs

4.2 Technical Prescriptions (Forest and Wildlife Management)

The overarching goal of HCV management in Priority 1 area is active response with measures such as regular patrolling and uplifting the living standards of rural community around the area to minimize illegal activities. HCV screening predicts that the area is currently at high risk from threats such as poaching and spread of pest and diseases. Therefore, active actions are considered to address these threats in the area. The management plan outlines strategies, outcomes, outputs and activities (Table 26).

4.2.1 Management Prescriptions for HCVA

The management prescription for High Conservation Value area is based on the existing threats present within the delineated boundary.

Table 26: Presence and magnitude of threats in HCVMA

Strategy	Outcome	Outputs	Activities
Ensure conservation and protection of flora & fauna	Nature Conservation	Wildlife habitat improved and secured	Conduct survey and map waterholes and mineral licks
			Restore critical waterholes and mineral licks
			Conduct survey and map bamboo habitats and assess disturbances
		Knowledge on faunal diversity enhanced	Population survey of key species (Tiger & Red Panda)
			Conduct annual assessment/monitoring of Biodiversity
		Knowledge on flora diversity enhanced	Conduct survey on lesser-known species (fishes, bats, small mammals, herpetofauna and butterflies)
			Publication of technical reports
Sustainable management of resources	Forest Resource Management	Timber resources harvested sustainably	Support high value tree species in the community
		NWFP Groups formed and trained	Support formation of NWFP management group
			Awareness and training on the sustainable harvesting technique of NWFPs and enterprise
			Promotion of alternative products (eg; bamboo products)
Enhance integrated approach in conservation and development	Integrated Conservation and Development	HWC management enhanced	Analyse and study the impacts of HWC using available data from relevant sectors
			Form Quick Response Teams to mitigate HWC management
			Facilitate and collaborate with relevant stakeholders for the intervention measures
		Livelihood of residents improved	Identify and promote enterprise development in the Community
			Integrate conservation program through development of Agro-Silvo-Pastoral
		Climate change and climate related activities initiated	Enhance pollution monitoring through periodic data collection and reporting
		Conservation awareness and education strengthened	Conduct awareness campaigns among communities on ills of wildlife poaching and need for conservation
			Study tour to learn best practices

Enhance protection and enforcement	Forest Protection and Enforcement	Protection and Enforcement strengthened	Conduct SMART patrol
		Forest health and Hygiene improved	Provide awareness on fire and firefighting techniques
			Monitor invasive species in the landscape

HCV area management plan

The HCVA of Nub Dalemkha is an important location for conservation of many keystone species such as tiger, musk deer, red panda, gaur and many bird species. The landscape connects to the Kanchenjunga Landscape of Sikkim and Chumbi valley of China. The area is of great significance as it will facilitate movement of wildlife across the landscape. There is evidence of tiger movement across the landscape from the HCV area to Sikkim. The tiger captured in the camera trap at Dongtsa under HCVA during the national tiger survey in 2024 was also recorded within Pangolakha Wildlife Sanctuary across the border in Sikkim. This highlights the importance of regional-level conservation efforts to ensure the safe and healthy movement of wildlife across landscapes (Figure 39).

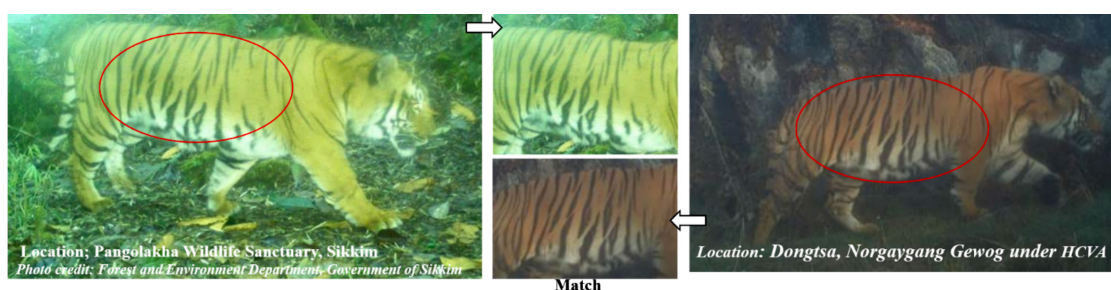


Figure 39: Movement of tigers in the landscape

Similarly, area is identified as highly susceptible to threats of poaching, pests and diseases; it is located at close proximity to the international border. Therefore, the Division has placed priority I for the management for the HCV area.

Table 27: Presence and magnitude threats in HCVMA

HCV priority	Threats in HCVMA	Threat magnitude (H,M,L)*	Response mechanism
1	Poaching	H	Anti-poaching patrol
2	Pest and disease	M	Surveillance
3	Illegal logging	M	Patrol

* For setting a time frame for threat response, threat magnitude H must be implemented first followed by M & L in sequence (H: 1-3 years; M: 4-6 years; L: 7-10 years).

Chapter 5: Implementation plan and financial outlay

5.1 Implementation and financial plan for the next 10 years

The schedule and budget required for implementing plan prescriptions for the plan period of 10 years is outlined in table 28.

Table 28: Implementation plan and financial outlay

Objectives	Strategies	Action	Proposed Budget Outlay in million										Total Budget Required	Remarks (What and where)
			1	2	3	4	5	6	7	8	9	10		
 Objective 1: Enhance capacity and ensure service delivery	Strategy 1.1 Technology adoption such as drone, SMART, GIS, Google Earth Engine, SW Map for efficient service delivery	Activity 1.1.1 Provide online forestry services via G2C and OFS system within tour around time.	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	12.00	
		Activity 1.1.2 Capacity building training of staff on basic drone handling, operation and image processing and produce real time data.		0.20		0.20			0.20			0.20	0.80	
		Activity 1.1.3 Capacity building and training of staff on SMART application.	0.25		0.25			0.25				0.25	1.25	
		Activity 1.1.4 Basic training of staff on GIS, Google Earth Engine, SDSS and SW Maps		0.10		0.10			0.10				0.40	

Strategy 1.2 Build conducive working environment	Activity 1.1.5 Advanced training on GIS and remote sensing	0.20						0.20									0.40	
	Activity 1.1.6 Provide training on data management		0.15				0.15	0.15					0.15				0.60	
	Activity 1.1.7 Conduct awareness on relevant conservation and land use laws and policies	0.10					0.10							0.10			0.30	
	Activity 1.2.1 Maintenance of Beat Office at Tading						0.9										0.90	
	Activity 1.2.2 Relocation and new construction of Range Office at Yoeseltse.					6											6.00	
	Activity 1.2.3 Maintenance of Range Office at Norbugang.															0.9	0.90	
	Activity 1.2.4 Maintenance of Range Office at Dorokha including approach road and compound fencing.												2.50				2.50	
	Activity 1.2.5 Construction of 70 heads capacity conference hall at Division compound						6.50										6.50	
	Activity 1.2.6 Set up specimen repository lab in the Division for educational purpose												2.50				2.50	
	Activity 1.2.7 Maintenance of transit camp at Division																1.00	



Strategy 2.2. Strengthen and manage existing CFMG, LFMA, NWFP groups and other Conservation areas	Activity 2.2.1 Provide educational tours to the CFMG and NWFP groups (with gender representation)																	1.20			
	Activity 2.2.2 Strengthen existing CF and NWFP groups through capacity building	0.10			0.10							0.10						0.50	0.10		Working lunch only
	Activity 2.2.3 Revision of existing CFs and NWFP plans	0.1	0.15	0.6	0.35	0.55	0.6					0.05	0.25					3.4	0.4		
	Activity 2.2.4 Develop Payment of Ecosystem Services in potential areas.		0.20															0.40			
	Activity 2.2.5 Monitor and evaluate management regimes	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	1.50	0.15		65 CFs, 2 NWFP Groups, 1 LFMA (cumulative), 3 KBAs
	Activity 2.2.6 Monitor SRFL allotted to applicants after issuance of Forestry Clearance	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.00	0.1		
	Activity 2.2.7 Conduct METT+ review of the Division to assess performance		0.15															0.15			
	Activity 2.3.1 Creation of new plantation	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	4.00	0.40		
	Activity 2.3.2 Maintenance of plantation	0.20	0.24	0.288	0.345	0.414	0.455	0.500	0.550	0.605	0.665	0.665	0.665	0.665	0.665	0.665	0.665	4.3	0.665		
	Activity 2.3.3 Create and maintain nurseries for production of seedlings		1.2				1.2											2.4			
Strategy 2.3 Implement reforestation and afforestation programs																					

Objective 4 Engagement of stakeholders in resource management	Strategy 4.1 Create public awareness and sensitization	Activity 4.1.1 Conduct consultation meetings with stakeholders (NRDCL, GBCL, dredgers, loggers, Wood Based Industries, Dzongkhags, local leaders)	0.06		0.06		0.06		0.06		0.30	
		Activity 4.1.2 Conduct public consultation to initiate conservation activities supported projects by engaging communities and stakeholders	0.10	0.10		0.10		0.10		0.40		
		Activity 4.1.3 Carry out educational campaigns	0.20	0.20	0.20	0.20	0.20	0.20	0.20	1.20		
		Activity 4.1.4 Create public awareness on illicit trade of wildlife and its' parts	0.05					0.05		0.15		
		Activity 4.1.5 Create public awareness on waste & pollution management, invasive plants, pest and diseases, and HWC.				0.1			0.1	0.2		
		Activity 4.1.6 Conduct training on women's leadership and empowerment in resource management and governance				0.20		0.20		0.40		
		Activity 4.1.7 Create awareness on forest fire				0.10			0.10	0.3		
		Activity 4.1.8 Conduct Zero waste hour to minimize waste										

Objective 5 Climate change mitigation and adaption measures adopted	Strategy 4.2 Enhance local livelihood through ecotourism	Activity 4.2.1 Develop hiking trail connecting Dzongsar ruins under Tendruk to Batasay, Dupidara, Thulo Gairi, and Sangacholing																		5.00						
		Activity 4.2.2 Develop Sangacholing lake into potential ecotourism destination	2.0																	0.10						
		Activity 4.2.3 Develop Bukay Dham as ecotourism and pilgrimage destination								0.90										0.90						
		Activity 4.2.4 Develop birding trail from Numlakha to Phuntshopeliri	0.10																	0.10						
		Activity 4.2.5 Promote women's group formation and skills development on NWFPs management, eco-tourism and other alternative income generating initiatives.						0.10												0.10						
Objective 5 Climate change mitigation and adaption measures adopted	Strategy 5.1 Research and development of forest resources to minimize waste and alternatives to wood products	Activity 5.1.1 Promote bamboo production and explore market for sale of bamboo																		0.6						

	Strategy 5.2 Scientific research	Strategy 5.2.1 Conduct research on key species for conservation and develop check list and pictorial guide	0.1						0.1			0.3		
		Activity 5.2.2 Risk assessment and monitoring using drone						0.1				0.2		
		Activity 6.1.1 Procure equipment for rescue of big animals such as wild pigs, gaur, leopard, Asiatic black bear to be distributed to each Range Office.						0.8				0.8		
		Activity 6.1.2 Procure snake handling equipment and distribute them in the field offices for conducting snake rescue operations				0.4						0.4		
		Activity 6.1.3 Procure equipment for use in responding to human elephant conflicts.						0.5				0.5		
		Activity 6.2.1 Develop C2C strategy in the Gewogs						0.5	0.5	0.5	0.5	4.00		
		Activity 6.2.2 Assessment of the effectiveness of the HWC intervention in the two hotspot Gewogs												
Objective 6 Human wildlife co-existence promoted	Strategy 6.1 Strengthen rescue team to mitigate HWC													
	Strategy 6.2 Develop C2C strategy in the affected communities													



Table 29: HCVA implementation plan and financial outlay

Strategy	Outcome	Outputs	Activities	Location	Target for Plan Period	Baseline	Target	Budget (Nu. Mn)	Lead	Collaborators
Strategy 1 Ensure conservation and protection of flora & fauna	Nature Conservation	Wildlife habitat improved and secured	1.1 Conduct survey and map waterholes and mineral licks	HCV area	2nd Year	1	1 survey report for HCV	0.25	DFO-Samtse	
			1.2 Restore critical waterholes and mineral licks	HCV area	3th, 6th & 9th Year	1	Restored as per survey report	0.6	DFO-Samtse	
			1.3 Conduct survey and map bamboo habitats and assess disturbances	HCV area	3rd Year	1	1 survey report for HCV	0.2	DFO-Samtse	
			1.4 Conduct annual assessment/ monitoring of biodiversity	HCV area	Annual	0	1 survey report	1	DFO-Samtse	
Strategy 2 Sustainable management of resources	Forest Resource Management	Timber resources harvested sustainably	2.1 Support high value timber seedlings in the community	Norgaygang & Tendruk Gewog	5th & 6th Year	0	30 Hhs	0.4	DFO-Samtse	Gewog Administration (Norgaygang & Tendruk)
		NWFP resource management	2.2 Promotion of alternative products (eg; bamboo products)	Communities surrounding HCV area	3rd, 6th & 9th Year	0	3 times training provided	0.2	DFO-Samtse	

Strategy 3 Enhance integrated approach in conservation and development	Integrated Conservation and Development	Conservation awareness and education strengthened	3.1 Conduct awareness campaigns among communities on ills of wildlife poaching and need for conservation 3.2 Study tour to learn best practices	Communities surrounding HCV area	2nd & 6th Year	1	2 times awareness conducted	0.2	DFO-Samtse	
Strategy 4 Enhance protection and enforcement	Forest Protection and Enforcement	Protection and Enforcement strengthened Forest health and Hygiene improved	4.1 Conduct SMART patrol 4.2 Monitor invasive species in the landscape 4.3 Conduct surveillance on pest and diseases	Communities surrounding HCV area HCV area HCV area HCV area	7th Year Annual 3rd & 7th Year Annual	0 1 0	1 program initiated At least one time in a year At least one time in a year At least one time in a year	0.5 1 0.2 1	DFO-Samtse DFO-Samtse DFO-Samtse DFO-Samtse	



5.2 Gender Mainstreaming

Gender mainstreaming involves a systematic analysis of the roles, responsibilities, and relationships between genders across various dimensions of conservation—such as policy formulation, research, resource management, access to resources, division of labour, socio-cultural perceptions, and community participation. The DFO recognizes that gender dynamics significantly influence how individuals engage with the environment, access resources, and contribute to decision-making processes. Therefore, integrating gender considerations into conservation efforts is essential to achieving equitable and sustainable outcomes under the DFO management framework.

The Gender Analysis, Gender Mainstreaming Strategy, and Gender Action Plan (2019) emphasizes that effective gender mainstreaming within DFO management plans requires adequate budgetary provision (as outlined in the indicative budget of the Gender Action Plan). The report also recommends active engagement with women's organizations at both national and local levels, capacity building for project teams, skills development for local communities—particularly in nature-based product diversification—and the identification of alternative livelihoods and incentive mechanisms. Additionally, it highlights the importance of supporting CFMGs to institutionalize gender-inclusive practices. Incorporating these recommendations into the DFO management plan framework will help ensure that gender perspectives are meaningfully addressed. Furthermore, integrating gender—particularly women's participation—into conservation planning is widely recognized to yield the following key outcomes:

Inclusion of Diverse Knowledge and Perspectives: Women and men often hold complementary knowledge about ecosystems, resources, and biodiversity. Leveraging this diversity enhances the quality and inclusiveness of conservation strategies. Therefore, women's participation is considered critical in the formulation and implementation of biodiversity action plans.

Enhanced Resource Management: Women play pivotal roles in natural resource management activities such as agriculture, water and fuelwood collection. Their involvement in the management of CFs and SRFs will be actively encouraged and supported.

Women's Empowerment: The Division is committed to empowering women by facilitating their active engagement in conservation and land-use decision-making processes.

Equitable Distribution of Benefits: A gender-responsive approach ensures that both women and men benefit equitably from conservation initiatives, thereby minimizing gender-based disparities in access to resources and opportunities.

5.3. Environmental and Social Safeguards

The ESS system is a framework developed to identify, assess, and manage potential negative environmental and social impacts arising from proposed actions. By systematically screening these actions, the ESS facilitates the early identification of issues that could harm ecosystems or affect local communities. This proactive approach enables the design and implementation of appropriate measures to avoid, minimize, or mitigate adverse impacts—ensuring that all activities are conducted in an environmentally and socially responsible manner.



A core function of the ESS is the ongoing monitoring of both the implementation and effectiveness of mitigation measures. This involves continuous oversight to ensure that safeguards are functioning as intended and to address any unforeseen impacts that may emerge during the course of implementing management prescriptions. Such monitoring enhances the accountability and adaptability of conservation efforts.

The integration of ESS into management planning ensures that environmental and social considerations are embedded throughout all stages of project design and execution. This leads to more inclusive, responsive, and sustainable management outcomes. Furthermore, the ESS framework has been explicitly incorporated into the management prescriptions, supported by a dedicated financial outlay to ensure its effective implementation.

5.4 Grievance Redressal Mechanism

The Grievance Redress Mechanism (GRM) is established to receive, address, and resolve grievances arising from the implementation of activities under the DFO, Samtse. Timely and effective resolution of grievances not only strengthens mutual understanding and coordination but also enhances accountability, fosters collaboration, and ensures the successful and impactful implementation of planned activities.

Grievances may be submitted by any individual, group, community, or stakeholder who perceives themselves to be negatively affected by the implementation of the DFO's plans (hereafter referred to as "affected parties"). This mechanism guarantees non-retaliation against complainants and ensures that concerns are handled with fairness and transparency.

5.4.1 Grievance Submission Channels

Grievances may be submitted through any of the following channels:

By Phone or Email:
Divisional Forest Office, Samtse
Email: dfosamtse@gmail.com
Telephone: 05-365510 / 05-365253

Through Officials:

Grievances may also be submitted to any Forest Range Officers under the Division or directly to the CFO.

5.4.2 Required Information for Submitting a Grievance

The complaint or grievance should contain the following details:

- Full name, address, and contact information of the complainant.
- Relevant documentation or evidence to support the claim.
- Description of any prior steps taken to resolve the issue, including previous communication with DFO, Samtse.
- Suggested resolution (if any).
- Indication of whether confidentiality is requested, along with the reason.
- Grievances may be submitted in either English or Dzongkha.



5.4.3 Grievance Handling Process

Step 1: Eligibility Assessment

Upon receipt, the Grievance/Complaint Team will review and assess the eligibility of the complaint. A response will be provided within 10 working days.

Step 2: Planning and Communication

If the complaint is deemed eligible, the team will develop an investigation plan and define a timeframe. This plan will be communicated to the complainant within 10 working days.

Step 3: Investigation and Action Planning

An investigation will be carried out by the team, with technical support as needed, including from Head Office if necessary. Based on findings, an action plan and resolution timeline will be developed in consultation with the affected parties.

Step 4: Resolution and Documentation

A detailed summary—including the nature of the complaint, actions taken, conclusions reached, and agreed timelines—will be documented and shared with the complainant. The GRM team may also engage external experts if necessary to support resolution efforts.

If a grievance cannot be resolved at the Division level, it will be escalated to the Department-Level Grievance Committee for further review and resolution.

5.4.4 Composition of the Grievance/Complaint Resolution Committee – DFO, Samtse

1. Chief Forestry Officer (CFO) – Chairperson
2. Section Heads – Members
3. Concerned FRO – Member Secretary

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Chapter 6: Monitoring and evaluation

6.1 Monitoring and evaluation of DFO management plan

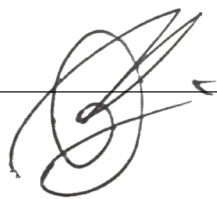
The monitoring and evaluation plan includes the indicators against which the performance of the management plan will be measured. The details of the M&E plan prepared to ensure synergy with the management prescription and implementation framework are outlined in table 30.



Table 30: Monitoring and evaluation timeline

Objectives	Action	Output indicator	Unit	Baseline	Yearly Target									
					I	II	III	IV	V	VI	VII	VIII	IX	X
Objective 1: Enhance capacity and ensure service delivery	Activity 1.1.1 Provide online forestry services via G2C and OFS system within turnaround time.	Service provided as per TAT	Days	10	-	-	-	-	-	-	-	-	-	-
	Activity 1.1.2 Capacity building training of staff on basic drone handling, operation and image processing and produce real time data.	Training provided and report submitted	Nos.	0	-	1	-	1	-	1	-	-	1	-
	Activity 1.1.3 Capacity building and training of staff on SMART application.	Training provided and report submitted	Nos.	1	1	-	1	-	1	-	1	-	1	-
	Activity 1.1.4 Basic training of staff on GIS, Google Earth Engine, SDSS and SW Maps	Training provided and report submitted	Nos.	1	-	1	-	1	-	1	-	1	-	-
	Activity 1.1.5 Advanced training on GIS and remote sensing	Training provided and report submitted	Nos.	0	-	1	-	-	-	-	1	-	-	-
	Activity 1.1.6 Provide training on data management	Training provided and report submitted	Nos.	1	-	-	1	-	1	-	1	-	1	-
	Activity 1.1.7 Conduct awareness on relevant conservation and land use laws and policies	Training provided and report submitted	Nos.	1	-	1	-	-	-	1	-	-	-	1
	Activity 1.2.1 Maintenance of Beat Office at Tading	Maintenance completed	Nos.	0	-	-	-	-	-	1	-	-	-	-
	Activity 1.2.2 Relocation and new construction of Range Office at Yoeseltse.	New office construction completed	Nos.	0	-	-	-	-	1	-	-	-	-	-

	Activity 1.2.3 Maintenance of Range Office at Norbugang.	Maintenance completed	Nos.	0	-	-	-	-	-	-	-	-	-	-	-	-	-	1
	Activity 1.2.4 Maintenance of Range Office at Dorokha including approach road and compound fencing.	Maintenance completed	Nos.	0	-	-	-	-	-	-	-	-	-	-	-	-	1	
	Activity 1.2.5 Construction of 70 heads capacity conference hall at Division compound	Maintenance completed	Nos.	0	-	-	-	-	-	-	-	1	-	-	-	-	-	
	Activity 1.2.6 Set up specimen repository lab in the Division for educational purpose	Lab established	Nos.	0	-	-	-	-	-	-	-	-	-	-	1	-	-	
	Activity 1.2.7 Maintenance of transit camp at Division	Maintenance completed	Nos.	0	-	-	-	-	-	-	-	-	-	1	-	-	-	
	Activity 1.2.8 Maintenance of the old heritage cottage site at Yoeseltse	Maintenance completed	Nos.	0	-	-	-	-	1	-	-	-	-	-	-	-	-	
	Activity 1.2.9 Maintenance of Tendruk Beat Office	Maintenance completed	Nos.	0	-	-	-	-	-	-	-	1	-	-	-	-	-	
	Activity 1.2.10 Maintenance of vehicle and fuel	Vehicle functioning all time	Nos.	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	Activity 2.1.1 Establish local forest management areas.	LFMA established	Nos.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Activity 2.1.2 Forest area brought under scientific thinning	Thinning operations conducted	Ha		1	1	-	-	-	-	-	-	-	-	-	-	-	-
	Activity 2.1.3 Conduct research on NWFPs such as Paris polyphylla, Tupistra nutans, Plectocomia sp., Pipila and Mushrooms (Mulberry mushroom) etc.	Research report	Nos.		-	1	-	-	-	1	-	-	-	1	-	-	-	-
	Activity 2.1.4 Number of new NWFP management plans prepared	Nos of new NWFP groups established	Nos.	2	-	1	1	1	1	1	-	-	-	-	-	-	-	-



Activity 2.1.5 Conduct training on gender mainstreaming for stakeholders	Nos.	0	-	-	1	-	-	-	1	-	-	1	-	1
Activity 2.1.6 Conduct Forest Inventory as part of NFI	Nos.	1	-	-	4	-	-	-	4	-	-	-	-	-
Activity 2.2.1 Provide educational tours to the CFMG and NWFP groups (with gender representation)	Nos.	0	-	-	-	-	1	-	-	-	-	1	-	-
Activity 2.2.2 Strengthen existing CF and NWFP groups through capacity building	Nos.	1	-	1	-	1	1	-	1	-	1	-	-	1
Activity 2.2.3 Revision of existing CFs and NWFP plans	Nos.	2	2	3	12	7	11	12	7	1	5	8	-	-
Activity 2.2.4 Develop Payment of Ecosystem Services in potential areas.	Nos.	0	-	1	-	1	-	-	-	-	-	-	-	-
Activity 2.2.5 Monitor and evaluate management regimes	Nos.	69	70	70	70	70	70	70	70	70	70	70	70	70
Activity 2.2.6 Monitor SRFL allotted to applicants after issuance of Forestry Clearance	Nos.		1	1	1	1	1	1	1	1	1	1	1	1
Activity 2.2.7 Conduct METT+ review of the Division to assess performance	Nos.	1	-	1	-	-	-	-	-	-	-	-	-	-
Activity 2.3.1 Creation of new plantation	Ha	2	4	4	4	4	4	4	4	4	4	4	4	4
Activity 2.3.2 Maintenance of plantation	Nos.	1	1	1	1	1	1	1	1	1	1	1	1	1
Activity 2.3.3. Create and maintain nurseries for production of seedlings	Nos.		-	1	-	-	-	1	-	-	-	-	-	-

Objective 3 Ensure conservation, protection and monitoring of flora and fauna in the Division	Activity 3.1.1 Conduct regular SMART patrolling to detect and deter illegal activities	SMART report	Nos.	12	12	12	12	12	12	12	12	12	12	12	12	12
	Activity 3.1.2 Conduct drone surveillance twice in a month	Drone surveillance report	Nos.	0	12	12	12	12	12	12	12	12	12	12	12	12
	Activity 3.1.3 Carryout biodiversity monitoring in six permanent grids annually	BMG monitoring report	Nos.	6	6	6	6	6	6	6	6	6	6	6	6	6
	Activity 3.1.4 Carry out tiger population survey as a part of the nationwide tiger population revalidation surveys every five years	Tiger survey conducted	Nos.	1	–	1	–	–	–	–	–	1	–	–	–	–
	Activity 3.1.5 Determine the population or abundance Musk Deer as a part of the nationwide survey	Musk deer survey conducted	Nos.	0	1	–	–	–	–	–	–	–	–	–	–	–
	Activity 3.1.6 Conduct eDNA survey as a part of the nationwide eDNA survey	eDNA survey conducted	Nos.	0	1	–	–	–	–	–	–	–	–	–	–	–
	Activity 3.2.1 Conduct meetings to discuss with Indian counterpart on combating wildlife trade	Meeting conducted	Nos.	1	–	1	–	1	–	1	–	1	–	1	–	1
	Activity 4.1.1 Conduct consultation meetings with stakeholders (NRDCL, GBCL, dredgers, loggers, Wood Based Industries, Dzongkhags, local leaders)	Consultation conducted with stakeholders	Nos.	1	–	1	–	1	–	1	–	1	–	1	–	1
	Activity 4.1.2 Conduct public consultation to initiate conservation activities supported projects by engaging communities and stakeholders	Consultation conducted with public	Nos.	1	–	–	1	–	1	–	1	–	1	–	1	–
	Activity 4.1.3 Carry out educational campaigns	Educational campaigns conducted	Nos.	0	–	–	1	–	1	–	1	–	1	–	1	–
Objective 4 Engagement of stakeholders in resource management	Activity 4.1.4 Create public awareness on illicit trade of wildlife and its' parts	Public consultation conducted	Nos.	1	–	–	1	–	1	–	1	–	1	–	1	–

	Activity 4.1.5 Create public awareness on waste & pollution management, invasive plants, pest and diseases, and Human Wildlife Conflict.	Awareness program conducted	Nos.	1	-	-	-	-	1	-	-	1	-	-	-
	Activity 4.1.6 Conduct training on women's leadership and empowerment in resource management regimes and governance	Training conducted	Nos.	1	-	-	-	-	1	-	-	-	-	-	-
	Activity 4.1.7 Create awareness on forest fire	Awareness program conducted	Nos.	0	-	-	-	-	1	-	-	1	-	-	1
	Activity 4.1.8 Conduct Zero waste hour to minimize waste	Zero waste hour conducted	Nos.	12	12	12	12	12	12	12	12	12	12	12	12
	Activity 4.2.1 Develop hiking trail connecting Dzongsar ruins under Tendruk to Batasay, Dupidara, Thulo Gairi, and Sangacholing	Hiking trail developed at the proposed site	Nos.	0	-	-	-	5	-	-	-	-	-	-	-
	Activity 4.2.2 Develop Sangacholing lake into potential ecotourism destination	Sangacholing lake developed as recreational	Nos.	0	2	-	-	-	-	-	-	-	-	-	-
	Activity 4.2.3 Develop Bukay Dham as ecotourism and pilgrimage destination	Bukay Dham developed with required facilities	Nos.	0	-	-	-	1	-	-	-	-	-	-	-
	Activity 4.2.4 Develop birding trail from Numlakha to Phuntshopelri	Developed birding trail	Nos.	0	1	-	-	-	-	-	-	-	-	-	-
	Activity 4.2.5 Promote women's group formation and skills development training on NWFPs management, eco-tourism and other alternative income generating initiatives.	Womens' group formed and promoted	Nos.	-	-	1	-	-	-	-	-	-	-	-	-

Objective 5 Climate change mitigation and adaption measures adopted	Activity 5.1.1 Promote bamboo production and explore market for sale of bamboo	Bamboo production promoted	Nos.	0	-	-	-	-	1	-	-	1	-	11	-
	Activity 5.2.1 Conduct research on key species for conservation and develop check list and pictorial guide for the Division	Research report	Nos.	0	-	1	-	-	-	1	-	-	1	-	-
	Activity 5.2.2 Risk assessment and monitoring using drone	Risk assessment report	Nos.	0	-	-	1	-	-	-	-	-	-	1	1
Objective 6 Humans wildlife co-existence promoted	Activity 6.1.1 Procure equipment for rescue of big animals such as wild pigs, gaur, leopard, Asiatic black bear to be distributed to each Range Office.	Equipment procured and issued	Nos.	1	-	-	1	-	-	-	-	-	-	-	-
	Activity 6.1.2 Procure snake handling equipment and distribute them in the field offices for conducting snake rescue operations	Equipment procured and issued	Nos.	3	-	-	-	1	-	-	-	-	-	-	-
	Activity 6.1.3 Procure equipment for use in responding to human elephant conflicts.	Equipment procured and issued	Nos.	4	-	-	1	-	-	-	-	-	-	-	-
	Activity 6.2.1 Develop C2C strategy in the Gewogs	C2C strategies developed	Nos.	2	-	-	1	1	1	1	1	1	1	1	1
	Activity 6.2.2 Assessment of the effectiveness of the HWC intervention in the two hotspot Gewogs	Assessment conducted on impact of HWC	Nos.	0	-	2	-	-	-	-	-	-	-	-	-



6.2 High Conservation Value Area Monitoring

The main purpose of carrying monitoring in the HCVA is to maintain and enhance values present in the area. A monitoring plan is required to evaluate management strategies and to measure conservation outcomes and also to provide up-to-date information, helping in adaptive management by allowing changes based on results.

To ensure that effective monitoring takes place in the HCV area, a standardized method has been developed to draw reliable conclusions over time. Indicators are set that are efficient, consistent, standardized, and repeatable for the assessment. The data collected from the area will be recorded in a centralized database for long-term analysis. Indeed, monitoring is planned before the commencement of management intervention to establish the baseline and for inclusion of input from experts and stakeholders.



Table 31: HCVMA annual/operational monitoring form

Strategy	Outcome	Output Indicators	Activities	Measurement Unit	Lead	Collaborators	Baseline	Target for Plan Period	Achievement %	Data/Information Source	Reason for Non-Fulfillment of Target	Observation by Monitoring Team	Recommendations
Strategy 1 Ensure conservation and protection of flora & fauna	Nature Conservation	Wildlife habitat improved and secured	1.1 Conduct survey and map waterholes and mineral licks	Nos.	DFO-Samtse			2nd Year					
			1.2 Restore critical waterholes and mineral licks	Nos.	DFO-Samtse	Gewog Administration (Norgaygang & Tendruk)		3th, 6th & 9th Year					
			1.3 Conduct survey and map bamboo habitats and assess disturbances	Nos.	DFO-Samtse			3rd Year					
		Knowledge on faunal diversity enhanced	1.4 Conduct annual assessment/monitoring of biodiversity	Nos.	DFO-Samtse			Annual					
Strategy 2 Sustainable management of resources	Forest Resource Management	Timber resources harvested sustainably	2.1 Support high value timber seedlings in the community	Nos.	DFO-Samtse			5th & 6th Year					
		NWFP resource management	2.2 Promotion of alternative products (eg, bamboo products)	Nos.	DFO-Samtse			3rd, 6th & 9th Year					

Strategy 3 Enhance integrated approach in conservation and development	Integrated Conservation and Development	Conservation awareness and education strengthened	3.1 Conduct awareness campaigns among communities on ills of wildlife poaching and need for conservation 3.2 Study tour to learn best practices	Nos.	DFO- Samtse					2nd & 6th Year				
				Nos.	DFO- Samtse					7th Year				
Strategy 4 Enhance protection and enforcement	Forest Protection and Enforcement	Protection and Enforcement strengthened	4.1 Conduct SMART patrol	Nos.	DFO- Samtse					Annual				
		Forest health and Hygiene improved	4.2 Monitor invasive species in the landscape 4.3 Conduct surveillance on pest and diseases	Nos.	DFO- Samtse					3rd and 7th Year				
				Nos.	DFO- Samtse					Annual				



Table 32: HCVMA monitoring and evaluation schedule

Types of M & E	Responsibilities	Timeline	Forms	Report submission	Submission deadline	Purpose
Annual monitoring	Concerned DFO	By 12th month	Annual Monitoring Form	CFO will submit report as per annual monitoring form to FMID	First quarter of following financial year	For operational monitoring
Mid-term Evaluation	Lead: FMID/ Programmatic division Collaborator: IKI Taskforce, concerned DFO and other stakeholders	First quarter of 6th year of the plan period.	Mid-Term and Final Evaluation Form	The evaluation team shall submit an evaluation report as per evaluation form to FMID	Within one month after conducting evaluation	For Strategic/ effectiveness monitoring
Final evaluation	Lead: FMID/ Programmatic division Collaborator: KI Taskforce, concerned DFO and other stakeholders	First quarter of 10th year of the plan period.	Mid-Term and Final Evaluation Form	The evaluation team shall submit an evaluation report as per evaluation form to FMID	Within one month after conducting evaluation	

- The planned management strategy may be ineffective or have encountered practical barriers while implementing.
- The management strategy may be poorly implemented or may have become ineffective over the time have

Monitoring of HCVA, components such as operational or compliance monitoring, Strategic or effectiveness monitoring and Threat monitoring using Miradi or other relevant tools.



Chapter 7. Stakeholder consultation and endorsement

7.1 Stakeholder consultation

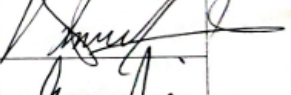
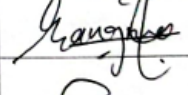
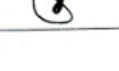
The Division had identified all the relevant stakeholders and rights holders in the jurisdiction. A consultation meeting was conducted in December 2024 on the proposed management interventions and also on the restrictions and prohibitions to avoid future complications.

The DFO had identified the following agencies as the stakeholders and right holders (table 33).

Table 33: Stakeholder consultation program

Consultation and endorsement of DFO Management Plan, Samtse

Upon incorporating all the comments and feedback raised by the undersigned stakeholders, the Divisional Forest Office Management Plan is hereby endorsed.

Sl. No.	Name	Designation	Office / Gewog	Signature
1	Yam Bala Ghalley	Gup	Tadling	
2	Kimang Dorji	GAO	Norsungang	
3	Kimley Dorji	GAO	Norsungang	
4	Kinley Hlangmo	GAO	sang-ngag-choeling	
5	Prabhat Rai	Tshogpa	Diplunchea	
6	Prabhat Upcher	Gup	Phuentshupela	
7	lekhi Zangmo	GAO	Tadling	
8	Rohi Bala Ghalley	Gup	Namsaychling	
9	lekhi Tshering	Br. CPS I	Tachruk	

10	Vaskar Chapagai	Gup	Denchukha	adhyapana
11	Phutola	Gup	Dophuelsen	
12	Wangchuk Lepcha	Gup	Samtse	
13	Durga Das Rai	Gup	Dumba	
14	Khasi Nade Dolsi	GAO	Phuentshongpatol	
15	Tashi Jomsho	Gup	Yoesette	
16	Sagar Kigur	DGM	Samtse	
17	Chador	DER	- 11 -	
18	Karna Nidhy	GAO	P/Chokhy	
19	Sanga Chingay	GAO	Nhungyachhodang	
20	Dorji Yonden	GAO	Pemaling.	

21	NR Acharya	ADAO	Agriculture, Samtse	
22	Chandra Challen	DLDO	Livestock, Samtse	
23	Yado Kyi Ghalhy	Gup	Nosbugang Gavog	
24	Som Lo. Pradhan	Thomdo Kshatriya	Samtse Thomdo	
25	Khem Raj Ghalhy	Gup	Pamalung	
26	Karna Bdr Thakuri	Gup	Ygesetse	
27	Phata Singh Ghalhy	Gup	Sangolgy-chaly	
28	Dechen Wangdi	GAO	Denchukha	
29	Mahendra Subedi	BPC	Tashichhodang, Samtse	
30	Wangmo Tamang	GAO	Ygesetse	
31	Sangay Wengoi	GAO	Yoesetse	

32	Tashi Uamro	GAO	Sangtse Gavog	
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7.2 Finalization and Endorsement of the DFO Management Plan

The management plan shall be finalized by the concerned DFO. The draft plan shall be reviewed by FRPMD and subsequently endorsed by the Technical Advisory Committee (TAC) of the Department. The technically reviewed and endorsed Plan will then be recommended for approval to the Ministry by the head of the Department. The Head of the Ministry will approve the plan for implementation.

References

DoFPS (2021). Forest and Nature Conservation Code of Best Management Practices of Bhutan Volume IV: Protected Area Management.

DoFPS (2022). Guidelines for Development of Divisional Forest Office Management Plan.

DoFPS (2022). National Interpretation for the Identification of High Conservation Values in Bhutan.

DoFPS 2023. Status of Tigers in Bhutan: The National Tiger Survey Report 2021–2022. Bhutan Tiger Center, Department of Forests and Park Services, Ministry of Energy and Natural Resources, Royal Government of Bhutan, Thimphu, Bhutan.

DoFPS (2023). Forest and Nature Conservation Rules and Regulations, 2023

DoFPS (2025). Operational Guidelines for Management and monitoring of High Conservation Value

FMID. (2023). NFI Volume I: State of Forest Report.

FMID. (2023). NFI Volume II: State of Forest Carbon Report.

NCD. (2020). Biodiversity Monitoring and Social Survey Protocol of Bhutan (An addendum to the Forest Management Code of Bhutan).

NCHM. (2019). Analysis of historical climate and climate projection for Bhutan. National Centre for Hydrology and Meteorology. www.nchm.gov.bt

NSB (2018). 2017 Population and Housing Census of Bhutan.

WWF-Bhutan 2022. Gender Mainstreaming Guidelines for Divisional Forest Offices

Annexure I: Annual Operational Plan

Framework for Annual Operational Plan for Division Forest Office						
<i>*The Annual Operational Plan for the Division Forest Office shall be prepared and submitted to.....latest by 31 July</i>						
Name of the office:						
Plan Period:					(Seal and sign)	
Prepared by and date:						
Verified by and date:						
Recommended by and date:						
Approved by and date:						
REVIEW OF THE PREVIOUS YEARS' PLAN						
I.a. SUMMARY OF THE PLAN						
No. of Planned activities	Status of the activities (in Nos.)					
	Achieved		On-going		Not Implemented	
I.b. DETAILED REVIEW OF THE PLANNED ACTIVITIES						
Activities	Target with unit	Budget utilization status (%)	Brief report on the progress of the activities		Remarks (Justification/ reasoning if not completed or not implemented)	
II. ANNUAL OPERATIONAL PLAN SCHEDULE						
II.a. DETAILS OF THE PLANNED ACTIVITIES						
Output Indicator as per the management plan/APA	Activities	Target with Unit	Timeline	Budget (in Nu. (m))	Fund Source	Specify location, if relevant
Program 1: Nature Conseravtion						

Program II: Forest Resource Panning and Management						
Program III: Forest Monitoring and Information						
Program IV: Administration and Direction						
1. Program I shall include but not limited to; surveys, reserch, HWC management, Habitat Management, watershed & wetland protection, ecotourism & Nature recreation, waste management, wildlife rescue & rehabilitation. 2. Program II shall include but not limited to; LFMA plan preparation, NWFP, CF, Plantation, timber allocation and monitoring. 3. Program III shall include but not limited to; patrolling, forest offence compounding/prosecution, forestry clearances, pest & disease surveillance, forest fire management. 4. Program IV shall include but not limited to; Division Forest Office management plan preparation, work planning, coordination meetings, administrative and accounting activi- ties, monitoring and evaluation, data management.						
<i>*Note: Activities such as Awareness, capacity building, etc to be tagged with respective program activities.</i>						

Annexure II: Bhutan METT+ Form (DFO, Samtse)

Name, affiliation and contact details for person responsible for completing the Bhutan METT + (email etc.)				
Date assessment carried out				
Name of Protected Area/Forest Division				
WDPA site code (codes can be searched for on: www.protectedplanet.net/)				
Designation	National	IUCN Category National Category (to be list based on site needs-CF, WFMU, LFMPs)	Internation (see below)	
Location of protected Area/Forest Division (province and if possible map reference)				
Date of establishment (dd/mm/yyyy)				
Ownership details (please tick)	SRFL	Private	Community	Other
Management Authority				
Size of the Protected Area/ Forest Division(sq.km)				
Number of staff	Permanant			Temporary (same):
Annual Budget (Nu)-excluding staff salary costs		Current budget (operational costs, e.g. staff costs):		Capital budget (infrastructure development etc):
What are the main values for which the area is designated				
List the two primary protected area /forest division management objectives				
Management objective 1				
Management objective 2				
No. of people involved in completing assessment				
Including: (highlight where appropriate)	Forest Division Manager Agency staff	Forest Division staff	Other Forest Division	NGO
	Local community	Donors	External experst	Other
Please note if assessment was carried out in association with a particular project, on behalf of an organization or donor				
Information on International Designations (where applicable)				
UNESCO World Heritage site				
Date listed	Site name		Site area	
Criteria for designation (i.e. criteria i to x)				

Statement of Outstanding Universal Value		
Ramsar site		
Date listed	Site Name and number	Site area
Criteria for Designation & ecological character (see Ramsar Information Sheet)		
UNESCO Man and Biosphere Reserves		
Date listed	Site name	Site area
Total:		
Core:		
Buffer:		
Transition:		
Criteria for designation		
Fulfilment of three functions of MAB (conservation, development and logistic support)		
Please list other designations and any supporting information below		
Name:	Detail:	
Name:	Detail:	
Name:	Detail:	
Protected Area/ Forest Division Threats: Assessment Sheet 1		
In the assessment below threats should be:		
Ranked as of high significance if they are seriously degrading values; medium if they are having some negative impact and low if they are present but not seriously impacting values. Not applicable (N/A) is selected when the threat is either not present or not applicable in the forest Division.		
Note that threats ranked as of medium and high significance can be assessed in more detail using Assessment Sheet 2		
Assessed at three levels:		
Current threat: in which case a 'C' is put in either the High, Medium or Low box Potential threat: in which case a 'P' is put in either the High, Medium or Low box Issues: In which case an 'I' is put in either the High, Medium or Low Box		
Each threat identified could have both a current threat assessment (e.g. assessed as low) and potential threat (e.g. assessed as medium). The category of 'issues' has been added because some management issues may not be strictly regarded as threats but need constant management intervention to ensure they do not become a threat. For example, plants collected for medicinal use could be a management issue ; or a current or potential threat if management activities are not effective in controlling the collection levels or processes.		
Guidance in making the assessment		
Unlike many other countries in the region (and worldwide) the level of threats are fairly low at present in Bhutan and thus what might be considered of high threat here, may not be at anything like the same scale as in other countries. Guidance in what is meant by the categories high, medium and low threats in a Bhutanese context has thus been developed for threats marked ** (see Annexe 1). Threat categories with specific guidance are marked by a *.		
Specific guidance on assessing threats in the Bhutanese context are also given in boxes below each threat.		
Residential and commercial development within a protected area/ forest division		
Threats from human settlements or other non-agricultural land uses with a substantial footprint		

1. Residential and commercial development within a protected area/ forest division					
Threats from human settlements or other non-agricultural land uses with a substantial footprint					
High	Medium	Low	N/A		Assessment Methods/Guide Note
				1.1 Housing and settlement	Could be based on built up areas from LULC 2016 in relation to the Total Divisions area
				1.2 Commercial and industrial areas	Extent of industrial areas to the total areas of the FDs
				1.3 Tourism and recreation infrastructure	Based on the presence of absence of Tourism plans, facilities and services existing within the FDs
2. Agriculture and aquaculture within a protected area / forest division					
<i>Threats from farming and grazing as a result of agricultural expansion and intensification, including silviculture and aquaculture</i>					
High	Medium	Low	N/A		Assessment Methods/Guide Note
				2.1 Annual and perennial non-timber crop cultivation	
				2.1a Medicinal plant cultivation*	No quantification in this section for as assessment
				2.2 Wood and pulp plantations	
				2.2a Community forestry	
				2.2b Private forestry (e.g. planting of exotic species)	
				2.3 Livestock farming and grazing**	Based on the % area impacted by presence of livestock Division area
				2.3a Land encroachment for agriculture	
				2.3b Land lease of government reserve land for commercial farming	Land lease area record from DLLC (Dzongkhag land leasing committee) which can be based on actual land leased with LUC (land user certificate)
				2.4 Freshwater aquaculture	
<i>Threat 2.1a Medical plant cultivation: Note that the collection of species from wild is covered in threat 5.2</i>					
3. Energy production and mining within a protected area/ forest division					
<i>Threats from production of non-biological resources</i>					
High	Medium	Low	N/A		Assessment Methods/Guide Note
				3.1 Oil and gas drilling	Not relevant
				3.2 Mining and quarrying**	Area of mines and quarry (in % of area to total area of DFO)
				3.3 Energy generation, including from hydropower dams*	Impact based or area covered/ utilized for hydropower dams, residents, channels, power houses, etc...
<i>3.3 Energy generation including HEP: This question looks specifically at threats within Forest Division. Most of the hydropower developments in Bhutan are outside protected areas but distant HEP systems can still impact on the Forest Division, the impact of such threats is covered in threat 7.2.</i>					

4. Transportation and service corridors within a protected area / forest division										
<i>Threats from long narrow transport corridors and the vehicles that use them including associated wildlife mortality</i>										
High	Medium	Loa	N/A		Assessment Methods/Guide Note					
				4.1 Roads and railroads (include road-killed animals) **	Number of species kills recorded along the roads or likely to occur					
				4.2 Utility and service lines (e.g. electricity cable lines, telephone lines) ***	Could be minimal impacts along flight paths (Druk air, Tashi air, Helicopter>..) particularly due to noise					
				4.3 Flight paths*						
<i>4.2 Utility and service lines: Given the pace of infrastructure development in Bhutan (e.g. high tension cables, service centres etc) it was felt this threat should consider both impacts in the Forest Division and in the buffer zones.</i>										
<i>4.3 Flight paths: It should be stressed that this threat is considering flight paths of aeroplanes, hot air balloons, gliders etc, not the flight paths of birds</i>										
5. Biological resource use and harm within a protected area /forest division										
<i>Threats from consumptive use of "wild" biological resources including both deliberate and unintentional harvesting effects; also persecution or control of specific species (note this includes hunting and killing of animals)</i>										
High	Medium	Low	N/A		Assessment Methods/Guide Note					
				5.1 Hunting, killing and collecting terrestrial animals (including killing of animals as a result of human/ wildlife conflict)	No need to fill this section					
				5.1a Human wildlife conflict**	Record of HWC in respective forest Divisions					
				5.1b Wildlife Poaching**						
				5.2 Gathering terrestrial plants or plant products (non-timber)						
				5.2a Mushrooms**						
				5.2b Plant species for medicinal use**						
				5.2c Plant species for food**						
				5.3 Illegal logging and timber harvesting**						
				5.3a Legal logging and timber harvesting**						
				5.4 Fishing and harvesting aquatic resources	Date from Illegal fishing record as well as fishery groups established					

6. Human intrusions and disturbance within a protected area /forest division					
<i>Threats from human activities that alter, destroy or disturb habitats and species associated with non-consumptive uses of biological resources</i>					
High	Medium	Low	N/A		Assessment Methods/Guide Note
				6.1 Recreational activities and tourism	No rating
				6.1a Unmanaged ecotourism **	
				6.2 War, civil unrest and military exercises*	
				6.3 Research, education and other work-related activities in forest divisions	
				6.4 Activities of FD Managers (e.g. construction or vehicle use, artificial watering points and dams)	
				6.5 Deliberate vandalism or destructive activities	
<i>6.2 War, civil unrest and military exercises: in the case of Bhutan war and civil unrest should include intrusion of political insurgency from across the border</i>					
7. Natural system modifications					
<i>Threats from other actions that convert or degrade habitat or change the way the ecosystem functions</i>					
High	Medium	Low	N/A		Assessment Methods/Guide Note
				7.1 Fire and fire suppression (including arson) **	Impacts on FD from activities carried out in the adjoining divisions/ parks/ State
				7.2 Dams, hydrological modification and water management/use ***	
				7.3a Increased fragmentation within forest division	
				7.3b Isolation from other natural habitat (e.g. deforestation, dams without effective aquatic wildlife passages)	
				7.3c Other 'edge effects' on protected area values	
				7.3d Loss of keystone species (e.g. top predators, pollinators etc)	
<i>Whereas threat 3 looked at impacts of infrastructure development in Forest Division, threat 7 looks at impacts which may occur from developments far away from the actually protected area. As noted above most of the hydropower developments in Bhutan are outside protected areas but distant HEP systems can still impact on the Forest Division. Threat 7.2 should record impacts on habitat or changes in the way the ecosystem functions, such as changing water flow patterns.</i>					

8. Invasive and other problematic species and genes						
Threats from terrestrial and aquatic non-native and native plants, animals, pathogens/microbes or genetic materials that have or are predicted to have harmful effects on biodiversity following introduction, spread and/or increase						
High	Medium	Low	N/A			Assessment Methods/Guide Note
				8.1a Invasive non-native/alien plants (weeds)		
				8.1b Invasive non-native/alien animals		
				8.1c Invasive non-native/alien freshwater fish		
				8.1d Pathogens (non-native or native but creating new/increased problems)		Consider diseases here
				8.2 Introduced genetic material (e.g. genetically modified organisms)		
9. Pollution entering or generated within a protected area /forest division						
Threats from introduction of exotic and/or excess materials or energy from point and non-point sources						
High	Medium	Low	N/A			
				9.1 Household sewage and urban waste water		
				9.1a Sewage and waste water from protected area facilities (e.g. toilets, hotels etc)		
				9.2 Industrial, mining and military effluents and discharges (e.g. poor water quality discharge from dams, e.g. unnatural temperatures, de-oxygenated, other pollution)		
				9.3 Agricultural and forestry effluents (e.g. excess fertilizers or pesticides)		
				9.4 Garbage and solid waste**		
				9.5 Air-borne pollutants		
				9.6 Excess energy (e.g. heat pollution, lights etc)		
10. Geological events						
Geological events may be part of natural disturbance regimes in many ecosystems. But they can be a threat if a species or habitat is damaged and has lost its resilience and is vulnerable to disturbance. Management capacity to respond to some of these changes may be limited.						
High	Medium	Low	N/A			Assessment Methods/Guide Note
				10.1 Volcanoes		Not really relevant
				10.2 Earthquakes/Tsunamis		Based on the history of Earthquake damages/records from dzongkhag disaster management

				10.3 Avalanches/ Landslides	Map out landslides areas within the Division and compare to the total area of the Division as well take into consideration the severity of impacts from landslide in adjoining areas
				10.4 Erosion and siltation/ deposition (e.g. shoreline or riverbed changes)	
11. Climate change and severe weather					
Threats from long-term climatic changes which may be linked to global warming and other severe climatic/ weather events outside of the natural range of variation					
High	Medium	Low	N/A		Assessment Methods/Guide Note
				11.1 Habitat shifting and alteration	
				11.2 Droughts	Basis on weather data from NCHMS for assessment rather the social data collection for uniformity
				11.3 Temperature extremes	
				11.4 Storms and flooding	
12. Specific cultural and social threats					
High	Medium	Low	N/A		Assessment Methods/Guide Note
				12.1 Loss of cultural links, traditional knowledge and/or management practices	
				12.2 Natural deterioration of important cultural site values	
				12.3 Destruction of cultural heritage buildings, gardens, sites etc	

Protected Area /Forest Division Threats: Assessment Sheet 2

As the severity and impact of threats in Bhutan are expected to increase over the next few years, in part due to infrastructure development and the relative ease of access/communications that new roads and mobile phone coverage are allowing, the Bhutan METT + includes a more detailed assessment of major threats.

The assessment form allows a more detailed assessment of the current or potential threats identified as having medium or high significance in Assessment Sheet 2

1. Specify threat: Housing and settlement

Threat (specific if current or potential):

Impact of threat		Management response
Extent: Describe the extent of the impact under one of the three descriptors given below	Severity: Describe how severe the impact under one of the three descriptors given below	Action: What actions are planned or have taken place to manage the threat
A: Small section of the site (5-10%):	A: Minor impact:	
B: Several areas of the site (11-50%):	B: Major impact but not continuous:	
C: Most of the site (51-100%):	C: Major continuous impact:	

2. Specify threat: Commercial and industrial areas		
Threat (specific if current or potential):		
Impact of threat		Management response
Extent: Describe the extent of the im- pact under one of the three descriptors given below	Severity: Describe how severe the impact under one of the three descriptors given below	Action: What actions are planned or have taken place to manage the threat
A: Small section of the site (5-10%):	A: Minor impact:	
B: Several areas of the site (11-50%):	B: Major impact but not continu- ous:	
C: Most of the site (51-100%):	C: Major continuous impact:	

3. Specify threat: Tourism and recreation infrastructure		
Threat (specific if current or potential):		
Impact of threat		Management response
Extent: Describe the extent of the im- pact under one of the three descriptors given below	Severity: Describe how severe the impact under one of the three descriptors given below	Action: What actions are planned or have taken place to manage the threat
A: Small section of the site (5-10%):	A: Minor impact:	
B: Several areas of the site (11-50%):	B: Major impact but not continu- ous:	
C: Most of the site (51-100%):	C: Major continuous impact:	

4. Specify threat: Wood and pulp plantations		
Threat (specific if current or potential):		
Impact of threat		Management response
Extent: Describe the extent of the im- pact under one of the three descriptors given below	Severity: Describe how severe the impact under one of the three descriptors given below	Action: What actions are planned or have taken place to manage the threat
A: Small section of the site (5-10%):	A: Minor impact:	
B: Several areas of the site (11-50%):	B: Major impact but not continu- ous:	
C: Most of the site (51-100%):	C: Major continuous impact:	

5. Specify threat: Community forestry		
Threat (specific if current or potential):		
Impact of threat		Management response
Extent: Describe the extent of the im- pact under one of the three descriptors given below	Severity: Describe how severe the impact under one of the three descriptors given below	Action: What actions are planned or have taken place to manage the threat
A: Small section of the site (5-10%):	A: Minor impact:	
B: Several areas of the site (11-50%):	B: Major impact but not continu- ous:	
C: Most of the site (51-100%):	C: Major continuous impact:	

6. Specify threat: Livestock farming and grazing		
Threat (specific if current or potential):		
Impact of threat		Management response
Extent: Describe the extent of the im- pact under one of the three descriptors given below	Severity: Describe how severe the impact under one of the three descriptors given below	Action: What actions are planned or have taken place to manage the threat
A: Small section of the site (5-10%):	A: Minor impact:	
B: Several areas of the site (11-50%):	B: Major impact but not continu- ous:	
C: Most of the site (51-100%):	C: Major continuous impact:	

7. Specify threat: Land encroachment for agriculture		
Threat (specific if current or potential):		
Impact of threat		Management response
Extent: Describe the extent of the im- pact under one of the three descriptors given below	Severity: Describe how severe the impact under one of the three descriptors given below	Action: What actions are planned or have taken place to manage the threat
A: Small section of the site (5-10%):	A: Minor impact:	
B: Several areas of the site (11-50%):	B: Major impact but not continu- ous:	
C: Most of the site (51-100%):	C: Major continuous impact:	

8. Specify threat: Land lease of government reserve land for commercial farming		
Threat (specific if current or potential):		
Impact of threat		Management response
Extent: Describe the extent of the im- pact under one of the three descriptors given below	Severity: Describe how severe the impact under one of the three descriptors given below	hn: What actions are planned or have taken place to manage the threat
A: Small section of the site (5-10%):	A: Minor impact:	
B: Several areas of the site (11-50%):	B: Major impact but not continu- ous:	
C: Most of the site (51-100%):	C: Major continuous impact:	

9. Specify threat: Energy generation, including from hydropower dams*		
Threat (specific if current or potential):		
Impact of threat		Management response
Extent: Describe the extent of the im- pact under one of the three descriptors given below	Severity: Describe how severe the impact under one of the three descriptors given below	Action: What actions are planned or have taken place to manage the threat
A: Small section of the site (5-10%):	A: Minor impact:	
B: Several areas of the site (11-50%):	B: Major impact but not continuous	
C: Most of the site (51-100%):	C: Major continuous impact:	

10. Specify threat: Roads and railroads (include road-killed animals) **		
Threat (specific if current or potential):		
Impact of threat		Management response
Extent: Describe the extent of the im- pact under one of the three descriptors given below	Severity: Describe how severe the impact under one of the three descriptors given below	Action: What actions are planned or have taken place to manage the threat
A: Small section of the site (5-10%):	A: Minor impact:	
B: Several areas of the site (11-50%):	B: Major impact but not continuous:	
C: Most of the site (51-100%):	C: Major continuous impact:	

11. Specify threat: Utility and service lines (e.g. electricity cable lines, telephone lines) */**		
Threat (specific if current or potential):		
Impact of threat		Management response
Extent: Describe the extent of the im- pact under one of the three descriptors given below	Severity: Describe how severe the impact under one of the three descriptors given below	Action: What actions are planned or have taken place to manage the threat
A: Small section of the site (5-10%):	A: Minor impact:	
B: Several areas of the site (11-50%):	B: Major impact but not continuous:	
C: Most of the site (51-100%):	C: Major continuous impact:	

12. Specify threat: Human Wildlife Conflict		
Threat (specific if current or potential):		
Impact of threat		Management response
Extent: Describe the extent of the im- pact under one of the three descriptors given below	Severity: Describe how severe the impact under one of the three descriptors given below	Action: What actions are planned or have taken place to manage the threat
A: Small section of the site (5-10%):	A: Minor impact:	
B: Several areas of the site (11-50%):	B: Major impact but not continuous:	
C: Most of the site (51-100%):	C: Major continuous impact:	

13. Specify threat: Wildlife Poaching**		
Threat (specific if current or potential):		
Impact of threat		Management response
Extent: Describe the extent of the im- pact under one of the three descriptors given below	Severity: Describe how severe the impact under one of the three descriptors given below	Action: What actions are planned or have taken place to manage the threat
A: Small section of the site (5-10%):	A: Minor impact:	
B: Several areas of the site (11-50%):	B: Major impact but not continuous:	
C: Most of the site (51-100%):	C: Major continuous impact:	

14. Specify threat: Plant species for medicinal use**		
Threat (specific if current or potential):		
Impact of threat		Management response
Extent: Describe the extent of the im- pact under one of the three descriptors given below	Severity: Describe how severe the impact under one of the three descriptors given below	Action: What actions are planned or have taken place to manage the threat
A: Small section of the site (5-10%):	A: Minor impact:	
B: Several areas of the site (11-50%):	B: Major impact but not continu- ous:	
C: Most of the site (51-100%):	C: Major continuous impact:	
15. Specify threat: Plant species for food**		
Threat (specific if current or potential):		
Impact of threat		Management response
Extent: Describe the extent of the im- pact under one of the three descriptors given below	Severity: Describe how severe the impact under one of the three descriptors given below	Action: What actions are planned or have taken place to manage the threat
A: Small section of the site (5-10%):	A: Minor impact:	
B: Several areas of the site (11-50%):	B: Major impact but not continuous:	
C: Most of the site (51-100%):	C: Major continuous impact:	
16. Specify threat: Illegal logging and timber harvesting**		
Threat (specific if current or potential):		
Impact of threat		Management response
Extent: Describe the extent of the im- pact under one of the three descriptors given below	Severity: Describe how severe the impact under one of the three descriptors given below	Action: What actions are planned or have taken place to manage the threat
A: Small section of the site (5-10%):	A: Minor impact:	
B: Several areas of the site (11-50%):	B: Major impact but not continuous:	
C: Most of the site (51-100%):	C: Major continuous impact:	
17. Specify threat: Legal logging and timber harvesting**		
Threat (specific if current or potential):		
Impact of threat		Management response
Extent: Describe the extent of the im- pact under one of the three descriptors given below	Severity: Describe how severe the impact under one of the three descriptors given below	Action: What actions are planned or have taken place to manage the threat
A: Small section of the site (5-10%):	A: Minor impact:	
B: Several areas of the site (11-50%):	B: Major impact but not continuous:	
C: Most of the site (51-100%):	C: Major continuous impact:	

18. Specify threat: Fishing and harvesting aquatic resources		
Threat (specific if current or potential):		
Impact of threat		Management response
Extent: Describe the extent of the im- pact under one of the three descriptors given below	Severity: Describe how severe the impact under one of the three descriptors given below	Action: What actions are planned or have taken place to manage the threat
A: Small section of the site (5-10%):	A: Minor impact:	
B: Several areas of the site (11-50%):	B: Major impact but not continuous:	
C: Most of the site (51-100%):	C: Major continuous impact:	

19. Specify threat: Garbage and solid waste**		
Threat (specific if current or potential):		
Impact of threat		Management response
Extent: Describe the extent of the im- pact under one of the three descriptors given below	Severity: Describe how severe the impact under one of the three descriptors given below	Action: What actions are planned or have taken place to manage the threat
A: Small section of the site (5-10%):	A: Minor impact:	
B: Several areas of the site (11-50%):	B: Major impact but not continu- ous:	
C: Most of the site (51-100%):	C: Major continuous impact:	

20. Specify threat: Earthquakes		
Threat (specific if current or potential):		
Impact of threat		Management response
Extent: Describe the extent of the im- pact under one of the three descriptors given below	Severity: Describe how severe the impact under one of the three descriptors given below	Action: What actions are planned or have taken place to manage the threat
A: Small section of the site (5-10%):	A: Minor impact:	
B: Several areas of the site (11-50%):	B: Major impact but not continu- ous:	
C: Most of the site (51-100%):	C: Major continuous impact:	

21. Specify threat: Landslides		
Threat (specific if current or potential):		
Impact of threat		Management response
Extent: Describe the extent of the im- pact under one of the three descriptors given below	Severity: Describe how severe the impact under one of the three descriptors given below	Action: What actions are planned or have taken place to manage the threat
A: Small section of the site (5-10%):	A: Minor impact:	
B: Several areas of the site (11-50%):	B: Major impact but not continu- ous:	
C: Most of the site (51-100%):	C: Major continuous impact:	

22. Specify threat: Erosion and siltation/ deposition (e.g. shoreline or riverbed changes)		
Threat (specific if current or potential):		
Impact of threat		Management response
Extent: Describe the extent of the im- pact under one of the three descriptors given below	Severity: Describe how severe the impact under one of the three descriptors given below	Action: What actions are planned or have taken place to manage the threat
A: Small section of the site (5-10%):	A: Minor impact:	
B: Several areas of the site (11-50%):	B: Major impact but not continuous:	
C: Most of the site (51-100%):	C: Major continuous impact:	

23. Specify threat: Storms and flooding		
Threat (specific if current or potential):		
Impact of threat		Management response
Extent: Describe the extent of the im- pact under one of the three descriptors given below	Severity: Describe how severe the impact under one of the three descriptors given below	Action: What actions are planned or have taken place to manage the threat
A: Small section of the site (5-10%):	A: Minor impact:	
B: Several areas of the site (11-50%):	B: Major impact but not continu- ous:	
C: Most of the site (51-100%):	C: Major continuous impact:	

24. Specify threat: Loss of cultural links, traditional knowledge and/or management practices		
Threat (specific if current or potential):		
Impact of threat		Management response
Extent: Describe the extent of the im- pact under one of the three descriptors given below	Severity: Describe how severe the impact under one of the three descriptors given below	Action: What actions are planned or have taken place to manage the threat
A: Small section of the site (5-10%):	A: Minor impact:	
B: Several areas of the site (11-50%):	B: Major impact but not continu- ous:	
C: Most of the site (51-100%):	C: Major continuous impact:	

25. Specify threat: Natural deterioration of important cultural site values		
Threat (specific if current or potential):		
Impact of threat		Management response
Extent: Describe the extent of the im- pact under one of the three descriptors given below	Severity: Describe how severe the impact under one of the three descriptors given below	Action: What actions are planned or have taken place to manage the threat
A: Small section of the site (5-10%):	A: Minor impact:	
B: Several areas of the site (11-50%):	B: Major impact but not continu- ous:	
C: Most of the site (51-100%):	C: Major continuous impact:	

Protected Area /Forest Division Management Activities: Assessment Sheet 3

Please tick the two critical management activities currently undertaken in the protected area	Comment/Explanation
☐ Law enforcement and surveillance	
☐ Promoting sustainable resource use	
☐ Working with local communities	
☐ Education and awareness	
☐ Demarcation and zoning	
☐ Monitoring	
☐ Research	
☐ Management planning	
☐ Ecotourism	
☐ Building institutional and governance capacity	
☐ Species management	
☐ Infrastructure development	
☐ Fundraising	
☐ Restoration	
☐ Fire management	
☐ Resolving tenure problems	
☐ Human-wildlife conflict management	
☐ Alien species control	
☐ External communication and publicity	
☐ Equipment and facilities	
☐ Improving habitat	
☐ Species (re)introduction / control / breeding	
☐ Working with regional authorities	
☐ Other	

Protected Area / Forest Division Management Effectiveness: Assessment

Issue	Criteria	Score: Tick only one box per question		Comment/Explanation	Next steps
1. Legal status Does the protected area/forest division have legal status (or in the case of private reserves is covered by a covenant or similar)? Context	The protected area/forest division is not gazetted/covenanted	0			
	There is agreement that the protected area/Forest Division should be gazetted/covenanted but the process has not yet begun	1			
	The protected area /Forest Division is in the process of being gazetted/covenanted but the process is still incomplete (includes sites designated under international conventions, such as Ramsar, or local/traditional law such as community conserved areas, which do not yet have national legal status or covenant)	2			
	The protected area/Forest Division has been formally gazetted/covenanted	3			
2. Protected area/forest division regulations Are appropriate regulations in place to control land use and activities (e.g. hunting)? Planning	There are no regulations for controlling land use and activities in the protected area /forest division	0			
	Some regulations for controlling land use and activities in the protected area / Forest Division exist but there are major weaknesses	1			
	Regulations for controlling land use and activities in the protected area / Forest Division exist but there are some weaknesses or gaps	2			
	Regulations for controlling inappropriate land use and activities in the protected area/Forest Division exist and provide an excellent basis for management	3			
3. Law enforcement Can staff (i.e. those with responsibility for managing the site) enforce protected area / Forest Division rules well enough? Input	The staff have no effective capacity/resources to enforce protected/forest division area legislation and regulations	0			
	There are major deficiencies in staff capacity/resources to enforce protected area/ forest division legislation and regulations (e.g. lack of skills, no patrol budget, lack of institutional support)	1			
	The staff have acceptable capacity/resources to enforce protected area legislation and regulations but some deficiencies remain	2			
	The staff have excellent capacity/resources to enforce protected area/forest division legislation and regulations	3			

4. Protected area/ forest division objectives Is management undertaken according to agreed objectives? Planning	No firm objectives have been agreed for the protected area/forest division	0			
	The protected area/forest division has agreed objectives, but is not managed according to these objectives	1			
	The protected area/forest division has agreed objectives, but is only partially managed according to these objectives	2			
	The protected area/forest division has agreed objectives and is managed to meet these objectives	3			
5. Protected area/ forest division design Is the protected area/forest division the right size and shape to meet the objectives (protect species, habitats, ecological processes and water catchments of key conservation concern, resource utilization) Planning	Inadequacies in protected area/forest division design mean achieving the major objectives of the protected area is very difficult	0			
	Inadequacies in protected area/forest division design mean that achievement of major objectives is difficult but some mitigating actions are being taken (e.g. agreements with adjacent land owners for wildlife corridors or introduction of appropriate catchment management)	1			
	Protected area/forest division design is not significantly constraining achievement of objectives, but could be improved (e.g. with respect to larger scale ecological processes)	2			
	Protected area/forest division design helps achievement of objectives; it is appropriate for species and habitat conservation; and maintains ecological processes such as surface and groundwater flows at a catchment scale, natural disturbance patterns etc	3			
6. Protected/ forest division area boundary demarcation Is the boundary known and demarcated? Process	The boundary of the protected area/forest division is not known by the management authority or local residents/neighbouring land users	0			
	The boundary of the protected area/forest division is known by the management authority but is not known by local residents/ neighbouring land users	1			
	The boundary of the protected area/forest division is known by both the management authority and local residents/neighbouring land users but is not appropriately demarcated	2			
	The boundary of the protected area / forest division is known by the management authority and local residents/neighbouring land users and is appropriately demarcated	3			
7. Management plan Is there a management plan and is it being implemented? Planning	There is no management plan for the protected area/forest division	0			
	A management plan is being prepared or has been prepared but is not being implemented	1			
	A management plan exists but it is only being partially implemented because of funding constraints or other problems	2			
	A management plan exists and is being implemented	3			

Bhutan METT+: If a management plan is just running out and there is a process underway to redo the plan this is equivalent to score 3: a management plan exists					
<i>Additional points: Planning</i>					
7a. Planning process	The planning process allows adequate opportunity for key stakeholders to influence the management plan	1			
7b. Planning process	There is an established schedule and process for periodic review and updating of the management plan	1			
7c. Planning process	The results of monitoring, research and evaluation are routinely incorporated into planning	1			
8. Regular work plan	No regular work plan exists	0			
Is there a regular work plan and is it being implemented	A regular work plan exists but few of the activities are implemented	1			
	A regular work plan exists and many activities are implemented	2			
	A regular work plan exists and all activities are implemented	3			
	Planning/Outputs				
9. Resource inventory	There is little or no information available on the resource (critical habitats, species(flora & fauna), growing stocks and cultural values) of the protected area/forest division	0			
Do you have enough information to manage the area?	Information on the resource (critical habitats, species(flora & fauna), growing stocks and cultural values) of the protected area/forest division not sufficient to support planning and decision making	1			
Input	Information on the resource (critical habitats, species(flora & fauna), growing stocks and cultural values) of the protected area/forest division sufficient for most key areas of planning and decision making	2			
	Information on the resource (critical habitats, species(flora & fauna), growing stocks and cultural values) of the protected area/forest division sufficient for all areas of planning and decision making	3			
10. Protection systems	Protection systems (patrols, permits etc) do not exist or are not effective in controlling access/resource use	0			
Are systems in place to control access/resource use in the protected area/ forest division ?	Protection systems are only partially effective in controlling access/resource use	1			
	Protection systems are moderately effective in controlling access/resource use	2			
	Protection systems are largely or wholly effective in controlling access/ resource use	3			
	Process/Outcome				

11. Research	There is no survey or research work taking place in the protected area/ forest division	0			
Is there a programme of management-orientated survey and research work?	There is some survey and research work but it is not directed towards the needs of protected area / forest division management	1			
	There is some survey and research work which is at least partly directed towards the needs of protected area / forest division management	2			
	There is a comprehensive, integrated programme of survey and research work, which is relevant to management needs	3			
12. Resource management	Active resource management is not being undertaken	0			
Is active resource management being undertaken?	Very few of the requirements for active management of critical habitats, species, ecological processes, cultural values and sustainable resource production are being implemented	1			
	Many of the requirements for active management of critical habitats, species, ecological processes, cultural values and sustainable resource production are being implemented but some key issues are not being addressed	2			
	Requirements for active management of critical habitats, species, ecological processes, cultural values and sustainable resource production are being substantially or fully implemented	3			
12a: Management of NTFPs	A management plan exists for the management of all major non timber forest products actively collected within the protected area / forest division	1			
12b: Management of medicinal plants	A management plan exists for the management of all major medicinal plants actively collected within the protected area / forest division	1			
12c: Management of Other conservation areas (OCAs)	A management plan exists for all Other conservation areas (OCAs) within the protected area/forest division	1			
Bhutan METT+: consideration of this question includes issues relating to land leasing					
13. Staff numbers	There are no staff	0			
Are there enough people employed to manage the protected area forest division ?	Staff numbers are inadequate for critical management activities	1			
	Staff numbers are below optimum level for critical management activities	2			
	Staff numbers are adequate for the management needs of the protected area / forest division	3			
Inputs					

14. Staff training Are staff adequately trained to fulfil management objectives? Inputs/Process	Staff lack the skills needed for protected area / forest division management	0			
	Staff training and skills are low relative to the needs of the protected area /forest division	1			
	Staff training and skills are adequate, but could be further improved to fully achieve the objectives of management	2			
	Staff training and skills are aligned with the management needs of the protected area / forest division	3			
15. Current budget Is the current budget sufficient? Inputs	There is no budget for management of the protected area / forest division	0			
	The available budget is inadequate for basic management needs and presents a serious constraint to the capacity to manage	1			
	The available budget is acceptable but could be further improved to fully achieve effective management	2			
	The available budget is sufficient and meets the full management needs of the protected area / forest division	3			
Bhutan METT+: Budgets in Bhutan are divided by capital budget (infrastructure development etc) and current budget (operational costs, e.g. staff costs). Consideration of both budgets should be made when answering question 15 (and 16 and 17). The comment/explanation column should be used to detail specific issues concerning budget allocations etc.					
16. Security of budget Is the budget secure? Inputs	There is no secure budget for the protected area/forest division and management is wholly reliant on outside or highly variable funding	0			
	There is very little secure budget and the protected area/forest division could not function adequately without outside funding	1			
	There is a reasonably secure core budget for regular operation of the protected area/forest division but many innovations and initiatives are reliant on outside funding	2			
	There is a secure budget for the protected area/ forest division and its management needs	3			
17. Management of budget Is the budget managed to meet critical management needs? Process	Budget management is very poor and significantly undermines effectiveness (e.g. late release of budget in financial year)	0			
	Budget management is poor and constrains effectiveness	1			
	Budget management is good and actions are prioritised when funds are inadequate to meet management needs	2			
	Budget management is excellent and meets management needs	3			

18. Equipment	There are little or no equipment and facilities for management needs	0			
Is equipment sufficient for management needs?	There are some equipment and facilities but these are inadequate for most management needs	1			
Input	There are equipment and facilities, but still some gaps that constrain management	2			
	There are adequate equipment and facilities	3			
Bhutan METT+: Most protected areas cover large areas, there are thus likely to be differences in equipment availability in park/ division headquarters and guard posts around the park. Question 18 should consider equipment across the whole protected area / forest division and specific concerns regarding availability should be included in the comment/explanation and next steps column					
19. Maintenance of equipment	There is little or no maintenance of equipment and facilities	0			
Is equipment adequately maintained?	There is some ad hoc maintenance of equipment and facilities	1			
	There is basic maintenance of equipment and facilities	2			
Process	Equipment and facilities are well maintained	3			
20. Education and awareness	There is no education and awareness programme	0			
Is there a planned education programme linked to the objectives and needs?	There is a limited and ad hoc education and awareness programme	1			
	There is an education and awareness programme but it only partly meets needs and could be improved	2			
Process	There is an appropriate and fully implemented education and awareness programme	3			
21. Planning for land and water use	Adjacent land and water use planning does not take into account the needs of the protected area/forest division and activities/policies are detrimental to the survival of the area	0			
Does land and water use planning outside the protected area/ forest division recognise the protected area/ forest division and aid the achievement of objectives?	Adjacent land and water use planning does not take into account the long term needs of the protected area/forest division, but activities are not detrimental the area	1			
	Adjacent land and water use planning partially takes into account the long term needs of the protected area/forest division	2			
Planning	Adjacent land and water use planning fully takes into account the long term needs of the protected area/forest division	3			
Bhutan METT +: This question is specific to activities outside of the protected area / forest division . EIA's are supposed to take place for any developments. Issues in Bhutan include hydropower, transmission lines and mining.					
<i>Additional points: Land and water planning</i>					
21a: Land and water planning for habitat conservation	Planning and management in the catchment or landscape containing the protected area/ forest division incorporates provision for adequate environmental conditions (e.g. volume, quality and timing of water flow, air pollution levels etc) to sustain relevant habitats	1			

21b: Land and water planning for connectivity	Management of corridors linking the protected area/forest division provides for wildlife passage to key habitats outside the protected area (e.g. to allow migratory fish to travel between freshwater spawning sites and the sea, or to allow animal migration)	1			
21c: Land and water planning for ecosystem services and species conservation	Planning addresses ecosystem-specific needs and/or the needs of particular species of concern at an ecosystem scale (e.g. volume, quality and timing of freshwater flow to sustain particular species, fire management to maintain grassland habitats etc.)	1			
22. State and commercial neighbours Is there co-operation with adjacent land and water users? Process	There is no contact between managers and neighbouring official or corporate land and water users	0			
	There is contact between managers and neighbouring official or corporate land and water users but little or no cooperation	1			
	There is contact between managers and neighbouring official or corporate land and water users, but only some co-operation	2			
	There is regular contact between managers and neighbouring official or corporate land and water users, and substantial co-operation on management	3			
22a: State and commercial neighbours	There is regular contact and substantial cooperation with any hydropower developers and operators whose operations impact protected area /forest division management	1			
22b: State and commercial neighbours	There is regular contact and substantial cooperation with any developers and operators of linear infrastructure (e.g. transmission lines and/or roads) whose operations impact protected area / forest division management	1			
22c: State and commercial neighbours	Where the protected area/forest division provides important natural resources for commercial operations (e.g. municipal water companies or hydropower operators) payments for ecological services agreements are in place	1			
23. Local communities Do local communities resident or near the protected area/ forest division have input to management decisions? Process	Local communities have no input into decisions relating to the management of the protected area/forest division	0			
	Local communities have some input into discussions relating to management but no direct role in management	1			
	Local communities directly contribute to some relevant decisions relating to management but their involvement could be improved	2			
	Local communities directly participate in all relevant decisions relating to management, e.g. co-management	3			

Additional points Local communities					
23a: Impact on communities	There is open communication and trust between local people, stakeholders and protected area/forest division managers	1			
23b: Impact on communities	Programmes to enhance community welfare, while conserving protected area/forest division resources, are being implemented	1			
23c: Impact on communities	Local people actively support the protected area/forest division	1			
24. Economic benefit	The protected area/forest division does not deliver any economic benefits to local communities	0			
Is the protected area/forest division providing economic benefits to local communities, e.g. income, employment, payment for environmental services?	Potential economic benefits are recognised and plans to realise these are being developed	1			
	There is some flow of economic benefits to local communities	2			
	There is a major flow of economic benefits to local communities from activities associated with the protected area/forest division	3			
Outcomes					
25. Monitoring and evaluation	There is no monitoring and evaluation in the protected area/forest division	0			
Are management activities monitored against performance?	There is some ad hoc monitoring and evaluation, but no overall strategy and/or no regular collection of results	1			
	There is an agreed and implemented monitoring and evaluation system but results do not feed back into management	2			
	A good monitoring and evaluation system exists, is well implemented and used in adaptive management	3			
Planning/Process					
26. Visitor facilities	There are no visitor facilities and services despite an identified need	0			
Are visitor facilities adequate?	Visitor facilities and services are inappropriate for current levels of visitation	1			
Outputs	Visitor facilities and services are adequate for current levels of visitation but could be improved	2			
	Visitor facilities and services are excellent for current levels of visitation	3			
27. Commercial tourism operators	There is little or no contact between managers and tourism operators using the protected area/forest division	0			
Do commercial tour operators contribute to protected area/forest division management?	There is contact between managers and tourism operators but this is largely confined to administrative or regulatory matters	1			
	There is limited co-operation between managers and tourism operators to enhance visitor experiences and maintain protected area / forest division values	2			
Process					

	There is good co-operation between managers and tourism operators to enhance visitor experiences, and maintain protected area/forest division values	3			
28. Fees	Although fees are theoretically applied, they are not collected	0			
If fees (e.g. entry fees) are applied, do they help protected area/forest division management?	Fees are collected, but make no contribution to the protected area/forest division or its environs	1			
	Fees are collected, and make some contribution to the protected area/forest division and its environs	2			
Inputs/Process	Fees are collected and make a substantial contribution to the protected area/forest division and its environs	3			
29. Fines	There are no fines, or fines are theoretically applied but are seldom or never collected	0			
If fines (e.g. poaching fines) are applied, do they help protected area management?	Fines are collected, but make no direct contribution to the protected area/forest division or its environs	1			
	Fines are collected, and make some contribution to the protected area/forest division and its environs	2			
Inputs/Process	Fines are collected and make a substantial contribution to the protected area/forest division and its environs	3			
Bhutan METT +: The term “protected area or its environs” can include incentive schemes such as payments to informers of poachers					
30. Condition of biodiversity and ecological values	Many biodiversity and ecological values are being severely degraded	0			
	Some biodiversity and ecological values are being severely degraded	1			
What is the condition of the important biodiversity values of the protected area/forest division as compared to when it was first designated?	Some biodiversity and ecological values are being partially degraded but the most important values have not been significantly impacted	2			
	Biodiversity and ecological values are predominantly intact	3			
Outcomes					
Additional Points: Condition of values					
30a: Condition of biodiversity values	The assessment of the condition of biodiversity and ecological values is based on research and/or monitoring	1			
30b: Condition of biodiversity values	Specific management programmes are being implemented to address threats to biodiversity and ecological values	1			
30c: Condition of biodiversity values	Activities to maintain key biodiversity and ecological values are a routine part of protected area/forest division management	1			
Bhutan METT + questions					

31. Condition of cultural values What is the condition of the important cultural values of the protected area/ forest division as compared to when it was first designated? Outcomes	Many cultural values are being severely degraded	0			
	Some cultural values are being severely degraded	1			
	Some cultural values are being partially degraded but the most important values have not been significantly impacted	2			
	Cultural values are predominantly intact	3			
32. Access How accessible is the protected area/ forest division? Planning / Process	Staff are unable to move around the protected area/forest division and thus much of the protected area/ forest division is inaccessible throughout the year	0			
	There are significant restrictions on the ability of staff to move around the protected area/ forest division throughout the year (e.g. in the rainy season) and thus much of the protected area/ forest division (e.g. over 50 % of the area) is inaccessible some or all of the year	1			
	Staff are able to move relatively easily around the protected area / forest division and thus most of the protected area/forest division is accessible, although some areas (e.g. less than 50 % of the area) remain inaccessible some or all of the year	2			
	Staff are able to move easily around the whole protected area/forest division and the majority of the protected area / forest division is fully accessible	3			
33. Neighbouring protected areas/ forest division Is there co-operation with adjoining protected areas/ forest division (national and international)? Process	There is no contact between managers of adjoining protected areas/forest division on issues which impact protected area/forest division management effectiveness	0			
	There is limited contact between managers of adjoining protected areas/forest division but little cooperation on issues which impact protected area/ forest division management effectiveness	1			
	There is contact between managers of adjoining protected areas/forest division and some cooperation on protected area/forest division management effectiveness	2			
	There is regular contact between managers of adjoining protected areas/forest division and full cooperation on ensuring management effectiveness	3			

34. Is the protected area/forest division being consciously managed to adapt to climate change? Planning	There have been no efforts to consider	0			
	Some initial thought has taken place about likely impacts of climate change, but this has yet to be translated into management plans	1			
	Limited plans have been drawn up about how to adapt management to predicted climate change, which may or may not be being implemented	2			
	Detailed plans have been drawn up about how to adapt management to predicted climate change, and these are already being implemented	3			
35. Is the protected area/forest division being consciously managed to prevent carbon loss and to encourage further carbon capture? Process	Carbon storage and carbon dioxide capture has not been considered in management of the protected area/forest division		0		
	Carbon storage and carbon dioxide capture has been considered in general terms, but has not yet been significantly reflected in management		1		
	There are active measures in place to reduce carbon loss from the protected area/forest division, but no conscious measures to increase carbon dioxide capture	2			
	There are active measures in place both to reduce carbon loss from the protected area/forest division and to increase carbon dioxide capture		3		

Protected Area / Forest Division

Outcome Baseline: Assessment Sheet 5

For this assessment to be completed a list of core indicators needs to be developed. Once indicators have been agreed then the form below should be completed for each indicator from each protected area / forest division thus providing a summary of the baseline data available. An initial list of indicators was developed in the METT workshops[1].

Indicator	
Baseline data	Summary of data (e.g. number of species, vegetation cover etc)
Date: 2018-2021	
Data: 2015-2018	
Data: 2010-2015	
Data: 2000-2009	
Data: Pre-2000	
Data in preparation	
Data collection planned	
No data collection	
Additional notes	

[1] See: Wildlife Conservation Division and Equilibrium Research (2015). Management Effectiveness of Protected Areas in Bhutan: A training session and initial assessment of five protected areas. Thimphu, Bhutan and Bristol, UK

The guidance provided below should be considered when filling in the threat assessment (Assessment Sheet 1). The guidance has been developed to describe threat levels specific to Bhutan and will help ensure equivalence across the assessments of all protected areas in the country. (Threats assessed as of high significance can be assessed in more detail using Assessment Sheet 2). Where specific numbers are provided (as in human wildlife conflict) the indicator should be assessed against actual monitoring data, if available, or expert opinion if not. Generally, if expert opinion indicates a high threat a management action suggested in Assessment Sheet 2 would likely be to develop monitoring.

Threat (question number)	Indicators	High	Medium	Low	S7 Assessment methods/Guide Note
Livestock farming and grazing (2.3)	Evidence of degradation	Grazing is causing major degradation, e.g. loss/reduction of species covering over more than 25% of the FD. And/or Negative impact such as absence of natural regeneration, invasion by invasive species and impact of migratory cattle/sedentary ranching (herding in one location) are prevalent.	Grazing is causing minor degradation, e.g. loss/reduction of species covering 11-24% of the FD. And/or Some evidence of negative impact such as absence of natural regeneration, invasion by invasive species and some evidence of impact of migratory cattle/sedentary ranching (herding in one location) are prevalent.	Grazing is causing minor degradation, e.g. loss/reduction of species covering over less than 10% of the FD. And/or No evidence of negative impacts such as absence of natural regeneration, invasion by invasive species and no evidence of impact of migratory cattle/sedentary ranching (herding in one location) are prevalent.	Assessment Method (uniform for all IKI landscape DFOs). % area impacted by presence of livestock to the total DFO area
Extraction of minerals, quarries, etc (3.2)	Evidence of impact including potential threat	2 or more mines inside the protected area and no proper guidelines for mining operations And/or Mines in core zone And/or Open cast mines	1 mine inside the protected area with no proper guidelines for mining operations	Mining takes place, but is managed under strict mining guidelines	Measure in % in relation to the total area of the respective DFOs

Road construction (4.1)	Evidence of impact of highway(Road) building	Evidence of major impacts on habitats and species through road building, widening and spill-over extends to over 15 metres width either side of the road/beyond the right of way in over 50% of road construction in the park.	Evidence of major impacts on habitats and species through road building, widening and spill-over extends to over 15 metres width either side of the road beyond the right of way in less than 50% of the park.	Evidence of major impacts on habitats and species through road building, widening and spill-over extends to less than 15 metres width either side of the road beyond the right of way in over 25% of the park	Consider GC and Farm roads for assessment, rather than just Highway
		And/or No evidence of restoration; thus the road construction has led to fragmentation of park/habitat.	And/or Limited evidence of restoration; thus the road construction has lead to fragmentation of park/ habitat.		
		And/or The road construction cuts through the entire park including the core zone. There is negative impact on streams/rivers used by wildlife, regulations related to noise control not followed.	And/or The road construction cuts through some parts of the park (excluding the core zone which if impacted is seen as high threat) and there is negative impact on streams/rivers used by wildlife, regulations related to noise control followed but not effective		
Power Transmission Lines (4.2)	Evidence of Impact Forest fire caused by faulty transmission lines Frequency of unnatural fires	Over 2 forest fires within the last 5 years caused by faulty transmission lines	1-2 forest fires within the last 5 years caused by faulty transmission lines	There is some evidence of impacts on habitats and species in the immediate area of the transmission lines	
		And/or There is major evidence of impacts on habitats and species in the immediate area of the transmission lines	And/or There is evidence of impacts on habitats and species in the immediate area of the transmission lines		

Human Wildlife Conflicts (5.1a)	Number of conflicts Protected species killed Human life lost/ serious, life changing injury	Within the last 5 years: Any deaths or suspected deaths of tiger, snow leopard or elephant	Within the last 5 years: Any deaths or suspected deaths of 5 or more species (other than tiger, snow leopard or elephant which are considered as high threat) listed in the Forest and Nature Conservation Act	Within the last 5 years: Less than 5 deaths or suspected deaths of species (other than tiger, snow leopard or elephant which are considered as high threat) listed in the Forest and Nature Conservation Act	No need to consider natural deaths for this assessment
		And/or	And/or	And/or	
		Any recorded deaths or life changing injury (e.g. loss of limbs which impacts livelihoods)	Records of 5 or more injuries (not life changing)	Less than 5 records of injuries (not life changing)	
		And/or	And/or	And/or	
Wildlife Poaching (5.1 b)	Number of wild animals lost (schedule I and II of fauna) Number of poachers arrested Number of poaching evidences (camps, traps, snares)	50 or more number of livestock depredation annually	25-50	less than 25	by number for Yak/ cattle/goat/sheep & horse, and by number of cases for poultry
		Loss of 50% of annual crops at a household level	Loss of 25-49% of annual crops at a household level	Loss of less than 25% of annual crops at a household level	
		And/or	And/or	And/or	
		Complete destruction of permanent infrastructure	Major damage to permanent infrastructure	Minor damage to permanent and temporary infrastructure	
		Evidence of poaching of at more than one, Schedule I (Fauna) and >25 of schedule II listed fauna and flora.	Evidence of poaching of at least one totally protected wild fauna and 15-24 of schedule II listed fauna and flora of schedule I and II.	No evidence of poaching of schedule list I fauna and less than 15 numbers of poaching of schedule list II of both flora and fauna.	
		And/or	And/or	And/or	
		15 + poachers arrested	6 – 10 poachers arrested	<5 poachers arrested	
		And/or	And/or	And/or	
		50 + poaching evidences (camps, traps, snares)	11 – 30 poaching evidences (camps, traps, snares)	<10 poaching evidences (camps, traps, snares)	

NWFP Collection (5.2 a,b,c)	Evidence of species at serious risk	Widespread (over 50% of the area of the species collected) show evidence of any of the below:	Widespread (between 25- 49% of the area of the species collected) show evidence of any of the below:	Some concern about species and/or habitat decline	
		- Whole plant uprooting	- Whole plant uprooting	And/or	
		- Thriving market/demand and absence of management plan/ regulations	- Thriving market/ demand and absence of management plan/ regulations	Unreliable data on species ecology available	
		- No reliable data on resilience of species	- No reliable data on resilience of species		
Illegal Timber Felling (5.3)	Evidence of degradation	Evidence of major impacts on habitats and species through illegal forest operation has impacted up to 10% of the park area over last 5 years	Evidence of major impacts on habitats and species through illegal forest operation has impacted up to between 5 -9% of the park area over last 5 years	Evidence of major impacts on habitats and species through illegal forest operation has impacted less than 5% of the park area over 5 last years	Based on the offence cases registered and illegal timber felling site areas.
Legal Timber Felling (5.3a)	Evidence of Degradation	Evidence of major impacts on habitats and species through illegal forest operation has impacted up to 10% of the park area over last 5 years	Evidence of major impacts on habitats and species through illegal forest operation has impacted up to between 5-9% of the park area over last 5 years	Evidence of major impacts on habitats and species through illegal forest operation has impacted up to less than 5% of the park area over last 10 years	Based on areas of forest degraded due to legal timber logging in different management regimes, leased areas, and developmental activities
Unmanaged ecotourism (6.1a)	Evidence of impact	No ecotourism plan for the protected area and No proper facilities or control over tourist travelling in the designated conservation areas (e.g. in core zones)	Ecotourism plan exists for the protected area but there are no proper facilities for tourists and/or control over where tourists travel (e.g. in core areas)	Ecotourism Plan exists but is not effectively implemented or monitored	
Forest Fires (7.1)	Evidence of degradation	Evidence of major impacts on habitats and species through unnatural fire occurrences (arson, accident etc) fire has impacted > 10% of the park area over the last 5 years.	Evidence of major impacts on habitats and species through unnatural fire occurrences (arson, accident etc) fire has impacted up to 5-10% of the park area over the last five years.	Evidence of major impacts on habitats and species through unnatural fire occurrences – (arson, accident etc) fire has impacted less than 5% of the park area over the last five years.	Consider fire burnt time/duration in the assessment

Hydro Power (7.2)	Evidence of Impact Loss of habitat of water birds	Impacts to consider include:	Impacts to consider include:	Impacts to consider include:
		Impacts to consider include:	Impacts to consider include:	Impacts to consider include:
		Fires burn for several days and response time is long	Fires burn for several days and response time is long	Fires burn for several days and response time is long
		No. of fires in the same locality	No. of fires in the same locality	No. of fires in the same locality
		Evidence of some impacts on habitats including:	Evidence of impacts on habitats including one or few of the following	Minor impacts of road construction and some evidence of mitigation/restoration despite EIA and Environmentally Friendly Road Construction Guidelines reportedly being followed
		Designated conservation areas		And/or
		Endangered species	Only limited evidence of restoration/mitigation	Presence of interventions in place but unclear if these are functional
		Flight path.		
		Exceeding 50 meters on either sides of transmission lines	EMP and Environmentally Friendly Road Construction Guidelines are being followed in some but not all sites	
		No evidence of mitigation/restoration		
		EMP prescriptions not followed/complied	Presence of fish migratory ladders(Related interventions- proposed) but not properly designed & functional	

Solid Waste (9.4)	Evidence of Impact Enforcement/ compliance of rules		Habitat restoration programmes in place but not functional		
		Major presence of non-biodegradable waste	Presence of non-biodegradable waste but being collected	There is no evidence of impacts on habitats	
		And/or	And/or	And/or	
		Evidence of deaths caused by consumption of wastes by wildlife	Some evidence of deaths caused by consumption of wastes by wildlife	Compliance of rules adequately	
		And/or	And/or		
		Spillage of waste into rivers/streams	Some evidence of spillage of waste into rivers/streams		
		And/or	And/or		
		No enforcement/compliance of rules	Some level of enforcement/compliance of rules		



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