United Nations Development Programme
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Project title: Enhancing Sustainability and Climate Resilience of Forest and Agricultural Landscape and Community Livelihoods		
Country: Bhutan	**Implementing Partner:** Gross National Happiness Commission	**Management Arrangements :** National Implementation Modality (NIM)
UNDAF/Country Programme Outcome*:* **Outcome 1 (Sustainable Development): By 2018, sustainable and green economic growth that is equitable, inclusive, climate and disaster resilient and promotes poverty reduction, and employment opportunities particularly for vulnerable groups enhanced.** **UNDP Strategic Plan Environment and Sustainable Development Primary Outcome:** Strengthened capacities of developing countries to mainstream climate change adaptation policies into development plans **UNDP Strategic Plan Secondary Outcome**: National, regional and local levels of governance expand their capacities to manage equitable delivery of public services and support conflict resolution. **Expected CP Outcomes(s):** **CP Outcome 1.1:** Increased capacities for integrated natural resource management, climate change adaptation/mitigation, and poverty-environment nexus developed. **CP Outcome 1.2:** National and local institutions and individuals are better prepared and able to respond to and rescue climate change-induced and other disaster risks.		
UNDP Strategic Plan Output: Output 1.3: Solutions developed at national and sub-national levels for sustainable management of natural resources, ecosystem services, chemicals and waste.		
UNDP Social and Environmental Screening Category: Moderate	**UNDP Gender Marker:** **GEN2:** Gender equality as a significant objective	
Atlas Project ID/Award ID number: 00080725	**Atlas Output ID/Project ID number:** 00090310	
UNDP-GEF PIMS ID number: 5713	**GEF ID number:** 9199	
Planned start date: 30th October 2017	**Planned end date:** 29th October 2023	
LPAC date: 14th November 2016		
Brief project description: The development challenge that this project seeks to address concerns the adverse impacts of climate change on rural livelihood security (SDG 13) and poverty (SDG 1), and the effects of sector-led development practices on the ecological integrity of biodiversity-rich forested landscapes (SDG 15). Bhutan's renewable natural resource (RNR) sector, which is made up of agriculture, livestock production and forestry forms a significant part of the national economy, as the largest employer with 58 percent of the working population, and with agriculture contributing 16.7 percent to the national economy in 2015. However, the RNR sector is very vulnerable to climate change impacts, which have been increasing as a result of heavy rainfall, drought, frost, hailstorms, windstorms and related land degradation. In addition to climate-related losses, damage to crops and livestock from wildlife causes major production losses. Bhutan's biodiversity resources are of regional and global significance and the preservation of intact, forested landscapes through the protected areas network and associated biological		

corridors is needed to sustain these values. However, climate change impacts and other anthropogenic threats such as land conversion, forest fires, infrastructure development and unsustainable agriculture are placing increasing pressure on biodiversity and the integrity of ecosystems in the country.

The long-term solution envisaged by the project is to ensure the effective climate resilient management of forest areas including biological corridors and adjoining protected areas, securing ecosystem services that underpin livelihoods, local and national development and climate change adaptation (CCA). However, there are several barriers that need to be overcome: 1) Insufficient institutional capacity for integrated landscape management (ILM) and CCA; 2) Insufficient capacity to operationalize the biological corridor system; 3) Limited capacity, awareness and support for building livelihood resilience; and 4) Inadequate knowledge on natural resource status, ecosystem services and resilient livelihood options. These barriers will be removed through four project components that will lead to achievement of the **Project Objective**, which is to operationalize an integrated landscape approach through strengthening of biological corridors, sustainable forest and agricultural systems, and build climate resilience of community livelihoods. The project outcomes are as follows:

Outcome 1: Enhanced institutional capacity for ILM and climate change resilience: This component will focus on building institutional capacities for ILM as well enhancing climate resilience across rural communities.
Outcome 2: Biological corridor governance and management established and demonstrated with management linkage to adjoining protected areas.
Outcome 3: Livelihood options for communities are made climate-resilient through diversification, SLM and climate-smart agriculture and supported by enhanced climate-resilient infrastructure.
Outcome 4: Knowledge management system established to support sustainable management of forest and agricultural landscapes and climate-resilient communities

FINANCING PLAN	
GEF Funds	USD 3,467,124
LDCF Funds	USD 10,500,000
(1) Total Budget administered by UNDP	**USD 13,967,124**
PARALLEL CO-FINANCING (*all other co-financing that is not cash co-financing administered by UNDP)*	
UNDP	USD 1,080,300
Government	USD 41,550,000
(2) Total co-financing	**USD 42,630,300**
(3) Grand-Total Project Financing (1) +(2)	**USD 56,597,424**

SIGNATURES		
Signature: Mr. Thinley Namgyel, Secretary, GNH Commission	**Agreed by Government**	**Date/Month/Year:** 30th October 2017
Signature: Mr. Thinley Namgyel, Secretary, GNH Commission	**Agreed by Implementing Partner**	**Date/Month/Year:** 30th October 2017
Signature: Mr. Gerald Daly, Resident Representative, UNDP, Bhutan Resident Coordinator, UN Bhutan	**Agreed by UNDP**	**Date/Month/Year:** 30th October 2017

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ACRONYMS AND ABBREVIATIONS

BC	Biological Corridor
BFL	Bhutan for Life
BTF	Bhutan Trust Fund for Environmental Conservation
CARLEP	Commercial Agriculture and Resilient Livelihoods Enhancement Program
CBD	Convention on Biological Diversity
CCA	Climate Change Adaptation
CCVA	Climate Change Vulnerability Assessment
CF	Community Forest
CFMG	Community Forest Management Group
CMP	Conservation Management Plan
CSO	Civil Society Organization
DAMC	Department of Agricultural Marketing and Cooperatives
DCD	Development Cooperation Division, GNHC-S
DoA	Department of Agriculture, MoAF
DoFPS	Department of Forests and Park Services, MoAF
DoL	Department of Livestock, MoAF
DoR	Department of Roads
EFRC	Environment Friendly Road Construction
FMU	Forest Management Unit
FRMD	Forest Resources Management Division, DoFPS/ MoAF
FYP	Five-Year Plan
GEF	Global Environment Facility
GCCA	Global Climate Change Alliance
GC	Gewog Connectivity (Road)
GCF	Green Climate Fund
GECC	Gewog Environmental Conservation Committee
GNHC-S	Gross National Happiness Commission Secretariat
GSLEP	Global Snow Leopard and Ecosystem Protection Program
HANAs	High Altitude Northern Areas
HWC	Human-wildlife Conflict
ICIMOD	International Centre for Integrated Mountain Development
IFAD	International Fund for Agricultural Development
ILM	Integrated landscape management
INDC	Intended Nationally Determined Contributions (UNFCCC)
JKSNR	Jigme Khesar Strict Nature Reserve
JSWNP	Jigme Singye Wangchuck National Park
KLCDI	Kanchenjunga Landscape Conservation and Development Initiative
LDCF	Least Developed Countries Fund
LDD	Local Development Division, GNHC-S
LFMP	Local Forest Management Plan
LG	Local Government
METT	Management Effectiveness Tracking Tool
MoAF	Ministry of Agriculture and Forests

MRV	Monitoring, Reporting and Verification
NAPA	National Adaptation Program of Action
NSBAP	National Biodiversity Strategies and Action Plan (2014)
NEC-S	National Environment Commission Secretariat
NFI	National Forest Inventory
NKRA	National Key Result Area
NPPC	National Plant Protection Center, DoA, MoAF
NSC	National Seed Center, DoA, MoAF
NSLEP	National Snow Leopard and Ecosystem Protection Program
NSSC	National Soil Services Center, DoA, MoAF
NTFP	Non Timber Forest Product
PA	Protected Area
PAMA	Protected Area Management Authority
PB	Project Board (a.k.a. Project Steering Committee)
PES	Payments for Ecosystem Services
PIF	Project Identification Form
PMU	Project Management Unit
PNP	Phrumsengla National Park
PPD	Policy and Planning Division (MoAF)
PPG	Project Preparation Grant
PRA	Participatory Rural Appraisal
RDTC	Rural Development Training Centre (Zhemgang)
REDD	Reducing Emission from Deforestation and Forest Degradation
RGoB	Royal Government of Bhutan
RNR	Renewable Natural Resources
RP	Responsible Party
RSPN	Royal Society for the Protection of Nature
SAPA	Sector Adaptation Program of Action
SDG	Sustainable Development Goal
SFED	Social Forestry and Extension Division, DoFPS/ MoAF
SFM	Sustainable Forest Management
SLM	Sustainable Land Management
SMART	Specific, measurable, achievable, relevant, time-bound (relating to indicators and targets)
SMART	Spatial Monitoring and Reporting Tool (see: http://www.smartconservationsoftware.org/)
TACC	Technical Advisory and Coordination Committee
TFD	Territorial Forest Division
TRAMCA	Trans-boundary Manas Conservation Area
UNDAF	United Nations Development Assistance Framework
UNDP	United Nations Development Program
UNFCCC	United Nations Framework Convention on Climate Change
WCD	Wildlife Conservation Division, DoFPS, MoAF
WEMS	Wildlife Enforcement Monitoring System
WMD	Watershed Management Division, DoFPS, MoAF
WUA	Water Users Association
WWF	World Wildlife Fund

I. DEVELOPMENT CHALLENGE

DEVELOPMENT CHALLENGE

1. Bhutan is a small landlocked country characterized by mountainous topography with elevations ranging from around 100 to more than 7,000 masl and forest coverage of 70.46 percent of land area (LCMP, 2010). The steep rugged terrain represents a significant challenge for economic development, constraining habitable areas and areas under cultivation to a mere 8.3 and 2.9 percent respectively of the total land area, complicating road development between population centres and access to markets, and posing significant risks of natural disasters through slope instability and landslides. In addition, Bhutan remains highly vulnerable to emerging climate change impacts due to its geographic location and the dependence of its economy on the climate-sensitive renewable natural resource (RNR) sector, which is made up of agriculture, livestock production and forestry, forming the largest employer with 58 percent of the working population and contributing 16.7 percent to the national economy in 2015[1]. Tourism (nature and culture based) is a rapidly growing industry: Bhutan's Vision 2020 projects that tourism will contribute 25 percent of GDP by 2017. Hydroelectric power is Bhutan's largest export product, and in rural areas electrification is being extended to all households. However, many still depend on firewood for heating and cooking. Overall, the poverty rate in Bhutan is 12 percent. However, poverty in rural areas (16.7 percent) is significantly higher than urban areas (1.8 percent)[2].

2. Bhutan's abundant forest and water resources support outstanding biodiversity and provide valuable resources such as firewood, fodder and medicinal plants for rural communities as well as providing ecosystem services such as water and timber that underpin the national economy. The role of natural forest ecosystems in supporting the resilience of rural landscapes and communities against climate change through ecosystem-based adaptation is also well recognized. Ecosystem-based approaches to climate change are considered cost effective due to the multiple environmental, economic, and social benefits they can provide for human wellbeing and economic development[3]. This nexus between sustainable forest management, biodiversity conservation and the climate resilience of rural livelihoods is not well recognized in national and local government policy and planning processes, with the result that climate vulnerability and biodiversity losses are increasing as natural capital is eroded and fragmented. Consequently, this project seeks to develop an integrated landscape management approach in line with the principles of the CBD's Ecosystem Approach[4]. This will include: the conservation of ecosystem structure and functioning in order to maintain ecosystem services, boundaries for management appropriate to scale and defined through a consultation, maintenance of ecological connectivity, a decentralized approach to resource management, and an adaptive management approach that anticipates change and takes into account both traditional knowledge and science-based monitoring of resource status and use.

3. The project will focus on three landscapes[5] that cover 38 gewogs across 12 dzongkhags in the central belt of the country, focusing on four Biological Corridors (BCs), including Jigme Khesar Strict Nature Reserve and

[1] National Accounts Report 2016, National Statistics Bureau, RGoB

[2] National Statistical Bureau (NSB). (2013). Bhutan Poverty Analysis Report 2012. National Statistical Bureau, RGoB.

[3] Ecosystem-based Approaches to Address Climate Change Challenges in the Greater Mekong Subregion. 2015. ADB Greater Mekong Subregion Core Environment Programme, Bangkok, Thailand. www.gms-eoc.org

[4] Convention on Biological Diversity (CBD)COP 5 Decision V/6: https://www.cbd.int/decision/cop/default.shtml?id=7148 , https://www.cbd.int/ecosystem/sourcebook/

[5] See **Annex 24** for Population and land cover information for the project landscapes

Biological Corridor 1, in the western part of the country (Landscape 1), Jigme Singye Wangchuck National Park and Biological Corridors 2 and 8, in the central-west part (Landscape 2), and Phrumsengla National Park and Biological Corridor 4, in the central-east part (Landscape 3) (see Strategy section below and **Figs. 1 & 2**). The total area covered by the project landscapes is 1,304,958 hectares (ha), or 13,049.58 km^2, which is a little more than one-third of the country's total geographical area. A projected population of 96,472 (49,800 males and 46,672 females) reside in the three project landscapes (by the end of the project, 2021), comprising some 11.8 percent of the projected national population of 818,370. Forested land accounts for 75.3 percent of the landscapes, with only 1.6 percent under agriculture. The remainder consists of shrub vegetation, meadows and snow cover at high altitudes.

4. **Biodiversity Values:** Located between India and China within the Eastern Himalayan global biodiversity hotspot, Bhutan has some of the richest biodiversity in the world despite its small land area, ranking in the top ten percent of countries with the highest species density (species richness per unit area) and has the highest proportion of forest with tree cover of any Asian country (70.46 percent[6]), with 51.44 percent of the land area covered by protected areas and biological corridors. Diversity is high at the ecosystem, species and genetic levels, as a result of being located at the junction of two major biogeographic realms (the Indo-Malayan and the Palearctic); and, three global ecoregions (Eastern Himalayan Alpine Meadows, Eastern Himalayan Broadleaf and Conifer Forests, and Terai Duar Savannas and Grasslands) occur here[7]. It hosts viable populations of globally threatened species including tiger, leopard, snow leopard, red panda, golden langur, capped langur, wild dog, takin and black-necked crane. As such, Bhutan's biodiversity resources are of regional and global significance and the preservation of intact, forested landscapes through the protected area network and associated biological corridors is critical to sustain these global environmental values[8].

Climate Change Vulnerability (See **Annex 19** for further details)

5. *Climate trends:* The IPCC's Fifth Assessment Report (AR5)[9] provides the most current assessment of observed climate change trends, impacts and projections. It does not provide such details at country level, but certain findings can be highlighted: warming trends and increasing temperature extremes have been observed across most of the Asian region over the past century (*high confidence*). Increasing numbers of warm days and decreasing numbers of cold days have been observed, with the warming trend continuing into the new millennium. Precipitation trends including extremes are characterized by strong variability, with both increasing and decreasing trends observed in different parts and seasons of Asia. All models and all scenarios project an increase in both the mean and extreme precipitation in the Indian summer monsoon.

6. The most recent assessment for Bhutan is the State of Climate Change Report for RNR Sector (May 2016)[10]. According to two climate models (ECHAM5 and HadCM3Q0)[11] there is a progressive and steady increase of

[6] Land Cover Mapping Project cited in RNR Statistics 2015

[7] http://wwf.panda.org/about_our_earth/ecoregions/ecoregion_list/

[8] See **Annex 21** for further information on biodiversity values and conservation status.

[9] **Hijioka**, Y., E. Lin, J.J. Pereira, R.T. Corlett, X. Cui, G.E. Insarov, R.D. Lasco, E. Lindgren, and A. Surjan, 2014: Asia. In: *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Barros, V.R., C.B. Field, D.J. Dokken, M.D. Mastrandrea, K.J. Mach, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 1327-1370.

[10] MOAF. May 2016. State of Climate Change Report for RNR Sector. RNR Climate Change Adaptation Program, MOAF, RGoB.

[11] These models were used for the Second National Communication to the UNFCCC (2011) and reported in the State of Climate Change Report for RNR Sector.

3.5°C in the air temperature over the period 1980 to 2069. Analysis of summer and winter mean air temperatures for the period 2005 to 2014 (data missing for 2007) of Bhutan show that the summer mean temperatures of temperate and subtropical regions are steadily rising while winter mean temperatures in temperate region seem declining. However, annual mean temperatures in both temperate and subtropical regions are gradually rising. The same GCM models showed a progressive and steady increase in precipitation from 1980 to 2069 of 600 mm per year (ECHAM5) and 500 mm per year (HadCM3Q0). Analysis of rainfall data from 2005 to 2014 of Bhutan shows that the annual mean rainfall is decreasing. However, the rainfall fluctuations are largely random with no systematic change detectable on either annual or monthly scale. In general, Bhutan is expected to experience a significant overall increase in precipitation, but with an appreciable change in the spatial pattern of winter and summer monsoon precipitation, including a 20 to 30 percent decrease in winter precipitation, over the north-east and south-west parts of Bhutan for the 2050s.

7. *Geographical and socio-economic vulnerabilities:* The underlying causes of climate change vulnerability embrace both climatic and non-climatic factors. In Bhutan's case, the sources of inherent vulnerabilities to climate change impacts can be found in the combination of the country's geology and topography, existing land use practices, and poverty. The geology is highly sensitive to intense rainfall and surface runoff and erosion rates are high, frequently resulting in substantial landslides[12] and other climate-induced disasters such flash floods. This will be exacerbated by the projected increase in frequency and intensity of extreme rainfall events. Flash floods will be further aggravated by glacier melting, increasing the risk of glacial lake outburst floods (GLOFs). Prolonged extreme droughts in turn increase the risk of loss of biodiversity and agricultural crops, as well as forest fires[13].

8. Existing patterns of poverty are influenced by geography and topography, which limit access to markets and public services and increase the cost of (agricultural) inputs. Access to water is often difficult due to the terrain. Poorer communities are also the most vulnerable to problems posed by environmental degradation and climate change, because of the greater reliance of their livelihoods on natural resources. In the event of a natural disaster, the poor are also the most affected due to lack of resources to respond to, and recover from, the disaster. Where the natural environment is well kept, it serves as a critical source of local livelihoods, an asset for poverty alleviation and an effective cushion to the impacts of climate change. Where communities are impoverished or lacking livelihood opportunities, threats to the environment are greater in the form of rampant use of natural resources and other unsustainable practices such as incompatibility between land capability and land use, which in turn exacerbate climate change impacts.

9. Climate change and its impacts are not gender neutral, nor are associated policies and actions. Due to gender-differentiated traditional roles in society such as in agriculture, and health and nutrition of the family, women are amongst those who are likely to face the heaviest burdens from these changes and benefit less from related policies, programmes and projects. The Project Preparation Grant (PPG) study on gender (**Annex 14**) revealed that women are likely to be vulnerable in view of their roles in rural communities, which are largely confined to agricultural and domestic activities within the household while men go for off-farm non-agricultural work or conduct heavier tasks such as ploughing and collecting firewood. Women constitute 53.3% of the population

[12] *A Provisional Physiographic Zonation of Bhutan by Chencho Norbu et al, National Soil Services Center, Semtokha, Cranfield University, 2004.*

[13] UNDP/GEF/RGoB. April 2014. Addressing the Risks of Climate-induced Disasters through Enhanced National and Local Capacity for Effective Actions. Project Document.

engaged in agriculture[14], implying the importance of agricultural livelihoods for the development and well-being of Bhutanese women.

10. Currently, some 58 percent of the total employed population is engaged in agriculture and forestry sector[15]. As can be seen from the past incidences of impacts, agriculture and forestry sector is very vulnerable to the impacts from climate change. In addition to the climatic impact, the already scarce agricultural land is progressively being lost to a combined effect of land degradation, floods, population growth, land fragmentation and infrastructure development. For instance, the average cereal crop yield peaked in 2004 at 1,256.3kg per acre and declined by about 20-30 percent over subsequent years, due to loss of arable land from flash floods, damage to crops, changes in temperature and rainfall patterns, and water scarcity. Climate related vulnerabilities and impacts reported by studies during project preparation (see **Annex 19 -** baseline study on vulnerability assessments and adaptive livelihoods, and **Annex 25** - Baseline study on crop and livelihood damage and insurance assessment) included the following findings: first, 95 percent of all respondents observed an increase in summer temperatures, and 60 percent observed an increase in winter temperatures. Nine out of 18 gewogs covered by the PPG study in the project landscapes, were identified as having above-average vulnerability to climate change. Secondly, over a 5-year period, an increasing trend was observed with the most crop loss due to climate-induced factors occurring in 2015 throughout the country. Primary data collected from the project landscape dzongkhags revealed that out of 1,997 acres adversely affected by climate-induced factors nationally, 17 percent occurred in the project landscapes, caused by heavy rainfall, drought, frost, hailstorms, windstorms, and landslides.

11. *Ecological vulnerabilities*: Climate change will have a range of direct and indirect impacts on both the environment and the people of the Eastern Himalayan region. These impacts are closely interlinked, ranging from biodiversity impacts and related effects on ecosystem goods and services, through impacts on water balance and availability and hazards, to socioeconomic and health impacts on the population. The impacts are embedded in and affected by a range of other global and local drivers of change. The impact of climate change on biodiversity will occur in concert with well-established stressors such as habitat loss and fragmentation, invasive species, species exploitation, and environmental contamination, amongst others. Although there are no systematic studies of climate change impacts on biodiversity and ecosystems *per se*, Bhutan's forests are threatened by combination of climate change and associated human disturbances through changes such as shift in forest boundaries, altered ecosystems, change in composition of forests, and loss of species affecting ecosystem functions and services. Climate change combined with human-induced impacts can accelerate damage to freshwater ecosystems, such as the wetlands of Phobjikha, the habitat of over-wintering black-necked cranes. The increasing outbreaks of forest fires and pests and disease are becoming serious threats to blue pine, spruce and fir and oak forests. Climate change can speed up the colonization of invasive species, with severe implications for native species.[16] [17] [18]

Threats to Biodiversity

[14] 2013 figure cited in RNR Statistics 2015

[15] MoLHR, 2015: Labour Force Survey Report, 2015.

[16] MoAF (2010) Land Cover Mapping Project, Bhutan.

[17] Renewable Natural Resources Sector Adaptation Plan of Action (SAPA), 2013. Council for Renewable Natural Resources Research of Bhutan, Ministry of Agriculture and Forests, Royal Government of Bhutan.

[18] MOAF 2016. State of Climate Change Report for the RNR Sector. RNR Climate Change Adaptation Program Ministry of Agriculture & Forests Royal Government of Bhutan.

12. Climate change impacts and other anthropogenic threats are placing increasing pressure on the integrity of biodiversity and ecosystems in the country. Ecosystem degradation decreases their capacity to provide essential natural infrastructure and ecosystem services to support rural livelihoods, economy and adaptation efforts for rural communities. One of the major factors of natural habitat loss affecting the ecosystems of Bhutan is land use conversion while forest fire is the major factor causing habitat degradation and fragmentation[19], especially where the frequency and intensity of fires is exacerbated by human activities and climate change. Over grazing on rangelands and unsustainable agricultural practices are some of the other factors leading to soil erosion and subsequent land degradation. A conceptual model of the threats to the project targets (biodiversity, forest cover and climate resilient communities in the project landscapes) is presented in **Fig. 3.** See also **Annex 21** as well as the GEF Biodiversity 1 Tracking Tool in **Annex 4a** for site specific information.

Direct Pressures on Biodiversity

13. *Land use conversion:* Given the fast pace of socio-economic development in the country (8 percent growth rate), forest areas are either lost or cleared for various activities such as construction of hydro-power and transmission lines, roads, buildings, mining and quarrying, etc. A total of 38,577 acres of Government Reserved Forest (GRF) was allocated for development from 2008 to 2013. Out of the total forest area converted for various uses, land allotted for construction of power transmission lines made up 19 per cent while roads made up 30 per cent[20]. Such linear infrastructure affects the integrity of biological corridors, especially where large hillside cuttings are made for road development. The construction of large hydropower installations also impacts landscape and ecological integrity, and currently provides little financial support for improving watershed management. Project Landscape 2 located in the heart of Bhutan PA system is surrounded by four mega hydropower projects namely Puna Tsangchu I and II, Tangsibji, and Mangdechu; and Phrumsengla NP in Landscape 3 has Kurichu and Chamkhar HEP projects.

14. *Habitat fragmentation and degradation*: Major causes of habitat degradation are from free-ranging livestock in the forest, frequent forest fires, and unsustainable collection of forest products (see overharvesting paragraph below). Subsequent conversion to other land uses, mainly to intensive agriculture because of improved accessibility and rural electrification, could result in extensive loss of habitats, forest fragmentation, and degradation. The temperate and subtropical forests are particularly at risk from these threats.

15. *Forest fire:* is a recurrent phenomenon, although the trends are not clear - incidences declined from 44 incidences in 2010-2011, to 39 in 2011-2012 and 34 in 2012-2013, but then increased to 64 incidences destroying around 45,095 acres of forests during 2013-2014[21]. On average, the most affected Dzongkhags are Wangduephodrang, Trashigang, Mongar, Lhuentse and Thimphu[22]. The causes of forest fires are mostly man-made, such as increasing area for cattle foraging, reinvigoration of lemongrass for commercial production, preventing wildlife invasions and other accidental cases, posing a serious threat to biodiversity in the country[23]. The incidence of forest fires is anticipated to increase due to increased frequency of dry periods and higher

[19] NBSAP 2014

[20] NBSAP 2014

[21] MoAF, 2015: Bhutan RNR Statistics, 2015

[22] See **Annex 19**. Climate change vulnerability assessment and adaptation planning – final report. July 2016.

[23] NBSAP 2014

temperatures linked to climate change (see below), creating high fire risk conditions. Details of forest fires recorded in the project landscapes are given in **Annex 21, Table 23**.

16. *Overharvesting of natural resources*: A significant amount of timber and firewood extraction as well as overharvesting of non-timber forest products (e.g., cane, bamboo, edible fruits and wild orchids) to meet commercial market demands threatens populations of some species and habitat integrity. In particular, the sustainable limits of forest resources used for timber extraction from areas outside FMU systems are a concern. For instance, almost all respondents in all gewogs reported collection of fuelwood during PPG studies (**Annex 21**).

17. *Poaching and illegal harvesting*: The most common forest offence reported concerns the illegal trade and transport of timber[24]. Other offences include wildlife poaching, illegal harvesting of NWFP, fishing, retaliatory killings, forest fire, etc. The driving factors are most likely to be the booming construction sector, proximity to lucrative international markets for high value medicinal species, and expansion of road networks. Poaching poses a threat to wildlife, with the main species targeted being leopard, musk deer, red panda and Himalayan black bear. Tigers are killed very rarely, but because of their globally endangered status, these losses are significant. Records indicate that 1 tiger, 2 Himalayan black bear, 5 musk deer, 2 goral, and 2 sambar deer were killed in the project landscapes in 2015-2016.[25] Park staff patrol with dedication but because of the vast and rugged terrain and an insufficient number of staff, it is difficult to apprehend poachers.

18. *Human Wildlife Conflict*: Livestock depredation and crop damage are two major problems caused by wildlife, posing a serious threat to rural livelihoods. Some 55 percent of the crop damage in the country was attributed to wildlife damage, together with livestock losses of more than 2,035 heads from 2002-12. In affected areas, households may spend some 110 nights in a year guarding crops[26], reflecting the deleterious impacts these recurrent conflicts have on rural livelihoods and quality of life. Consequently, HWC is a contributing factor in agriculture land fallowing and rural-urban migration. Since human-wildlife conflict causes substantial economic and social costs to the rural communities, it also results in retaliatory killings, resentment against policies, and lack of support towards conservation initiatives. For example, retaliatory killing through poisoning of dholes a few decades ago almost eliminated the species from the wild[27]. In the project landscapes, 100% of respondents suffered crop damage in the last year from wildlife and 61.8% reported livestock predation (**Annex 7 Table 20**). The PPG study on crop and livelihood (including livestock) damage and insurance (**Annex 20**) also revealed a significant scale of losses to farmers resulting from wildlife incursions. In the three project landscapes, 46 percent (915 livestock) of the national loss was reported, for which Nu. 3,107,550 was disbursed in direct compensation.

Indirect Pressures on Biodiversity (Root Causes)

19. *Climate Change:* Although there are no systematic studies of climate change impacts on biodiversity and ecosystems in Bhutan *per se*, there are observations of Blue Pine (*Pinus wallichiana*) encroachment into spruce/maple/birch forests and decline of *Abies densa* forests on the mountain tops in the 1980s due to moisture

[24] Forestry Facts and Figures (FFF). (2013). Department of Forests and Park Services, MoAF, RGoB.

[25] **Annex 21, pIX**

[26] Wildlife Conservation Division (WCD). (2013). Assessment on Impact of Human-Wildlife Conflict Management Intervention to the Local Communities. WCD, DoFPS, MoAF, RGoB.

[27] NBSAP 2014

stress[28]. Such effects could be exacerbated due to increased incidence of moisture stress from rising temperature. Concerns are similar for the montane cloud forests of Bhutan which occur around 2,500 masl in the inner deep dry valley slopes of Dochula-Bajo series[29]. These are vulnerable to change in temperature and human disturbances, which could lead to habitat loss for some important relict plant species like *Taxus, Magnolia, Tetracentron* and endangered bird species such as hornbills. Other threats to biodiversity that could be exacerbated due to climate change include the incidence of forest fires, loss of agrobiodiversity, increased incidence of pests and diseases, accelerated establishment of invasive alien species (IAS) and bio-cultural loss. See also **Annexes 14 and 26**.[30]

20. *Population growth:* The population of the country is estimated at 776,557 (in 2016). Despite a gradual decrease in population growth rate from 3.1 per cent in 1994 to 1.3 per cent in 2005, the population is projected to grow to 818,370 by 2021[31]. Although the overall population is still low, the very limited arable and habitable land could result in localized demographic pressures on the natural environment,[32] in particular to meet national food security needs. For example, natural shallow wetland habitats are often prime locations for development of rice cultivation – a national agricultural priority.

21. *Economic growth:* The current GDP growth rate is 8 percent (target of 10 percent) per annum, including development priorities to increase road connectivity and increase Hydro-electric Power installation capacity to 10 million MW by 2020. Developments on this scale inevitably involve environmental impacts including fragmentation of forest habitats and river systems, and increased erosion and sedimentation of rivers. Greater access to formerly remote areas facilitates further habitat conversion, exploitation of natural resources and poaching of wildlife.

22. *Poverty:* According to the Poverty Analysis Report 2012[33], the poverty incidence declined from 31.7 per cent in 2003 to 12 percent in 2012. Rural poverty has decreased from 38.3 to 16.7 percent. Nevertheless, all three poverty assessment reports of 2003, 2007 and 2012 reveal poverty to be a rural phenomenon[34]. As per the 2012 report, poverty in rural areas at 16.7 percent is significantly higher than urban areas at 1.8 percent[35]. This is significant considering that the rural poor are dependent on natural resources for their livelihoods, often engaging in unsustainable harvesting of timber and non-wood forest products resulting in depletion of these resources.

Landscape Scoping and Rationale

23. The primary rationale for the selection of the project landscapes in the central belt of the country is based on the need to strengthen the ecological network connecting protected areas in the northern third of the country with those in the centre and south of the country (**Figs. 1&2**) – in other words, biological corridors that generally

[28] Gratzer, G., Rai, P.B., and Glatzel, G. (1997). Ecology of the Abies densa forests in IFMP Ura, Bhutan.

[29] Wangda, P. and Ohsawa, M. (2010). Temperature and humidity as determinants of the transition from dry pine to humid cloud forests in the Bhutan Himalaya. In L. A. Bruijnzeel et al. (ed.) Tropical Montane Cloud Forests: International Hydrology Series, Cambridge University Press. 156-163.

[30] **Annex 19**. Climate change vulnerability assessment and adaptation planning – final report. July 2016.

[31] Statistical Yearbook of Bhutan (SYB). (2014). National Statistics Bureau, RGoB, Thimphu.

[32] NBSAP 2014

[33] National Statistical Bureau (NSB). (2013). Bhutan Poverty Analysis Report 2012. National Statistical Bureau, RGoB.

[34] Gross National Happiness Commission (GNHC). (2013). Eleventh Five Year Plan Document, Vol. I, GNHC, RGoB.

[35] National Statistical Bureau (NSB). (2013). Bhutan Poverty Analysis Report 2012. National Statistical Bureau, RGoB.

follow the alignment of river valleys and intervening ridges. This is of great importance for key wildlife species such as the tiger, leopard, snow leopard and elephant with large ranges. In particular, Bhutan is regarded as key source population for the tiger across the Himalayan range and this project will be of great significance in supporting national and global tiger recovery plans.

24. The project landscapes contain some of the finest representational samples of a continuum of ecosystems, connecting the largely subtropical zone of southern Bhutan and the predominantly sub-alpine/ alpine zone of northern Bhutan. These landscapes, with proper conservation management plans in operation and sustainable livelihoods in practice, will cushion the adverse impacts of climate change to key development sectors and local livelihoods and enhance the ecological resilience to changing climate and associated risks.

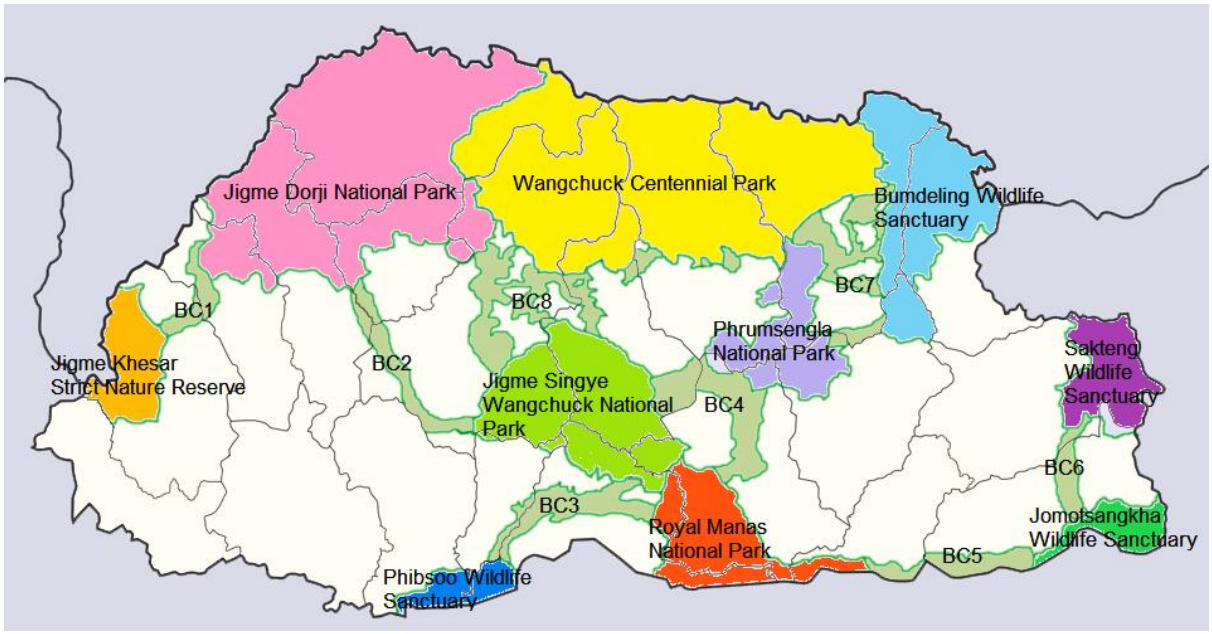


Figure 1. Bhutan's national PA and BC System

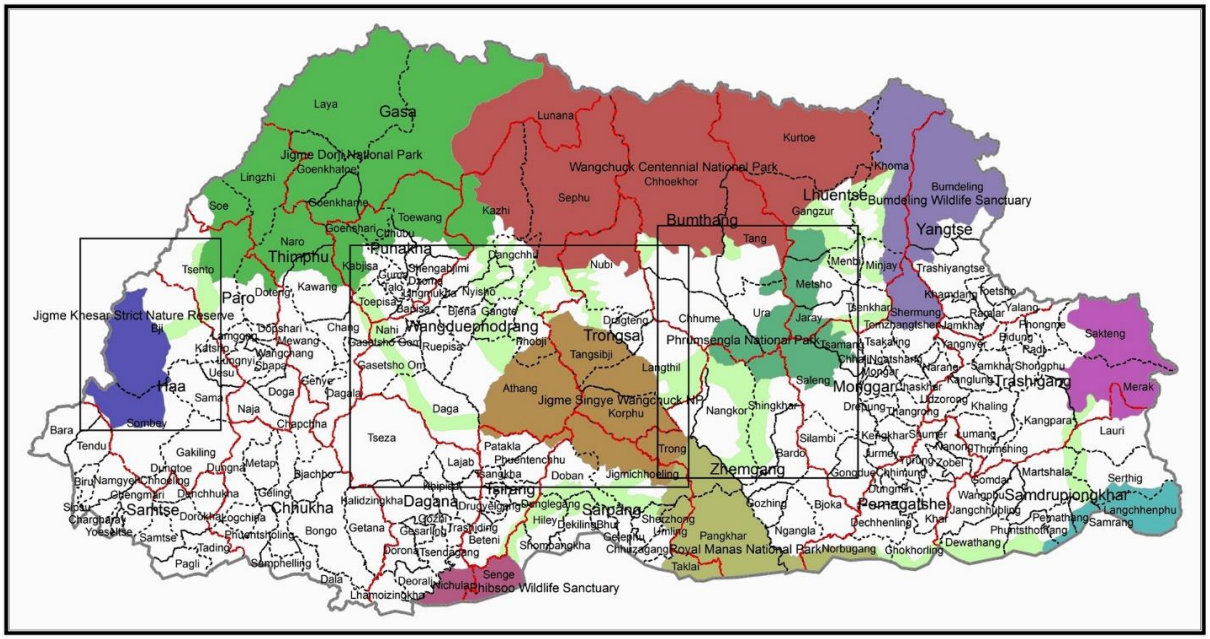


Figure 2. Locations of the project landscapes (boxes) superimposed over the PA and BC network

The three landscapes[36] identified by the names of the protected areas and biological corridors (**Figs. 1 & 2**) are:

Landscape 1, covering Jigme Khesar Strict Nature Reserve and Biological Corridor 1, in the west of the country;
Landscape 2, covering Jigme Singye Wangchuck National Park and Biological Corridors 2 and 8, in the central-west;
Landscape 3, covering Phrumsengla National Park and Biological Corridor 4, in the central-east.

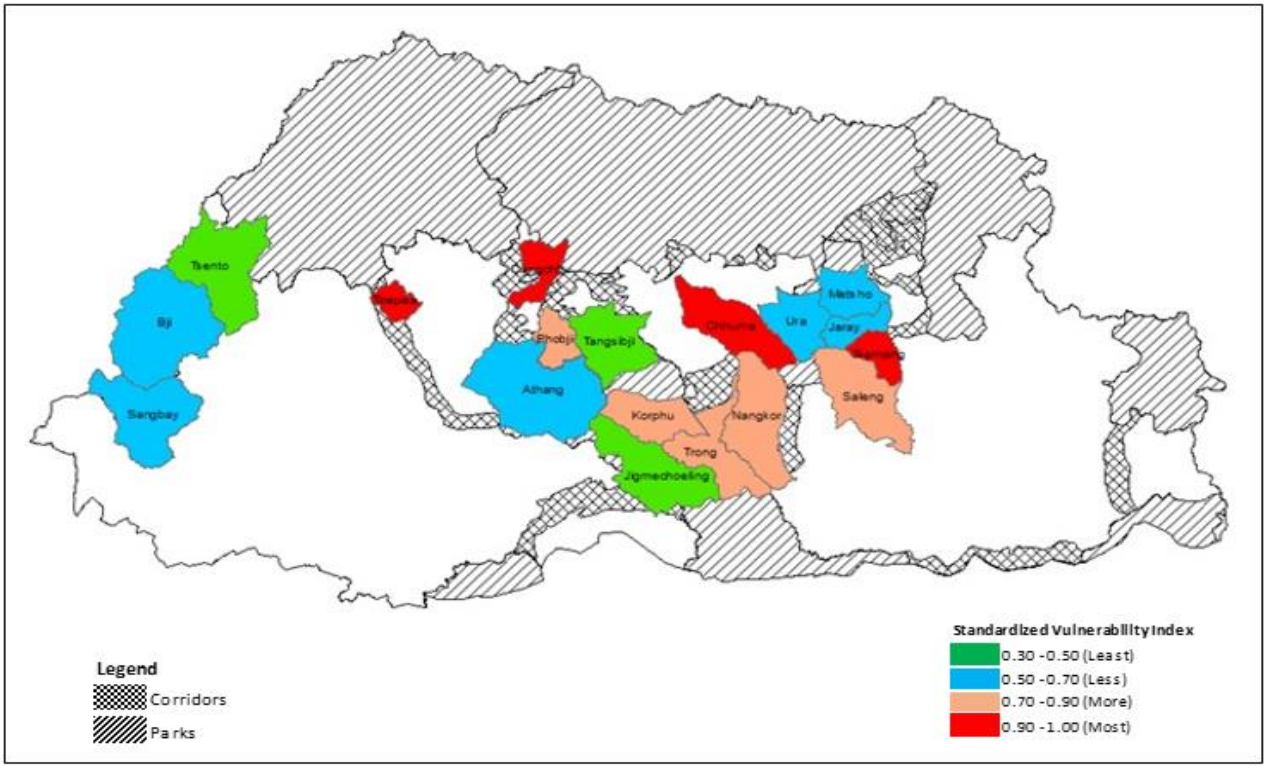


Figure 3. Gewog level Climate Change Vulnerability Map within the landscape areas
(Source: PPG Climate Change Vulnerability Assessment Report – See **Annex 19**).

25. A climate change vulnerability assessment was conducted for the proposed project landscapes during the PPG process (see Annex 18). Assessment of vulnerability was done at chiwog level, then upscaled to gewog level. The assessment at the landscape level was then made based on the average score of gewogs within each landscape. The vulnerability scores for the sampled gewogs are shown in Fig. 3. Combined scores indicated that Landscape 1 in the west was least vulnerable, Landscape 2 in the centre was less vulnerable and Landscape 3 in the east was most vulnerable. Changes in summer temperature, windstorm and rainfall patterns are the major factors that contribute to the score in exposure index at the landscape level. Landscape 1 is the most affected by changes in rainfall and windstorm while landscape 2 is affected the most by changes in winter temperature and hailstorm. Landscape 3 is the most affected by changes in summer temperature and flood. Thus, changes in exposure are highly localized in view of Bhutan's highly dissected topography and corresponding climatic variations. The CCVA results have informed the prioritization of livelihood interventions under the project, which will be fine-tuned during the project inception phase to ensure that impoverished and highly vulnerable communities are prioritized.

[36] See **Annex 24** for Population and land cover information for the project landscapes

26. A further strategic consideration is the need to avoid overlap with related landscape level initiatives. The selected project landscapes generally complement these initiatives, which respectively focus on the southern, northern and eastern parts of Bhutan, as follows: a) WWF's Trans-boundary Manas Conservation Area (TRAMCA) project (2012-2015), which supports transboundary areas in southern Bhutan with India and Nepal; b) World Bank-GEF Sustainable Financing for Biodiversity Conservation and Natural Resources Management Project (GEF-5), which aims to improve the operational effectiveness and institutional sustainability of the Bhutan Trust Fund for Environmental Conservation (BTFEC) and improve conservation management of the High Altitude Northern Areas (HANAS) landscape; and c) IFAD's Commercial Agriculture and Resilient Livelihoods Enhancement Programme (CARLEP) ($31.526 million, over seven years), which aims to promote climate smart approaches in agriculture and strengthen capacities of communities and local institutions in six eastern Dzongkhags with high production and marketing potential in the selected value chains. In addition, the project will coordinate with the transboundary ICIMOD Kangchenjunga Landscape Conservation and Development Initiative (KLCDI)[37], which overlaps with Landscape 1 in the west of the country including Jigme Khesar Strict Nature Reserve. See **Annex 28** for details.

27. The total area covered by the project landscapes is 1,304,958 hectares (ha), or 13,049.58 km^2, which is a little more than one-third of the country's total geographical area. Forest is by far the most dominant land cover accounting for 75.3 percent (982,873 ha) of the total area in the project landscapes. Agriculture area accounts for only a tiny 1.6 percent (20,057 ha) as large areas of the landscapes are characterized by rugged terrain, wilderness and high altitudes. In total, the three landscapes cover 12 dzongkhags and 38 gewogs, see **Annex 24**. While the selection of the three project landscapes is based on the location of the PAs and BCs along the central belt of the country, the project will cover the gewogs (that have areas within the PAs/BCs) in their entirety especially for the climate-resilient community livelihoods component, thus expanding the landscapes beyond the boundaries of the identified PAs and BCs. Local communities living on the fringes and outside the PAs/BCs have access to, and often significantly depend on, natural resources in the PAs/BCs for their subsistence and livelihoods.

Baseline Activities

28. *Biodiversity conservation:* In recognition of the vital linkages between biodiversity and sustainable economic development, the Royal Government of Bhutan (RGOB) has had a long-standing political commitment to conservation. As early as 1974, the National Assembly stipulated that the country should retain at least 60 percent of its forest cover in perpetuity.[38] This policy is now enshrined in the national constitution, which was adopted in 2008.[39] Furthermore, environmental conservation is one of the four key pillars of Bhutan's long-term development policy of maximizing and realizing Gross National Happiness (GNH), along with sustainable and equitable socio-economic development; preservation and promotion of culture; and good governance.[40] The country's protected area system is impressive, covering 51.44 percent of the land area within ten protected areas and eight biological corridors that connect different protected areas. The biological corridor system, totaling some 330,714 ha and declared in 1999, provides the foundation of a pioneering national ecological network, yet it is still not operational in management terms and lacks financing. Within the project landscapes,

[37] See: http://www.icimod.org/kl

[38] Common Country Assessment for Bhutan, 2006. United Nations.

[39] Bhutan's Progress: Midway to the Millennium Development Goals. GNH Commission, RGOB & United Nations, November 2008.

[40] Tenth Five Year Plan (2008-2013). Vol I. GNH Commission, RGOB, Draft. February 2008.

conservation management plans are under implementation for JKSNR, JSWNP, PNP, and BC1 (**Annex 21 Table 25**), while field surveys are in progress to develop management plans for BC4 (Zhemgang Forest Division) and BC2 (Wangdue Forest Division).

29. As one of the world's 13 tiger range countries, Bhutan developed the national Tiger Action Plan (2006-2015) in 2005. The most recent tiger population survey in 2014 recorded a total of 103 individuals, an increase of 32 percent over 78 tigers recorded in 1998. This pool is recognized as a key source population of tiger in the Himalayan region and is dependent on the large unfragmented forested landscapes secured by the PA/BC system. Bhutan also has a National Snow Leopard and Ecosystem Protection (NSLEP) program under implementation. The NSLEP programs of individual countries serve as the foundation and implementation mechanism for the Global Snow Leopard and Ecosystem Protection (GSLEP) program, which seeks to secure about 500,000 km^2 of habitat, or over a quarter of the global snow leopard range, through community-based conservation, sustainable development and anti-poaching efforts in more than 20 large landscapes. As a part of the NSLEP program, Bhutan completed and documented a nationwide snow leopard survey – the first to do so among all snow leopard range countries – in August 2016. The number of snow leopards has been estimated at 96 individuals, with an abundance range of 79 to 112 individuals. The presence of a good population of snow leopards in largely undisturbed natural habitats encompassing around 9,000 km^2 suggests that Bhutan is a stronghold for snow leopard conservation in the Eastern Himalaya. The survey report recommendations for conservation of snow leopard in Bhutan include review and strengthening of biological corridors, development of climate-smart conservation management plans, and strengthening of insurance/ compensation schemes for livestock depredation by snow leopard.

30. Bhutan's PA management is highly constrained by insufficient funds to support basic management let alone achieving financial sustainability for optimal management. The GEF biodiversity tracking tool (**Annex 4a**) indicates a need of US$ 8,212,000 for basic management and US$ 11,049,000 for optimal management of PAs. Given current funding levels, this translates into a financing gap of US$ 4,447,000 for basic and US$ 7,284,000 for optimal management respectively. In the past, Bhutan was proactive in establishing the Bhutan Trust Fund for Environmental Conservation to support the PAs. However, the Trust Fund has slowly evolved into a general donor supporting other sectors thus weakening its focus on the PAs. Presently, the government is working on the Bhutan for Life fund to support conservation efforts (see Partnerships section). On a smaller scale, individual PAs have implemented self-sustaining programs which are showing positive results. For instance, the community based *Nabji trail* in JSWNP - an eco-tourism venture is self-sustainable with additional income for the communities. This model is being up scaled to other parks but an evaluation of results is not yet available.

31. *Agriculture development and poverty reduction:* Sustaining a viable agricultural sector has an important bearing on achieving the development objective of self-reliance and inclusive green socio-economic development and poverty reduction set out in Bhutan's 11th Five-Year Plan (FYP). Despite the remarkable progress made during the past few FYP cycles in terms of poverty reduction, where poverty incidence has declined from 31.7 percent in 2003 to 12 percent in 2012, the benefit of the progress is unevenly distributed. Rural areas, where agriculture is the main livelihood option, continue to be most disadvantaged in terms of access to livelihood-related public services, markets, knowledge and infrastructure. To reverse this trend, the 11th FYP sets out targeted programmes for agricultural productivity enhancement.

32. MoAF is investing Nu. 3,515 million (c.$55.8M) during the 11th FYP 2013-18 under the overarching national target of food security enhancement and import substitution. Production enhancement support includes the

provision of hybrid (high yield) seeds, irrigation development, farm mechanization, and human-wildlife conflict prevention. Notable investments include distributions of about 100 power tillers annually, construction of 108 irrigation schemes, and maintenance of farm roads. As the proposed GEF/LDCF project will work in 12 dzongkhags, the value of baseline projects in this area is computed as more than $4.5 million.

33. The major rural development programmes include the Rural Economic Advancement Programme (REAP), which was initiated in 2009 for a period of three years with the specific purpose of addressing the socio-economic development needs of the extremely remote and unreached communities, and is now being extended through Phase 2, corresponding with the ongoing 11th FYP. IFAD's Commercial Agriculture and Resilient Livelihoods Enhancement Programme (CARLEP) a 7 year programme (2017-2023 with a budget of $31,526 million, aims to facilitate the transformation of a subsistence-based rural agricultural economy into a sustainable value chain and market driven productive sector by promoting climate smart approaches in agriculture and strengthening capacities of communities and local institutions, implemented initially in six southern and eastern districts. The Local Governance Sustainable Development Program (LGSDP) is another relevant initiative jointly supported by UNDP, UNCDF, UNEP, Denmark, Switzerland and the EU. The program has three major outcomes or 'components': (i) inclusive and equitable socio-economic development at local level; (ii) conservation and sustainable use of environment at local level; and (iii) strengthening good governance at local level. Finally, UNDP is preparing a Green Climate Fund (GCF) project named "Enhancing Climate Resilient Agriculture and Food Security in Bhutan" (2017-2022) with the objective to increase food self-sufficiency in Bhutan through climate resilient agriculture and improved market access. See the Partnerships section (IVii), Table 3 and Annex 25 for coordination with these initiatives.

34. *Vulnerability of rural communities*: Over the last decades, considerable investment has been put into improving the physical infrastructure for rural communities (farm and gewog connectivity roads, irrigation channels). Whereas in 2004 only about 4,000km of roads existed, by 2013 more than 10,000km of roads had been constructed. A total of 6,765km of farm roads, which connect gewog roads to villages have been constructed, benefitting 76,484 households, but these farm roads are not yet paved. There are more than 1,270 large networks of open gravity-fed irrigation systems in Bhutan. Most of these schemes were constructed many years ago and have low technology efficiency as many are earthen canals. This leads to water loss through seepage, vulnerability to frequent damage due to blockages, and water conveyance loss. A notable baseline exists for agricultural development support for rural communities such as the REAP and CARLEP programmes (see above, **Partnerships section, Table 3 and Annex 28**). In addition to and complementary to the investments in physical infrastructure, the RGoB has developed a RNR extension system to support the development of the rural communities. Extension agents on agriculture, livestock and forestry are placed in almost all 205 Gewogs, supported by a Dzongkhag level RNR administration, and they are key agents in capacity building, awareness raising, technology transfer and in enhancing access to information services and inputs for the farming communities.

35. However, the rapid development of this infrastructure has increased the vulnerability of this system to the emerging climate extremes and access to communities and markets is regularly interrupted (particularly in the monsoon) due to poor design and construction standards. This is further defined in the barriers section below. Similarly, critical irrigation systems are not climate-resilient and become damaged or defunct as a direct impact of flooding or slope instability processes. Unseasonal and prolonged droughts result in reduced access and availability of sufficient water for agricultural production and livelihoods.

36. Agricultural land use in the 38 gewogs is only between 1.27% to 1.7% of the overall landscape, mainly concentrated along valley floors and in patches around settlements with forest cover ranging between 60% to more than 80% for the three landscapes. Average landholding of the smallholder subsistence farmers is in line with the national average with about 2.0ac of dryland and 1.5ac of wetland. These small and marginal farmers are largely focused on meeting subsistence needs, while some have diversified into cash crops such as cardamom, citrus and potato and many combine crop protection with livestock as a key livelihood source. The average household income amounts to Nu81,887 in the project gewogs with 59% contributed by agriculture and 22% by livestock. Traditional crops produced include wheat, barley and buckwheat (at higher altitude), millet, sorghum, rice, potato, maize, cardamom, apple, mustard, chilies and vegetables, while livestock produce is mainly butter and cheese (partly from yaks in high gewogs). Currently 17.3% of the prime wetlands are left fallow mostly due to lack of sufficient irrigation water (with labour shortage and the human-wildlife conflict as other key causes of fallowing). Only 29% of the arable area is under assured irrigation and the other 71% is dependent on monsoon (rain-fed). The Bhutanese agro-ecological zones are characterized by distinct altitudinal, temperature and rainfall patterns, reflecting the extreme landscape heterogeneity with rich natural flora and faunal biodiversity and agro-biodiversity with diverse farming systems. The zones also reflect the high topographic and climatic variability within Bhutan with the sub-tropical region of the southern belt receiving more than 5000 mm of rainfall to alpine areas to the north receiving less than 600 mm of rainfall. With rice as a key commodity in the sub-tropical to warm temperate agro-ecological zones of the project landscapes, the dependency on timely and sufficient monsoon rains is high for both irrigated and rain-fed agricultural practices. Irrigation systems in Bhutan are predominantly open gravity-fed, of small scale, making use of small streamlets as water source and very little use is made of higher-order rivers and little or no use of pumping systems. The national irrigation data base (MoAF, 2013) reflects that from the 962 irrigation systems surveyed (having a command area larger than 15ac) 261 were classified as suffering from acute water shortages or inadequate water availability, whereas only 272 were considered to have abundant water availability.

37. *Climate change adaptation, vulnerability reduction and disaster management:* Bhutan has made progress in strengthening institutional structures to respond to the growing challenges of climate change. At the highest level, the National Environment Commission (NEC), established in 1992 and chaired by the Prime Minister, is designated to lead and coordinate all environment and climate change related strategies and activities in the country. A Multi-sectoral Technical Committee on Climate Change (MSTCCC) was also formed. In 2009, a Climate Change Unit was created within the NEC Secretariat (NECS) and upgraded to the Climate Change Division in 2011. Under the National Adaptation Programme of Action (NAPA) of 2006, which was updated in 2012, Bhutan is working to increase the climate-resilience of the nation and local communities. Under the 11th Five Year Plan (2013-2018), the government is investing some $13 million[41] to enhance the hydrological network for water resource assessment, improvement of flood information and Glacial Lake Outburst Floods (GLOF) early warning system, strengthening of meteorological network coverage, and enhancement of weather and climate information services. Implementation of the NAPA is being supported by the UNDP/GEF NAPA II project and a GCF project in preparation named “Enhancing Climate Resilient Agriculture and Food Security in Bhutan” (2017-2022) with the objective to increase food self-sufficiency in Bhutan through climate resilient agriculture and improved market access (**see section IVii**, **Table 3 and Annex 28**). In addition, the MOAF released the second Sector Adaptation Plan of Action (SAPA) for the Renewable Natural Resources (RNR) sector in June 2016[42], which responds to the need identified in the NAPA for a specific plan of action for this sector in view of its

[41] Based on the exchange rate or US$ 1 = 61 Bhutanese Ngultrum.

[42] MOAF. June 2016. The Renewable Natural Resources Sector Adaptation Plan of Action, 2016. RNR Climate Change Adaptation Program, Ministry of Agriculture & Forests, Royal Government of Bhutan

inherent vulnerability to climate change and significant contributions to employment and the national economy. Considering their small size and limited financial and human resources, it has been challenging to achieve an integrated approach across technical departments and agencies to address complex multi-sectoral issues such as climate change and its impacts. The Global Climate Change Alliance (GCCA[43]), supported by EU (€4.4 million for 2012-2017, including (€0.8 million Fast Start Funding)), has supported the development of the State of Climate Change Report and Sector Adaptation Programme of Action (SAPA, 2014) for the RNR sector.

38. The government has recognized that disaster risk management is an important entry point for stimulating livelihood adaptation. The National Disaster Management Act (2013) mandates the development of the National Disaster Management and Contingency Plan and Dzongkhag Disaster Management and Contingency Plans, and espouses mainstreaming of disaster risk reduction in sectoral and local development plans. Consequently, development programs increasingly recognize climate change issues in their activities. Within the Ministry of Agriculture and Forests, the concept of Climate Smart Villages and climate smart agriculture is recognized as an intervention strategy to build resilience of communities and local production systems with strong emphasis on poverty alleviation and food security. However, the RNR extension officials, who are key facilitators for local actions, do not have adequate understanding on climate change issues and more importantly on how to assess climate change vulnerability and plan for adaptation. Of all training programs to extension staff as well as to farmers in the 11th FYP local plans, there is little mention of training related to climate change. In addition, analysis of Chiwog (village) level survey responses show that minimal information on climate change issues is made available through formal channels. Hence there is scope for strengthening capacity of formal institutions such as the Gewog centers, associations and extension staff to be able to assess, maintain and disseminate climate related information to communities.

Long-term solution

39. The long-term solution to minimize and mitigate the adverse consequences of climate change and strengthen biodiversity management in Bhutan is to ensure the effective management of forested landscapes including protected areas and biological corridors, thus securing ecosystem services for local livelihoods, promoting climate-smart and environmentally sustainable community livelihoods, ensuring natural capital for national development and climate change resilience. A critical requirement is to fully operationalise the biological corridor system, which supports and links individual protected areas, significantly enhancing the effectiveness and resilience of the entire protected area and corridor system, which covers 51.44 percent of the land area. An integrated landscape management approach embodying CBD's Ecosystem Approach[44] will be introduced to deliver sustainable rural development that maximizes the benefits provided by sustainable forest and land management, ecosystem-based adaptation, climate-smart livelihood practices, and biodiversity conservation. National and local capacity will be increased to integrate biodiversity conservation, climate change adaptation and rural development leading to multiple impacts and cost effective investments.

Barriers

40. There are several barriers to successful implementation of integrated forest and agricultural landscape planning and management and enhanced climate change resilience. These have been grouped as follows:

[43] http://www.gcca.eu/national-programmes/asia/gcca-bhutan

[44] Convention on Biological Diversity (CBD)COP 5 Decision V/6: https://www.cbd.int/decision/cop/default.shtml?id=7148 , https://www.cbd.int/ecosystem/sourcebook/

1. Insufficient institutional capacity for sustainable forest and agricultural landscape planning and management, and climate change resilience at national, sub-national and village levels

41. While Bhutan has a relatively advanced forest management system backed by strong political commitment, there is insufficient institutional capacity to fully internalize biodiversity, climate change adaptation and ecosystem services in forest management. Financing of SFM is centralized and insufficient and does not offer adequate incentives for wider adoption, and there is inadequate political and financial support for inventory and monitoring of natural resources to underpin their effective management. There is little understanding of the value of ecosystem services and ecosystem-based adaptation benefits, and such values are largely not considered in planning processes despite national policy requirements for environmentally sustainable development. Landscape planning and management is a relatively new concept in the country, especially at local government level. Therefore, land use and infrastructure development decisions are made regardless of considerations for the overall resilience and biological and economic potential of the landscape, resulting in the fragmentation of forested landscapes due to linear infrastructure development (e.g. roads, powerlines) and significant environmental impacts of construction activities (e.g. for HEP projects). There is a need for generating biological and ecosystem services (e.g. carbon sequestration) data to be used in forest area classification, forest management unit and community forest establishment and management. In addition, although biological corridors were mapped and proclaimed in 1999, these are not well integrated with other spatial planning and climate change impacts have not been fully taken into account. Therefore, there is also a need for conducting integrated spatial planning that includes optimization of the biological corridor system in order to ensure their functionality and resilience to climate change impacts, as well as to consider land use changes that have occurred in the corridors since their proclamation. A range of incentive mechanisms are warranted to promote SFM practices by communities.

42. The majority of Bhutan's population lives in forest and agricultural landscapes in rural areas. Bhutan's rural poverty rate remains significant at 16.7% and the government is striving to improve living standards for all its people. Since the 9th FYP, sub-national administrations (dzongkhags and gewogs) have received increasing importance in pursuit of national development objectives as well as public service delivery. Currently, however, there is a lack of coordination in development efforts by different sectoral agencies which impedes the mainstreaming of climate change adaptation and environmental concerns into their practices. Climate change concerns are also not integrated into local development planning due to the of lack of priority and budget afforded to this subject at central and local levels due to limited information and understanding of the issues, and lack of technical capacity regarding adaptation practices. Furthermore, the central MRG is defunct while the dzongkhag level MRGs are only now being established or not yet operational despite their potentially significant role in promoting and coordinating the integration of climate change adaptation, environmental management, disaster risk reduction, and gender considerations (*inter alia*) into local development practices.

2. Insufficient capacity to operationalise biological corridors

43. Bhutan established an impressive and innovative system of biological corridors in 1999 to link protected areas and facilitate wildlife movement. However, some 17 years later, the corridors remain a vision that has not been implemented. Many people residing in biological corridors are not aware that they live in a corridor or even know about the existence of corridors. Boundaries are not demarcated on the ground and most corridors do not have a management plan although it is required under the 2007 Rules on Biological Corridors. In the absence of corridor management plans, in the last decade, forest management units and community forests were

established and construction of roads, transmission lines and hydropower plants took place in the corridor areas. A disconnect exists between biological corridor governance and local planning due to factors including lack of central government direction and guidance, lack of inter-sectoral coordination, and poor local understanding of BC functions, and breaks in the connectivity of biological corridors have occurred in the absence of active management due to inappropriate land uses and encroachment. Consequently, there is an urgent need to operationalize the corridors on the ground, developing and implementing management plans. This will involve, *inter alia*, establishment of decentralized governance and management systems for individual corridors, integration of corridors in the local land use plans and practices, hiring and training staff and creating basic infrastructure and securing financial resources. BC management is severely under-resourced while the management of adjoining PAs remains under-resourced in relation to the size of the territories involved, the nature of the terrain and requirements for increased monitoring, patrolling and community engagement, constraining management effectiveness and the realization of potential benefits.

3. Poor opportunities and support for building livelihood resilience to climate change and extension services as a result of low awareness, technical capacity and access to information services

A. Technical and financial capacities of government and communities

44. Cross-cutting issues such as climate change adaptation and biodiversity and ecosystem management are left to specific departments of the government agencies to deal with, and while climate vulnerability is recognized in national policies and plans, it is not systematically addressed or adequately supported in rural development practices. Given the small size of the government and limited financial and human resources, there is a need for a more integrated approach to increase the resilience of livelihoods at local level. Consequently, the vulnerability of rural communities to climate change is not systematically included in rural development and its related planning, budgeting and implementation processes, which limits the resilience of livelihoods of the communities. The assessment of local level adaptation measures and proposals on adaptation to climate change indicate that actions related to CCA are fragmented and show weak coordination. Therefore, there is need to strengthen linkages across local level sector development plans and CCA interventions. Likewise, national level policies and programs such as those on renewable energy, watershed management, Environment Committees at Dzongkhag and Gewog[45] levels, etc. do not emerge in local level discussions. Therefore, there is also a need to strengthen such linkages with national level policies and programs.

45. At local level, communities have been trying to combine forces and a variety of RNR centered groups and cooperatives have been formed (e.g. CF, NWFP, vegetable and dairy groups). Their success has been mixed and they still rely heavily on government support, reflecting the existing capacity limitations, lack of skills and limited access to information. Sustainability of local organisations is linked to their ability to raise financing and safeguard a sufficient revenue stream to make the groups viable. Support of RNR extension staff is critical for the formation of local organisations and to facilitate basic training in book-keeping, technical skills and conflict management. Access to market and climate information for enhanced value addition of local produce is a limiting factor and often access to inputs and advanced technologies is cumbersome for farmers. The PPG study of

[45] There is no Environment Committee per se at gewog level as of now. The Dzongkhag Environment Committee covers the needs of environment assessment and clearance (which form the core responsibility of a DEC at the gewog level). The committee used for crop/ livestock compensation is known as the Gewog Environmental Conservation Committee (GECC). Its function is, however, different from the Dzongkhag Environment Committee and is operational in only a certain number of gewogs where HWC is significant.

Penjor (2016) reports, for example, that less than 1% of the households in the landscapes consulted are adopting drip or sprinkler irrigation.

B. Access to information and markets

46. A significant development challenge in Bhutan is the remoteness of many mountain communities, which limits access to public services, markets and knowledge, and constrains the potential of economies of scale. Market access is interrupted especially during the monsoon due to inadequate road design standards that are not resilient and robust enough to withstand the climate extremes the country is facing. Absence of proper drainage works, poor pavement conditions and lack of slope stability (bio-) engineering works are leading to recurrent blockages and closure of roads over longer periods with serious impact on livelihood conditions.

47. Livelihood conditions and resilience are defined by weak commodity chains with limited value-addition opportunities for the rural producers, lack of diversification of land-based income sources and limited access to information, support and services to improve these livelihood conditions.

48. At present, there is limited awareness and capacity of farmers and extension services related to development and adoption of climate-resilient practices, such as SLM to reduce land degradation and improve production, and climate-smart agricultural and livestock practices for development of a more resilient agricultural system and practices at the local community level. Importantly, there are also opportunities for the country to establish a positive loop of adaptation actions to enhance livelihood resilience that also benefit ecosystem resilience and biodiversity conservation, which in turn feedback to further enhance resilient livelihoods through ecosystem-based adaptation. At present, community development projects largely fail to recognize and connect with ecosystem management for such improved resilience. The operationalization of the biological corridor system offers an ideal opportunity for such integration with high potential for yielding synergistic impacts of development, adaptation and biodiversity conservation. However, lack of demonstrated experiences and the current sectoral approach to governance hampers the trial and uptake of this more integrated approach.

4. Inadequate knowledge on natural resource status, ecosystem services and climate resilient livelihood options to inform ILM

49. While Bhutan has conducted a participatory process for identifying biodiversity priorities, which is articulated in the National Biodiversity Strategy and Action Plan (NBSAP, 2014), has completed the first National Forest Inventory, has recently completed a national climate change assessment and Sector Adaptation Plan of Action (SAPA) for the RNR sector, and is undertaking a range of major projects and programmes on sustainable land management and climate-smart agriculture (see **Partnerships section, Table 39 and Annex 28**), much of the information from these initiatives is not easily accessible or made available to inform integrated approaches towards landscape management involving a range of different sectors. Knowledge exchange on natural resource management is not institutionalized or widely available, and learning and extension services for livelihood resilience and integrated landscape management are weak. There are few opportunities for cross-sectoral learning and cross-fertilization of approaches in the present situation. This makes it difficult to promote understanding and support for ILM.

50. A conceptual model illustrating the relationships between the threats, indirect factors (root causes), project targets and indicating intervention strategies is given in **Figure 4**. The relationship between the barriers and the project intervention logic is further illustrated in the theory of change diagram in **Figure 5** in the next section.

Alignment with national priorities

51. Overall, the project is consistent with national climate change adaptation policy (NAPA), biodiversity policy (NBSAP) and national forest policy commitments to retain 60 percent of the country under forest cover and to achieve carbon neutral development. Bhutan completed its INC in 2000 and the SNC in 2011 as well as National Adaptation Programme of Action (NAPA) in 2006, updated in 2012. The project will primarily address NAPA priority of community-based food security and climate resilience, and to a certain extent the priority of application of climate-resilient and environment-friendly road construction. With respect to NBSAP 2014, it will specifically contribute to: target 2 of establishing national capacity for valuation and integration of biodiversity and ecosystem services in the national development planning; target 7 of managing areas under agriculture and forestry through adoption of sustainable practices ensuring biodiversity conservation; target 10 of identifying potential impacts of climate change on vulnerable ecosystems and strengthening adaptation measures; and target 11 of maintaining current PA system with enhanced management effectiveness and financial sustainability. The long-term development vision for Bhutan is provided by "Bhutan 2020: A Vision for Peace, Prosperity and Happiness", which provides the operational framework for maximizing and realizing GNH and guides the formulation of the Five-Year Plans (FYP). The Eleventh FYP's (2013-2018) objective is "Self-Reliance and Inclusive Green Socio-economic Development". It seeks to promote carbon-neutral and environmentally sustainable development, and engenders mainstreaming of environment, climate change and disaster risk reduction as cross-cutting issues along with gender and poverty reduction. The process for the Twelfth FYP (2018-2023) preparation is underway. The Twelfth FYP preparation guidelines outline 16 National Key Result Areas (NKRA). This project will contribute to several of them but most specifically to NKRA 5 (healthy ecosystem services maintained), NKRA 6 (carbon-neutral and climate- and disaster-resilient development enhanced), and NKRA 8 (water, food and nutrition security ensured). Furthermore, through a decentralized project implementation approach to development of community-based climate-resilient livelihood practices and mainstreaming of climate change and environmental considerations in sub-national/ local development planning, the project will contribute to the NKRA 13 (democracy and decentralization strengthened). All these documents demonstrate Bhutan's vulnerability to climate change-induced sudden and chronic hazards such as landslides, flash floods and droughts, and their impacts on agriculture and key economic infrastructure. Bhutan has also submitted its Intended Nationally Determined Contribution (INDC) to UNFCCC in September 2015, in the run-up to CoP21 in Paris, building on its declaration to remain carbon neutral. The National Environment Strategy (NES) (1998) describes the main approaches for sustainable development and, once revised, will focus on low-carbon and climate resilient development, addressing both climate change mitigation and adaptation aspects, which was not the case in the earlier NES. Also the Bhutan Water Vision and Policy (2003) advocates is integrated water resource management to address existing and emerging water issues including those emanating from climate change, to which the project will contribute through watershed conservation and integrated landscape management. Details of the project's alignment with these national policies and plans are given in **Annex 29.**

Contribution to the UN Sustainable Development Goals (SDGs)

52. The project will contribute directly towards three SDGs that have been prioritized by the RGoB: *1: No poverty (end poverty in all its forms everywhere)* – through support to climate-smart agriculture (CSA) practices,

improved value chains and access to markets, community forestry and resource user groups, and enhanced security of ecosystem service provision; *13: Climate Action (Take urgent action to combat climate change and its impacts*) – through ecosystem-based adaptation associated with operationalization of the BC system and support for SFM in project landscapes, support for adoption of CSA in project landscapes, climate-proofing of rural roads and enhanced access to markets and market and weather information; *15: Life on land (Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss)* – through operationalization of the BC system and support for SFM in FMUs, LFMPs and CFs, and recognition of biodiversity and ecosystem service values in integrated landscape planning. In addition, the project will contribute towards SDG 2 (*End hunger, achieve food security and improved nutrition and promote sustainable agriculture*) through promoting CSA and SLM; SDG 3 (*Good health and well-being*) as a result of sustainable ecosystem services from the management of forest and agricultural landscapes and improved livelihoods[46]; and SDG 5 (*Achieve gender equality and empower all women and girls*) through capacity building for equal participation and equitable sharing of benefits from the implementation of project interventions.

[46] See p8 of:: http://www.undp.org/content/undp/en/home/librarypage/hiv-aids/hiv--health-and-development-strategy-2016-2021.html

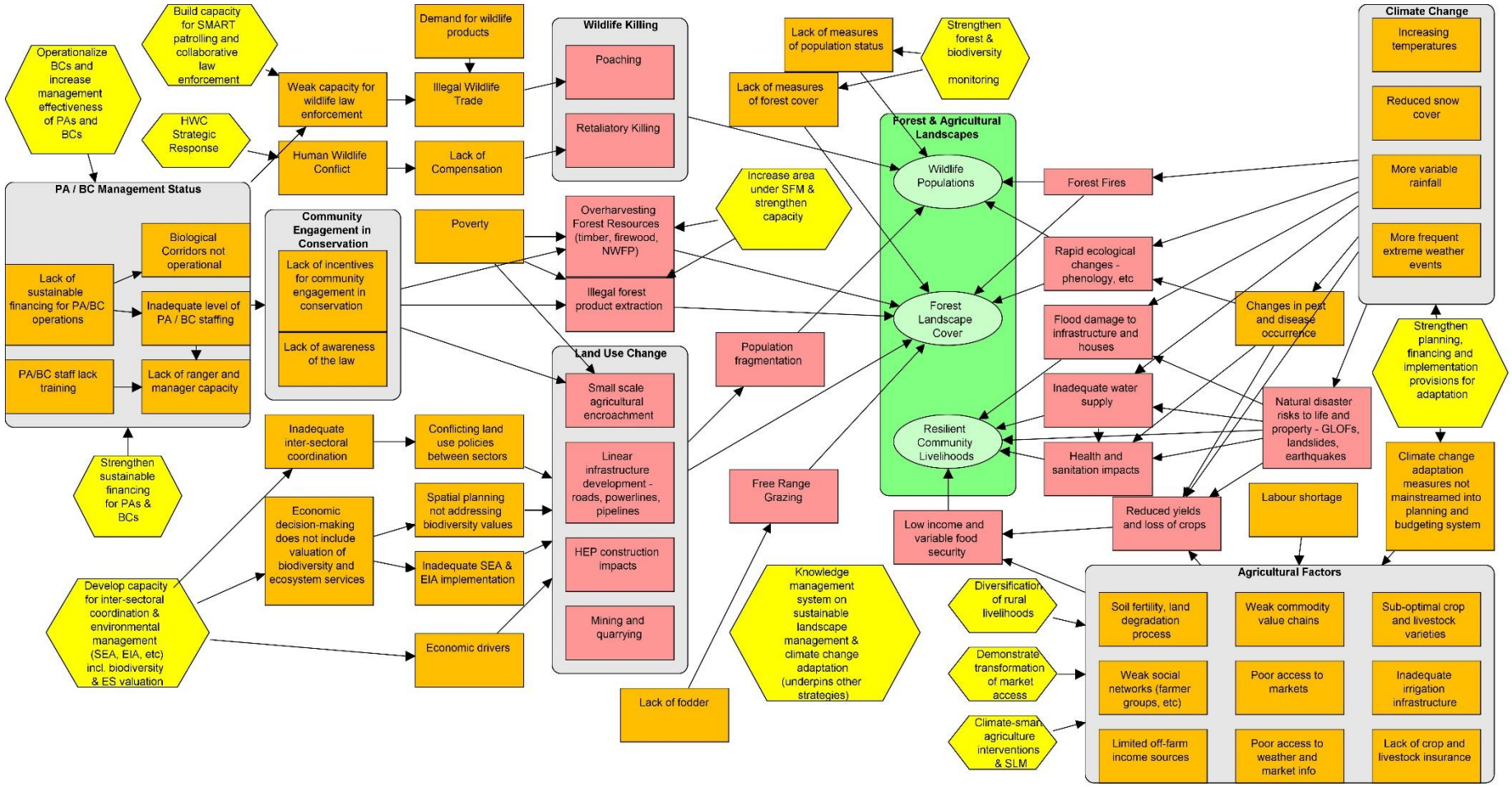


Figure 4. Conceptual model of the factors influencing the project targets, with project interventions.

Key: Project Targets (green oval), direct factors (pink box), indirect factors (orange box), project intervention strategies (yellow hexagon)

II. STRATEGY

53. The root causes (indirect factors) and direct threats impacting biodiversity condition in Bhutan are described in the Development Challenge section above, together with a situation analysis of climate change impacts on the environment and local communities in the project landscapes[47]. The relationships between the various levels of indirect factors and direct factors and the targets for the project intervention are illustrated in the conceptual model in **Fig. 4**, which also identifies the main entry points for the project intervention strategies. The intervention pathways are then described in the theory of change[48] diagram in **Fig. 5**[49], in which the GEF/LDCF project alternative will aim to remove the identified barriers to achieving the long-term solution needed to minimize and mitigate the adverse consequences of climate change and strengthen biodiversity management in Bhutan. This solution is to ensure the effective management of forested landscapes including PAs and BCs, thus securing ecosystem services for local livelihoods, promoting climate-smart and environmentally sustainable community livelihoods, ensuring natural capital for national development and climate change resilience. A critical requirement is to fully operationalise the biological corridor system, which supports and links individual protected areas, significantly enhancing the effectiveness and resilience of the entire PA/BC system. An integrated landscape management approach embodying CBD's Ecosystem Approach[50] will be introduced to deliver sustainable rural development that maximizes the benefits provided by sustainable forest and land management, ecosystem-based adaptation, climate-smart livelihood practices, and biodiversity conservation. National and local capacity will be increased to integrate biodiversity conservation, climate change adaptation and rural development leading to multiple impacts and cost effective investments.

54. The key barriers can be summarized as 1) Insufficient institutional capacity for ILM and CCA; 2) Insufficient capacity to operationalize the biological corridor system; 3) Lack of opportunities and support for building livelihood resilience; and 4) Inadequate knowledge on natural resource status, ecosystem services and resilient livelihood options. These barriers will be removed through the implementation of a suite of activities, whose results will contribute towards the accomplishment of a series of project outputs, which in turn will achieve the four main project outcomes:

55. **Outcome 1: Enhanced institutional capacity for integrated landscape management and climate change resilience:** this component will focus on building institutional capacities for integrated landscape management and climate resilience across rural communities. Specifically, this component will incorporate biodiversity conservation objectives and safeguards as well as climate change concerns in the forest/agricultural land use and natural resource use planning and management process, aiming to catalyse an economically and ecologically optimal land use mix and practices in the biological corridors and neighbouring landscapes.

56. **Outcome 2: Biological corridor governance and management established and demonstrated:** This component will enable the RGoB to operationalize the biological corridors (BCs 1, 2, 4 and 8) in the project

[47] Substantial additional information is available in **Annexes 18, 19 and 21**

[48] Theories of change are a planning tool. They describe possible pathways to development change based on experience and evidence. By so doing, theories of change help explain and clarify the logic and assumptions underlying the achievement of results over time. This allows governments, other stakeholders and evaluators to check if the argument makes sense and assess if progress is being made, as planned, or requires a change in approach. Theories of change are, therefore, a practical way of anchoring results-based management in the realities of development.

[49] Note: This Theory of Change is retrofitted, because the rationale and structure of the project intervention was established at PIF stage (i.e. approved by GEF), thus allowing no option for changing the project objective, main outcomes or scope, and limited flexibility in terms of the intervention pathways and incremental reasoning.

[50] Convention on Biological Diversity (CBD)COP 5 Decision V/6: https://www.cbd.int/decision/cop/default.shtml?id=7148 , https://www.cbd.int/ecosystem/sourcebook/

landscapes through the development of climate-smart conservation management plans and the development of technical capacity and basic infrastructure, including strengthened biological monitoring and law enforcement systems and human-wildlife conflict management interventions to address biodiversity threats, encroachment and poaching in particular.

57. **Outcome 3: Livelihood options for communities are more climate-resilient through diversification, SLM and climate-smart agriculture and supported by enhanced infrastructure:** This component will provide direct support to communities and their service providers to enhance climate resilience of community livelihoods by optimizing and diversifying production including adoption of climate-smart agriculture practices, adding post-production value and improving sustainable access to markets. In addition, it will demonstrate how climate change adaptation and biodiversity conservation as well sustainable forest management objectives can jointly be addressed, creating synergistic impact for sustainable local development.

58. **Outcome 4**: **Knowledge management system established to support sustainable management of forest and agricultural landscapes and climate-resilient communities:** Through this component, the project will ensure that information and knowledge accumulated and produced within the project will be documented and made available for wider communication and dissemination of project lessons and experiences to support the replication and scaling-up of project results.

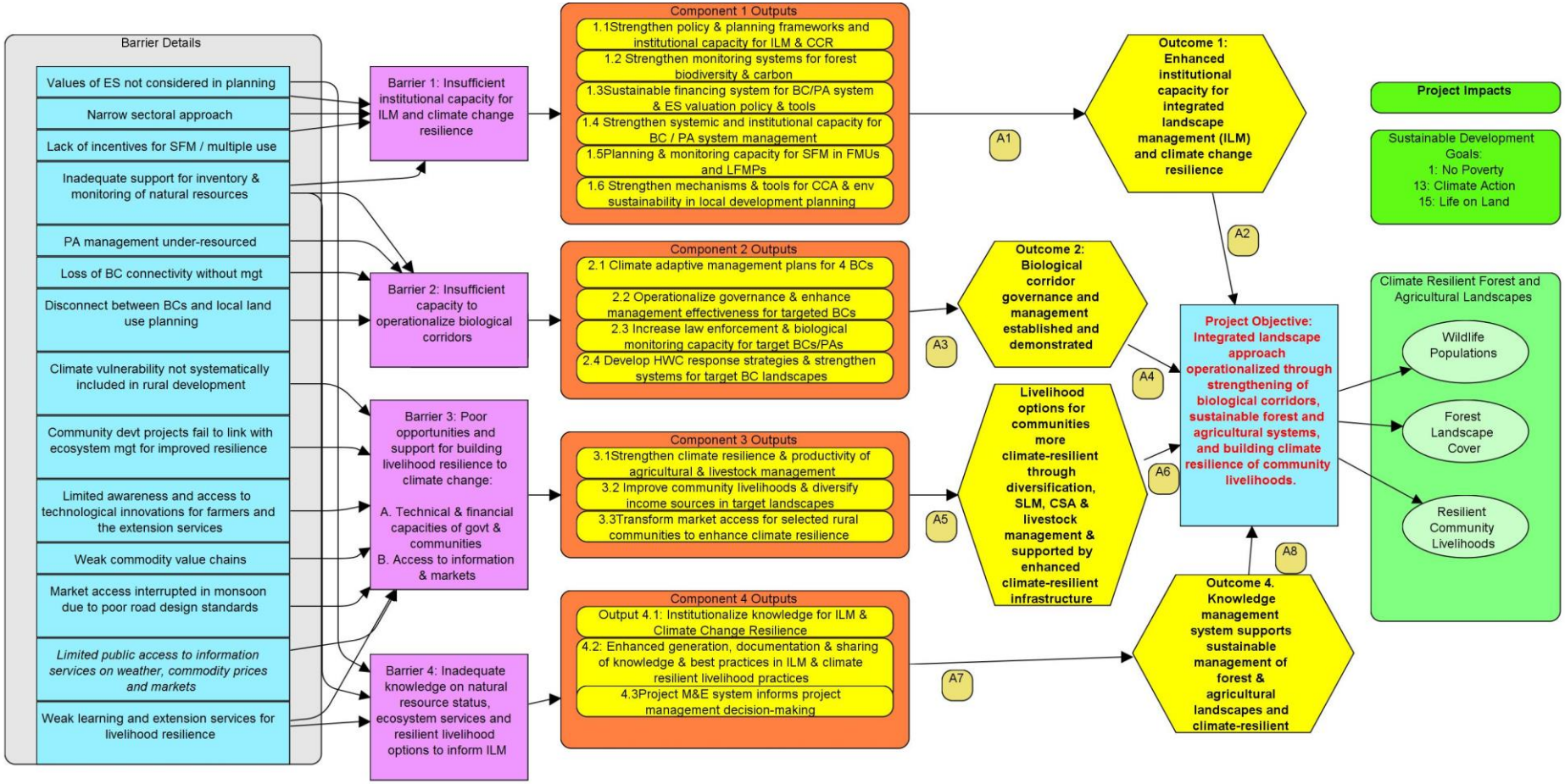
59. The project component outcomes are described in greater detail in the Results and Partnerships section, as are the output strategies, and related activities are listed (also given in **Annex 1**). Indicators and assumptions are given in the Results Framework for the project outcomes and objective, and the assumptions indicated in the theory of change diagram are also described below. The four outcomes will contribute towards achievement of the Project Objective, which is to *operationalize an integrated landscape approach through strengthening of biological corridors, sustainable forest and agricultural systems, and build climate resilience of community livelihoods.* This will be achieved through strengthening of biological corridor and sustainable agricultural systems, integrating investments for forest and biodiversity management and climate resilient livelihoods, thus increasing the resilience of ecosystem and vulnerable communities under the conditions of climate change and conserving globally significant biodiversity. The connections between implementation of the project outputs and related initiatives is described in the Partnerships section (see **Table 3**). Given the range of related initiatives, this will take considerable coordination via the PMU and Responsible Parties, especially GNHC-S and PPD, MoAF (while individual MOAF bodies will report directly to the PMU). The collective sharing of the knowledge, experience, and lessons from these initiatives through a single window would be of major advantage to all stakeholders involved in this project, and Output 4.1 (on capacity building for knowledge management) will seek to facilitate this, in collaboration with other partners. The assumptions in the Theory of Change diagram in **Fig. 5** apply to the *if…then* logic of the results framework, and have been identified for the logical connections between the project outputs and outcomes, and between the outcomes and the project objective. These are given in **Annex 26.**

Innovativeness

60. The integrated approach being implemented through the project (i.e. combining sustainable forest management and biodiversity conservation, climate change adaptation, and community livelihoods at a landscape level) as a coordinated partnership between different sectors of the government administrations and local stakeholders will provide an innovative example that is expected to: (a) generate important lessons for other dzongkhags/gewogs and biological corridors/protected areas within the country as well as in other countries; and (b) build national

expertise in new fields (e.g. landscape planning and integration of PA management/SFM and CCA into the wider landscape and economic sectors and into rural development and poverty alleviation efforts). In addition, the project will demonstrate how a country can fully integrate its conservation strategy and the policy of retaining 60 percent of the national land permanently under forest cover, with a viable poverty reduction and climate-resilient rural development strategy. Some of the key innovations include an integrated approach to sustainable rural development through the mainstreaming of environmental sustainability, climate resilience and gender into local governance through the Mainstreaming Reference Group approach; the introduction of climate-smart agriculture techniques in the project landscapes; innovative approaches towards addressing risks to crops, livestock and livelihoods as a result of both climate extremes and human-wildlife conflict (HWC) such as access to rural insurance schemes and holistic approaches towards addressing HWC. The biological corridors system is quite unique and its comprehensive demonstration up to a fully operational status will provide a valuable model for other countries.

Figure 5. Theory of Change Diagram for the Project



Global Environmental Benefits

61. The global benefits will be delivered primarily from significantly improved management of Bhutan's biological corridor system covering in total some 330,000 ha of predominantly forested land with its high concentration of globally significant biodiversity including tiger, snow leopard, leopard, red panda, takin, blue sheep, musk deer and black-necked cranes (see **Annex 17**). The project will mainstream biodiversity conservation into the management of three project landscapes totalling 1,304,958 ha, some 75.3 % of which is under forest cover, 9.7% shrub cover, a mere 1.6% agricultural land (due to the rugged terrain), and the remainder meadows, rocky terrain and snow 13.4%. 176,400 ha of this lies in four BCs and 324,405 ha in three associated PAs (**see Table 1**). In addition, it will strengthen the management effectiveness of these PAs and BCs, assist in the outroll of the national METT+ system and secure sustainable financing to achieve at least a basic level of management. The project will support the internalisation of immediate and long-term adaptation measures in conservation management, forestry management, agricultural and livelihood development, equipping the government to integrate support for rural development, biodiversity conservation and ecosystem management at the local level.

62. Global carbon sequestration benefits will be derived from the adoption of SFM practices in the project landscapes totalling at least 100,000 ha of FMUs, LFMPs and community forests. Complimentary to climate-smart agricultural practices and SLM (approximately 2,000ha of SLM practices), the project will support low-emission livestock practice management and enhanced management of grazing land and fodder production (approximately 1,000ha of improved grazing land and agro-forestry). Overall, lifetime direct avoided GHG emissions through forest protection, SFM, SLM and smart livestock practices that will reduce land degradation and secure ecosystem services, totalling 3,578,372 tCO_2eq over a 10-year period, plus a lifetime indirect GHG emissions avoided of 580,632 tCO_2eq (See **Annex 4c**). Through support of UNCCD pilots on Land Degradation Neutrality (LDN) in the project landscapes, Output 3.1, carbon stock and sequestration in agricultural soils will be monitored.

Table 1. Area of PAs and BCs within the three project landscapes

	Pas	BCs	Total [ha]
Landscape 1	60,950	14,900	75,850
Landscape 2	173,000	111,400	284,400
Landscape 3	90,505	50,100	140,605
Total [ha]	**324,405**	**176,400**	**500,855**

National socio-economic benefits

63. Forest protection, strengthened SFM and watershed management achieved through the combined impacts of all project components will ensure the sustainability of ecosystem services that contribute directly to the national economy, including water supply for agriculture and hydropower, slope stabilization, soil protection, pollination, tourism and recreation, etc. These services are as yet unquantified, but underpin four of Bhutan's most important economic sectors – hydro-electric power, agriculture, forestry and tourism development. In addition, in view of Bhutan's position in the upper reaches of major rivers flowing southwards to the plains of India and Bangladesh, indirect environmental benefits (watershed services, regulation of floods, etc.) would benefit millions of people downstream through sustainable and climate-resilient management of these landscapes. The third component of the project will invest significantly in supporting a wide range of interventions that will: first, strengthen rural

production through SLM, CSA seeds/varieties, water/irrigation, livestock, pest management, capacity building related to inputs and production; secondly, provide post-production, value-addition, diversification, livelihood support and insurance; thirdly, improve market access, commercialization and access to market information. Substantial social and economic benefits will accrue from this range of interventions, providing improvements in the livelihoods and climate-resilience of an estimated 97,000 people residing in the project landscapes, including rural poor communities. These benefits are summarized in the following table.

Table 2. Social and economic benefits arising from the project outputs

Output	Social and Economic Benefits
1.5	Enhanced SFM practices supporting at least 7 FMUs, LFMPs in 33 gewogs and numerous CFs will benefit both local employment and enhanced local benefits from forest resources.
1.6	The strengthened functionality of the MRG at local level will result in more effective and integrated local development planning, and increased climate resilience of infrastructure and livelihoods, reducing economic losses from extreme weather conditions
2.1, 2.2, 2.3	Operationalization of the management of four biological corridors in Component 2 will create employment and income-generating opportunities, including eco-tourism through the Territorial Forest Divisions
2.3	Operationalization of the management of four biological corridors in Component 2 will also create employment opportunities through engagement of local communities and provision of incentives.
2.4	The project's significant intervention towards addressing Human-Wildlife Conflict as a major source of loss for farming communities will have widespread benefits in demonstration areas and subsequently through scaling up effective approaches.
3.1	Reduced land degradation, enhanced soil fertility, enhanced productivity, climate resilience and vegetative cover on 2,000 ha under SLM; climate resilient crop varieties introduced across project landscapes; watershed management strengthened and irrigation infrastructure climate-proofed and extended; enhanced management of grazing land and fodder production and low-emission livestock practices over 1000 ha; integrated pest management supported as part of CSA.
3.2	Value addition in supply chains of priority climate resilient commodities (e.g. cardamom, potatoes) including: commercialization of organically-produced farm produce; viability of crop and livestock insurance schemes will be tested to reduce major losses due to extreme weather and wildlife incursions; new livelihood options created based on value addition of wood and non-wood forest products; conservation livelihood opportunity development such as community ranger system establishment and other conservation jobs; and alternative community revenue streams such as PES/REDD+ pilots in Community Forests.
3.3	Guidelines developed for design and construction of climate-resilient road infrastructure; prioritized Gewog Connectivity road stretches upgraded to demonstrate enhanced climate resilience; marketing infrastructure improved through development of post-harvest storage and packaging and processing and sales facilities; and capacity of farmers increased to recognize market risks, linkages and opportunities to maximize value addition in the supply chain.

III. RESULTS AND PARTNERSHIPS

i. Expected Results:

64. The Project Objective is to *operationalize an integrated landscape approach through strengthening of biological corridors, sustainable forest and agricultural systems, and build climate resilience of community livelihoods.* This will be achieved through strengthening of biological corridor and sustainable agricultural systems, integrating investments for forest and biodiversity management and climate resilient livelihoods, thus increasing the resilience of ecosystems and vulnerable communities under the conditions of climate change and conserving globally significant biodiversity. The project aims to achieve its objective through the following four interrelated outcomes, each the result of the project components described below:

1. Enhanced institutional capacity for integrated landscape management (ILM) and climate change resilience;
2. Biological corridor governance and management established, demonstrated and linked to management of contiguous PAs;
3. Livelihood options for communities made more climate-resilient through diversification, SLM and climate-smart agriculture and supported by enhanced climate-resilient infrastructure; and
4. Monitoring and evaluation and knowledge management system established to support sustainable management of forest and agricultural landscapes and climate-resilient communities.

Component 1: Institutional capacity for integrated landscape management (ILM) and climate change resilience

Total Cost: USD$ 11,554,000; GEF project grant requested: $ 1,554,000; Co-financing (source): $10,000,000
Without GEF intervention (baseline):

65. Much of Bhutan is forested and it has a relatively advanced forest management system backed by the political commitment to maintain at least 60 per cent of the country under forest cover for all times. However, there is still insufficient institutional capacity to fully internalize biodiversity and ecosystem services in forest management. Landscape planning and management is a relatively new concept in the country, in particular at the local government level. Therefore, land use decisions and infrastructure development are made regardless of biodiversity and ecosystem service values and consideration for the overall resilience and biological and economic potential of the landscape. There is a need for generating biological and ecosystem services (e.g. carbon) data to be used in forest area classification, forest management unit and community forest establishment and management.

66. In addition, although biological corridors were mapped and proclaimed in 1999, they largely remain as “paper corridors” with no effective governance and management structure and activities, and they were drawn up without regard to climate change considerations. Corridors are not able to fulfil intended functions, resulting in habitat degradation and loss of connectivity between protected areas due to developmental activities as road corridors, hydropower projects, transmission lines and other encroachments. Degraded forest areas in important Wildlife Corridors are not restored. The disconnect between corridor management and local level land use planning and practices persist, exacerbating human wildlife conflict and unsustainable natural resource use in some instances. Associated Protected areas continue to be under-resourced, resulting in suboptimal management effectiveness.

67. At the local level, various development efforts are carried out independently by different sectoral agencies, and climate change concerns are not integrated into local development planning, resulting in suboptimal planning and implementation which leaves people vulnerable to the impacts of climate change and environmental degradation. Furthermore, the central MRG is currently largely defunct due to the transfer of staff and the process of establishing dzongkhag MRGs remains in progress despite their potentially significant role in promoting and coordinating the integration of climate change adaptation, environmental management and gender considerations (*inter alia*) into local development practices.

With GEF intervention (project alternative):

68. This component will focus on strengthening the policy and planning framework and building institutional capacities for forest and agricultural landscape management incorporating climate change adaptation. Specifically, this component will incorporate biodiversity conservation objectives and safeguards as well as climate change adaptation requirements into forest and agricultural land use and natural resource planning and management, aiming to catalyse an economically and ecologically optimal land use mix and practices in the biological corridors. The project will enhance institutional capacity for integrated management of forest biodiversity and ecosystem services that will provide a conducive environment for operationalization of the biological corridor network. The project strategy for this component is to address systemic gaps and weaknesses through reviewing national policies and plans and building institutional capacity for institutionalization of forest and biodiversity condition and carbon stock monitoring system under the National Forest Inventory and National Forest Monitoring System, integrating the HCVF approach within the functional mapping of forest areas, developing a sustainable financing strategy and mechanism for management of the biological corridors and associated PAs, testing ecosystem valuation tools in coordination, strengthening the systemic framework and human resources to operationalize the national biological corridor system, strengthening and expanding SFM practices through planning, management and monitoring of Forest Management Units (FMUs) and Local Forest Management Plans, and revitalizing the Mainstreaming Reference Group system at central and local levels as a key and officially endorsed mechanism for integrating climate change adaptation, environmental management and gender concerns (*inter alia*) into local development practices.

Outcome 1: Enhanced institutional capacity for integrated landscape management (ILM) and climate change resilience

Output 1.1 Strengthened policy and planning frameworks and institutional capacity for integrated landscape management and climate change resilience within key national agencies

69. This output will support an inter-sectoral policy review of the needs to achieve integrated landscape management (ILM) and climate change resilience, as a basis for identifying and addressing gaps, conflicts and inconsistencies in the existing policy, legal and planning framework. This will be informed by multifunctional landscape analysis and coordinated with other existing and planned landscape scale initiatives that also seek to achieve sustainable land management, forest conservation, poverty alleviation and climate resilience, such as HANAS, BIOFIN, CPEIR and BTF through a Task Force led by GNHC and including NEC-S and UNDP CO amongst others. Secondly, it will support institutional capacity development to plan and implement climate-resilient ILM and community development that considers traditional land management practices, forest biodiversity and ecosystem services for operationalization of the biological corridor network. Thirdly, it will provide TA for holistic and comprehensive integrated landuse planning as a basis for effective conservation, reviewing and refining the BC system delineation as a key part of this exercise. This will involve a review of the spatial arrangement of the corridors system in terms

of coverage of the habitat and vegetation types, the climate change vulnerability of species and ecosystems, as well as impact mitigation measures and need for realignment of the PA/BC system. It will consider other land uses including traditional land management and the sustainability of forest corridors in the project landscapes in view of traditional land uses, settlement and development patterns with results integrated into the BC management plans (Component 2).

70. ***Indicative activities under Output 1.1 include:*** Conduct an analytical review to identify gaps, conflicts and inconsistencies in existing sectoral and inter-sectoral policy, planning and legal frameworks for developing climate-resilient integrated landscape management and climate resilient communities including investment policy and take forward recommendations with key stakeholders, in coordination with related initiatives through a Task Force (1.1.1); assess existing capacity gaps and develop institutional capacity of MOAF and related agencies to plan and implement climate-resilient integrated landscape management and community development. Priority subjects for training and development/improvement of toolkits/ guidelines/ resource materials are given in **Annex 1** (1.1.2); and, provide TA including decision support tools for holistic and comprehensive integrated landuse planning through zonation for the project landscapes (including BCs /PAs/wetlands /Settlements /Agricultural Land /Disaster Risk Reduction /Development) for effective future conservation and planning. Review and refine BC system delineation in relation to connectivity, HCVF, climate change adaptation and sustainability criteria (1.1.3).

Output 1.2 Strengthened monitoring systems for forest condition, biodiversity status and carbon stocks in DoFPS

71. Building on the recent National Forest Inventory (NFI) exercise, the project will support strengthening of the forest monitoring and management system, equipping the country to continuously assess and monitor the extent of forest cover and the quality of forests in terms of biodiversity and ecosystem service values, to manage them sustainably and to substantially increase the areas of forest under sustainable management practices. Institutional capacity will be developed for conducting regular inventory and monitoring assessments through the institutionalization of forest and biodiversity condition and carbon stock monitoring system under the NFI and National Forest Monitoring System (NFMS), supporting the project impact assessment through data on forest cover extent, carbon stocks and biodiversity. The project will support the outroll of the national METT+ for BCs and PAs in order to provide systematic oversight and guidance to BC and PA management and to focus monitoring efforts towards priority threats and biodiversity condition targets in line with UNDP/GEF project M&E requirements. National protocols will be developed for monitoring habitats and biodiversity for the BC/PA system and capacity developed for targeted biological monitoring systems covering habitat change due to climatic factors, and the status of threatened species such as the tiger. This will support impact assessment of the project outcome regarding the functionality of the BC system. While Bhutan has abundant high quality forest resources, the HCVF concept will be introduced (in the Bhutanese context) to DoFPS with the aim of integrating the HCVF approach within the functional mapping of forest areas and the further design of the national BC / PA system.

72. ***Indicative activities under Output 1.2 include:*** Provide support for strengthening the National Forest Inventory (NFI) and the National Forest Monitoring System (NFMS) to measure status and condition of forest and carbon stocks in line with REDD+ MRV and GEF SFM monitoring requirements, including integration of the HCVF concept (in the Bhutanese context) (1.2.1); support the outroll of national METT+ for BCs and PAs and ensure consistency with GEF 6 Biodiversity Tracking Tool reporting requirements for project sites (1.2.2); establish national protocols for monitoring habitats and biodiversity for the BC/PA system and develop capacity for targeted biological monitoring systems, including: habitat change due to climatic factors, and status of key threatened species (1.2.3).

Output 1.3 Sustainable financing system for biological corridor and PA system and sector-oriented valuation policy and tools developed to measure ecosystem services benefits

73. To complement and increase synergy with the innovative sustainable financing efforts under the Bhutan for Life initiative[51] (see Section IVii) the project shall develop an innovative financing mechanism for management of the biological corridors and associated PAs. The specific synergies of project activities with BFL are detailed in **Annex 28, Table 25-1**. Analysis of policies and public expenditure will be conducted to support the sustainable financing system for PAs and BCs (i.e. potential restructuring of financial flows from HEP, tourism levies, etc towards directly related environmental management – eg catchment management) and development of levy standards for tourism, HEP and other key services. While Bhutan has made progress towards REDD+ readiness and implementation of PES, a significant need remains to demonstrate and upscale these at field level to put effective management systems in place and realize their potential economic benefits. Thus, the project will support the planning, implementation (under Component 3), evaluation and sharing of lessons learned from PES and REDD+ pilot demonstrations and other revenue-generating mechanisms such as the development of standards for levies for use of ecosystem services provided by the PA / BC system. Finally, the project will support the elaboration and upscaling of work conducted by the National Statistics Bureau on Green Accounting (including tourism, HEP, RNR and other relevant sectors) to test the valuation of ecosystem goods and services in the project landscapes; and to conduct an awareness programme for key national stakeholders.

74. ***Indicative activities under Output 1.3 include:*** Review policies, public expenditure and innovative financing mechanisms and develop a sustainable financing strategy for the national PA and BC system (1.3.1); evaluate and share lessons to upscale PES/REDD+ schemes in the project landscapes in coordination with responsible agencies (note – implementation of pilots would be supported by the project under C3) (1.3.2); and, test ecosystem valuation tools in coordination with National Statistics Bureau work on Green Accounting (including tourism, HEP, RNR and other relevant sectors and conduct awareness programme for key national stakeholders (1.3.3).

Output 1.4 Strengthened national systemic and institutional capacity for management of the biological corridor and PA system

75. This component of the project will support national measures for strengthening of the systemic framework and human resources to operationalize the national biological corridor system. In order to optimize the functionality of the biological corridors and to strengthen their governance, the 2007 Rules on Biological Corridors will be reviewed and updated. The vision and operational requirements for strengthening governance of the BC system will be set out in a strategic plan, and human resource requirements, staffing standards, training modules, community engagement mechanisms and coordination arrangements put in place to support effective management. This will be supported by an awareness raising campaign to build support for the BC system. These systemic measures will support the operationalization and field resourcing of the BC system at dzongkhag level under Component 2.

76. ***Indicative activities under Output 1.4 include:*** Review and revise/ update Biological Corridor Regulations (BC 2007 Rule) to optimize BC functionality and strengthen governance (1.4.1); develop a strategic plan for strengthening governance and operationalizing the BC system including a reporting system; staffing standards for BC/PA management (human resource requirements, job descriptions, etc); training modules on BC/PA management subjects including climate change adaptation measures; incentive mechanisms for increasing motivation of field staff; mechanisms for engagement of local stakeholders (eg community groups) to participate in

[51] http://www.wwfbhutan.org.bt/bhutan_for_life/; http://www.bfl.org.bt/

BC/PA management / information gathering; and mechanisms for coordination of BC/PA management (1.4.2); and raise awareness and understanding of the BC system concept, conservation and socio-economic benefits, and the law and regulations that govern them among stakeholders at national level (1.4.3).

Output 1.5 Planning and monitoring capacity for sustainable forest management in FMUs and LFMPs

77. This output will provide support towards expanding sustainable forest management across the project landscapes. This will take the form of strengthened planning, management and monitoring of Forest Management Units (FMUs), and Local Forest Management Plans (LFMPs) at gewog level. Further support for Community Forests is provided in Component 3. While FMUs have been managed relatively well for many years, the project will add value through integration of climate resilience, carbon sequestration, and biodiversity conservation functions and values of FMUs and LFMPs in the planning and monitoring system. This will include strengthening of existing guidelines and institution of a new forest inventory data management system involving development of a new computer program and training of forest management planners in the updated guidelines and system. Furthermore, field studies and lab analysis will be carried out to expand existing volume equations to improve the accuracy of estimation of growing stock for sustainable forest management planning. The project will also address chronic shortages of equipment for more effective field operations in targeted areas, and directly support the preparation of management plans for prioritized FMUs and LFMPs in the project landscapes.

78. ***Indicative activities under Output 1.5 include:*** Review and update planning, implementation and monitoring guidelines, including new inventory data management system, for FMUs and LFMPs taking into account new SFM needs including integration of climate resilience, carbon sequestration, and biodiversity conservation functions and values of FMUs and LFMPs (1.5.1); train staff in the deployment of the updated planning, implementation and monitoring system, and provide training and equipment to enhance forest management information system and planning and monitoring of FMUs and LFMPs (1.5.2); support field studies and lab analysis to improve the accuracy of estimation of growing stock for sustainable management planning and training for the inventory data management system (1.5.3); provide mobility and field equipment/ instruments to FRMD and Territorial Forestry Divisions in the project landscapes required for enhanced planning and monitoring of SFM activities in FMUs and LFMPs (1.5.4); develop management plan for the newly proposed Buli-Kikhar FMU (in Landscape III) and review and update FMU management plans for Chendebji, Rongmachhu, Lingmethang, Khotokha, Karshong and Selela (1.5.5); and prepare LFMPs in the project landscapes (5 of the total 38 gewogs had LFMPs as of May 2016) (1.5.6).

Output 1.6 Institutional mechanisms and tools strengthened for integration of Climate Change Adaptation (CCA) and environmental sustainability needs in local development planning system at dzongkhag and gewog levels.

79. As part of the overall approach towards integrated landscape planning, this output focuses on strengthening the capacity and sustainability of the Mainstreaming Reference Group (MRG) [52] approach under the overall

[52] The project will seek to reinvigorate and work through the Environment, Climate Change and Poverty Mainstreaming Reference Group (MRG), which was established by Executive order from the Prime Minister's Office in 2013. The MRG was formed in order to strengthen and facilitate the integration of all cross-cutting issues into the government's decision-making processes and development policies, plans and programmes. This is being done to ensure that issues such as Climate Change, Environment, Disaster, Gender and Poverty and their opportunities are adequately integrated into the mainstream development process. The primary role of the MRG has been to undertake detailed analysis of policy and planning processes at both central and local levels in Bhutan to identify windows of opportunity for the integration of ECP issues and mainstreaming approaches. Furthermore, it aimed to raise awareness around and build capacity in ECP mainstreaming across sector and government agencies in Bhutan, particularly at the local levels. This will provide a permanent mechanism for integrating ECP into landscape management and planning, representing a key institution for sustaining and upscaling the project's impacts across the country.

coordination of GNHC. This will involve strengthening the central level MRG to provide technical backstopping to Local Level MRG for integrating Climate Change Adaptation and other cross cutting issues into local government planning processes, as well as direct support for local (dzongkhag-level) MRGs. As impacts from major infrastructure development (eg roads, dams, power lines) are key threats to the ecological integrity of Bhutan's landscapes and wildlife (e.g. tiger) populations[53], this output also includes an activity supporting Strategic Environmental Assessment (SEA) for such developments in the project landscapes with NEC-S support. Overall, this will provide the systemic basis for integrating climate change adaptation, environmental management and gender concerns (inter alia) into local government planning and practices. Coordination with NEC-S as the National Climate Change Committee and Climate Change Coordination Committee focal point is needed to review and integrate the role of MRG for CCA delivery under this Output, and synergies with selected local governments for CCA investments with assistance from UNCDF-LoCAL (Local Climate Adaptive Living Facility) program should be realized through coordination during implementation (see Partnerships section below).

80. ***Indicative activities under Output 1.6 include:*** Strengthen the central level MRG to provide technical backstopping to Local Level MRG for integrating Climate Change Adaptation and other cross cutting issues into local government planning processes (1.6.1); build capacity of local government MRG on mainstreaming tools and integrate climate change adaptation and other cross-cutting issues into plans and programmes (1.6.2); provide training and conduct SEA for key sector-led development policies, programmes and plans affecting the project landscapes (1.6.3).

Component 2: Emplacement of BC system governance and management system at pilot corridors

Total Cost: US$10,220,000; LDCF project grant requested: US$1,900,000; Co-financing: US$8,320,000

Without GEF/LDCF intervention (baseline)

81. In keeping with its rich biodiversity, Bhutan has established a widespread system of protected areas and biological corridors encompassing 51.44 percent of the country's total geographic area[54]. This system represents a continuum of representational samples of all major natural ecosystems ranging from the tropical/ subtropical grasslands and forests in the southern foothills through montane temperate forests in the central mountains and valleys to alpine meadows and scree in the northern highlands.

82. The biological corridors were created primarily to maintain gene-flow through uninterrupted wildlife movements and contiguous succession of natural habitats linking the protected areas. These biological corridors, declared in 1999, were identified based on field assessment of factors which included abundance of target wildlife, slope of terrain, occurrence of forest fire, condition of the canopy and undergrowth, level of human disturbance, and width of narrowest constriction[55]. However, these biological corridors have remained largely non-operational with no conservation management plans and requisite infrastructure in place due to financial constraints and limited technical capacity within the responsible Territorial Forestry Divisions (TFDs). Some progress is now being made with conservation management planning process underway in BCs 1, 2 and 4, and their Conservation Management Plans (CMPs) due for finalization by the end of 2016. The other BCs, including BC8 in the project

[53] https://news.mongabay.com/2016/11/tigers-face-unprecedented-threat-from-transport-projects-wwf/

[54] Summary: Bhutan's State of Parks Report 2016, WWF and Wildlife Conservation Division, Department of Forests and Park Services, Ministry of Agriculture and Forest.

[55] Biodiversity Action Plan 2009, Royal Government of Bhutan.

landscape II, remain without any conservation management planning initiative while BCs 1, 2 and 4 which are on the verge of having a CMP do not systematically integrate the needs for adaptation and resilience to potential and/or existing climate change vulnerabilities and risks.

83. In the absence of CMPs and adequate technical capacity including for biological monitoring and enforcement measures to address biodiversity threats such as encroachment, poaching and human-wildlife conflicts, there is the risk that the conservation functionality and value of the BCs will be impaired in the face of growing pressure for natural resources and land use conversion and low level of public awareness and understanding of their role and significance.

84. The conservation management status of the PAs is comparatively positive, with nine out of the ten PAs operational with CMPs and basic infrastructure and staffing in place. However, implementation of the CMPs, particularly in the case of newly operationalized PAs such as Jigme Khesar Strict Nature Reserve, has been severely limited due to resource constraints in terms of funds as well as insufficient technical capacity within the PAs. CMPs are updated every five years but often without any major improvements to address evolving conservation circumstances and needs such as adaptation to climate change. Technical capacity for monitoring of biological conditions and biodiversity threats in PAs is limited and monitoring and enforcement systems are not well-instituted due to lack of funds and trained personnel. Dearth of staff and the vastness and difficult terrain of the protected areas pose extreme challenge for biological monitoring and conservation law enforcement. If these challenges remain unaddressed, poaching and habitat encroachment are likely to increase resulting in biodiversity loss and reduced resilience of the BCs and PAs.

With GEF/LDCF intervention (additionality):

85. Through this component, the GEF/LDCF project will strengthen the governance and management of BCs in the project landscapes. It will enable the RGoB to operationalize BC8 through the development of a climate-adaptive CMP using an inclusive and integrated approach based on extensive consultations with stakeholders especially those at the local level. It will support the development of basic infrastructure and technical capacity to implement their respective CMPs. It will also support the mid-term review of the CMPs of BCs 1, 2 and 4, which will have their CMPs in place before the start of the project, to assess the CCA aspect and enable the integration of CCA needs. The four BCs in the project landscapes, which make up half of the BCs in the country, will present an excellent opportunity to demonstrate the governance of biological corridors based on sound CMPs emanating from a comprehensive process that takes into account and integrates biodiversity conservation, CCA and socio-economic development needs. The strategies in the CMPs will be based on evidence and informed choices emanating from socio-economic and biodiversity surveys and stakeholder consultations. The project will give particular attention to integration of appraisal of local CC vulnerabilities and risks in the socio-economic and biodiversity surveys so as to provide the necessary information base for production of climate-adaptive CMPs. These CMPs, besides outlining conservation strategies and actions, are expected to be important instruments for leveraging funds from government and key donors for their implementation.

86. Project support will also enable institution of strengthened biological monitoring and law enforcement systems, which may include SMART patrolling and Wildlife Enforcement Monitoring System (WEMS)[56], and human-wildlife

[56] WEMS is a web-based model that serves as a uniform compliance measuring mechanism to ensure timely information and analysis to facilitate wildlife crime prevention enforcement efforts at the national, regional and global levels. WEMS empowers national governments to monitor the effectiveness of enforcement of and compliance with legislations at national and international levels. For details see: http://wems-initiative.org/

conflict management interventions in the BCs and adjacent PAs in the project landscapes to address biodiversity threats, encroachment and poaching. These will include: mobilization of local community support and partnership in the monitoring and reporting of biological conditions and biodiversity threats; updating of the Bhutan National HWC Management Strategy and using it as a basis for selecting HWC management interventions for pilot implementation; and evaluating and upscaling the best practices of HWC management in the target BCs and PAs.

Outcome 2: Biological corridor governance and management established, demonstrated, and linked to management of contiguous PAs

Output 2.1: Conservation management plans integrating CCA needs in place for the four BCs in the target project landscapes

87. The project will support the field assessments of the ecosystem and climate-adaptive functionality of the BCs. Revalidation and realignment of the BCs may be necessary based on the results of the field assessment of their functionality and in conjunction with the land use planning framework for integrated landscape management (under Output 1.1). This will specially be the case with regards to BC 8, which is a large and complex mosaic of sub-corridors, parts of which have been subsumed in Wangchuck Centennial National Park when it was created in 2008. For BC 8, conservation management planning process will be pursued with the aim to have a climate-adaptive CMP by the third year of the project. The process will primarily constitute a series of biodiversity and socio-economic surveys that integrate the appraisal of local climate change vulnerabilities and risks, and extensive stakeholder consultations. For the other BCs in the project landscapes, BCs 1, 2 and 4, their conservation management will be reviewed in the mid-term with special attention to assessing the specific needs for integration of CCA. Accordingly, support will be provided to update and enhance their CMPs to a standard that integrates CCA.

88. The technical capacity of the TFDs for biodiversity and socio-economic surveys and conservation management planning integrating CCA needs will be developed through staff training as well as through provision of necessary equipment to carry out field surveys, and document and analyse field data.

89. The CMPs will among other things articulate: the conservation strategies and activities (including CCA responses); institutional mechanisms including management linkage and coordination with the adjoining PAs; regulations, compliance and enforcement plans; climate-proofed land use plans; management oriented budgets; business plans to meet budget needs incorporating cost-efficiency measures and proposed additional sources of sustainable financing; and staffing needs. The development of the CMPs will be consistent with the updated Biological Corridor Rules and strategic plan (activities under Output 1.4).

90. ***Indicative activities under Output 2.1 include:*** review and revalidate the boundaries of the BCs and assess their ecosystem and CCA functionality, realign and demarcate them as necessary and produce new maps (2.1.1); develop the technical capacity of WCD and concerned TFDs on biodiversity and socio-economic survey methods that integrate appraisal of climate change vulnerabilities and risks for development of climate-adaptive CMP (2.1.2); carry out field surveys in BC8 using biodiversity and socio-economic survey methods integrating appraisal of climate vulnerabilities and risks, and prepare a climate-adaptive CMP for BC8 (2.1.3); and review the CMPs of BCs 1, 2 and 4 during mid-term stage and update them integrating specific CCA needs (2.1.4).

Output 2.2: Governance operationalized and management effectiveness enhanced for the targeted biological corridors, including strengthened personnel capacity and sustainable financing

91. Once the CMPs for the BCs are in place, project support is needed for establishment of basic infrastructure and development of capacity for the governance of the BCs. Under this output, the project will establish basic infrastructure such as park signage at key strategic locations, boundary pillars, and outposts and camping sites for patrolling and other field activities, and provide equipment for communications, field work, and mobility (essentially trail bikes) for the management of the BCs in the target landscapes. A series of awareness-raising activities through community meetings, communication and extension materials, and local festivals and fairs among others, will be organized to sensitize local stakeholders, with special attention to women's participation, about the concept, goals, regulations, and conservation/ socio-economic benefits of the BCs (note that national level awareness-raising on the BC system will take place through Output 1.4). Increased public awareness of the BC concept, regulations and conservation benefits is expected to bring about better public cooperation and support and aid governance. Given that conservation management will be a new area of work for the TFDs and that there is limited technical capacity for it within these divisions, support will also be provided to train target TFD staff in conservation management with particular emphasis on landscape-based approach, climate-adaptive management, and stakeholder engagement. A system of assessment of the management effectiveness of the BCs will be instituted through training of BC staff (including women staff) and a review and management response mechanism using existing forums and avenues such as the Annual DoFPS/ PA Conference.

92. ***Indicative activities under Output 2.2 include:*** establish basic infrastructure (e.g. signage, patrol/ camping sites and outposts, boundary pillars) and provide equipment essential for management of the BCs in accordance with their conservation management plans (2.2.1); raise awareness and understanding of the BC/PA concept, goals, regulations and conservation/ socio-economic benefits among the local stakeholders (2.2.2); develop the technical capacity of TFDs for conservation management of the target BCs with particular emphasis on landscape-based approach, climate-adaptive management, and stakeholder engagement (2.2.3); and institute a system of assessment of management effectiveness of BCs within the relevant TFDs to monitor and evaluate against METT baselines for each BC in the project landscapes (2.2.4).

Output 2.3: Law enforcement and biological monitoring capacity increased for key ecosystems for threatened species in the target BCs and adjoining Pas

93. Project support under this output will be directed towards institution of a system to monitor the biological conditions and functionality of the BCs and adjoining PAs with attention to key ecosystems and target species through GIS, high resolution habitat mapping and camera trapping among other things and training of staff including women staff in the application of the system. Capacity for law enforcement, particularly through institution of SMART patrolling system in the BCs and adjoining PAs, will be developed. This will essentially involve staff training and provision of equipment for mobility (trail bikes), surveillance, communication, safety and camping. Furthermore, the project will seek to enlist the support and participation of local communities – both men and women – in the monitoring of biological conditions and biodiversity threats through training and other appropriate mobilization strategies including sustainable incentives (with linkage to community-based conservation jobs under output 3.2). Local community engagement in biological monitoring will alleviate monitoring constraints posed by the dearth of staff and the vastness and rugged terrain of the BCs and PAs whilst fostering a more productive relationship between TFD/PA personnel and the local people. The project will also support the development and institution of inter-institutional and enforcement mechanism, involving relevant law enforcement agencies including local government

administrations, to combat poaching and illegal wildlife trade. In this respect, the project will among other things examine the suitability of introducing WEMS.

94. ***Indicative activities under Output 2.3 include:*** institute SMART patrolling in the management of the target BCs and adjoining PAs, and provide necessary training and equipment to the staff of these BCs/PAs (2.3.1); develop and institute biological monitoring system for key ecosystems and species, including high resolution mapping, in the target BCs and adjoining PAs and train their staff in the application of the monitoring system (2.3.2); train local communities and mobilize their participation in monitoring and reporting of biodiversity conditions and threats through sustainable incentives and/or community-based conservation jobs (link with output 3.2) among other things (2.3.3); and develop and institute inter-institutional coordination and enforcement mechanisms to combat poaching and illegal wildlife trade (2.3.4).

Output 2.4: Sustainable human wildlife conflict response strategies developed and systems strengthened through innovative mechanisms based on global best practices in the target BCs and adjunct Pas

95. A major conservation challenge in Bhutan, where large populations of mega-fauna occur in close proximity to rural settlements and farms, is the conflicts that arise between humans and wildlife as a result of widespread crop and livestock depredation and intermittent incursions on homes and human lives by wildlife. Persistent socio-economic losses from human-wildlife conflicts lead to retributory killings of wildlife and resentment of conservation policies. Under this output, the project seeks to review and update the Bhutan National Human-Wildlife Conflict Management Strategy, which was formulated in 2008 and long due for revision, to assess the lessons and build on the experiences and integrate new approaches and strategies. The updated Strategy will provide the basis for selection of HWC management interventions to be implemented on a pilot basis in the HWC hotspots and nearby villages in the target BCs and PAs. The pilot activities will be evaluated using the expertise of in-country research institutions to examine to what extent the pilot activities have been effective and are sustainable, and the best practices of HWC management will be accordingly scaled-up in the target BCs and PAs. Concurrently, the capacity of the TFDs/PAs along with that of relevant partners, such as the local governments, will be strengthened to effectively and holistically manage HWC and respond to HWC incidents. The impacts of HWC on the workloads and security of women will be considered in the implementation of these activities.

96. ***Indicative activities under Output 2.4 include:*** review and update/strengthen Bhutan National HWC Management Strategy 2008 progressively as a living strategic document (2.4.1); identify relevant and practicable HWC management interventions from the updated HWC management strategy and implement them in the HWC hotspots in the targets BCs and adjoining PAs, evaluate and scale-up best practices (2.4.2); and develop the capacity of the TFDs/ PAs and relevant partners, particularly the local communities, to manage HWC and respond to HWC incidents using holistic approach (2.4.3).

Component 3: Climate Adaptive Communities

Total Cost: USD$ 28,154,000 GEF/LDCF project grant requested: $ 9,154,000; Co-financing: $ 19,000,000

Without GEF-LDCF intervention (baseline):

97. Agricultural development support for rural communities in Bhutan has shown remarkable advances over the last decades. The 69 percent of rural population still dependent on their land for subsistence and cash income

generation is supported by a widespread RNR extension services for agriculture, livestock and forestry in all gewogs. The PPG study on Biodiversity and Socio-economic conditions, Wang (2016) (**Annex 21**), reports that agricultural land use in the 38 gewogs is only between 1.27% to 1.7% of the overall landscape, mainly concentrated along valley floors and in patches around settlements with forest cover ranging between 60% to more than 80% for the 3 landscapes. Average landholding of the smallholder subsistence farmers is in line with the national average with about 2.0ac of dryland and 1.5ac of wetland. The average household income amounts to Nu81,887 in the project gewogs with 59% contributed by agriculture and 22% by livestock. On average 84% of the households are food secure. Traditional crops produced include wheat, barley and buckwheat (at higher altitude), millet, sorghum, rice, potato, maize, cardamom, apple, mustard, chilies and vegetables, while livestock produce is mainly butter and cheese (partly from yaks in high gewogs). Cross cutting issues of climate change adaptation and biodiversity management are spread over different line departments of the government to deal with. Considering the small size and limited financial and human resources, it has been challenging to achieve an integrated approach across technical departments and agencies to address complex multi-sectoral issues.

98. According to the PPG study by Penjor (2016) on climate change vulnerability assessment and adaptation planning (**Annex 19**), Landscape 1 is the least vulnerable with a highest score on adaptive capacity and lowest score on exposure and sensitivity indices. Landscape 2 is seen as second most vulnerable, scoring the highest on exposure index and lowest on adaptive capacity, including some gewogs with most vulnerability to climate change impact, namely Toepisa and Dangchu gewogs and more vulnerability for Nangkhor, Trong, Korphu and Phobji gewogs. Landscape 3 is seen as most vulnerable, scoring the highest on exposure index and lowest on adaptive capacity, including gewogs with most vulnerability as described for Chumey and Samang gewogs and more vulnerability for Saleng and Nangkhor gewogs. Overall 70 to 75% of the respondent of the study of Wang (2016) reported that they experienced some form of extreme weather events in the last 5 years. Penjor (2016) states that 95.1% of the respondents reported to have observed increase in summer temperatures and 63.6% reported an increase in rainfall. Drought, wind and hail storms, delayed and prolonged rains, early/late onset of monsoon are climate related events farmers experienced, leading to reduced yield and income from crops. Decreasing water quantity and quality and drying water sources are impacting agricultural activities and productivity and water shortage is reported by respondents as the greatest threat to their food security. E.g., in Landscape 2 reported 58% of the respondents' loss of crops due to drought and 90% experienced damage to their crops and/or residences by wind and hail storms. Unseasonal and prolonged droughts result in reduced access and availability of sufficient water for agricultural production and livelihoods. Penjor (2016) reports a decrease of drinking water availability in 44.4% of the chiwogs consulted and a decrease of 42.4% irrigation water availability. The drying up of water sources is reported by 33.3% of the gewogs and conflicts in the community due to water shortage is reported by 22.2% of the gewogs, while 11.1% report no capacity in water management as climate change related issue. In the survey gewogs 153km of irrigation channels exist with 27.3% of the chiwogs having a water user association. Only 0.11% of the households consulted within the landscapes are adopting drip irrigation and 0.82% sprinkler irrigation.

99. The vulnerability of rural communities to climate change is not systematically addressed in rural development and its related planning, budgeting and implementation processes, which limits the resilience of livelihoods of the communities and is perceived as a barrier in the present baseline.

100. Remoteness of many rural mountain communities forms another major challenge, which limits access to public services, markets and knowledge and requires considerable financial investment for these isolated communities. Over the last decades, considerable investment has been made into improving physical infrastructure for rural communities (farm and gewog connectivity roads, irrigation channels). The rapid development of this infrastructure has increased the vulnerability of this system to the emerging climate extremes and access to communities and

markets is regularly interrupted (particularly in the monsoon) due to poor design and construction standards, which are not resilient and robust enough to withstand the climate extremes. Absence of proper drainage works, poor pavement conditions and lack of slope stability (bio-) engineering works are leading to recurrent blockades and closure of roads over longer periods with serious impact on livelihood conditions. The PPG study of Chamling (2016), assessment of gewog connectivity roads for enhanced climate resilience (**Annex 22**), reports that of the 14 gewog connectivity roads assessed only 4 have some degree of climate resilience, while the other roads are highly vulnerable to the climate change induced hazards because of poor design and sub-standard quality of construction, especially caused by absence or poor drainage works. Penjor (2016) reports that 44.4% of the gewogs consulted report damage to farm roads. Technical expertise on construction of climate resilient roads is highly inadequate and manuals and guidelines on Environment Friendly Road Construction EFRC) are absent. Similarly, critical irrigation systems are not climate-resilient and damaged or become defunct as a direct impact of flooding or slope instability processes.

101. At landscape level, community development projects fail to link with ecosystem and biodiversity management for improved resilience. The remarkable effort in conservation, as expressed in the network of protected areas and biological corridors has safeguarded ecosystem services of global value, but has negatively impacted livelihood conditions of neighbouring communities as exemplified through the human-wildlife conflict with crop loss and livestock depredation, for which no effective risk transfer mechanisms are in place. Wang (2016) reports for all 3 landscapes very high percentages of households affected by crop damage by animals (100%) and up to 77.5% to 88% of households affected by livestock predation in landscapes 2 and 3, while in landscape 1 only 20% of the households reports predation of livestock. In the PPG study of Sonam (2016), crop and livestock compensation, insurance against climate-induced disasters and wildlife incursions (**Annex 20**), experiences with crop and livestock insurance schemes are reviewed. It reports failure of most previous schemes due to high premiums asked from the farmers and their inability and unwillingness to pay high premiums together with a limited interest from private enterprises linked to the limited financial viability. Landscape 2 recorded the highest percentage of crop land affected by climate-induced factors (heavy rainfall, drought, frost, hailstorms, windstorms, and landslides), affecting 60% of households. Loss to wildlife of four primary crops was analyzed, namely paddy, maize, wheat and potatoes. Main wildlife species were wild pigs, deer, monkeys and elephants. Livestock depredation was identified as the major feature of human wildlife conflict, and concentrated in or near protected areas and biological corridors. Tigers, snow leopards, leopards, bears and wild dogs preyed on yaks, cattle, horses, mules, sheep and goats. During the 2002-2015 period, in the 3 landscapes, 46% (915 heads of livestock) of the national loss was reported. The highest incidences were reported from Landscape 2 with 619 incidents (corresponding to 35% of all incidents in the country). In comparison, only 36 incidents were reported in Landscape 1 and 260 in Landscape 3.

102. Livelihood conditions and its resilience are defined by weak commodity chains with limited value-addition opportunities for the rural producers, lack of diversification of land-based income sources and limited access to information, support and services to improve these livelihood conditions. At present, there is limited technical innovation towards a more climate-resilient livelihood system and practices at the local community level representing another barrier, leaving many rural communities vulnerable to the impacts of climate change. In the PPG study of Tobgay (2016), value chain and market analysis of selected RNR products, **(Annex 19**) the value chain of key climate-resilient commodities as potato, maize, cardamom, ginger and dairy are assessed, looking at key constraints, opportunities and giving recommendations to improve the vale chain development. The study reports on the presently underdeveloped value chains, limited information on climate change impacts on value chains, impact of droughts, falling soil fertility and an increase of pests and diseases on production, difficulties with access to markets due to road blockades. It further describes constraints with low seed replacement ratios, high

post- harvest losses, lack of adequate market knowledge and prices, processing flaws (absence of proper grading) and the inability to manage and monitor quality standards required for export.

103. These combined barriers result in an overall lack of opportunities and support for building livelihood resilience to the impacts of climate change.

With GEF-LDCF intervention (adaptation alternative):

104. This component will provide direct support to communities and their service providers to enhance climate resilience of community livelihoods. In addition, it will demonstrate how climate change adaptation and biodiversity conservation as well sustainable forest management objectives can jointly be addressed and create synergistic impact for sustainable and climate-resilient local development. 12 *dzongkhags* have been selected for targeted support within the three landscapes defined for project demonstration purposes (see **Annex 18** for landscape profiles). These landscapes were defined based on the presence of biological corridors with globally significant biodiversity and unique demonstration values, as well as national priorities for socio-economic development, and climate change vulnerability. A significant portion of the targeted landscapes lie within biological corridors and associated protected areas and are supported under Component 2.

105. Component 3 will introduce enhanced options for climate resilience for rural livelihoods through investment in an integrated range of activities related to agricultural production, post-production value addition and market analysis and information and knowledge transfer, including: climate-resilient irrigation and road design, crop diversification and creation of biodiversity conservation oriented livelihoods and jobs. Capacity of agriculture extension officers will be enhanced to promote SLM and climate resilient agricultural practices. Institutional capacity will be improved at the *dzongkhag* and *gewog* levels for potential climate risk transfer mechanisms identified for crop and livestock, including the piloting of insurance for risks for crops and livestock from climate disasters and wildlife damage.

106. In an adaptation approach, focus will be put on essential inputs and production for a transition toward a more climate resilient agriculture including sustainable land management (SLM) technologies to limit land degradation, improve soil fertility and enhance productivity. This is seen as a key approach to enhance climate-resilience of the agricultural production system on steep to very steep slopes, combined with innovative climate smart agricultural approaches and climate-resilient seeds and varieties, catchment protection and climate proofing of irrigation systems, support to climate smart livestock practices including support to improved fodder availability and stall feeding, integrated pest management and capacity building related to these inputs and innovative production approaches.

107. Linked to the more resilient production approaches, another cluster of activities aims to strengthen community livelihoods and enhance sources of income for vulnerable people in the demonstration landscapes through post-production value-addition, diversification, additional and innovative income generating opportunities and climate risk transfer schemes through insurance of vulnerable assets. Building on the value chain assessment carried out in the PPG Phase (Tobgay, 2006 – see **Annex 20**), which identified and prioritized commodities that can be produced from sustainable and climate-resilient livelihood practices and recommended measures to strengthen the existing value chains, the project will support value addition in post-production of priority climate resilient commodities, such as, amongst others, potato, cardamom, ginger, maize and dairy. In addition, the project will promote the commercialization of organic produce through the cooperatives system with attention to improved certification, branding, packaging and marketing to further develop the value chain and identify potential value addition. Another approach will be the piloting of community-based crop and livestock insurance schemes in selected hot spot areas

to provide protection and mitigation of impact against climate and wildlife damage risks, all geared towards the safeguarding and enhancing the livelihood contribution of agriculture. This piloting will be accompanied by training of local authorities and the community-based Gewog Environmental Conservation Committees (GECCs).

108. In addition to targeting agriculture, additional diversification of livelihoods is supported by (i) the piloting of PES/Payment for Watershed Services and REDD+ activities in group approaches, and (ii) community based nature conservation jobs such as community ranger system development and the exploration of the potential of eco-tourism development. These adaptive approaches will be complemented by targeted support on building capacity of the rural communities and local staff.

109. Furthermore, the component will enhance markets and market accessibility in support of rural climate resilient livelihood options. Building on the extensive public investments on roads, the project will support the upgrading and implementation of climate-resilient road construction guidelines and standards, specifically to enhance the structural integrity of these roads so critical in ensuring continuous access to markets. A simplified EFRC standard that is more suitable for sub-national administrations given their technical and financial constraints will be developed and be demonstrated in selected Gewog Connectivity roads in the target landscapes to showcase climate-resilient elements of improved road design and construction. Market access will also be improved through support to (i) small-scale processing machinery, (ii) improved packaging, (iii) post-harvest storage facilities and (iv) sales facilities to display and market farm produce. Finally, capacity development of farming communities will be supported to better recognize risks, linkages and opportunities in the market through improved access to market information to maximize value addition in the supply chain.

110. In order to promote gender equality and women's empowerment, the project will proactively engage women in its capacity development, user group formation, employment and informal labour opportunities under this component in line with the gender assessment and action plan (**Annex 12**). Some of the key areas for gender mainstreaming action have been identified in the following outputs and are also reflected in the results framework.

111. Additional detail is provided on the proposed activities in this component in view of the large GEF/LDCF investment and to provide adequate guidance for project implementation, see **Annex 24** for further information.

Outcome 3: Livelihood options for communities are more climate-resilient through diversification, SLM and climate-smart agriculture and supported by enhanced climate-resilient infrastructure

Output 3.1: Strengthened climate resilience and productivity of agricultural and livestock management

112. The project will support a range of activities under Output 3.1 aimed at optimizing inputs needed for improving the sustainable management and production of the agricultural and forest landscape system in order to improve climate-resilience and livelihoods of the rural communities residing in and in close proximity of PAs and BCs. Under Output 3.1 SLM interventions including traditional practices are supported to reduce land degradation, enhance production and increase the resilience of the agricultural sloping lands against the negative impacts of extreme climatic events. The project will support climate-smart agricultural practices and the adoption of climate-resilient crop varieties better suited to withstand water-stress or having a shorter cropping life. The project will support critical investments to improve irrigation water availability through rehabilitation and construction of irrigation channels/schemes, water reservoir construction to facilitate a more sustainable supply of irrigation water and winter cropping and introduction of innovative climate-smart irrigation approaches. Complimentary to climate-smart agricultural practices and SLM, the project will support low-emission livestock practice management and enhanced

management of grazing land and fodder production (approximately 1,000ha of improved grazing land and agro-forestry). Institutional capacity development for government staff and rural communities will be assisted to proactively support the adoption and implementation of climate-resilient agricultural production, low-emission livestock practice management and SLM. Lastly, under Output 3.1, activities related to capacity building on integrated pest management will be supported to improve the resilience of farming communities against potential pest and diseases, including mitigation options with bio-pesticides to support organic farming.

113. During the course of implementing the activities below, consideration will be given to meeting women and men's practical needs and priorities in the improvement of drinking and irrigation water supplies, seeds and seedlings inputs, agricultural machinery, equipment and tools, electric / solar fencing against wildlife incursions, and entrepreneurship skills. These needs and priorities are presented in more detail in the PPG gender analysis report, Mokthan (2016) (**Annex 14**). Imparting training to women, youth, boys and girls on vegetable cultivation should be prioritized, as this provides a source of direct income for these groups and is consistent with organic and climate-smart farming approaches. Organizing, scaling up and involving women in farmers' study tours is recommended for exchange of knowledge and skills through lessons learned on agriculture, livestock and forest management. To reduce the impact of workloads of women, gender-friendly farm mechanization should be factored in through the promotion and use of labour-efficient and easy to use agricultural machinery and tools for harvest and post-harvest practices of maize, rice, wheat, buckwheat and barley and fuelwood efficient (or alternative fuel) cardamom driers.

Indicative activities under Output 3.1 are as follows:

114. ***SLM interventions including traditional practices supported to reduce land degradation and enhance climate resilience (3.1.1):*** The project will support, in light of perceived climate risks and impacts, a range of SLM approaches and techniques to limit soil erosion on the steep Himalayan slopes, improve soil moisture availability and workability and enhance soil fertility and productivity. Based on the best practices piloted, rolled-out and documented by the GEF-funded SLMP project[57] (2006-2012), a series of agronomic, vegetative and structural measures will be implemented to enable a more sustainable management of these critical agricultural lands in the 12 Dzongkhags of the project (e.g. vulnerable land identified in Gakiling (under Sangbaykha Dungkhag), Haa, Landscape 1). An area of 2,000 ha will be supported by the project as recommended in the REDD+ and carbon assessment (**Annex 23**).

115. ***Develop and promote climate-smart agricultural practices through support of climate-resilient crop varieties and Integrated Pest Management (3.1.2):*** The project will develop and promote climate resilient crop varieties to engage and build capacity of farmer groups in testing alternative crops (drought and water stress resistant, short-life varieties), agronomic techniques and integrated pest and soil management, etc. Farmer Field Schools will be used as a method to build awareness and skills of farmers with demonstration of good practices on farmer plots in the communities. These activities will include support to organic farming systems with a focus on inputs need for enhanced organic production (climate- and pest-resilient crop varieties, manure and composting methods etc.). A second focus of this activity will be the capacity building effort on integrated pest management in the target landscapes.

116. ***Support watershed management and irrigation interventions through climate-resilient irrigation channel construction, rehabilitation, small-scale reservoir construction and innovative irrigation approaches (3.1.3).*** The project will assist the 12 project Dzongkhags with targeted interventions to enhance a sustainable access and

[57] Sustainable Land Management Project (SLMP), 2006-2012, WB-GEF financed, implemented by NSSC, DoA, MoAF, RGoB.

availability of irrigation water. Irrigation water access is a key limitation for agricultural activities (as documented in the CCVA study, (**Annex 15**) and the project will support a range of interventions to improve irrigation conditions and reduce vulnerability to climatic extremes that have had negative impact on the integrity and functionality of the irrigation systems. Irrigation water will enhance the productivity of wetland complexes, but will also be beneficial for enabling winter cropping at lower altitudes. Irrigation interventions and activities that will be supported will include:

- Rehabilitation of defunct or damaged irrigation channels. Often channels are damaged by flash floods at intake points (inlet) related to sudden flash floods with severe impact related to flaws in design and choice of location of the inlet structures and along channel sections with mass movement where likely slope instability issues have not been recognized in alignment studies. In these slope sections, alternative solutions will be supported as HPE pipe supply to avoid recurrent damage linked to extreme weather events. Detailed feasibility assessments will be undertaken by Dzongkhag and Gewog staff to establish root causes of the damage and the required rehabilitation works, including possible mitigation measures to prevent future or repetition of flood or slope instability damage; the project will support prioritized irrigation schemes through assessments of DoA.
- Construction of new irrigation channel alignments where rehabilitation is not feasible or in places where wetland complexes or winter cropping on dryland require additional irrigation water supply, also based on the prioritization assessments of DoA.
- Water harvesting approaches to store rainwater from rooftops and other sources for use in homestead vegetable gardens and/or winter cropping to reduce dependency on monsoon related functioning of the irrigation systems and broaden the cropping period;
- Construction of small earthen ponds and/or storage tanks as smalls scale reservoirs for irrigation water supply during dry spells and/or for winter cropping;
- Innovative irrigation technologies as sprinklers and drip irrigation as water saving approaches to enhance production under conditions with limited water availability;
- The project will support for all these irrigation development support activities the formation of water users' associations to train the users in management and maintenance of the irrigation infrastructure and to establish functional by laws and group agreements to optimize maintenance and sustainable use and prevent future conflicts between users. Women should be prioritized in the membership of water user associations.

117. ***Promote and support low-emission livestock practice management through enhanced management of grazing land and fodder production, stall feeding and breed improvement (3.1.4):*** To increase local fodder availability and access to improved grazing land, the project will assist in developing 1,000 hectares of grazing land and/or agro-forestry areas to support sustainable livestock husbandry. This is intended to reduce present dependency on free range grazing in forest areas, which has though the grazing pressure a negative impact on biodiversity, is labour-intensive and seen as contributing to the human-wildlife conflict with cattle falling regularly prey to predators. Improved fodder grasses and fodder trees with higher nutritional properties will support a gradual transition to a cut-and-carry fodder system, better fit for improved breeds with higher production potential. The project will also support low-emission livestock practices through promotion of stall feeding, supply of improved breeds and climate-smart native livestock conservation in support of the climate-smart livestock practices as defined in the INDC.

118. ***Enhance institutional capacity at dzongkhag and gewog levels for extension services to promote sustainable land management, climate-resilient agricultural and low-emission livestock practices (3.1.5):*** To proactively support the adoption and implementation of climate-resilient agricultural, low-emission livestock and sustainable land management practices the project will provide capacity building for RNR staff at Dzongkhag and

Gewog level. This will enhance their knowledge of best practices, group approaches and innovations and support their capacity in their extension work with rural communities. The capacity building will involve ToT on technical domains, but will also include group formation training of extension staff and actual group formation and support. Training activities will be focused as much as possible at farmer field level to serve as demonstration sites and provide actual support to farmers. Dzongkhag RNR staff will be leading in this activity with technical support from central agencies (DAMC, DoA-NSSC, DoL). Through this activity, a postgraduate studentship in integrated landscape management / climate change adaptation / sustainable rural development will be supported as contribution to sustainability of project outcomes and capacity building. Women will be proactively considered for such capacity building training.

Output 3.2: Community livelihoods improved and sources of income diversified and enhanced in the target landscapes

119. Under Output 3.2 the project will invest in interventions aimed at improving community livelihoods, diversification of income sources through a combined effort to enhance the post-production process, add value in key commodity supply chains, including organic produce, generate innovative and additional income sources from RNR products, conservation employment and valuation of environmental services and create opportunities to get insurance coverage for climate and HWC related crop loss and livestock depredation. This output will proactively consider providing opportunities for female entrepreneurship, addressing women's strategic needs and priorities on awareness and capacity building through education and training on subjects such as drinking water and sanitation technology, tailoring, entrepreneurship skills and micro-finance saving schemes. It should also create awareness of job opportunities and requirements for unemployed youths in villages, leadership, communication and decision-making skills to capacitate women's participation as stepping stones. It should also strengthen cooperatives and farmers' groups on commodity value-chain addition and management with women's executive roles in agriculture, livestock, forestry, water, health, human-wildlife conflict, crops and livestock insurance schemes and environmental management groups in decision-making and empowerment. ***Indicative activities under Output 3.2 include the following:***

120. ***Promote value addition in supply chains of priority climate resilient commodities (3.2.1):*** the project will support value addition and assistance for the development of the supply chains of priority climate resilient commodities, such as potato, maize, cardamom, ginger and dairy. Based on the recommendations of the value chain assessment (**Annex 16**) these commodities are key livelihood sources within the project landscapes with ample opportunities to improve add value along the supply chain. Value-addition to dairy products, as a key livelihood resource of rural communities, will be included. As sub-activity, the project will assist, with technical assistance from NSC, in establishment and management of community seeds banks of the key commodities with the opportunity for community members to gain additional income as seed supplier. The project will collaborate with DAMC for technical support in value-addition in post-production and assist in linking the communities with existing farm shops for local commercialization.

121. ***Promote commercialization of organically-produced farm produce through cooperatives system (certification, branding, marketing: value chain development) (3.2.2):*** Through this activity the project will promote commercialization of organically-produced farm produce (supported under Activity 3.1.2) through post-production value-addition making use of the cooperatives system (with support of DAMC). This will involve support to certification of organic (niche) products, if possible in partnership with private enterprises, branding of (certified) organic products for the internal and international market and targeted marketing of these products based on the premise of 'Brand Bhutan' espoused in the Economic Development Policy 2010.

122. ***Pilot community-based crop and livestock insurance schemes in selected hot spot areas to provide protection and mitigation against climate and wildlife damage risks, including capacity building at Dzongkhag and community level (GECC) for potential climate risk transfers (3.2.3):*** Through this activity the project will support the piloting of innovative insurance schemes to provide rural communities the possibility to be compensated for damage to their crops due to extreme weather events and due to wildlife. Wind- and hail storms, high-intensity rain storms and related flooding, untimely precipitation during harvest time and late or insufficient rains during paddy transplantation time can all cause considerable damage to crop yield and livelihoods of farming communities, for which they have very few options for financial compensation. The project will assist in exploring emerging insurance approaches, in follow-up of the recommendations of the PPG study on HWC and insurance mechanisms (Sonam, 2016, Annex 20), such as micro-finance based micro-insurance mechanisms to reduce premiums for households, a key constraint for participation and sustainability of previous trials. The project will support additional efforts to explore the introduction of global best practices on crop and wildlife insurance schemes, best fit for the Bhutanese conditions. Insurance cover will also include damage to crops caused by wildlife (the human-wildlife conflict) as bear, deer, wild boar, elephants and monkeys. Besides the crop insurance, the project will also pilot livestock insurance schemes to alleviate the impact of predators (tiger, leopard, bear, wild dog etc.) on livestock. The insurance schemes will be piloted in hotspot Gewogs identified in the CCVA and HWC study (**Annex 19 and 25):** Bjena, Korphu, Patala, Phuntenchu, Dovan, Jigmecholing, Bji, Tsento, Phobji and Nubi. In addition to the development and piloting of insurance trials, training will be provided by the project to build institutional capacity of Dzongkhag and Gewog representatives and Gewog Environmental Conservation Committees (GECC) on potential climate risk transfer mechanisms for crop and livestock. More frequent extreme weather events as wind- and hail storms, high intensity rainfall events and drought periods are seen as an increasing risk for livelihoods as crop yields and household incomes can be seriously affected. The innovative crop and insurance mechanisms, including potentially micro-insurance/micro-finance schemes, will be piloted and supported under this activity, but require human resource development of the government and local administration staff involved to set-up and manage these insurance schemes and build awareness at community level. A total of USD750,000 has been allocated for the actual roll-out of the pilots for crop and livestock insurance demonstration schemes at gewog/chiwog level. The GECCs are proposed as community entities to train, support and facilitate the insurance trials. These are intended to be micro-grants to community bodies to facilitate the insurance trials and promote the uptake of cost-effective local schemes to insure farmers against climate- or wildlife-induced asset loss. The follow-up design in the first project year should describe in detail how this will be done. The issuance of such grants will be made in accordance with UNDP Guidance on Micro-Capital Grants and should be subject to proper due diligence procedures.

123. ***Safeguard environmental services (PES, PWS and REDD+) and generate alternative revenue streams through watershed protection (3.2.4):*** This activity supports the development of PES, PWS and REDD+ pilots in community forests and other critical catchment areas to generate alternative revenue streams for CFMG members and support WUAs in their efforts to enhance access to water. Based on initial experiences of the WMD and the SFED with PES and REDD+, assistance will be provided for the set-up of pilots in the 3 project landscapes. Indicative activities include: i) sensitization and awareness building of CFMG members on PES and REDD+ , ii) development of participatory MRV approaches to establish the forest cover, biomass and related carbon stock, iii) enrichment plantation and rehabilitation of degraded forest sections in the CF, iv) climate-resilient micro-watershed protection interventions to safeguard a sustainable supply of water quantity and quality, including water source protection measures and community-based water sanitation approaches (such as community-based vector control and management linked to climate change effects), and v) explore potential buyers of carbon credits or other environmental services and develop benefit-sharing mechanisms with a focus on multiple or co-benefits, beyond

carbon sequestration, such as biodiversity and revenue for the CFMG members. This activity is linked with the capacity building and knowledge sharing activity under output 1.3.

124. ***Support conservation livelihood opportunity development such as community ranger system establishment and other conservation jobs (3.2.5):*** Under this activity the project will facilitate the creation of new employment opportunities for community members residing in or close to the PAs and BCs. These new jobs, such as community rangers, will support the PA and BC management teams in their various conservation tasks, such as patrolling, maintenance, firefighting and awareness raising and outreach activities. Training will be provided through DoFPS, TFD and the PAs and BCs. Besides the direct support to community members through employment generation, this activity will support the awareness building of community members on the importance and value of biodiversity conservation in the neighbouring PAs ad BCs and strengthen the field presence and efficiency of the PA and BC management teams. Lastly, through these activity opportunities will be explored for community-based eco-tourism linked to the potential of the PAs and BCs (e.g. for the JKSNR in Haa). This should take account of and build on RSPN's successful piloting of sustainable community based tourism in Phobji and Gangtey (2011-2014) and Haa (2015-17), and provide opportunities for engagement of women in productive work.

Output 3.3: Transformation of market access is demonstrated for selected rural communities to enhance their climate resilience

125. To improve physical access to markets, enhance commercialization of staple and niche produce and build capacity and knowledge on market information (prices, opportunities, risks etc.), a suite of activities is supported under Output 3.3. This includes support to developing climate-resilient and environmentally friendly road construction guidelines and standards, the show casing of best practices in climate proofing Gewog-Connectivity roads on selected stretches to ensure a more sustained usage during monsoon and extreme rainfall events, investments in post-harvest loss infrastructure and processing and packaging and sales facilities and improving access to up-to-date market price information on key commodities. Implementation of this output should include gender-friendly mechanization through promotion and use of labour-efficient and easy to use machinery and tools for post-harvest practices of maize, rice, wheat, buckwheat and barley and fuelwood efficient (or alternative fuel) cardamom driers. Women should also be proactively considered for EFRC road construction work in appropriate roles. Access to market information should take full account of gender disaggregated needs (eg for communication and transportation), as women often play a prominent role in marketing activities. ***Indicative activities under Output 3.3 include:***

126. ***Develop climate-resilience guidelines for road infrastructure, adapting to existing EFRC guidelines and standards (3.3.1):*** Road alignment, design, construction and maintenance are complex on the very dynamic Bhutanese mountain slopes. This activity will support the development of improved guidelines and standards for alignment, design, construction and maintenance of Gewog Connectivity roads, taking into account the present climate vulnerability of this key infrastructure. Existing EFRC guidelines and standards and international best practices will be studied and adopted to enable a more climate-resilient approach to rural roads development. Focus will be put on bio-engineering techniques for stabilization of mass movement sections along road alignment sections and the design and application of appropriate drainage systems to withstand high-intensity rain storms without causing downslope damage to road sections or agricultural land. These guidelines and standard should ensure lower long-term maintenance costs, less disruption during monsoon and a longer and sustainable use of the climate-proofed sections to ensure access to markets and services for remote communities.

127. ***Improve and upgrade prioritized Gewog Connectivity road stretches for enhanced climate resilience (3.3.2):*** Based on the climate-resilient guidelines and standards developed under 3.3.1, the project will support show-casing of best practices to upgrade and climate proof Gewog Connectivity roads in the project landscapes. These road sections are intended to serve as examples of best practices and to pilot the improved guidelines and standards developed. Based on the Gewog Connectivity assessment (**Annex 18**) and further consultations suggested Geowog Connectivity road segments include i) the Shingkhar-Nimshong GC road, where black topping and critical drainage works are needed to enhance climate-resilience of the present road alignment (landscape 3) and ii) the Wangdigang-Zhalingbi GC road near Reotala, where a range of bio-engineering techniques will be showcased along a very fragile slope with frequent blockades and disturbances (landscape 2). Considering the relatively high costs involved, the project will focus on showcasing best practices along limited sections with co-financing being used to roll out climate proof remaining road sections in the project landscapes. The improved and upgraded road sections will serve as demonstration sites for Government staff and contractors to showcase the field implementation of the guidelines developed under 3.3.1. Engagement of women labourers should be prioritized for suitable contracted tasks.

128. ***Improve marketing infrastructure through development of post-harvest storage and packaging and processing and sales facilities (3.3.3):*** The project will support post-harvest storage facilities as silos to limit post-harvest losses related to unfavourable climatic conditions (untimely rains and droughts) and animals and diseases affecting harvested crops. Other activities that will be supported are: i) processing with small-scale (gender-friendly) farm machinery to reduce labour required and optimize production. This will include electric dryers for cardamom processing to replace fuel wood intensive kilns, ii) improved packaging to better preserve farm produce and enhance market penetration, and iii) development of sales facilities such as market sheds to display farm produce and professionalize and enhance commercialization.

129. ***Improve rural community access to market and weather/climate information, including commodity prices either through Gewog community information centers, farm shops, mobile applications, mass media or other innovative applications (3.3.4):*** The project will improve rural community access to market information such as commodity prices of key crops and nice products, with linkage to Gewog community information centres, farm shops and improved public information sources. Rural communities in Bhutan still have very limited access to and knowledge of actual commodity prices in the market place and are therefore disadvantaged in their dealings with buyers and middlemen. Through this activity intervention will be supported to advance real time market price information access for rural communities through innovative applications, such SMS services, mobile apps or mass media. Through these information channels to be developed, it is foreseen to include agro-meteorological information on weather and climate (seasonal forecasting/ weather bulletins) to be developed through support of the GCF project[58] under formulation.

130. ***Develop capacity of farmers to recognize market risks, linkages and explore opportunities (access to market) to maximize value addition in the supply chain (3.3.5):*** Under this activity the project supports capacity development of farmers, cooperatives and government officers/NGOs to recognize risks, linkages and opportunities in markets and value chains for climate-resilient goods and services and to apply this knowledge through relevant skills through training and extension services. It includes the review of mechanism for prioritized commodities to link farmers (producers) directly to formal institutions, buyers/wholesalers or processors to fetch better prices for their produce. The activity will include the strengthening of the organizing and coordinating capabilities of farming

[58] GCF Feasibility Study: "Supporting Climate Resilience and Transformational Change in the Agricultural Sector in Bhutan" GNHC-UNDP, October 2016.

communities for production and marketing of the products/services through market linkages, value addition and strengthening market information to fetch better prices and improve community livelihoods. The activity will also facilitate agribusiness promotion, e.g. through annual agriculture business exhibitions, showcasing opportunities to local communities.

Component 4: Knowledge Management and Monitoring and Evaluation

Total Cost: US$2,695,000; LDCF project grant requested: US$695,000; Co-financing: US$2,000,000

Without GEF/LDCF intervention (baseline)

131. Information and knowledge in relation to integrated forest and agricultural landscape planning and management and climate change resilience in Bhutan is limited, often anecdotal and mostly restricted to a sectoral approach in scope and access. An integrated cross-sectoral and landscape-based approach is missing. This inadequate knowledge and information sharing on natural resources, ecosystem services and climate resilient livelihood options is recognized as a key barrier to progress in achieving integrated forest and agricultural landscape planning and management and climate change resilience. It reflects a relatively weak learning environment and related extension services for livelihood resilience and a result of a lack of opportunities for knowledge exchange on integrated natural resource management, climate change and conservation approaches.

132. The SAPA for the RNR Sector (2016)[59] makes the following conclusions regarding data and knowledge management: the research agenda to address the effects of climate change on agriculture and food security is inadequate. In forest and biodiversity, knowledge on the state of forest, ecosystems and ecosystem services as well as on species in the face of climate change is little known. Similarly, inventory of water resources has been conducted and the information on water resources is very basic. Meteorological data is limited to temperature, rainfall and humidity for less than two decades from a limited range of stations and is inadequate to draw conclusions for climate change analysis and acts as an impediment in developing and implementing proper adaptation measures. Therefore, the SAPA's plan of action relating data and knowledge management is given highest priority for implementation. In addition, the SAPA (2016) notes that there is a lack of national capacity across the board in dealing with climate change and its effects on forest and biological diversity, food security and water resources. In general, there is poor or no understanding on impacts of climate change on agriculture and food security, water resources and forest and biodiversity at all levels in terms of climate change on awareness and education. The specific areas of capacity that need to be addressed include research and assessment, monitoring, extension and training, and policy development. It recommends that concerted efforts must be made towards educating the people on the impacts of climate change on agriculture and food security, water resources and forest and biodiversity. This will ensure the country's preparedness to reduce vulnerability against the impacts of climate change through awareness and strengthened capacities of all stakeholders.

With GEF/LDCF intervention (additionality):

133. Through this component, the project will ensure that information and knowledge accumulated and produced within the project will be documented and made available for wider communication and dissemination of project lessons

[59] RNR Climate Change Adaptation Program, MoAF, RGoB. The Renewable Natural Resources Sector Adaptation Plan of Action, 2016 (SAPA 2016).

and experiences to support the replication and scaling-up of project results. Project support will enable the strengthening of institutional, financial and human resource capacity for knowledge management and M&E for integrated climate-resilient forest and agricultural landscapes through review and synthesis of existing knowledge, identification of resource gaps and development of strategies to fill these gaps and strengthening of digital repositories of biodiversity information on PAs and BCs. Project support will also be geared towards enhanced generation, documentation and sharing of best practices and knowledge in sustainable management of forest and agricultural landscapes and climate resilient livelihoods. This will include case studies and technical reports to document best practices and traditional (indigenous) technical knowledge and sharing and presenting these materials at national and international meetings. While the potential scope of this knowledge is very broad, some key themes can be prioritized that will help to inform the project interventions. As a basis for integrated landscape management there needs to be a stronger information base and accessibility to information on the status and trends of Bhutan's forests, wetlands, water resources and biodiversity, the ecosystem services that they provide, the value of these services, and the threats these resources are facing. To support increased awareness of climate change risk and impacts and to help underpin policy-making, planning and resource allocation, improved knowledge is needed on local exposure of ecosystems, water resources and rural community livelihoods to climate change, and more accurate local assessments of vulnerability in view of Bhutan's climatic diversity due to its extreme topography. The project should also support improved understanding of the nature and significance of ecosystem-based adaptation, and how this supports the resilience of rural communities. In relation to the functioning of the biological corridors, it is important to document and share information on how these contribute towards the ecological integrity and stability of the country through their ecosystem services, and towards the viability of populations of key species of wildlife. The project will support the documentation and sharing of traditional (indigenous) technical knowledge of sustainable land and forest management and climate resilient livelihood practices to inform interventions in the project landscapes. Climate smart agriculture, SLM and sustainable livelihood interventions need to be informed by knowledge on suitable crop and livestock varieties with greater adaptations to limited arable land and extreme temperature and rainfall events, suitable agro-forestry or agro-silvo–pastoral systems to reduce soil erosion and run-off on steep slopes, cropping patterns, irrigation methods, etc. These will also be supported by sharing information from other similar projects in Bhutan and neighbouring countries (eg available through ICIMOD). Information and knowledge generated by the project will be shared through a project website, social media and a range of outreach and communication materials. Lastly, the project will support a rigorous project implementation review or M&E process to take stock of progress and constraints, support adaptive management and coordination between the various project components, and document and share lessons learnt. This will include a specific assessment of project impacts.

Outcome 4: M&E and Knowledge management system established to support sustainable management of forest and agricultural landscapes and climate-resilient communities

Output 4.1: Institutionalized knowledge for ILM and Climate Change Resilience

134. Under Output 4.1 the project will support the strengthening of institutional, financial and human resource capacities for long term knowledge management and M&E for integrated forest and agricultural landscapes and climate resilient livelihoods. This will include stock taking and review of existing (sectoral) information sources and documents and related best practices and lessons learnt and mapping of existing knowledge gaps, based on this analysis (taking account of related initiatives such as the GCCA, NAPA 2 project and SLM project (see Partnerships section below). Human resource development and related institutional and budget support will be provided to train staff for improved long-term knowledge management. Linked to this capacity development, the

project will assist in improving the existing biodiversity portal with updated and more comprehensive information on the PAs and BCs, including detailed GIS maps of the BCs.

135. ***Indicative activities under Output 4.1 include:*** Review and document existing information and lessons on ILM and climate change resilience (4.1.1); identify and strengthen relevant institutional base(s), human and financial resources for long-term knowledge management system (4.2.2); and, strengthen the biodiversity portal with information on PAs and BCs, including upgraded and detailed maps of the BCs (4.1.3).

Output 4.2: Enhanced generation, documentation and sharing of knowledge and best practices in ILM and climate resilient livelihood practices

136. Under Output 4.2, the project will assist in improved generation and documentation of emerging good and best practices in integrated management of forest and agricultural landscapes and climate resilient livelihoods. This will include a series of case studies, targeted research and assessments to document and present best practices, based on innovation and global best practices piloted through project support, but also including traditional (indigenous) technical knowledge of sustainable land and forest management and climate resilient livelihood practices, including traditional grievance redress mechanisms for resolving resource management disputes. Study results will be published, disseminated and presented at various national and international knowledge sharing events, which will be supported and organized by the project. The project will make use of a targeted communication strategy to systematically document, publish and share information emanating from project activities and knowledge sharing events, including making use of websites and social media.

137. ***Indicative activities under Output 4.2 include:*** Develop a project communications strategy through a consultative process; report against it and update it annually (4.2.1); identify, prioritize and document case studies to highlight best practices and traditional knowledge, gender roles and traditional grievance redress mechanisms for resolving resource management disputes (4.2.2); support national and regional focus group discussions and exchange visits, including sustainable community livelihoods and HWC and innovative conservation approaches. Document and disseminate results of above events (4.2.3); develop and manage project website / web pages / social media and update regularly with project news and publications, with discussion forum and links to stakeholder websites (4.2.4); and share learning on gender mainstreaming and SESP integration into project implementation (4.2.5).

Output 4.3: Project monitoring and evaluation system in place and used to inform project management decision-making

138. To develop and implement an effective M&E system, the project will assist under Output 4.3 a series of activities to enable well-informed and participatory project management decision-making and stock taking and dissemination of emerging good and best practices to broader local, national, regional and global stakeholders. This will include the regular review and updating of the M&E plan (**Annex 2**) with indicators, baselines and targets, annual work plans and budgets and the generation of comprehensive monitoring and progress reports. The project will ensure that gender mainstreaming and SESP requirements are met as an integral part of the project planning, implementation and M&E cycle. Internal annual review and planning workshops will enable all key stakeholders to be actively involved in a participatory M&E process and that an efficient platform is provided for open information exchange to support project management and knowledge generation, including timely flagging of constraints and challenges and project mitigation approaches. Lastly, learnings from the MTR and TE will be shared and acted on to ensure optimal implementation efficiency and knowledge generation.

139. As part of the M&E plan, the project will carry out an impact evaluation, making use of a quasi-experimental design to capture the causal impact of the project for distinct project topics and applying a survey with household questionnaires at inception and project completion stages (see **M&E Plan section** and **Annex 15).** The impact evaluation will involve subcontracting a research team to design and implement a detailed evaluation methodology to determine baseline conditions in Year 1 and the overall impact of the project in the final year. The project has three main technical components with different activities under each, making for multiple treatment of households, farmers, communities and policy makers in an evaluation. However, not all such treatments are amenable to rigorous impact evaluation. Therefore, the impact evaluation will address a subset of the activities components, with special attention given to component 3 of the project that relates to community resilience and improved livelihoods.

140. ***Indicative activities under Output 4.3 include***: Review and update project M&E indicator baselines and elaborate workplans during project inception period (4.3.1); Conduct impact evaluation and quality assurance according to UNDP requirements and develop capacity for effective monitoring and evaluation and results-based management (4.3.2); Disseminate results of MTR and TE and facilitate learning arising from findings and recommendations; update GEF TTs for MTR and TE (4.3.3).

ii. Partnerships:

141. The overall coordination of the GEF/LDCF project will be led by the GNHC-S as the Implementing Partner for the project. In view of the relatively large geographical area covered by this project, and the focus on integrated forest and landscape management, it will engage with a wide range of government agencies and other stakeholders at all levels, and will both build on the results of, and intersect with several significant initiatives.

142. This project will ensure complementarity with other projects that are currently in appraisal and scoping stage, namely the national adaptation plan (NAP) and GCF project proposal on Smart Agriculture which UNDP is taking the lead in preparation; and World Bank's Pilot Program for Climate Resilience. From the government's side, all the project preparations are coordinated by GNHC as the GEF OFP, GCF NDA, and WB's partner for PPCR. GNHC as the coordinating agency for all these project proposals have clearly indicated to the partners on spatial coverage and the focus of the project interventions. For the current project, the focus is in the central region of the country covering four biological corridors and three parks. The GCF project sites will cover six southern & western dzongkhags of Samtse, Sarpang, Tsirang, Punakha, Wangdue Phodrang and Trongsa. GNHC proposes to focus the WB PPCR/CIF project towards eastern Bhutan. These geographical considerations are explained further in the Strategy section, while **Annex 28** describes all the related initiatives and the table below summarizes the connections with the components and outputs of the present project.

143. The UNDP Bhutan CO is supporting the Government to develop a National Adaptation Plan (NAP) process for the country. A project on NAP is being developed in collaboration with the NEC Secretariat and support from NAP Global Support Programme for LDCs, to be submitted to under the GCF readiness window. GCF resources will be used to mainstream climate change adaptation into national development policies and planning. Three key outcomes are proposed: i) establishing a climate and socio-economic information and knowledge management system to guide climate-resilient policy and decision-making; ii) appraising adaptation options for implementation, including for vulnerable regions, population groups and sectors; and iii) establishing a National Adaptation Plan (NAP) process to support Bhutan's medium- and long-term adaptation. Coordination with the GEF/LDCF project would be achieved through the NEC-S, which leads on NAP and is on the Technical Advisory and Coordination Committee for this project, while both UNDP CO and GNHC-S would facilitate this process.

144. Considering the synergistic potential between the GCF project and the GEF-LDCF project, close consultation has been undertaken between the key stakeholders to ensure avoidance of geographic and thematic overlap and to align implementation fields. The projects converge thematically in the fields of SLM, CSA, watershed management and irrigation, sustainable livelihoods, market access and climate/risk information. As an outcome of these consultations, it was decided that support to the generation and application of agro-meteorological information will be supported by the GCF project, whereas the development of innovative crop insurance pilots, as a mechanism for climate risk transfer, will be initially take up by the GEF-LDCF project and potentially scaled-up by the GCF project to maximize impact. The climate resilient EFRC manual and guidelines to be developed by the GEF-LDCF project will be applied by the GCF project in supporting construction of selected GC roads. There is geographic overlap in Wangduephodrang, Trongsa, Sarpang, Zhemgang, Tsirang and Dagana Dzongkhags, which requires coordination to ensure specific geographic complementarity or thematic focus in these common areas. The GEF-LDCF project will target specific gewogs close to Protected Areas and Biological Corridors, whereas the GCF project targets whole dzongkhags.

145. A highly significant venture that this project aims to collaborate with and contribute towards is Bhutan for Life (BFL)[60], an innovative funding initiative by RGoB and WWF that aims to provide a sustained flow of finance to maintain the country's PAs and BCs in perpetuity. The goal of BFL is to "mobilize, in a single agreement, all the governmental, financial and other commitments needed to develop Bhutan's protected areas system and maintain it in perpetuity. The project will join forces with the BFL for its sustainable financing component, providing direct inputs into identifying and establishing new domestic streams of financing. During inception and PPG phase the project teams have been in close dialogue to ensure complementarity of outputs and activities, avoid geographic thematic and geographic overlap and to plan for sustainability of planned interventions and mechanisms taking into account that BFL will continue until 2030. The results of these discussions are summarized in **Table A25-1** in **Annex 28** that shows the GEF project activities against the corresponding BFL activities and milestones.

Table 3. Intersection of related initiatives with project outputs

Related Initiative	Intersections with Components and Outputs of the Present Project			
	C1	C2	C3	C4
A: NAPA II			3.1, 3.4	4.1
B: LGSDP	1.1,1.6		3.1	4.1
C: EU-GCCA			3.1,3.4	4.1
D: NAP GSP	1.1			4.1
E: UN-REDD /WB FCPF	All outputs		3.2	4.1
F: GCF			All outputs	4.1
G: BIOFIN	1.1,1.3,1.6		3.2	
H: REAP	1.6		All outputs	4.1
I: IFAD-CARLEP			All outputs	4.1
J: BFL	All outputs	All outputs	All outputs	All outputs
K: WWF-TRAMCA	1.2,1.4	All outputs	3.2	4.1
L: ICIMOD-KLCDI	1.2	All outputs		4.1
M: WB/GEF5-HANAS	All outputs	?	?	4.1
N: WB-SLMP			3.1	4.1
O: COMDEKS	1.1		All outputs	4.1

[60] http://www.wwfbhutan.org.bt/bhutan_for_life/; http://www.bfl.org.bt/

146. As presented in the project Strategy, there is a need for strategic coordination and synergy with related landscape level initiatives, including avoidance of geographical overlap. The selected project landscapes generally complement these initiatives, which respectively focus on the southern (WWF - TRAMCA), northern (WB - HANAS) and eastern (IFAD – CARLEP) parts of Bhutan.

147. The project will draw upon lessons learned, as well as tools and methods developed under the range of projects above, to reduce duplication and avoid pitfalls during implementation, and, where appropriate, adopt successful approaches that are complementary to this project. The project will invite key partners for various knowledge exchange dialogues, such as annual review workshops, to learn from emerging good practices and lessons learnt from key partners and inform mutually the partners of the knowledge generated within the GEF/LDCF project.

148. In line with RGoB policies, the project will delegate resources and decision–making to Dzongkhag and Gewog administrations in order to enhance their knowledge base. The project will thus strengthen local level structures through capacity building, community-based RNR related group formation (CFMG, NWFP, LFMP and other groups) and support, assistance to Gewog Environmental Coordination Committees and the RNR extension system.

149. The partnerships to be formed between these different structures and entities are key to the delivery and achievement of project goals and objectives. The role of the Project Board and the Project Management Unit in ensuring that the partnerships work and the interactions are kept functional is therefore key. As the Implementing Partner, support from various divisions within GNHC is required to ensure good coordination. For local government, this will be Local Development Division (LDD), for central agencies, it will be Plan Monitoring and Coordination Division (PMCD) and for coordination with Development Partners it will be Development Cooperation Division (DCD). UNDP, in its project oversight role, and as both the Implementing Agency for this GEF/LDCF project and a development partner to the RGoB, will play a central role in ensuring that these partnerships work, and will liaise at the highest level with government to ensure that the project delivers the development results as agreed between the GEF-LDCF, UNDP and the government.

iii. Stakeholder Engagement:

150. The implementation of the GEF-LDCF-financed project will be based on extensive engagement with stakeholders at all levels across the project landscapes. **Table 4** below lists the project stakeholders at all levels and their main roles and responsibilities during implementation. More specific roles of key stakeholders broken down by project output are given in **Annex 30**. At a broad level, participation and representation of stakeholders will be conducted through the governance structures put in place by the project as outlined and depicted in the organogram in the Governance and Management Arrangements (section VII), and through the existing structures at national and local/ field levels (e.g. central-level departments and agencies, Territorial Forestry Divisions, Protected Area Management Authorities, and Dzongkhag Administrations). Stakeholders will be consulted and engaged throughout the project implementation phase to: (i) promote understanding of the project's outcomes; (ii) promote stakeholder ownership of the project through engagement in planning, implementation and monitoring of the project interventions; (iii) communication to the public in a consistent, supportive and effective manner; and (iv) maximisation of linkage and synergy with other ongoing projects.

151. With regard to the direct engagement of local communities, in Component 1, Output 1.6 will focus on mechanisms and tools to strengthen the integration of environmental sustainability and CCA needs in local development planning among other things using Participatory Rural Appraisal (PRA) methods involving visual tools. PRA

methods are generally effective and appropriate for situations where local communities are reticent and illiterate, which is generally the case in most of rural Bhutan.

152. In Component 2, CMPs for the BCs will be derived from a stakeholder-led process involving socio-economic surveys as well as a series of stakeholder consultations with special attention to local governments and communities. The CMPs will take into account customary rights and practices of the local communities related to natural resource use and outline appropriate conservation strategies for integrated conservation and development, and sustainable livelihoods. Furthermore, under this component, the project will work towards mobilizing local community participation for monitoring and reporting of biological conditions by means of training and appropriate incentives. Awareness raising activities will also be organized to develop the understanding of local stakeholders about the BCs and PAs and enlist local cooperation and support for their governance.

153. In Component 3, local stakeholders will be actively engaged through livelihood interventions largely taking place at community and household levels with field-level oversight, monitoring and backstopping from the Dzongkhag and Gewog Administrations. The local livelihood interventions will be based on community priorities identified through a participatory, gender-sensitive approach, and will be integrated in the gewog and dzongkhag annual plans. In general, the project will prioritize attention on communities that are recognized to be in poverty or otherwise highly vulnerable, and on individual households with these characteristics in other communities. Project engagement and monitoring will be sensitive to different economic groups among women and men.

154. To promote accountability of any adverse project impacts on local stakeholders and their environment, existing grievance redress mechanisms will be employed at the local level. These include the Gewog Tshogdes (County Committees) and Dzongkhag Tshogdus (District Councils), which are empowered local bodies for deliberation and resolution of local development plans and issues, and the Dzongkhag Environmental Committees, which are mandated to examine local development projects in relation to potential adverse environmental impacts including those that may affect local livelihoods and provide environment clearance based on procedures and requirements set by Environmental Assessment Act 2000 and associated regulations. Furthermore, the Social and Environmental Management Framework developed for the project will guide the project to manage potential adverse impacts whilst enhancing environmental benefits to local people (see **Annex 7**). Gender-specific needs and priorities will be addressed primarily through the gender action plan (See IV.iv and **Annex 14**: Gender Strategy and SESP).

155. During the PPG phase, extensive consultations with stakeholders at all levels have taken place through: bilateral consultations with central government agencies, CSOs and development partners; visits to the target project sites and meetings with local governments/ field agencies and local communities; a series of national-level stakeholder consultation workshops; and various studies and assessments which included field visits and local stakeholder consultations (see **Annex 17**: List of People Consulted, and **Annexes 19 to 25** for the various studies and assessments). Besides the inputs for project development, these stakeholder consultations have helped raise the awareness of the project concept and logic, project components and what they seek to achieve. This is expected to have developed a platform for further engagement of the stakeholders during project implementation.

Table 4. Mandate and roles of stakeholders in the project

Key Stakeholders	Mandate and Relevant Roles
Gross National Happiness Commission	GNHC is responsible for coordinating the preparation, implementation and monitoring of Five-Year Plans as well as functions as the official organization through which development assistance is channeled. As the apex policy and planning coordination body and GEF/LDCF Operational Focal Point, it will provide overall coordination and monitoring of delivery of GEF/LDCF financing and co-financing. As the Implementing Partner of the project, the GNHC-Secretariat will house the PMU and provide project oversight, coordination and administration, ensuring linkages and alignment with national priorities and other relevant initiatives and programs.
Ministry of Agriculture and Forests	The MoAF is mandated to ensure conservation and sustainable use of renewable natural resources, comprising agriculture, forest resources, and livestock, and is the focal ministry for the Convention on Biological Diversity. The Policy & Planning Division of MoAF will coordinate and facilitate matters related to development of policy and institutional frameworks for integrated approach to management of agricultural and forest landscapes. The MoAF is the designated national focal agency for CBD and UNCCD.
Department of Forests and Park Services, MoAF	The DoFPS, through its network of functional divisions at the central level and field offices for forestry administration and PA/BC management, will be responsible for project implementation with regards to biological corridors and protected areas, sustainable forest management, and forest-based livelihoods.
Department of Agriculture, MoAF	The DoA, through its network of technical agencies and service centers, will provide technical guidance and backstopping for sustainable land management and climate-resilient agricultural livelihoods.
Department of Livestock, MoAF	The DoL, through its network of technical agencies and service centers, will provide technical guidance and backstopping for sustainable livestock and grazing management and climate-resilient livestock-based livelihoods.
Department of Agricultural Marketing and Cooperatives, MoAF	The DAMC will provide technical support and guidance for improving value chains and marketing of RNR products and for development of community-based groups and cooperatives to support local livelihoods.
National Environment Commission	NEC is mandated to coordinate with all government agencies and provide guidance and policy support on all issues related to environmental management and climate change. It also coordinates international environmental conventions and treaties including the UNFCCC, CBD and UNCCD. As the designated national focal agency for UNFCCC, it coordinated and led the development of NAPA (2006, updated 2012) and the Initial and Second National Communication Reports to UNFCCC. With respect to the project, NEC will have a policy and technical advisory role and will have representation in the Project Board as well as the Technical Advisory and Coordination Committee.
Department of Roads, Ministry of Works and Human Settlement	The DoR is mandated to develop and maintain the network of highways and roads, including the employment of environment-friendly road construction methods. It will be responsible for implementation of project activities related to enhancing the climate-resilience of GC roads.

Key Stakeholders	Mandate and Relevant Roles
Department of Local Governance, Ministry of Home & Cultural Affairs	The DLG is responsible for strengthening local governance and facilitating the functioning of local governments through policy and legislation support among other things. Their role in developing local capacity for mainstreaming cross-cutting issues including climate change, disaster risk reduction and environmental sustainability in local development planning in coordination with GNHC-S will be very important.
Department of Public Health, Ministry of Health	The DoPH is responsible for promoting public health safety including rural water supply and public sanitation. Its technical guidance is envisaged as important for the development of climate-resilient community and household level water supply systems.
Local Governments: Dzongkhag (District) Administrations, Gewog (Block/ County) Administrations	The local governments have the mandate for delivery of local community development programs and associated public services. They will have an active role in the implementation of climate-resilient livelihood activities in direct association with local communities. They will also have the role of mainstreaming CCA and environmental sustainability needs in the local development plans. Mobilization of local participation in matters related to the management of BCs/PAs and addressing local conservation issues will also be a key role of local governments.
Rural Communities	Some 97,000 people reside within and around the project landscapes. Communities have been widely consulted during project preparation in support of components that support community forestry, operationalization of biological corridors and livelihood support. Communities will be empowered to become custodians of the important natural resources with increased potential for developing conservation compatible livelihoods. Project interventions, especially for climate-resilient livelihoods, will be implemented directly at the community and household levels based on a participatory approach that is gender-sensitive and responsive to the needs of the poor and marginalized sections of the local communities.
Civil society organizations: Tarayana Foundation, Royal Society for the Protection of Nature	Tarayana Foundation is dedicated to socio-economic upliftment of the poor and marginalized communities and have a potentially key role for social mobilization and outreach to local communities for improved livelihoods including those that are more resilient to climate change. RSPN is dedicated to nature conservation and have a potentially key role in terms of raising community awareness and understanding of environmentally sustainable and climate-resilient livelihoods, and innovative approaches of integrated conservation and development including community-based eco-tourism. RSPN is active in Phobjikha, a critical wetland that is home to black-necked cranes in winter, which is a part of the project landscape II (JSWNP+BC2+BC8).
Training service providers: Ugyen Wangchuck Institute for Conservation and Environment, College of Natural Resources	In the context of the project, these would include UWICE and CNR. The former specializes in biodiversity conservation and the latter in agriculture, forestry and livestock management with special attention to development of community livelihoods using rural extension approaches.
WWF Bhutan Program	WWF will be a key project partner in view of their longstanding support to biodiversity conservation in Bhutan especially in the protected areas and biological corridors and

Key Stakeholders	Mandate and Relevant Roles
	for synergy and linkages with Bhutan for Life, a long-term collaborative scheme between RGoB and WWF to mobilize and operationalize sustainable financing for the protected areas/ biological corridors system. Particular areas of technical support from, and partnership with, WWF include enhancement of management effectiveness of biological corridors and protected areas (through Bhutan METT+ system), conservation management planning in the biological corridors integrating CCA needs, SMART patrolling, and human-wildlife conflict management.
Other development partners	There are several other DPs that are providing support in the RNR sector and in the area of climate change adaptation. These include (but are not limited to): Asian Development Bank, European Union, FAO, ICIMOD, IFAD, Japan International Cooperation Agency, Swiss Development Cooperation, SNV-Netherlands Development Organization, UNCDF, UNEP, and World Bank. The project will dialogue with these DPs and seek linkages and synergies during implementation.
Bhutan Trust Fund for Environmental Conservation	The BTF is an independent grant-making organization that uses its annual investment income to finance conservation activities. Grants are awarded to eligible Bhutanese individuals and institutions for biodiversity conservation, and community livelihood initiatives including research for discovery and inventories of flora and fauna and traditional knowledge related to conservation. It will be a key collaborator for establishing corridor management systems and sustainable financing for this purpose.
UNDP	UNDP will serve as the GEF Implementing Agency (IA) for the project. In this role, UNDP will oversee project execution and provide technical quality assurance. The project assurance and support functions will be provided by the UNDP Bhutan Country Office as well as the UNDP-GEF Unit based at the Bangkok Regional Hub. As GEF Implementing Agency, UNDP will coordinate and monitor the delivery and utilization of GEF funds and co-financing.

iv. Mainstreaming gender:

156. During the PPG phase, a gender analysis was carried out to ensure an inclusive approach through which women and men are able to participate actively and benefit equitably, have equitable access to the project resources and receive fair social and economic benefits. In addition to the gender analysis a gender action plan was also developed for the project to mainstream gender equality and women's empowerment in the project design in line with the BPPS Integrated Work Plan Enabling Action 1.3.2 on engaging and monitoring impacts on poor and excluded women. The objectives of the gender analysis were to: (i) identify the division of tasks between women and men in agricultural production, marketing, household (childcare etc) and socio-political activities at the household level; (ii) determine to what extent women as compared to men have access to and/or control over land and natural resources; (iii) identify practical and strategic gender needs for targeted development interventions by the project and; (iv) mainstream gender equality and women's empowerment in the design, implementation and, monitoring of UNDP/GEF/LDCF projects. The full report of this study is given in **Annex 14**, including the gender action plan for the project. Its key recommendations are as follows.

157. To promote gender equality and women's empowerment, the project has integrated the following points in its design, implementation and monitoring that will contribute towards the BPPS Integrated Work Plan Enabling Action 1.3.2:

- The project's outcomes, outputs and activities seek to balance the productive, unpaid domestic and socio-political roles of women and men across different socio-economic groups. The project's activities can be roughly categorised as 80 percent capacity building of formal institutions, 3 percent support for unpaid domestic and 17 percent for productive work. The project's activities are aligned with the gender action plan targeting capacity building of rural men and women beneficiaries under the respective outputs, to shift the balance in favour of women.

158. Meeting women and men's practical and strategic needs and priorities will support transformational change in gender relations. Project-based interventions can influence access to and control of land, agriculture, livestock and forest resources by paying attention to the following issues in policies and strategies promoted by the project:

- Meeting women and men's practical needs and priorities in improvement of drinking and irrigation water supplies, seed and seedling inputs, agricultural machines, equipment and tools, electric / solar fencing against wildlife incursions, and entrepreneurship skills;
- Meeting women's strategic needs and priorities on awareness and capacity building through education and training including non-formal teaching, improvement of health and sanitation, and where necessary, farm road establishment and maintenance;
- Meeting men's strategic needs on farm road, solar or electric fence installation, use and maintenance against wildlife incursion, education and, agricultural machinery;
- Scaling up of farmers' study tours for exchange of knowledge and skills through lessons learned on agriculture, livestock and forest landscapes management;
- Imparting training to women and men on: vegetable cultivation, drinking water and sanitation technology, tailoring, entrepreneurship skills and micro-finance saving schemes;
- Creating awareness of job opportunities and requirements to unemployed youths in villages, leadership, communication and decision-making skills to capacitate women's participation including provision of gender quota system in local governance as stepping stones;
- Access to markets, pricing policy and climate information through innovative information communication mechanisms such as Bhutan Broadcasting Service, radios, mobile phones, RNR Newsletter, Department of Agriculture/Centenary Farmers Market website and Gewog Information Centres, considering the difficulties of traversing mountain terrain to reach women in mountain communities.

159. To reduce the negative impacts of existing livelihoods on women (e.g. workload), the project should concentrate on the promotion of, and training for energy and labour-saving technologies:

- Electric / solar fence installation, use and maintenance that reduces women's crop-guarding time;
- Gender-friendly farm mechanization through promotion and use of labour-efficient and easy to use agricultural machinery and tools for harvest and post-harvest practices of maize, rice, wheat, buckwheat and barley and fuelwood efficient (or alternative fuel) cardamom driers;

160. To improve planning, decision-making and monitoring of development activities and ensure post-project sustainability, the project intervention should provide the following support:
    - Strengthen cooperatives and farmers' groups on commodity value-chain addition and management with women's executive roles in agriculture, livestock, forestry, water, health, human-wildlife conflict, crops and livestock insurance schemes and environmental management groups;
    - Monitoring impacts of project progress including gender-disaggregated indicators: reduction in women's unpaid domestic work with increased socio-political roles; equitable distribution of land and natural resources and benefits between men and women; and, increase women's participation and executive role in decision-making by 50% in commodity user groups and project's technical/coordination committee.

161. These recommendations have been incorporated into the design of the project strategy and activities, stakeholder engagement processes and monitoring and evaluation system.

v. South-South and Triangular Cooperation (SSTrC):

162. WWF's Trans-boundary Manas Conservation Area (TRAMCA) project (2012-2014) supports transboundary areas in southern Bhutan with India and Nepal. The project area includes the Khaling (new name Jomotsangkha) and Phibsoo Wildlife Sanctuaries and the Royal Manas National Park. The project supports biological surveys, development of park infrastructure including waterholes, watch towers and trails, and community co-management and human wildlife conflict response. The current project will maintain close contact and collaboration with the TRAMCA project, ensuring cross fertilization and replication of good practices for biological surveys, law enforcement, human wildlife conflict management etc. in the target biological corridors. The current project will cover the central part of the PA-corridor network adjacent to TRAMCA, increasing support for PAs and BC operationalization, especially for the BCs in the TRAMCA area.

163. Secondly, the project's western landscape falls within the scope of ICIMOD's Kangchenjunga Landscape Conservation and Development Initiative[61] (KLCDI) established in 2012, which covers an area of 25,080 km^2 and spreads across part of eastern Nepal, Sikkim and West Bengal of India and the western and south-western parts of Bhutan. The KLCDI is a transboundary conservation and development programme jointly implemented by the governments of Bhutan, India and Nepal which is facilitated and supported by ICIMOD. The initiative emphasises the transboundary landscape approach advocated and promoted by CBD. A Regional Cooperation Framework has been prepared as the basis for implementing the KLCDI, with a 20-year strategic programme and five-year operational plan (2016-2020). During the PPG, consultations were still ongoing through WCD as contact point, while Jigme Khesar SNR were aware and interested in participation. The capacity development through this project at central and landscape levels can contribute towards Bhutan's role in the KLCDI, and conversely the KLCDI should support the sustainability of the project's efforts.

164. Thirdly, the nationwide snow leopard survey carried out between 2014-16 revealed that Jigme Khesar SNR and BC1 harbor a small but critical pool of the snow leopard population in Bhutan, accounting for 22 percent of the identified individuals. Coordination with the National Snow Leopard and Ecosystem Protection Programme (NSLEP) which is supported by the Global Snow Leopard and Ecosystem Protection Program (GSLEP), will be pursued in line with the national Action Plan (2014-2019) priorities. The NSLEP program is managed by the WCD, which is also a key stakeholder in this project with an active role for guiding and supporting the preparation and implementation of conservation management plans, institution of biological monitoring system and management of human-wildlife conflicts - all crucial elements for snow leopard conservation.

[61] http://www.icimod.org/kl

IV. FEASIBILITY

i. Cost efficiency and effectiveness:

165. The project is cost-effective in that it will have broad applicability at gewog, dzongkhag and national levels, with potential for replication throughout the country in the long term. As such, the project will contribute directly towards national policy, planning, fiscal and communications goals in support of ILM, CCA and biodiversity conservation. In addition, the weak national framework and capacity for ILM - CCA are significant barriers impeding the development of a sustainable management regime to maintain the biological resources and ecosystem services provided by Bhutan's landscapes and the realization of their full value. The removal of these barriers will allow environmentally sustainable land uses to develop, enhancing benefits to the state, commercial sector and local communities. The project strategy also focuses on demonstrating best practices for ILM and CCA in specific landscapes centred on biological corridors and documenting and sharing these, as well as sharing other experience from elsewhere in Bhutan for replication and upscaling, which is highly cost-effective and low risk.

166. This approach is more cost effective than alternatives such as implementing conservation measures across the entire Biological Corridor system, as it allows the GEF-LDCF investment to be focused on a subset of landscapes that are considered priorities for conservation and climate change adaptation to demonstrate specific approaches towards maintaining forest ecosystem integrity and climate change resilience whilst enabling sustainable development of these areas to occur through strengthened sustainable forest management and sustainable/climate-smart agricultural production practices. The full scope of the BC system would involve many more local government administrations and the project resources would be stretched to cover such a large geographical area, increasing logistical challenges and reducing its overall impact, thus providing less return on investment.

167. The alternative of gazetting the territories within the Biological Corridors as Protected Areas would confer a stronger level of legal protection, but this would also be likely to increase resource use conflicts with local stakeholders, increasing the workload for PA management staff and reducing public support for nature conservation. The project alternative of supporting the management of the BCs by the Territorial Forest Divisions (at dzongkhag level) opens the door for wider local government engagement in nature conservation and sustainable forest management, capitalizing on – and strengthening – existing capacity within the forestry system, and allowing local communities to continue sustainable use of forest resources through community forestry, non timber forest product user groups, etc..

168. In line with the National Implementation Modality (NIM), implementation will be almost exclusively undertaken by existing government structures. This approach is believed to be particularly cost effective, as it reduces costs that would need to be spent on consultant-driven implementation, and it builds the capacity of the government system for ongoing and more widespread implementation of similar climate-sensitive development. Key examples of this are the roles of the MRGs at central and dzongkhag levels in leading ILM and CCA, the dzongkhag TFDs in leading biological corridor management, and gewog level RNR, environment and planning officers in leading local development initiatives supported by the project.

169. In order to reduce costs and to avoid duplication, the GEF/LDCF-financed project will pursue an active partnership strategy with other ongoing and planned initiatives, including Bhutan for Life, a developing GCF project, and other landscape initiatives including HANAS, CARLEP and TRAMCA. Through these collaborations, the project will build

on the lessons learned and best practices from past and current projects and ensure that cost effectiveness is considered in implementation plans.

170. The total GEF/LDCF investment of US$13,967,124 for this project will leverage a minimum of US$ 42,630,300 in cofinancing, a cost-effective ratio of 3.05 with additional associated financing inputs anticipated during project implementation.

171. Finally, the strong high-level political support for this international project and receipt of GEF/LDCF resources channelled through UNDP provide the impetus needed to address the challenges of inter-agency landscape management, establishing an effective biological corridor system, and integrating climate change resilience into local government practices and community livelihoods.

ii. Risk Management:

172. As per standard UNDP requirements, the Project Manager will monitor risks quarterly and report on the status of risks to the UNDP Country Office. The UNDP Country Office will record progress in the UNDP ATLAS risk log. Risks will be reported as critical when the impact and probablity are high (i.e. when impact is rated as 5, and when impact is rated as 4 and probability is rated at 3 or higher). Management responses to critical risks will also be reported to the GEF in the annual PIR. See **Table 5** below. During implementation, the PMU will integrate risk management into project workplans and procedures (to prevent, mitigate or transfer potential risks) including identification of risks and issues before or when they arise, quarterly monitoring and recording of risks using the UNDP Risk Log, and ensuring that risks are included in reporting to the Project Board. The project manager would have overall responsibility for risk management, with support of the M&E officer.

iii. Social and environmental safeguards:

173. The UNDP environmental and social safeguard requirements have been followed in the development of this GEF/LDCF-financed project. During the PPG, UNDP contracted a national consultant to screen the project for social and environmental risks, during which extensive consultations were held with a wide range of stakeholders including village communities (see **Annex 17**). Risks identified at the pre-screening (PIF) stage were reviewed and their probability of occurrence and likely impact were estimated in order to rate each risk, and determine how they would be mitigated by the Project.

174. In accordance with the UNDP Social and Environmental Screening Procedure, the project has been categorized as moderate risk and – as outlined below – is not expected to have significant negative environmental or social impacts. Please see **Annex 6** – the Social and Environmental Screening report - for details. Nevertheless, risk avoidance and risk minimization, mitigation and management mechanisms are integrated into the project design (see **Table 5**) and a Social and Environmental Management Framework has been completed (**Annex 7)**. This provides a framework for social and environmental screening checklists to be applied during the implementation planning of project activities, and specifies a requirement for compliance monitoring by the project implementing agency. The NEC has overall responsibility for compliance monitoring in relation to national environmental legislation.

175. One moderate human rights risk was identified, concerning the potential risk of reduced access to natural resources by local communities as a result of the operationalization of biological corridor management, while noting that the BCs were established in 1999 and their Rules published in 2007. A project awareness campaign will

help to sensitize communities to the BCs, and social assessment is proposed for any increases in restrictions through boundary changes or management regimes. One low gender risk has also been identified, recognizing that there are existing gender inequalities that the project should seek to address through mainstreaming gender in its activities and monitoring framework. See section IV iv for further details.

176. Two moderate environmental risks were determined during the SESP, concerning first, the potential local environmental impacts resulting from certain project activities such as climate-proofing of gewog connectivity roads, irrigation infrastructure improvement and construction of small-scale agricultural facilities, and secondly the potential environmental impacts resulting from the harvesting of trees from natural forests in FMUs and reforestation of degraded areas within FMUs, LFMPs, PAs & BCs. In both cases, the project will follow national guidelines for environmentally sustainable practices and also screen the activities for potential impacts. They will also be required to be subjected to environmental impact assessment and clearance requirements in keeping with the Environmental Assessment Act (2000) and Regulation for Environmental Clearance of Projects (2002).

177. *Human Rights*: In line with national law and UNDP principles, the project design seeks to uphold the centrality of human rights to sustainable development, poverty alleviation and ensuring fair distribution of development opportunities and benefits. Thus, it will implement a human rights-based approach in its delivery of goods and services. This will include maintaining and respecting the legal and traditional rights of local communities to land and natural resources within these landscapes. The project aims to address sustainable development, biodiversity conservation and climate change adaptation across three largely forested landscapes across central Bhutan through introducing an integrated landscape management approach. The preservation of ecological integrity within these landscapes will secure ecosystem services and goods that maintain current and future development options for local communities, while it will also proactively support sustainable land management, climate-smart agriculture and sustainable livelihood options that benefit these communities.

178. *Participation and inclusion:* While developing the project interventions, UNDP as the GEF Implementing Agency for the project ensured participatory process focusing on strengthening capacity of the duty bearers to meet their obligations and the right holders to claim their rights. The project gives special attention to vulnerable and marginalized groups, including ethnic minority communities within the targeted dzongkhags, protected areas (PAs) and biological corridors (BCs). During the PPG phase, the project stakeholders at the national, dzongkhag, gewog and community levels were consulted to ensure that they were adequately informed of the proposed initiative, and for their full and effective participation, as appropriate, in the design of interventions that are inclusive, promote ownership and sustainable.

179. *Equality and non-discrimination:* The project will not discriminate on the grounds of race, ethnicity, gender, age, language, disability, sexual orientation, religion, political or other opinion, national or social or geographical origin, property, birth or other status including as a member of a minority. UNDP will ensure the meaningful, effective and informed participation of stakeholders during implementation, monitoring and evaluation. This will include contributing towards implementation of the BPPS Integrated Work Plan, Enabling Action 1.3.2 (on engaging and monitoring impacts on poor and excluded women). Community participation in the management and decision-making will be enhanced through the promotion of women's executive role in cooperatives and farmers' groups in commodity value chain management. By focusing on both practical and strategic gender needs and priorities, the project addresses the needs of both men and women consistent with human-rights principles of non-discrimination and gender equality. As part of the project's institutional strengthening, climate change, gender concerns, environmental awareness and education, waste management, organic farming, a grievance redress mechanism has been mainstreamed into the local level planning process consistent with participation and inclusive human

rights principle. Capacity building training will be tailored to women and men at all levels including the project management office.

180. *Accountability and rule of law:* will be upheld by following all standard UNDP policies on monitoring, evaluation, audits and transparency in project implementation. The legal context of the project is defined by the CPAP signed by the Government and UNDP.

181. *Grievance redress*: To promote the rule of law and accountability of any adverse project impacts, existing formal and informal grievance redress mechanisms will be adopted at the gewog level. Smaller issues on grievances will be verified and resolved at the gewog level by the local government. Serious grievances that need attention will be brought to the notice of the Ministry of Home and Cultural Affairs by the dzongkhag and if necessary to judicial systems established in various sub-districts, all 20 districts and then high court and the supreme court for prompt compensation and fair redress of affected communities consistent with accountability and rule of law human rights principle. In addition, at project level, all grievances should be registered by the officer responsible for a particular activity with the Project Manager, who will immediately log the grievance and acknowledge it to the person(s) involved. The Project Manager will then determine on the response action to be taken, such as seeking additional information, consultation with all sides involved, and any need for technical or legal advice in order to inform redress actions, within two weeks. The response and any redress actions taken shall be logged and reported to the UNDP CO immediately, and subsequently reported to the next meeting of the Project Board, and included in the annual PIR.

182. *Gender Equality and Womens Empowerment:* UNDP's principle on gender equality and women's empowerment is respected in the Constitution of the Kingdom of Bhutan, which fortifies gender equality as fundamental rights of all Bhutanese citizens to be treated equal and effective protection under the law and shall not be discriminated against on the ground of race, sex, language, religion, politics or other status. Gender equality and empowerment of rural women and men are an integral part of the project design and implementation[62]. The findings of gender analysis (**Annex 12**) have been mainstreamed in the project design by integrating a gender action plan with gender-specific needs and priorities in the project's overall work plan for implementation. Gender indicators with gender disaggregated data are incorporated in the project's Results Framework for monitoring progress during implementation and evaluations. In terms of the UNDP Gender Marker, the project has been rated GEN 2. See the **Gender Mainstreaming** section above for further information.

183. *Mainstreaming Environmental Sustainability*: The project's design will directly support the implementation of Bhutan's obligations under CBD, UNFCCC, UNCCD, the SDGs, UNDAF priorities and national environmental policies and laws by incorporating project-level sustainable management principles and regimes for Protected Areas (PA), Biological Corridors (BC) and Forest Management Units (FMU) in order to address the practical and strategic needs and priorities in the project landscapes. This will be realised through a range of activities in Component 1, including integrated landuse planning, strengthened forest inventory and monitoring, biodiversity monitoring and assessment, protected area management effectiveness and sustainable financing, and developing a functional MRG system to support environmental management and climate change resilience at local government level. Activities in Component 2 will address natural resource management at the landscape level with emphasis on making the BCs operational, and securing sustainable forest resources, biodiversity, carbon, and other ecosystem services. Component 3 activities will seek to integrate rural livelihoods with sustainable resource

[62] In line with the BPPS Integrated Work Plan, Enabling Action 1.3.2 (on engaging and monitoring impacts on poor and excluded women).

management through for example, community forestry, conservation and ecotourism livelihoods, and sustainable agriculture and land management.

184. The project design is based on good understanding and identification of conservation issues and priorities through biodiversity and socioeconomic surveys bridging the poverty-environment nexus, and overtly aims to strengthen biodiversity conservation and ecosystem integrity. Therefore, project-induced environmental concerns are minimal, and any arising during implementation will be minimized, mitigated and managed guided by national policy and legislation such as the National Environment Protection Act 2007, Forest and Nature Conservation Act 1995 and Forest and Nature Conservation Rules 2006 and Environmental Friendly Road Construction guidelines and other regulations under the Ministry of Agriculture and Forests and Ministry of Works and Human Resources, respectively. The project also focuses on increasing the environmental management capacities of Dzongkhag (district) and Gewog (sub-district) including grassroots communities on integrating climate change concerns, and adaptation measures through the local level planning process and law enforcement strengthening environmental compliance and monitoring by revitalizing the central Mainstreaming Reference Group and building capacities of local Mainstreaming Reference Groups. Good practices and lessons learnt will be shared amongst project beneficiaries during the project monitoring and evaluation for informing future project design.

Table 5. Description of Project Risks and Mitigation Measures

Description	Type	Impact & Probability	Mitigation Measures	Owner	Status
Risk 1. The government's policy to retain small public service staffing levels may constrain adequate staffing for management of the biological corridors (BC). Coupled with the decentralization and high turnover of government staff who will be managing project components, this may impact implementation progress, and could seriously constrain management effectiveness for the BCs.	Operational	P=4, I=3 (PIF – Medium)	In supporting institutional capacity development for BC management, the project will support staffing needs assessment and plans for deploying permanent BC staff. The project will work closely with the government, investigating the possibility of linking up with its poverty alleviation, rural development and job creation strategies. It will explore possibilities to engage community inputs for BC management supported by a sound financial and skill base for sustainable and effective management. The project will support development of sustainable financing mechanisms for community corridor managers, in close collaboration with Bhutan for Life, BTFEC, and rural development and public works agencies. To reduce potential negative impacts of decentralization and staff turnover, the project will appoint a project hired manager and supporting PMU staff to ensure strong project coordination, as well as continuity and smooth transition in case of government staff turnover. The project will focus on institutionalisation of all the outputs and outcomes to ensure the sustainability of project products and achievements.	*Project M&E Officer*	*No Change*
Risk 2. Coordination amongst different agencies during implementation proves difficult and corridor management plans may create frictions between agencies with different mandates. It is unlikely that ILM will be effective if agencies are	*Organizational*	P=3, I=5 (PIF – Medium)	This project is multi-focal in nature, addressing biodiversity conservation, SFM and CCA. While this provides potential for demonstrating synergistic impact among the focal areas, it requires a high level of coordination between different entities working in different fields, in particular, forestry, agriculture, conservation, rural development, local governments, infrastructure etc. The project has involved all key stakeholders during the PPG phase to ensure joint project development and	*Project M&E Officer*	*No Change*

Description	Type	Impact & Probability	Mitigation Measures	Owner	Status
unwilling or unable to collaborate.			planning to ensure effective coordination. GNHC-S will play a leading role in supporting the coordination. In addition, a corridor management plan should not simply create a new set of mandates that may collide with other mandates. Instead, consistent with the concepts of Gross National Happiness and the Middle Path, corridor management plans should seek to harmonise the various mandates. For example, rather than prohibiting road building, plans should provide guidelines that allow roads to be re-routed or built in a way that does not compromise corridor function.		
Risk 3. Sustainability of support for resilient livelihood options. This is a key sustainability risk for the project - if the capacity and financial sustainability of supporting extension services is not secured, then project gains may not be sustained over time.	*Financial*	P=3, I=3 (PIF – Medium)	Sub-national administrations currently have a limited financial envelope, which will pose a serious challenge for sustainability. To mitigate this risk, the project will select target community areas which are the poorest and most vulnerable (as well as demonstrating clear linkage to climate and HWC impacts, etc), and thus it is expected that the development/adaptive gains are more visible and local buy-ins stronger. Secondly, it will work closely with LGSDP, which has a dedicated component on improving the use of ACG (unconditional grants made available for sub-national administrations), future decisions on the ways ACG will be utilized will be made more climate-sensitive.	*Project M&E Officer*	*No Change*
Risk 4. While the project will build capacity and demonstrate CSA options and rural livelihood diversification through its interventions, there is a risk that there will not be sufficient proactive uptake and sustained adoption of these advances through government-led	*Strategic*	P=2, I=3 (Medium)	The project will focus lead agency efforts and inter-agency coordination to increase the resilience of rural communities to climate change in rural development and its related planning, budgeting and implementation processes. This will include mainstreaming CSA and rural livelihood diversification into the five year plans of GNHC, MOAF and related agencies. The RNR extension system will be essential to build further awareness and capacity of the rural communities through continuous training and participatory approaches (including	*Project M&E Officer*	*No Change*

Description	Type	Impact & Probability	Mitigation Measures	Owner	Status
agricultural and rural development programmes.			M&E) and enable inclusive participation through, for example, the combination of long-term CSA interventions with short-term livelihood support.		
Risk 5. Climate change may undermine the conservation objectives of the Project. There is potential for extreme conditions resulting in local natural disasters (droughts, floods, winter storms) exacerbated by climate change to negate benefits of project supported interventions.	*Environmental*	P=1, I=3 (PIF – Low)	The project will work to address the anticipated negative impacts of climate change by increasing resilience of ecosystems and communities. It will improve PA management and emplace structures and systems for biological corridor management. By doing this, the project will contribute to the maintenance of ecosystem resilience under differing climate change conditions, so as to secure a continued sustainable flow of ecosystem services. The project will also provide direct support for enhancing community adaptation capacity through a range of field based interventions for adaptation actions that also yield conservation dividends. SLM interventions and climate proofing of GC roads will partially mitigate possible negative impacts of climate extremes.	*Project M&E Officer*	*Possible increase*
Risk 6: The review of biological corridor delineation and associated land use planning, and operationalization of biological corridor management may affect access to natural resources by local communities	*Operational /Social*	I = 2; P =3 (SESP – Moderate)	The main framework for the project intervention to operationalize management of the BCs already exists in legal terms, therefore the related project activities are only likely to impact the legal rights of access to natural resources if the boundaries of the BCs are extended or if additional legal restrictions are placed on resource use. The responsible parties for the project activities will conduct a social impact assessment including full consultation with concerned communities before imposing any restrictions on resource uses and agree on any redress required in line with national legal processes. The Environmental and Social Management Plan (**Annex 7**) provides guidance and a screening template for such situations. In relation to existing uses of lands within the BCs, the project will undertake a major awareness campaign to	*Project M&E Officer*	*Stable*

Description	Type	Impact & Probability	Mitigation Measures	Owner	Status
			build understanding of the BC system's functions and the related regulations to reduce the potential for land use conflicts.		
Risk 7: While specific gender concerns about the project have not been a significant issue, gender inequalities exist that stakeholders want the project to address; E.g. women's overwhelming engagement in productive and unpaid domestic activities has constrained them from being proactive and productive in socio-political spheres, especially participation in Government sponsored training and decision-making at all levels	*Strategic / Operational*	I = 1; P = 3 (SESP – Low)	Gender considerations have been mainstreamed into the design of project activities based on findings from the gender analysis, including gender disaggregated indicators at outcome and objective levels for monitoring. A gender action plan has been developed for the project intervention, addressing practical and strategic gender needs and priorities including specific training for women's empowerment in decision-making. See **Prodoc section IViv and Annex 12**. In terms of the UNDP Gender Marker, the project has been rated GEN 2 on the basis of the gender analysis undertaken, reflecting that both general and specific gender needs and priorities are mainstreamed in the project's activities with gender disaggregated data and indicators at the outcome level for tracking project progress on gender equality and women's empowerment.	*Project M&E Officer*	*Stable*
Risk 8: The project landscapes include critical habitats and environmentally sensitive areas, including protected areas. The implementation of certain project activities such as climate-proofing of gewog connectivity roads, irrigation infrastructure improvement and construction of small-scale agricultural facilities in such areas poses the risk of localized environmental impacts.	*Environmental*	I = 2; P = 5 (SESP – Moderate)	In the case of climate-proofing gewog connectivity roads, no new road construction is involved – only upgrading existing roads to improve their drainage and durability under anticipated increasingly demanding rainfall conditions. In addition, the application and improvement of environmentally-friendly road construction (EFRC) is integrated into the project design including capacity building of road engineers. A consultative approach to road planning, design and implementation are an integral part of the EFRC guidelines. Similarly, development of irrigation infrastructure will involve upgrading of existing systems rather than new systems. The Social and Environment Management Framework prepared for this project (Annex 7) includes screening templates for activities that may pose social	*Project M&E Officer*	*No Change*

Description	Type	Impact & Probability	Mitigation Measures	Owner	Status
			or environmental risks, these should be applied for all project supported infrastructure development.		
Risk 9: Harvesting of natural forests and reforestation in project areas may result in environmental impacts (SESP question) such as slope erosion, loss of biodiversity and introduction of alien species. Harvesting of trees from natural forests will take place in FMUs; there will be reforestation of degraded areas within FMUs, LFMPs, PAs & BCs for conservation and enhancement of carbon stocks.	*Environmental*	I = 2; P = 3 (SESP - Moderate)	Management plans developed/updated by the project for FMUs, LFMPs, PAs & BCs will be based on SFM principles and DoFPS rules. Selective harvest methods based on diameter limit cut for rural use will be allowed in line with management plans under regular monitoring and supervision by the DoFPS local offices. No commercial harvesting will occur in LFMPs and BCs. Commercial and rural harvest from the FMUs will be strictly guided by the group selection harvest guidelines and rural use guidelines indicated in the Social and Environmental Management Framework (See **Annex 7**). Plantation and reforestation programmes will only use native species.	*Project M&E Officer*	*No Change*

iv. Sustainability and Scaling Up:

185. This project is building on a strong baseline. First of all, there is the emphatic and foresighted vision of the RGoB based on the Gross National Happiness concept and a national commitment to conservation. The project builds on a policy and institutional framework for protected area and biological corridor management and for addressing climate change adaptation to increase community and ecosystem resilience. Secondly, there is strong commitment from Government to strengthen the protected area system by operationalizing biological corridors, as well as significant baseline investments in agricultural development in connection with rural livelihood enhancement. Thirdly, institutional and financial sustainability is fully integrated in the project design. Institutional set up and capacity will be reviewed and the corridor governance and management system will be put in place with adequate staffing and coordination mechanisms. In close collaboration with the Bhutan for Life initiative, the project will also develop a permanent financing structure for corridor management. The strong synergy between this project and Bhutan for Life, which will continue until 2030, will enable continued support, and enhance post-project sustainability and replication potential.

186. The project strategy and outputs will have long term impacts – for instance, the integration of climate change adaptation into national and local planning and governance practices, the development of capacity of RNR and related extension services and within communities, strengthening the value addition of key commodity chains, and improving access to markets and information will all make major contributions towards enduring impacts that extend well beyond the project lifetime.

187. The project will seek to reinvigorate and work through the Environment, Climate Change and Poverty Mainstreaming Reference Group (MRG), which was established by Executive order from the Prime Minister's Office in 2013. The MRG was formed in order to strengthen and facilitate the integration of all cross-cutting issues into the government's decision-making processes and development policies, plans and programmes. This is being done to ensure that issues such as Climate Change, Environment, Disaster, Gender and Poverty and their opportunities are adequately integrated into the mainstream development process. The primary role of the MRG has been to undertake detailed analysis of policy and planning processes at both central and local levels in Bhutan to identify windows of opportunity for the integration of ECP issues and mainstreaming approaches. Furthermore, it aimed to raise awareness around and build capacity in ECP mainstreaming across sector and government agencies in Bhutan, particularly at the local levels. This will provide a permanent mechanism for integrating ECP into landscape management and planning, representing a key institution for sustaining and upscaling the project's impacts across the country. The collaboration with the GCF project under preparation represents another opportunity for the project to synergize activities and sequence and phase interventions in order to enhance sustained impact through roll out and scaling-up of developed approaches to other geographic areas within the country. For example, the insurance pilots to be developed by the project and the related lessons learned will lay the ground and will be adopted and applied by the GCF project in its later phases. The same accounts for the improved EFRC guidelines and standards that will be followed by the GCF project in its endeavor to support a more climate-resilient road development.

188. With this investment, the replication potential is immense. The project will demonstrate operationalization of biological corridor management which has only been established on paper to date, testing the efficacy of community based natural resource management in the context of biological corridor management and connectivity establishment, developing effective management arrangements through coordination between the protected area management offices and corridor management bodies and personnel, and demonstrating coordinated planning and support for rural development and community adaptation and biodiversity

conservation, yielding synergistic impacts. The project will focus on four corridors totaling 167,400 ha. However, combined with the interventions at the national and regional levels to create an enabling environment, there is immediate possibility for scaling up the work to the entire corridor system covering 51.44 percent or 1,975,057 ha of the country.

v. Economic and/or financial analysis: N/A

V. PROJECT RESULTS FRAMEWORK

Goal: Sustainable and Climate Resilience Forest and Agricultural Landscape and Community Livelihood.					
This project will contribute to the following country outcome included in the UNDAF/Country Programme Document: Sustainable and green economic growth that is equitable, inclusive, climate and disaster resilient and promotes poverty reduction, and employment opportunities particularly for vulnerable groups enhanced.					
This project will be linked to the following outputs of the UNDP Strategic Plan: Output 1.3: Solutions developed at national and sub-national levels for sustainable management of natural resources, ecosystem services, chemicals and waste. Output 1.4: Scaled up action on climate change adaptation and mitigation cross sectors which is funded and implemented. Output 2.5: Legal and regulatory frameworks, policies and institutions enabled to ensure the conservation, sustainable use, and access and benefit sharing of natural resources, biodiversity and ecosystems, in line with international conventions and national legislation.					
	Objective and Outcome Indicators	**Baseline[63]**	**Mid-term Target[64]**	**End of Project Target**	**Assumptions[65]**
Project Objective: To operationalize an integrated landscape approach through strengthening of biological corridors, sustainable forest and agricultural systems, and build climate resilience of community livelihoods.	1. Number of new partnership mechanisms with funding for sustainable management solutions of natural resources and ecosystem services at national and/or subnational level.	• Limited partnership mechanism with funding for sustainable management solutions. MRG system not yet operational – central level not functional, dzongkhag level still being established. Bhutan for Life initiative aims to develop improved governance and sustainable financing for PA/BC	Increased partnership mechanisms in form of functional MRG system at central and dzongkhag level (12 dzongkhags) including clear national and dzongkhag leadership	Increased partnership mechanisms in form of functional MRG system that is strengthened and operating sustainably with increased funding at central and dzongkhag level (12 dzongkhags)	High level of willingness between different agencies to cooperate at national and landscape levels in order to achieve ILM-CCA

[63] Baseline, mid-term and end of project target levels must be expressed in the same neutral unit of analysis as the corresponding indicator. Baseline is the current/original status or condition and need to be quantified. The baseline must be established before the project document is submitted to the GEF for final approval. The baseline values will be used to measure the success of the project through implementation monitoring and evaluation.

[64] Target is the change in the baseline value that will be achieved by the mid-term review and then again by the terminal evaluation.

[65] Risks must be outlined in the Feasibility section of this project document.

		system. Project will synergize and support this initiative.			
	2. Number of direct project beneficiaries	Besides traditional uses of forest products and limited benefits from ecotourism and commercial NTFP collection, no other benefit from PAs/BCs.	19,350 women and 20,650 men benefited (total beneficiaries =40,000)	46,600 women and 49,800 men benefited (total beneficiaries =96,400)	There will be effective coordination between PA/BC authorities and local governments (dzongkhag and gewog administrations) to reconcile conservation objectives and community livelihood needs.
	3. Increased status of all indicators in the GEF Climate Change Adaptation Tracking Tool (**Annex 4b**)	See baselines in the GEF CCA TT (**Annex 4b**)	At least 40% progress towards targets set at CEO Endorsement in the updated GEF CCA TT For MTR (**Annex 4b**)	Achievement of Targets set at CEO Endorsement in the updated GEF CCA TT for TE (**Annex 4b**)	The RGoB is fully committed to addressing the impacts of climate change, with forest conservation, watershed management & climate smart agriculture key elements of the country's adaptation pathway.
Component/Outcome 1 Enhanced systemic and institutional capacity for integrated landscape management and climate change resilience.	4. Status of Biological Corridor system delineation, including climate change resilience considerations, GIS mapping and inclusion in integrated landuse plans	BC system proclaimed in 1998 but neither operationalized nor reviewed in relation to climate change impacts, settlement patterns or optimization of benefits from	BC system delineation reviewed against criteria agreed by key stakeholders, incl. connectivity, climate change vulnerability assessment results,	BC system mapped in detail based on results of delineation review and included in comprehensive integrated landuse plans	The RGoB continues to provide strong political and financial support for integrated landscape management as a key element of national prosperity and ecological security

		ecosystem services and biodiversity	& HCVF distribution.		
	5. Area under sustainable and climate-resilient management practices including incorporation in Local Forest Management Plans and Forest Management Units indicated by the GEF Sustainable Forest Management Tracking Tool	National protocols for monitoring habitats and biodiversity in BC/PA systems lacking. No systematic consideration of climate resilience in management plans. DoFPS and relevant agencies. See GEF SFMTT (**Annex 4c**)	Updated GE SFM TT For MTR (**Annex 4c**) 50,000ha forest area brought under sustainable and climate-resilient management practices.	Updated GEF SFM TT (**Annex 4c**) 100,000ha forest area brought under sustainable and climate-resilient management practices	As above
	6. Financing gap for sustainable management of the protected area and biological corridor system closed as indicated by improvement in GEF BD-1 Financial Sustainability Scorecard	GEF BD1 Tracking Tool (**Annex 4a**) Total Score 44% Financing gap of US$4,447,000 to achieve basic management of targeted PAs/BCs. Bhutan for Life (BFL) initiative by RGoB and WWF aims to provide a sustained flow of finance to maintain the country's PAs and BCs, currently in development phase to secure financing	GEF BD1 Tracking Tool (**Annex 4a**) Targeted Score:60% Specific policy, planning, regulatory and fiscal barriers to sustainable PA/BC financing removed.	GEF BD1 Tracking Tool (**Annex 4a**) Target Score:75% Financing gap closed and management of PAs/BCs more self-reliant through use of at least two new financial sources.	As above
Component/ Outcome 2 Biological corridor governance and	**7.** Percentage increase in METT Score for three protected areas	Baseline METT score (**Annex 4a**) JKSNR:62	Mid-term METT targets: JKSNR:68	EoP METT targets: JKSNR:75	Consistent application of METT assessments for PAs and BCs. Up-to-

management established, demonstrated, and linked to management of contiguous PAs.	(1,149,400ha) and four Biological Corridors (176,400ha):	JSWNP:66 PNP:73 BC1:35 BC2:26 BC3:32 BC8:20	JSWNP:70 PNP:77 BC1:45 BC2:40 BC3:45 BC8:35	JSWNP:75 PNP:80 BC1:65 BC2:65 BC3:65 BC8:65	date information required for METT is available across all the target BCs and PAs.
	8. Population size of key species: tiger in lower elevation, Snow leopard and Musk deer in higher elevation of PAs and sightings of animal or evidence (indirect signs) of movement of animals in the BCs:	**Tiger:** JKSNR=0 but found in BC) JSWNP=TBC * PNP=TBC* **Musk deer:** all PAs/BCs, data will be available once the analysis is completed by the Wildlife Conservation Division **Snow Leopard** JKSNR=9; JSWNP and PNP will be studied in baseline study*. Animal sign information in BCs will be added after baseline survey*	Populations of key species stable or increased over the baseline in PAs. Sighting of animals or signs of animals (droppings, pug marks etc.) using BCs stable or increased compared to baseline level.	(4) Key species populations stable or increased over MTR level in PAs. Sightings of animals or indirect signs of animals (droppings, pug marks etc.) using BCs stable or increased compared to MTR level.	Monitoring and status surveys of key species are done systematically
	9. Reduction in threat cases reported over the project period in project landscapes: ▪ % decrease in annual number of human-wildlife conflict cases for sample areas totaling 2,000 ha; ▪ % decrease in the annual	HWC: 100% of respondents affected by crop depredation and 61.8% by livestock depredation; Poaching: 13 cases of mega-fauna poaching detected; 2015 baseline: 9 forest	HWC: proportion of HHs affected by crop and livestock depredation reduced by at least 25% of baseline in targeted areas; Poaching: Poaching cases reduced by at	HWC: proportion of HHs affected by crop and livestock depredation reduced by at least 50% of baseline in targeted areas; Poaching: Poaching cases reduced by at	Records are systematically maintained. [Note: Improved anti-poaching activities as a result of project support may initially lead to higher detection of

	number of poaching and illegal wildlife trade cases; ▪ % decrease in the annual number and area of forest fires.	fire incidents covering 12,265.33 acres[66]	least 25% of baseline Forest Fires: number and area reduced by at least 25% of baseline.	least 50% of baseline Forest Fires: number and area reduced by at least 50% of baseline.	poaching cases]
Component/ Outcome 3 Livelihood options for communities are more climate-resilient through diversification, SLM and climate-smart agriculture and livestock management and supported by enhanced climate-resilient infrastructure.	**10.** Gender-equitable livelihood options for at least 70% of population in project landscapes made more resilient to climate risks, indicated by: • change in annual household income for selected sample communities attributable to project interventions • % reduction in women's unpaid domestic work with corresponding increase in productive work and socio-political engagement • number of people adopting climate-resilient livelihood activities associated with conservation management and processing of renewable natural resources (gender	Baselines to be quantified in Year 1 through impact assessment (see **Annex 21**) Roles of men and women vary in agricultural production: Vegetable production, kitchen garden and marketing of processed products and livestock are dominated by women. Ploughing, cardamom production and marketing are dominated by men. Women's participation in HH decision making is 34%. See **Annex 14.**	Livelihood program reached 35% of the population of the project area At least 10% increase in annual household incomes associated with project interventions over baseline; Awareness generated regarding consequences of women's unpaid domestic role; women's role in HH decision making increased to 50%; At least 10% increase over baseline number of people adopting sustainable livelihood activities At least 20%	Livelihood program reached at least 70% population of the project area At least 25% increase in annual household incomes associated with project interventions over baseline; All project area households aware of gender roles and women's role in HH decision making or consultation; women's contribution to productive work increased to 75% over baseline At least 30% increase over baseline number of people adopting climate-resilient livelihood activities	In line with national food security and climate change adaptation policy goals, the farmers, community and government are committed to increasing food production and are willing to take up improved and climate resilient food/agricultural production practices and technologies. Identified climate-resilient technologies and practices for community livelihoods are economically viable; There is adequate capacity within the MoAF and local governments for technical guidance and backstopping on climate-resilient livelihood practices at

[66] See **Annex 17** - Baseline studies on biodiversity and Socio economics - for all baselines in Indicator 9

	disaggregated) as quantified by the impact assessment • quantity of climate resilient infrastructure including irrigation systems (types by area covered), climate-proofed roads (length in km), post-harvest storage and agricultural extension facilities (numbers & capacity)		increase over baseline quantity of climate resilient infrastructure	At least 50% increase over baseline quantity of climate resilient infrastructure	the local level.
	11. Sustainable land and water resource management instituted in targeted landscapes through community-based and gender-equitable SLM, SFM and climate-smart agriculture practices indicated by: • Area of agricultural land under SLM • Number of community SFM groups (CF/NWFP), with gender disaggregated membership data • Number of water sources	112.5ha under SLM (to be confirmed) 5 SFM groups* No of water sources protected * Soil erosion plots to be established in Year 1 at each site Access and control of men is higher in agriculture machinery and forest product collection 61% of political decisions are made by both genders. Men's	1000ha under SLM 25 SFM groups Increased no. of water sources protected * Erosion rate values for reference plots (bare), traditional practices and SLM practices (t/ha/yr) at each site Women's access and control over agricultural machinery and forest product	2000ha under SLM . Total 38 SFM groups (100,000ha forest) Increased no. of water sources protected Erosion rate values for reference plots (bare), traditional practices and SLM practices (t/ha/yr) at each site Women's access and control of land and natural resources decision-making and	The Ministry of Agriculture and Forests is committed to improving the quality of agricultural extension and advisory services as well as watershed management Gender mainstreaming is accepted and supported by national and local government leaders

	protected • Soil erosion rates in one sample site for each of 3 landscapes[67] • Improved gender equity in land and natural resources decision-making and benefits between men and women • increased women's participation and executive role in decision-making in commodity user groups and project committees	participation is higher in government organized trainings, meetings and other programs **See Annex 14.**	collection increased by 50% over baseline. Gender parity of participation in commodity user groups, project-supported meetings, trainings and field activities	benefits increased by 75% over baseline. Women's participation in commodity user groups, project meetings, training and development activities reaches 60% of total participants	
Component/ Outcome 4 M&E and Knowledge management system established to support sustainable management of forest and agricultural landscapes and climate-resilient communities.	**12.** Effective sharing of knowledge, lessons learned and project results enable replication and up-scaling of the project approach including: • Status of knowledge on information sources, best practices, lessons learned & mapping of knowledge gaps on existing ILM/CCR practices in Bhutan • # of case studies presenting project-supported best practices	No baseline on this as project is at the development phase.	Information sources and initial best practices, lessons learned & knowledge gaps on existing ILM/CCR practices in Bhutan documented & made available online. Initial documentation of project supported best practices and traditional knowledge of ILM/CCR	Information sources, best practices, lessons learned & remaining knowledge gaps on ILM/CCR practices in Bhutan including all project results available online. Series of case studies presenting project-supported best practices and traditional knowledge of ILM /CCR Biodiversity portal with	Involvement in the design and implementation of project interventions and knowledge sharing on the experiences and expected benefits of ILM, CSA and SFM practices will result in long-term support for the project and adoption of new knowledge, skills and practices in integrated landscape management and climate resilient

[67] For methods, see: National Soil Services Centre (NSSC), 2010. Soil Erosion Plots - Measurement and analysis of soil erosion plot data for 2009. Report: SLMP-2010. Http://www.moa.gov.bt/nssc

	and traditional knowledge of ILM /CCR • Biodiversity portal with updated comprehensive information on the PAs and BCs, including detailed GIS maps of the BCs.		Biodiversity portal with updated information on the PAs and BCs	updated comprehensive information on the PAs and BCs, including GIS maps of BCs.	livelihoods

*Baseline information or target indicators completed during Inception period/within first year of implementation. Some baseline information is for dzongkhag level but some dzongkhags don't fall completely within the project area so more thorough data analysis needed to separate data of the project area for baseline.

VI. MONITORING AND EVALUATION (M&E) PLAN

189. The project results as outlined in the project results framework will be monitored annually and evaluated periodically during project implementation to ensure the project effectively achieves these results. Supported by Component 4: Knowledge Management and M&E, the project monitoring and evaluation plan will also facilitate learning and ensure knowledge is shared and widely disseminated to support the scaling up and replication of project results.

190. Project-level monitoring and evaluation will be undertaken in compliance with UNDP requirements as outlined in the UNDP Program and Operations Policies and Procedures (POPP) and UNDP Evaluation Policy. While these UNDP requirements are not outlined in this project document, the UNDP Country Office will work with the relevant project stakeholders to ensure UNDP M&E requirements are met in a timely fashion and to high quality standards. Additional mandatory GEF-specific M&E requirements (as outlined below) will be undertaken in accordance with the GEF M&E policy and other relevant GEF policies[68].

191. In addition to these mandatory UNDP and GEF M&E requirements, other M&E activities deemed necessary to support project-level adaptive management will be agreed during the Project Inception Workshop and will be detailed in the Inception Report. This will include the exact role of project target groups and other stakeholders in project M&E activities including the GEF Operational Focal Point and national/regional institutes assigned to undertake project monitoring. The GEF Operational Focal Point will strive to ensure consistency in the approach taken to the GEF-specific M&E requirements (notably the GEF Tracking Tools) across all GEF-financed projects in the country. This could be achieved for example by using one national institute to complete the GEF Tracking Tools for all GEF-financed projects in the country, including projects supported by other GEF Agencies.[69]

M&E Oversight and monitoring responsibilities:

192. Project Manager: The Project Manager is responsible for day-to-day project management and regular monitoring of project results and risks, including social and environmental risks. The PM will ensure that all project staff maintain a high level of transparency, responsibility and accountability in M&E and reporting of project results. The PM will report and be accountable to GNHC and the Project Board, and GNHC in turn is accountable to the UNDP Country Office for the delivery of the project results. The PM will be responsible for managing the Project Management Unit (PMU) and its staff.

193. The PM will develop annual work plans based on the multi-year work plan included in **Annex 1**, including annual output targets to support the efficient implementation of the project. The PM will ensure that the standard UNDP and GEF M&E requirements are fulfilled to the highest quality. This includes, but is not limited to, ensuring the results framework indicators are monitored annually in time for evidence-based reporting in the GEF PIR, and that the monitoring of risks and the various plans/strategies developed to support project implementation (e.g. gender strategy, KM strategy etc.) occur on a regular basis.

194. Project Board: The Project Board will take corrective action as needed to ensure the project achieves the desired results. The Project Board will hold project reviews to assess the performance of the project and appraise the Annual Work Plan for the following year. In the project's final year, the Project Board will hold an

[68] See https://www.thegef.org/gef/policies_guidelines

[69] See https://www.thegef.org/gef/gef_agencies

end-of-project review to capture lessons learned and discuss opportunities for scaling up and to highlight project results and lessons learned with relevant audiences. This final review meeting will also discuss the findings outlined in the project terminal evaluation report and the management response.

195. Project Implementing Partner: The Implementing Partner is responsible for providing all required information and data necessary for timely, comprehensive and evidence-based project reporting, including results and financial data, as necessary and appropriate. The Implementing Partner will strive to ensure project-level M&E is undertaken by national institutes, and is aligned with national systems so that the data used by and generated by the project supports national systems.

196. UNDP Country Office: The UNDP Country Office will support the PMU as needed, including through annual supervision missions. The annual supervision missions will take place according to the schedule outlined in the annual work plan. Supervision mission reports will be circulated to the project team and Project Board within one month of the mission. The UNDP Country Office will initiate and organize key GEF M&E activities including the annual GEF PIR, the independent mid-term review and the independent terminal evaluation. The UNDP Country Office will also ensure that the standard UNDP and GEF M&E requirements are fulfilled to the highest quality.

197. The UNDP Country Office is responsible for complying with all UNDP project-level M&E requirements as outlined in the UNDP POPP. This includes ensuring the UNDP Quality Assurance Assessment during implementation is undertaken annually; that annual targets at the output level are developed, and monitored and reported using UNDP corporate systems; the regular updating of the ATLAS risk log; and, the updating of the UNDP gender marker on an annual basis based on gender mainstreaming progress reported in the GEF PIR and the UNDP ROAR. Any quality concerns flagged during these M&E activities (e.g. annual GEF PIR quality assessment ratings) must be addressed by the UNDP Country Office and the Project Manager.

198. The UNDP Country Office will retain all M&E records for this project for up to seven years after project financial closure in order to support ex-post evaluations undertaken by the UNDP Independent Evaluation Office (IEO) and/or the GEF Independent Evaluation Office (IEO).

199. UNDP-GEF Unit: Additional M&E and implementation quality assurance and troubleshooting support will be provided by the UNDP-GEF Regional Technical Advisor and the UNDP-GEF Directorate as needed.

200. **Audit**: The project will be audited according to UNDP Financial Regulations and Rules and applicable audit policies on NIM implemented projects.[70] While the project audits will be conducted by the Royal Audit Authority in line with standard practice in Bhutan, these will be annual and must be consistent with UNDP audit requirements.

[70] See guidance here: https://info.undp.org/global/popp/frm/pages/financial-management-and-execution-modalities.aspx

Additional GEF monitoring and reporting requirements:

201. Inception Workshop and Report: A project inception workshop will be held within two months after the project document has been signed by all relevant parties to, amongst others:

    a) Re-orient project stakeholders to the project strategy and discuss any changes in the overall context that influence project strategy and implementation;
    b) Discuss the roles and responsibilities of the project team, including reporting and communication lines and conflict resolution mechanisms;
    c) Review the results framework and finalize the indicators, means of verification and monitoring plan;
    d) Discuss reporting, monitoring and evaluation roles and responsibilities and finalize the M&E budget; identify national/regional institutes to be involved in project-level M&E; discuss the role of the GEF OFP in M&E;
    e) Update and review responsibilities for monitoring the various project plans and strategies, including the risk log; Environmental and Social Management Plan and other safeguard requirements; the gender strategy; the knowledge management strategy, and other relevant strategies;
    f) Review financial reporting procedures and mandatory requirements, and agree on the arrangements for the annual audit; and
    g) Plan and schedule Project Board meetings and finalize the first year annual work plan.

202. The Project Manager will prepare the inception report no later than one month after the inception workshop. The inception report will be cleared by the UNDP Country Office and the UNDP-GEF Regional Technical Adviser, and will be approved by the Project Board.

203. GEF Project Implementation Report (PIR): The Project Manager, the UNDP Country Office, and the UNDP-GEF Regional Technical Advisor will provide objective input to the annual GEF PIR covering the reporting period July (previous year) to June (current year) for each year of project implementation. The Project Manager will ensure that the indicators included in the project results framework are monitored annually in advance of the PIR submission deadline so that progress can be reported in the PIR. Any environmental and social risks and related management plans will be monitored regularly, and progress will be reported in the PIR. The PIR submitted to the GEF will be shared with the Project Board. The UNDP Country Office will coordinate the input of the GEF Operational Focal Point and other stakeholders to the PIR as appropriate. The quality rating of the previous year's PIR will be used to inform the preparation of the subsequent PIR.

204. Lessons learned and knowledge generation: Results from the project will be disseminated within and beyond the project intervention area through existing information sharing networks and forums. The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to the project. The project will identify, analyse and share lessons learned that might be beneficial to the design and implementation of similar projects and disseminate these lessons widely. There will be continuous information exchange between this project and other projects of similar focus in the same country, region and globally. This will be supported by knowledge management activities in Component 4, including the development and sharing of case studies, national and regional seminars / workshops and exchange visits, and information exchange via a project website.

205. GEF Focal Area Tracking Tools: The following GEF Tracking Tools will be used to monitor global environmental benefit results: GEF Biodiversity (METT and sustainable financing scorecard), GEF SFM and GEF CCA. The

baseline/CEO Endorsement GEF Focal Area Tracking Tools – attached as **Annex 4a,b,c** to this project document – will be updated by the Project Manager/M&E Officer (not the evaluation consultants hired to undertake the MTR or the TE) with support from MOAF and shared with the mid-term review consultants and terminal evaluation consultants before the required review/evaluation missions take place. The updated GEF Tracking Tools will be submitted to the GEF along with the completed Mid-term Review report and Terminal Evaluation report.

206. Independent Mid-term Review (MTR): An independent mid-term review process will begin after the third PIR has been submitted to the GEF, and the MTR report will be submitted to the GEF in the same year as the 4th PIR. The MTR findings and responses outlined in the management response will be incorporated as recommendations for enhanced implementation during the final half of the project's duration. The terms of reference, the review process and the MTR report will follow the standard templates and guidance prepared by the UNDP IEO for GEF-financed projects available on the UNDP Evaluation Resource Center (ERC). As noted in this guidance, the evaluation will be 'independent, impartial and rigorous'. The consultants that will be hired to undertake the assignment will be independent from organizations that were involved in designing, executing or advising on the project to be evaluated. The GEF Operational Focal Point and other stakeholders will be involved and consulted during the terminal evaluation process. Additional quality assurance support is available from the UNDP-GEF Directorate. The final MTR report will be available in English and will be cleared by the UNDP Country Office and the UNDP-GEF Regional Technical Adviser, and approved by the Project Board.

207. Terminal Evaluation (TE): An independent terminal evaluation (TE) will take place upon completion of all major project outputs and constituent activities. The terminal evaluation process will begin three months before operational closure of the project allowing the evaluation mission to proceed while the project team is still in place, yet ensuring the project is close enough to completion for the evaluation team to reach conclusions on key aspects such as project sustainability. The Project Manager will remain on contract until the TE report and management response have been finalized. The terms of reference, the evaluation process and the final TE report will follow the standard templates and guidance prepared by the UNDP IEO for GEF-financed projects available on the UNDP Evaluation Resource Center. As noted in this guidance, the evaluation will be 'independent, impartial and rigorous'. The consultants that will be hired to undertake the assignment will be independent from organizations that were involved in designing, executing or advising on the project to be evaluated, as well as its Mid Term Review. The GEF Operational Focal Point and other stakeholders will be involved and consulted during the terminal evaluation process. Additional quality assurance support is available from the UNDP-GEF Directorate. The final TE report will be cleared by the UNDP Country Office and the UNDP-GEF Regional Technical Adviser, and will be approved by the Project Board. The TE report will be publicly available in English on the UNDP ERC.

208. The UNDP Country Office will include the planned project terminal evaluation in the UNDP Country Office evaluation plan, and will upload the final terminal evaluation report in English and the corresponding management response to the UNDP Evaluation Resource Centre (ERC). Once uploaded to the ERC, the UNDP IEO will undertake a quality assessment and validate the findings and ratings in the TE report, and rate the quality of the TE report. The UNDP IEO assessment report will be sent to the GEF IEO along with the project terminal evaluation report.

209. Final Report: The project's terminal PIR along with the terminal evaluation (TE) report and corresponding management response will serve as the final project report package. The final project report package shall be

discussed with the Project Board during an end-of-project review meeting to discuss lesson learned and opportunities for scaling up.

Table 6. Mandatory GEF M&E Requirements and M&E Budget

GEF M&E requirements	Primary responsibility	Indicative costs to be charged to the Project Budget[71] (US$)		Time frame
		GEF grant	Co-financing	
Inception Workshop	GNHC/PMU	USD 15,000		Within 2m of project document signature
Inception Report	PMU	None		Within 2weeks of inception workshop
Standard UNDP monitoring and reporting requirements as outlined in the UNDP POPP	UNDP Country Office	None		Quarterly, annually
Monitoring of indicators in project results framework	PMU	USD 4,000/year = USD 24,000		Annually
GEF Project Implementation Report (PIR)	PMU and UNDP Country Office and UNDP-GEF team	None		Annually
NIM Audit as per UNDP audit policies	UNDP Country Office	USD 4,000/year = USD 24,000		UNDP/RGoB projects are audited by Royal Audit Authority as per NEX manual between RGoB & UNDP.
Monitoring of environmental and social risks, and corresponding management plans as relevant	PMU UNDP CO	None		On-going
Addressing environmental and social grievances	PMU UNDP Country Office BPPS as needed	None for time of project manager, and UNDP CO		Costs associated with missions, workshops, BPPS expertise etc. can be charged to the project budget.
Project Board meetings	Project Board UNDP Country Office PMU	USD 800 per meeting = USD 9600		Meeting twice annually
Technical Advisory Group meetings*	TAG UNDP Country Office PMU	USD 800 per meeting = USD 9600		Meeting twice annually

[71] Excluding project team staff time and UNDP staff time and travel expenses.

GEF M&E requirements	Primary responsibility	Indicative costs to be charged to the Project Budget[71] (US$)		Time frame
		GEF grant	Co-financing	
Participatory review and planning workshops for project stakeholders*	PMU	USD400/meeting = USD 28,800		Quarterly meetings for 3 landscapes
Supervision missions	UNDP Country Office	None[72]		Annually
Oversight missions	UNDP-GEF team	None[73]		As needed
Knowledge management (Output 4.2) incl lessons learned	PMU	USD 195,000		On-going
GEF Secretariat learning missions'/site visits	UNDP Country Office PMU & UNDP-GEF team	None		To be determined.
Mid-term GEF Tracking Tools to be updated by: DoFPS for BD TT DoFPS for SFM TT DoA for SLM TT	PMU	USD 10,000		Before mid-term review mission takes place.
Independent Mid-term Review (MTR) and management response	UNDP Country Office and PMU and UNDP-GEF team	USD 50,000		Between 2nd and 3rd PIR.
Impact Assessment*	Consultants	USD 140,000		At project inception, before MTR & TE
minal GEF Tracking Tools to be updated by: DoFPS for BD TT DoFPS for SFM TT DoA for SLM TT	PMU	USD 10,000		Before TE mission takes place
Independent Terminal Evaluation (TE) included in UNDP evaluation plan, and management response	UNDP Country Office and PMU and UNDP-GEF team	USD 35,000		At least three months before operational closure
TOTAL indicative COST Excluding project team staff time, and UNDP staff and travel expenses		USD 551,000		

*Note – these items are not mandatory M&E requirements for GEF

Impact Evaluation

210. Impact evaluations seek to answer cause-and-effect questions. Unlike general evaluations, which can answer many types of questions, impact evaluations are structured around one type of question: *What is the impact (or causal effect) of a program on an outcome of interest?* The purpose of the impact evaluation is to ask policy

[72] The costs of UNDP Country Office and UNDP-GEF Unit's participation and time are charged to the GEF Agency Fee.
[73] The costs of UNDP Country Office and UNDP-GEF Unit's participation and time are charged to the GEF Agency Fee.

relevant questions to generate an evidence base for not only Bhutan dialogue and policy, but also for the international climate change adaptation community on how an integrated approach to ecosystem management can help enhance sustainability and climate resilience of forest and agricultural landscape and community livelihoods.

211. This project has three main technical components with different activities under each of them. This makes for multiple treatment of households, farmers, communities and policy makers. However, not all the treatments can be amenable to rigorous impact evaluation. Therefore, the impact evaluation will address a subset of the project activities, with special attention given towards evaluating component 3 of the project that relates to community resilience and improved livelihoods.

212. This will start with a series of research questions on *what do we want to learn about the Integrated approach in Bhutan*? Examples of such questions are:

- Component 1: Will the interventions in this Component lead to enhanced institutional capacity for ILM and climate resilience (and would this be more so than alternative approaches)?
- Component 2: Will the innovative approach to managing BCs in Bhutan reduce the loss of forest cover in the BCs and by how much? Could the same reduction have been achieved through other approaches? Do the BCs perform their intended function of sustaining viable populations of globally threatened wildlife?
- Component 3:
    - Output 3.1: Will the range of SLM measures introduced under the project limit soil erosion on the steep Himalayan slopes, improve soil moisture availability and enhance soil fertility and productivity?
    - Output 3.2: Will the supply chains developed through the project on priority climate-resilient commodities, such as potato, maize, cardamom, ginger and dairy, improve key livelihood sources within the project landscapes?

213. These questions will span the whole project scope, but with emphasis on Component 3. Answering the research questions will contribute to our understanding of how an integrated approach to landscape management and biological corridors can be used as an adaptation strategy in a country like Bhutan. It will also lend itself to upscaling of the project in the country.

214. The Impact evaluation will also look at chosen indicators of interest, based on international norms (eg GEF tracking tools). Indicators based on national norms and protocols may also be added. The Results Framework already includes a range of outcome indicators including the GEF tracking tools that are suitable for this purpose, while other outcome indicators may be added for the impact evaluation.

215. For each outcome, an evaluation strategy that identifies the causal impact of the intervention will need to be developed. This will involve using a control group and collecting both baseline and post intervention data on treatments and controls. The exact strategy for selecting the control will depend on the operational rules of the specific program/intervention. Within the context of the operational rules, the control group must be selected to obtain an accurate estimate of the counterfactual: i.e. what would have happened to treatments in the absence of the program. The control group should satisfy the requirement that the average observed and unobserved characteristics of the treatment and control groups are identical at baseline as well as be subject to the same time series shocks. Then, any differences in the average outcome measurements of treatment and control

groups following the program implementation can be attributed to the intervention. Impact evaluation is part of a broader agenda of evidence-based policy making that aims at valuing these impacts: *Did the project improve the outcome of the society?* These questions are asked across all projects and most especially by governments and development agencies working on climate change adaptation projects. *The basic premise of these questions is based on understanding causality.* Even though definitive answers may not always be possible due to different constraints that surrounds the project implementation and data, economists and social scientists have improved the methodology on pinning down the estimates the past three decades. The central focus of this research is developing a unified framework centered around *counterfactuals.*

216. Causal impact is the difference in outcomes that is caused by the program - How do people who participated in the program perform compared to how they would have fared if they had not participated in the program? This hypothetical condition is called the *counterfactual*. The key assumption of the counterfactual framework is that each household that benefits from a project or program has a potential outcome (increased productivity, profit, higher labor supply, etc.) under the program and without the program. For example, each farmer that adopts climate smart agriculture practice will have a potential what-if profit level if they did not adopt it and vice versa. This alternative income/outcome level serves as the counterfactual. *These two states of potential income exist in theory!* For a case where we have only two states under consideration, we refer to the two states as treatment and control with the state with the project called treatment and the state without the project control. Unfortunately, we only observe what happens with the program - we can never observe the same people at the same time both with and without the program: the *counterfactual is never directly observed*. The central focus of the impact evaluation framework is finding a way to infer the counterfactual from what happened to other people or what happened to the participants of the program before the start of the program. The validity of any impact evaluation framework estimate depends on the validity of the assumptions on the counterfactuals. An impact evaluation is only as good as the comparison group it uses to mimic the counterfactual and a bad comparison group ruins an evaluation and makes impact estimate invalid.

217. Further considerations and methodological details for the experimental design of the impact evaluation and the draft TOR and indicative schedule for a subcontract are given in **Annex 16** (impact evaluation concept note) and additional information on methodologies and indicators in **Annex 15** (monitoring and evaluation framework report). The impact evaluation will be conducted two times: at project inception (year 1) and completion (year 6) stages to provide insight on quantitative impacts and to answer questions related to attribution and is part of the M&E strategy and workplan. Therefore, a research team will be contracted soon after project inception to complete the detailed experimental design and to coordinate the initial assessment (which could be implemented by different trained teams, depending on need).

VII. GOVERNANCE AND MANAGEMENT ARRANGEMENTS

218. Roles and responsibilities of the project's governance mechanism: The project will be implemented in accordance with the National Execution (NEX) Manual agreed between the Royal Government of Bhutan (RGoB) and UNDP. It implies that all management aspects of the project are the responsibility of the national authority. However, the national authority remains accountable to the UNDP Country Office (CO) for production of the outputs, achievement of objectives, use of resources provided by UNDP, and financial / technical progress reporting. UNDP CO in turn remains accountable for the use of resources to the UNDP Executive Board and the project donors.

219. The **Implementing Partner (IP)**, or the national authority, for this project is the Gross National Happiness Commission-Secretariat (GNHC-S). Within the GNHC-S, the Development Cooperation Division (DCD) will manage the project. The Implementing Partner is responsible and accountable for managing this project, including the monitoring and evaluation of project interventions, achieving project outcomes, and for the effective use of UNDP resources. A Project Management Unit (PMU, see below) will be established within the office of the IP.

220. A **Project Board (PB)** will be established to provide high-level guidance and oversight to the project. The PB will be chaired by the Honorable Secretary of GNHC. The PB is responsible for making by consensus, management decisions when guidance is required by the PMU, including recommendation for UNDP/IP approval of project plans and revisions. In order to ensure UNDP's ultimate accountability, PB decisions will be made in accordance with standards and practices that shall ensure management for development results, best value for money, fairness, integrity, transparency, and effective international competition. See **Annex 5 Part A** for TOR for the PB, including its proposed membership. The PB will be made up of senior officials from various agencies representing the following categories:

- Executive, representing project ownership including the chair of the PB and other senior representations from various key agencies relevant to project execution and management;
- Senior Supplier, representing the interests of the parties which provide specific cost-sharing projects and/or technical expertise to the project; and
- Senior Beneficiary, representing the interests of those who will ultimately benefit from the project. The Senior Beneficiary's primary function within the PB is to ensure the realization of project results from the perspective of project beneficiaries.

221. **Technical Advisory and Coordination Committee (TACC)**: a multi-disciplinary team of technical people from various government agencies and implementing partners will be formed to provide technical advice to the project, ensuring that the project interventions are technically sound in keeping with RGoB and UNDP/GEF standards including social and environmental standards, and safegaurding a coordinated and integrated approach to project implementation. Such a group is deemed necessary especially given the technical intricacy of various project interventions and the vast scope of the project encompassing biodiversity conservation, climate change adaptation and community livelihoods. See **Annex 5 Part B** for TOR for the TACC, including its proposed membership.

222. **Project Management Unit:** A PMU will be established to run the project on a day-to-day basis on behalf of the Implementing Partner. Under the oversight and guidance of the Chief of the DCD, GNHC-S, as the Project Director, the PMU will be responsible for day-to-day project management, including monitoring and evaluation,

and coordination with the various responsible parties for planning and implementation of the activities for the delivery of project results in a timely and effective manner and as per standards set for UNDP/GEF projects. Other staff of PMU will include: Project Manager (RGoB co-financed); Project Officer (GEF financed, RGoB-contracted); Monitoring and Evaluation Officer (GEF financed, RGoB-contracted); Project Technical Specialist (GEF financed, UNDP contracted and based in UNDP CO); and Project Accountant (RGoB co-financed). See **Annex 5 Part C** for TOR for the proposed PMU staff positions.

223. The **project assurance role** will be specifically assumed by the UNDP Bhutan CO. Additional quality assurance will be provided by the UNDP Regional Hub for Asia and the Pacific as necessary.

224. Responsible Parties for Implementation: These will be project partners that can receive project funds through the PMU for implementation of the assigned project activities, and, therefore, will be accountable for implementation and reporting of the project activities as per approved work plans and budgets. To the extent possible and relevant, the approach of the project is to decentralize implementation of the project activities to the stakeholders at the field/ local level so as to build ownership of the project activities and project implementation capacity at the local level and also in keeping with the national policy objective to increasingly decentralize governance of development programs. In this respect, project components 2 and 3 are most suited for decentralized implementation. Accordingly, the project is designed to be implemented by the following groups of agencies:

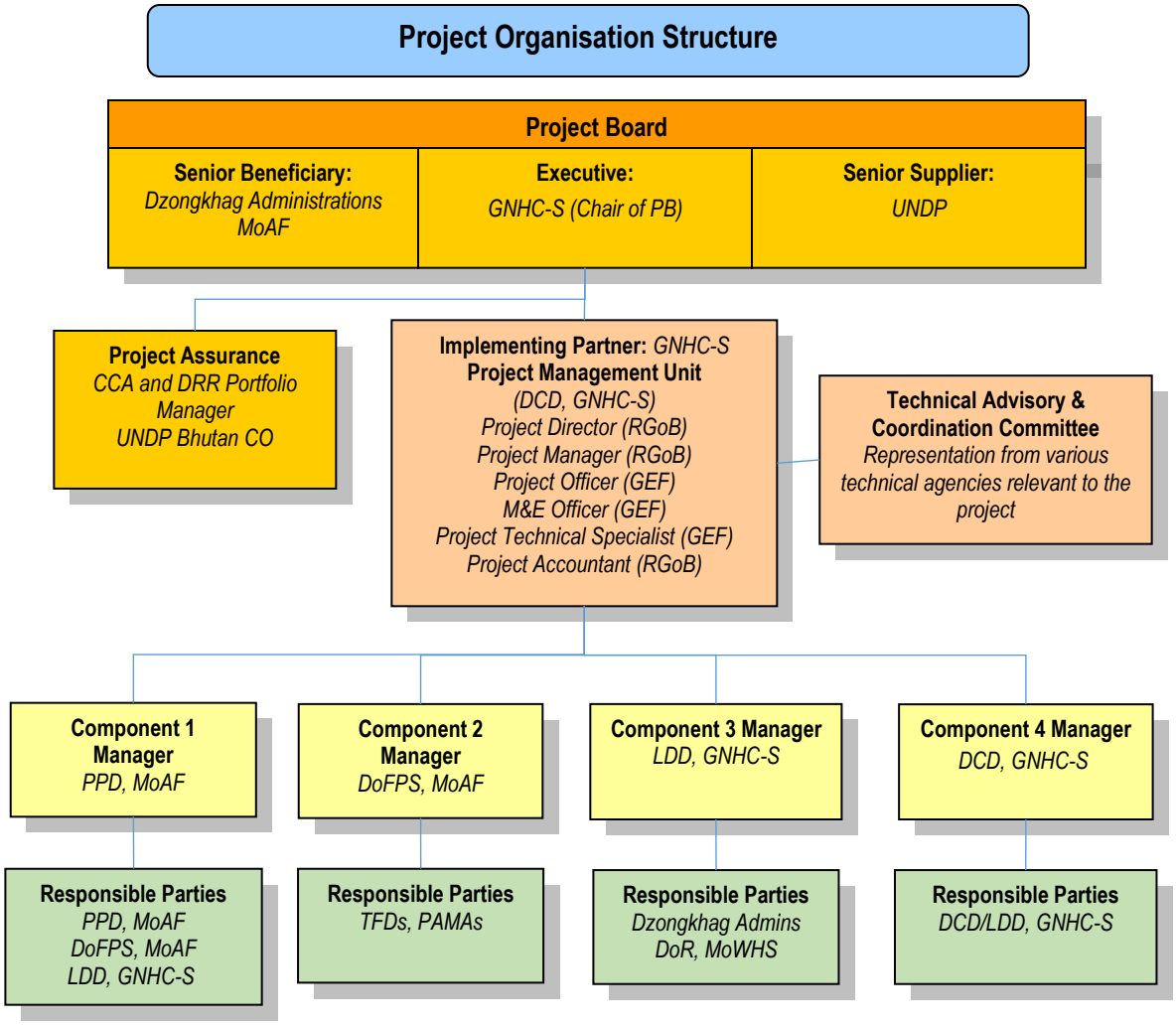


Figure 6. Project organization structure

- **Central government agencies** that have the national-level programmatic, policy and administrative mandates in matters related to forest management, agriculture, environmental assessments, and integration of CCA/ environmental needs in local planning system will be responsible for component/ outcome 1: strengthening systemic and institutional capacity for integrated landscape management. These agencies would include DoFPS/MoAF, PPD/MoAF, DLG/MoHCA and GNHC-S. For coordination and consolidation of project activities, the PPD/MoAF as the nodal policy and program coordination entity of MoAF for matters related to agricultural and forest landscape management will function as the project component 1 manager;
- **Field-based agencies**, namely territorial forestry divisions (TFDs) and protected area management authorities (PAMAs), for component/ outcome 2: BC governance and management established, demonstrated and linked to the management of contiguous PAs. The following TFDs have jurisdictions over the four BCs in the project landscapes: Paro TFD for BC 1, Wangduephodrang TFD for BC 2, and Zhemgang TFD for BC 4 while three TFDs – Bumthang, Wangduephodrang, and Zhemgang – have areas in BC 8, which is a large mosaic of several sub-corridors. The PAMAs in the project landscapes pertain to Jigme Khesar Strict Nature Reserve, Jigme Singye Wangchuck NP and Phrumsengla NP. The DoFPS, MoAF, as the central government department responsible for coordination and management of PAs, will function as the project component 2 manager.

- **Dzongkhag Administrations** that have the mandate for delivery of local development programs and associated public services for component/ outcome 3: livelihood options for communities are more climate-resilient through diversification, SLM and climate-smart agriculture and livestock management and supported by enhanced infrastructure. An exception will be the upgradation of gewog connectivity roads (for improved market access and enhanced climate resilience), which will be implemented by the **Department of Roads** under the Ministry of Works and Human Settlement. The project will involve 12 Dzongkhag Administrations that have gewog(s) inside the project landscapes. The coordination and consolidation of project activities for project component 3 will be done by the LDD, GNHC-S, which has the mandate for overall monitoring and coordination of local development activities.
- **The GNHC-S**, through the DCD, will be directly responsible for implementation of component/ outcome 4: monitoring and evaluation and knowledge management systems established to support sustainable management of forest and agricultural landscapes and climate-resilient communities.

225. The above agencies will implement the project activities assigned to them with technical support from, or in collaboration with other agencies, depending on the nature of the activities and requisite expertise. Key potential agencies for technical support and partnership include:

- Department of Agriculture, MoAF – The DoA, through its various technical agencies (which include National Soil Services Center, National Plant Protection Center, National Seed Center, National Post-Harvest Center, and Regional RNR Research and Development Centers) for technical support and guidance to the Dzongkhag Administrations in the implementation of activities related to sustainable land management and climate-resilient agricultural livelihood practices and systems.
- Department of Agricultural Marketing and Cooperatives, MoAF – for technical support and guidance for improving value chains and marketing of RNR products emanating from climate-resilient livelihood practices, and for development of community-based groups and cooperatives to support local livelihoods.
- Department of Livestock, MoAF – As the overall technical agency to enhance livestock productivity through appropriate animal husbandry and grazing management practices and services, DoL's technical support and guidance to the Dzongkhag Administrations is envisaged for implementation of livestock-based livelihood activities that enhance community resilience to climate change.
- National Environment Commission – Secretariat – for coordination and technical support on climate change and environmental management issues (e.g. SEA, EIA). NEC-S leads the National Climate Change Committee (NCCC) and Climate Change Coordination Committee (C4), as the main forums for coordinating and discussing matters related to climate change in Bhutan.
- Ministry of Health – to provide advice and support on community based health and sanitation inputs to activities in Output 3.2
- Tarayana Foundation, a Bhutanese CSO dedicated to socio-economic upliftment of the poor and marginalized communities, can potentially have a key role in terms of social mobilization and outreach to local communities for improved livelihoods especially among the poor and disadvantaged groups in the project landscapes.
- Royal Society for Protection of Nature, a Bhutanese CSO dedicated to nature conservation, can potentially have a key role in terms of raising community awareness and understanding of environmentally sustainable and climate-resilient livelihoods, and innovative approaches to integrating conservation and local livelihoods including community based ecotourism.
- WWF Bhutan Program will be a key project partner in view of their longstanding support to biodiversity conservation in Bhutan especially in the protected areas and biological corridors and for synergy and

linkages with Bhutan for Life, a long-term collaborative scheme between RGoB and WWF to mobilize and operationalize sustainable financing for the protected areas/ biological corridors system. Particular areas of technical support from, and partnership with, WWF include enhancement of management effectiveness of biological corridors and protected areas (through Bhutan METT+ system), conservation management planning in the biological corridors integrating CCA needs, SMART patrolling, and human-wildlife conflict management.

226. A stakeholder engagement plan is presented in **Table 4**, with further details in **Annex 30**. It outlines the participation of all project stakeholders and their roles in respect of various project outputs during project implementation.

227. UNDP Direct Project Services as requested by Government (if any): UNDP, as GEF Agency for this project, will provide project management cycle services for the project as defined by the GEF Council. In addition the Government of Bhutan may request UNDP direct services for specific projects, according to its policies and convenience. The UNDP and Government of Bhutan acknowledge and agree that those services are not mandatory, and will be provided only upon Government request. If requested, the services would follow the UNDP policies on the recovery of direct costs. These services (and their costs) are specified in the Letter of Agreement (**Annex 11).** As is determined by the GEF Council requirements, these service costs will be assigned as Project Management Cost, duly identified in the project budget as Direct Project Costs. Eligible Direct Project Costs should not be charged as a flat percentage. They should be calculated on the basis of estimated actual or transaction based costs and should be charged to the direct project costs account codes: "64397- Services to projects – CO staff" and "74596- Services to projects – GOE for CO".

228. Agreement on intellectual property rights and use of logo on the project's deliverables and disclosure of information**:** In order to accord proper acknowledgement to the GEF for providing grant funding, the GEF logo will appear together with the UNDP logo on all promotional materials, other written materials like publications developed by the project, and project hardware. Any citation on publications regarding projects funded by the GEF will also accord proper acknowledgement to the GEF. Information will be disclosed in accordance with relevant policies notably the UNDP Disclosure Policy[74] and the GEF policy on public involvement[75].

229. Project management*:* The PMU will be based in Thimphu and will operate from the office of GNHC-S. As part of the co-financing support from the RGoB, office space will be provided by Implementing Partner (GNHC-S). The project will coordinate with other ongoing projects and initiatives, in particular the Bhutan for Life program, IFAD-CARLEP project and GCF project especially where geographic coverage overlap so that there is coordination and synergy, and exchange of lessons and experiences that will strengthen the quality of project implementation (see IV.ii – Partnerships for details).

[74] See http://www.undp.org/content/undp/en/home/operations/transparency/information_disclosurepolicy/

[75] See https://www.thegef.org/gef/policies_guidelines

VIII. FINANCIAL PLANNING AND MANAGEMENT

230. The total cost of the project is USD 56,597,424. This is financed through a GEF or LDCF or SCCF grant of USD 13,967,124, and USD 42,630,300 in parallel co-financing. UNDP, as the GEF Implementing Agency, is responsible for the execution of the GEF resources and the cash co-financing transferred to UNDP bank account only.

231. Parallel co-financing: The realization of project co-financing will be monitored during the mid-term review and terminal evaluation process and reported to the GEF. The planned parallel co-financing will be used as follows in the table below. A single letter covering all government cofinancing has been provided by GNHC-S (see **Annex 11**).

Table 7. Parallel Cofinancing

Co-financing source	Co-financing type	Co-financing (US$ in million)	Planned Activities / Outputs
UNDP	Grant	1.0803	Biodiversity finance and testing of biodiversity financing instruments, support to vulnerable groups and mainstreaming of gender, environment, climate change into development plans at central and local levels
MoAF	Grant	22.49	Sustainable management of forests landscapes and conservation of biodiversity, integrated watershed management and agriculture infrastructure development.
MoAF	In Kind	3.52	
GNH Commission	Grant	7.36	Poverty interventions
GNH Commission	In kind	1.57	Office space, communication and staff salaries
MoWHS	Grant	6.61	Construction and up gradation of Gewog Connectivity Roads and Engineering Adaptation and Disaster Reduction programmes.
TOTAL		**42.6303 million**	

232. Budget Revision and Tolerance: As per UNDP requirements outlined in the UNDP POPP, the project board will agree on a budget tolerance level for each plan under the overall annual work plan allowing the project manager to expend up to the tolerance level beyond the approved project budget amount for the year without requiring a revision from the Project Board. Should the following deviations occur, the Project Manager and UNDP Country Office will seek the approval of the UNDP-GEF team as these are considered major amendments by the GEF:

a) Budget re-allocations among components in the project with amounts involving 10 percent of the total project grant or more;
b) Introduction of new budget items/or components that exceed 5 percent of original GEF allocation.

233. Any over expenditure incurred beyond the available GEF grant amount will be absorbed by non-GEF resources (e.g. UNDP TRAC or cash co-financing).

234. Refund to Donor: Should a refund of unspent funds to the GEF be necessary, this will be managed directly by the UNDP-GEF Unit in New York.

235. Project Closure: Project closure will be conducted as per UNDP requirements outlined in the UNDP POPP. On an exceptional basis only, a no-cost extension beyond the initial duration of the project will be sought from in-country UNDP colleagues and then the UNDP-GEF Executive Coordinator.

236. Operational completion: The project will be operationally completed when the last UNDP-financed inputs have been provided and the related activities have been completed. This includes the final clearance of the Terminal Evaluation Report (that will be available in English) and the corresponding management response, and the end-of-project review Project Board meeting. The Implementing Partner through a Project Board decision will notify the UNDP Country Office when operational closure has been completed. At this time, the relevant parties will have already agreed and confirmed in writing on the arrangements for the disposal of any equipment that is still the property of UNDP.

237. Financial completion: The project will be financially closed when the following conditions have been met:

a) The project is operationally completed or has been cancelled;
b) The Implementing Partner has reported all financial transactions to UNDP;
c) UNDP has closed the accounts for the project;
d) UNDP and the Implementing Partner have certified a final Combined Delivery Report (which serves as final budget revision).

238. The project will be financially completed within 12 months of operational closure or after the date of cancellation. Between operational and financial closure, the implementing partner will identify and settle all financial obligations and prepare a final expenditure report. The UNDP Country Office will send the final signed closure documents including confirmation of final cumulative expenditure and unspent balance to the UNDP-GEF Unit for confirmation before the project will be financially closed in Atlas by the UNDP Country Office.

IX. TOTAL BUDGET AND WORK PLAN

Atlas[1] Proposal or Award ID:	00080725	Atlas Primary Output Project ID:	00090310
Atlas Proposal or Award Title	Enhancing Sustainability and Climate Resilience of Forest and Agricultural Landscape and Community Livelihoods		
Atlas Business Unit	BHUTAN		
Atlas Primary Output Project Title	Enhancing Sustainability and Climate Resilience of Forest and Agricultural Landscape and Community Livelihoods		
UNDP-GEF PIMS No.	5713		
Implementing Partner	GNHC-S		

GEF Component/Atlas Activity	Responsible Party/[1] (Atlas Implementing Agent)	Fund ID	Donor Name	Atlas Budgetary Account Code	ATLAS Budget Description	Year 1 (USD)	Year 2 (USD)	Year 3 (USD)	Year 4 (USD)	Year 5 (USD)	Year 6 (USD)	Total (USD)	*See Budget Note:*
Outcome 1: Enhanced institutional capacity for integrated forest and agricultural landscape management (IFALM) and climate change resilience	**GNHC-S**	**62000**	**GEF**	71300	Local Consultants	10,000	20,000	25,000	20,000	10,000		85,000	*1*
				72100	Contractual Services-Companies	30,000	14,000	166,000	120,000	100,000	45,000	475,000	*2*
				72200	Equipment and Furniture	30,000	40,000	24,000				94,000	*3*
				72800	Information Technology Eqt	11,000	80,000					91,000	*4*
				72300	Supplies	5,000	10,000	16,000	8,000	4,000	2,000	45,000	*5*
				71600	Travel	5,000	10,000	6,000	6,000	6,000	2,000	35,000	*6*
				74500	Miscellaneous Expenses	5,000	5,000	5,000	5,000	5,000	5,000	30,000	*7*
				75700	Training, Workshops and Confs	14,000	10,000	20,000	40,000	10,000	5,000	99,000	*8*
					GEF Sub-Total			**262,000**					

					Outcome 1	**110,000**	**189,000**		**199,000**	**135,000**	**59,000**	**954,000**	
Outcome 1: Enhanced institutional capacity for integrated forest and agricultural landscape management (IFALM) and climate change resilience	**GNHC-S**	**62160**	**LDCF**	71200	International Consultants			14,000				14,000	*9*
				72100	Contractual Services-Companies	60,000	176,000	110,000	80,000	10,000		436,000	*10*
				72500	Supplies		14,000					14,000	*11*
				71600	Travel	5,000	10,000	15,000	10,000			40,000	*12*
				75700	Training, Workshops and Confs	16,000	40,000	40,000				96,000	*13*
					LDCF Sub-Total Outcome 1	**81,000**	**240,000**	**179,000**	**90,000**	**10,000**	**-**	**600,000**	
					Component 1 TOTAL	**191,000**	**429,000**	**441,000**	**289,000**	**145,000**	**59,000**	**1,554,000**	
Outcome 2: Biological corridor governance and management established and demonstrated	**GNHC-S**	**62000**	**GEF**	71200	International Consultants	40,000	70,000	50,000	-	-	-	160,000	*14*
				71300	Local Consultants	23,000	-	26,000	-	-	-	49,000	*15*
				72100	Contractual Services - Companies	10,000	110,000	102,000	67,000	50,000	-	339,000	*16*
				71600	Travel	10,000	20,000	15,000	-	-	-	45,000	*17*
				72200	Equipment & Furniture	-	70,000	55,000	20,000	-	-	145,000	*18*
				72800	Information Technology Equipment	15,000	40,000	35,000	-	-	-	90,000	*19*
				72400	Communication & AV Equipment	5,000	15,000	15,000	-	-	-	35,000	*20*
				72300	Materials & Goods	-	40,000	40,000	70,000	60,000	60,000	270,000	*21*
				74200	AV & Print Production Costs	10,000	20,000	20,000	4,000	4,000	3,000	61,000	*22*
				74500	Miscellaneous Expenses	6,400	6,400	6,700	6,700	6,900	6,900	40,000	*23*
				75700	Training, Workshops & Conferences	72,000	141,500	144,500	119,500	119,500	69,000	666,000	*24*

					GEF Sub-Total Outcome 2	**191,400**	**532,900**	**509,200**	**287,200**	**240,400**	**138,900**	**1,900,000**	
					Component 2 TOTAL	**191,400**	**532,900**	**509,200**	**287,200**	**240,400**	**138,900**	**1,900,000**	
Outcome 3: Livelihood options for communities are more climate-resilient through diversification, SLM and climate-smart agriculture	**GNHC-S**	**62000**	**GEF**	71300	Local Consultants		15,000	15,000	10,000	5,000		45,000	*25*
				72100	Contractual Services-Companies		45,000	45,000	45,000	20,000	10,000	165,000	*26*
				72300	Materials & Goods		7,000	7,000	6,000	6,000	4,000	30,000	*27*
				72200	Equipment and Furniture		20,000					20,000	*28*
				75700	Training, Workshops & Confs		7,500	10,000	10,000	7,500	5,000	40,000	*29*
					GEF Sub-Total Outcome 3	**-**	**94,500**	**77,000**	**71,000**	**38,500**	**19,000**	**300,000**	
Outcome 3: Livelihood options for communities are more climate-resilient through diversification, SLM and climate-smart agriculture	**GNHC-S**	**62160**	**LDCF**	71200	International Consultants	15,000	40,000	15,000	15,000	15,000	10,000	110,000	*30*
				71300	Local Consultants	50,000	40,000	45,000	40,000	30,000	25,000	230,000	*31*
				72100	Contractual Services-Companies	150,000	250,000	275,000	235,000	140,000	90,000	1,140,000	*32*
				72300	Materials & Goods	350,000	650,000	885,000	870,000	600,000	470,000	3,825,000	*33*
				72200	Equipment and Furniture	60,000	100,000	60,000	30,000	30,000	25,000	305,000	*34*
				72800	Information Technology Eqt	5,000	5,000					10,000	*35*
				72600	Grants		150,000	150,000	150,000	150,000	150,000	750,000	*36*
				74700	Transport, Shipping and handle	80,000	130,000	130,000	130,000	100,000	60,000	630,000	*37*
				71600	Travel	25,000	35,000	35,000	35,000	35,000	25,000	190,000	*38*
				74500	Miscellaneous Expenses	20,000	40,000	40,000	40,000	40,000	20,000	200,000	*39*
				75700	Training, Workshops & Confs	175,000	330,000	330,000	330,000	175,000	124,000	1,464,000	*40*
					LDCF Sub-Total Outcome	**930,000**	**1,770,000**	**1,965,000**	**1,875,000**	**1,315,000**	**999,000**	**8,854,000**	

					3								
					Component 3 TOTAL	**930,000**	**1,864,500**	**2,042,000**	**1,946,000**	**1,353,500**	**1,018,000**	**9,154,000**	
Outcome 4: Knowledge management system established to support sustainable management of forest and agricultural landscapes and climate-resilient communities:	**GNHC-S**	**62000**	**GEF**	75700	Training, Workshops & Confs	25,000	60,000	70,000	25,000	10,000	5,000	195,000	*41*
					GEF Sub-Total Outcome 4	**25,000**	**60,000**	**70,000**	**25,000**	**10,000**	**5,000**	**195,000**	
Outcome 4: Knowledge management system established to support sustainable management of forest and agricultural landscapes and climate-resilient communities:	**GNHC-S**	**62160**	**LDCF**	71200	International Consultants			16,250			19,500	35,750	*42*
				71300	Local Consultants	20,745	20,745	39,495	30,745	22,020	10,500	144,250	*43*
				72100	Contractual Services-Companies	70,000		20,000	30,000	20,000	75,000	215,000	*44*
				71600	Travel	5,000	5,000	20,000	5,000	5,000	10,000	50,000	*45*
				74200	Audio Visual&Print Prod Costs			10,000	15,000	10,000	10,000	45,000	*46*
				74500	Miscellaneous Expenses	2,000	2,000	2,000	2,000	1,000	1,000	10,000	*47*
					LDCF Sub-Total Outcome 4	**97,745**	**27,745**	**107,745**	**82,745**	**58,020**	**126,000**	**500,000**	
					Component 4 TOTAL	**122,745**	**87,745**	**177,745**	**107,745**	**68,020**	**131,000**	**695,000**	
Project management unit	**GNHC-S**	**62000**	**GEF**	71600	Travel	4,500	4,500	4,500	4,500	4,500	4,624	27,124	*48*
				74200	Audio Visual&Print Prod Costs	2,000	2,000	3,000	3,000	4,000	5,000	19,000	*49*
				74100	Professional Services	4,000	4,000	4,000	4,000	4,000	4,000	24,000	*50*
				75700	Training, Workshops & Confs	8,000	8,000	8,000	8,000	8,000	8,000	48,000	*51*
					GEF Sub-Total Project Mgt	**18,500**	**18,500**	**19,500**	**19,500**	**20,500**	**21,624**	**118,124**	

Project management unit	GNHC-S	62160	LDCF	71400	Contractual Services - Individ	51,863	51,863	51,863	51,863	51,863	51,860	311,175	52
				72200	Equipment and Furniture	43,000						43,000	53
				72500	Supplies	1,979	800	800	800	800	800	5,979	54
				72800	IT Equipment	11,500	1,200	1,200	1,200	1,200	1,200	17,500	55
				73300	Rental & Maintenance-IT Equip			1,000	1,000	1,180		3,180	56
				73400	Rental & Maint of Other Equip	500	800	800	800	800	800	4,500	57
				74596	UNDP CO implementation support	26,808	26,808	26,808	26,808	26,627	26,807	160,666	58
					LDCF Sub-Total Project Mgt	**135,650**	**81,471**	**82,471**	**82,471**	**82,470**	**81,467**	**546,000**	
					Project Mgt TOTAL	**154,150**	**99,971**	**101,971**	**101,971**	**102,970**	**103,094**	**664,124**	
					GEF Sub-Total	**344,900**	**894,900**	**937,700**	**601,700**	**444,400**	**243,524**	**3,467,124**	
					LDCF Sub-Total	**1,244,395**	**2,119,216**	**2,334,216**	**2,130,216**	**1,465,490**	**1,206,467**	**10,500,000**	
					Project Total	**1,589,295**	**3,014,116**	**3,271,916**	**2,731,916**	**1,909,890**	**1,449,991**	**13,967,124**	

SUMMARY BUDGET TABLE

	Amount	Amount	Amount	Amount	Amount	Amount	Total
	Year1	Year 2	Year 3	Year 4	Year 5	Year 6	
GEF	344,900	894,900	937,700	601,700	444,400	243,524	3,467,124
LDCF	1,244,395	2,119,216	2,334,216	2,130,216	1,465,490	1,206,467	10,500,000
GNHC - Grant	1,101,000	1,401,000	1,103,000	1,050,000	1,174,000	1,531,000	7,360,000
GNHC - In Kind	261,667	261,667	261,667	261,667	261,667	261,665	1,570,000
MoAF - Grant	3,409,000	4,880,000	2,122,000	2,626,433	4,453,000	4,999,567	22,490,000
MoAF - In Kind	586,667	586,667	586,667	586,667	586,667	586,665	3,520,000
MoWHS - Grant	1,110,000	1,677,000	507,000	754,000	1,119,000	1,443,000	6,610,000
UNDP - Grant	224,517	306,817	61,667	124,000	133,000	230,299	1,080,300
TOTAL	**8,282,146**	**12,127,267**	**7,913,917**	**8,134,683**	**9,637,224**	**10,502,187**	**56,597,424**

Budget Notes	
No.	**Component 1 - GEF**
1	LC to facilitate policy analysis including stakeholder meetings 10,000 Y2 (Output 1.1); LC to facilitate review of BC regulations and facilitate workshop $30,000, LC to develop strategy for BC system and facilitate workshop $40,000 (Output 1.4); LC to support NFI/NFMS development 5000 (Output 1.5); Total: $85,000.
2	Subcontracts to support to NFI and NFMS development $90,000, application of METT+ to BC system 30,000 and TA for developing monitoring protocols and providing training $50,000 (Output 1.2); policy study for sustainable financing and develop strategy $35,000, PES/REDD+ pilot development and upscaling $50,000, and Ecosystem valuation field studies and awareness programme $50,000 (Output 1.3); awareness programme on BC system for national stakeholders $20,000 (Output 1.4); revising of SFM guidelines $50,000, training in use of updated guidelines $20,000, TA and CD for developing and reviewing management plans for FMUs $40,000, and TA for developing LFMPs at Gewogs $40,000 (Output 1.5); Total: $475,000.
3	NFI lab equipment $10,000, field equipment including: 16 trail bikes for 8 FMUs @ 1500 = $24000, GPS x 8 units at $300, cameras 8 @ $500, camping equipment $7600, binoculars 8 @ $500, forest inventory equipment 30,000 in support of FMU management, $12,000 for field equipment for LFMP support (Output 1.5); Total: $94,000.
4	NFI / NFMS software $80,000 (Y2), $11,000 for computer hardware for NFI/NFMS support Y1 (Output 1.5); Total: $91,000.
5	Supplies for NFI/NFMS field studies, FMU fieldwork and LFMP fieldwork $45,000 (Output 1.5); Total: $45,000
6	Travel in support of NFI/NFMS field studies, FMU and LFMP fieldwork ($35,000) (Output 1.5); Total: $35,000.
7	Miscellaneous expenses: contingency allowance for currency fluctuations, etc. $30,000; Total: $30,000.
8	Workshops and FGDs for: IFALM policy analysis and development $14,000 (Output 1.1); sustainable financing review and strategy development $15,000 (Output 1.3); review of BC regulations and development of national BC strategy $30,000 (Output 1.4); developing and reviewing FMU management plans and LFMPs $40,000 (Output 1.5); Total: 99,000.
No.	**Component 1 - LDCF**
9	IC to provide TA for developing mainstreaming guidelines, tools and checklists for institutionalization of the MRG system 15 days @ $600 = $9,000 plus travel for one mission ($5000) $14,000 Y3 (Output 1.6); Total: $14,000.
10	Subcontracts to support capacity development for MOAF and other agencies in IFALM and CCA $140,000, and TA for land use planning including BC delineation $190,000 (Output 1.1); capacity development for central and local government MRGs $76,000; and TA for SEA training and implementation $30,000 (Output 1.6); Total: $436,000.
11	Supplies for local MRG capacity development $14,000 (Output 1.6); Total: $14,000.
12	Travel for local government MRG capacity development and SEA studies $40,000 (Output 1.6); Total: $40,000.

13	Workshops and FGDs for: IFALM policy analysis and development $6,000 (Output 1.1); capacity development for central and local MRGs and SEA capacity development $90,000 (Output 1.6); Total: $96,000.
	Component 2 - ALL GEF
14	International consulting costs for: (a) training of TFD staff on biodiversity/socio-economic surveys and conservation management planning integrating appraisal of climate change vulnerabilities and risks (USD 20,000 in Yr 1) Output 2.1; (b) technical guidance and backstopping to TFD staff for biodiversity/socio-economic surveys and conservation management planning for BC8 (USD 10,000 in Yr 1 and USD 15,000 each year in Yrs 2 and 3) Output 2.1; (c) technical support for development and institution of management effectiveness assessment system for BCs (USD 15,000 in Yr 2) Output 2.2; (d) technical support for development and institution of biological monitoring system (USD 10,000 in Yr 1,USD 25,000 each year in Yrs 2 and 3) Output 2.3; (e) technical support for development and institution of inter-institutional and coordination and enforcement mechanism system, such as WEMS, to combat poaching and illegal wildlife trade (USD 15,000 in Yr 2 and USD 10,000 in Yr 3) Output 2.3. Total: $160,000
15	Local consulting costs for: (a) national counterpart support to international consultant for training of TFD staff on biodiversity/socio-economic surveys and conservation management planning integrating appraisal of climate change vulnerabilities and risks (USD 7,000 in Yr 1) Output 2.1; (b) review and updating the conservation management plans of BCs 1, 2 and 4 integrating CCA needs (USD 26,000 in Yr 3) Output 2.1; (c) review and updating the Bhutan Human-Wildlife Conflicts Management Strategy (USD 16,000 in Yr 1) Output 2.4. Total: $49,000
16	Contractual services for: (a) technical services for boundary verification/ realignment surveys of the BCs (USD 10,000 in Yr 1 and USD 30,000 in Yr 2) Output 2.1; (b) development of basic infrastructure for management of BCs (USD 80,000 each year in Yrs 2 and 3, and USD 50,000 each year in Yrs 4 and 5)) Output 2.2; (c) professional services from an in-country institute to evaluate HWC interventions and assess best practices for scaling-up (USD 22,000 in Yr 3 and USD 17,000 in Yr 4) Output 2.4. Total: $339,000
17	Travel costs for field work for boundary verification/ realignment surveys of all BCs and conservation management planning for BC 8 (USD 10,000 in Yr 1, USD 20,000 in Yr 2, and USD 15,000 in Yr 3) Output 2.1. Total: $45,000
18	Field and office equipment for: (a) BC8 biodiversity/ socio-economic surveys, conservation management planning and documentation work (USD 20,000 in Yr 2) Output 2.1; (b) operationalization of BC management (USD 20,000 each year in Yrs 2, 3 and 4) Output 2.2; (c) field gear and equipment for local communities participating in biological monitoring (USD 10,000 in Yr 2 and USD 15,000 in Yr 3) Output 2.3; (d) HWC management (USD 20,000 each year in Yrs 2 and 3) Output 2.4. Total: $145,000
19	IT equipment for institution of SMART patrolling and biological monitoring systems (USD 15,000 in Yr 1, USD 40,000 in Yr 2, and USD 35,000 in Yr 3) Output 2.3. Total: $90,000
20	Communication and AV equipment for institution of SMART patrolling and biological monitoring systems (USD 5,000 in Yr 1, and USD 15,000 each year in Yrs 2 and 3) Output 2.3. Total: $35,000
21	Materials and goods for physical interventions to manage HWC conflicts Output 2.4. Total: $270,000
22	AV and print production costs for: (a) map production and printing of conservation management plans (USD 3,000 in Yr 1, and USD 6,000 each year in Yrs 2 and 3) Output 2.1; (b) audiovisual production, extension materials, etc for awareness-raising on BCs (USD 4,000 each year in Yrs 1, 2, 3, 4 and 5, and USD 3,000 in Yr 6) Output 2.1; (c) SMART patrolling, biological monitoring, and sensitization of local communities on monitoring of biodiversity and biodiversity threats (USD 10,000 each year in Yrs 2 and 3) Output 2.3; (d) printing of updated HWC management strategy (USD 3,000 in Yr 1) Output 2.4. Total: $61,000

23	Miscellaneous expenses: contingency allowance for currency fluctuations, potential increases in the costs of materials and supplies, etc. $40,000. Total: $40,000
24	Training and workshop costs for: (a) in-country training of TFD staff in biodiversity/ socio-economic surveys and conservation management planning integrating appraisal of CC vulnerabilities and risks (USD 10,000 in Yr 1 and USD 12,000 in Yr 2) Output 2.1; (b) stakeholder consultation meetings/workshops for BC boundary verification/ realignment surveys and for conservation management plan preparation for BC8 (USD 10,000 each year in Yrs 1 and Yr 2) and review and updating of conservation management plans of BCs 1, 2 and 4 (USD 5,000 in Yr 3) Output 2.1; (c) community sensitization programs/ meetings to raise awareness on BCs (USD 3,000 in Yr 1, USD 4,500 each year in Yrs 2, 3, 4 and 5, and USD 4,000 in Yr 6) Output 2.2; (d) training for TFD staff on conservation management (USD 30,000 in Yr 2, USD 50,000 each year in Yrs 3, 4 and 5, and USD 20,000 in Yr 6) Output 2.2; (e) TFD/PA staff training on SMART patrolling/ WEMS and biological monitoring (USD 15,000 in Yr 1, USD 35,000 each year in Yrs 2 and 3, and USD 20,000 each year in Yrs 4, 5 and 6) Output 2.3; (f) local community training on biological monitoring (USD 20,000 each year in Yrs 2 and 3 and USD 10,000 each year in Yrs 4 and 5) Output 2.3; (g) consultation meetings/ workshops to review/update HWC management strategy and to identify pilot HWC interventions (USD 14,000 in Yr 1) Output 2.4; and (h) HWC management (USD 20,000 in Yr 1, USD 30,000 each in Yrs 2 and 3, USD 35,000 each year in Yrs 4 and 5, and USD 25,000 in Yr 6) Output 2.4. Total: $666,000
	Component 3 – GEF
25	LC costs for support on the development and creation of innovative conservation jobs for community members, including drafting of ToR and support in development of training modules/curricula ($45,000) Output 3.2. Total: $45,000.
26	Contractual services costs for: • conservation jobs created for community members for support of PA and BC management teams ($165,000) Output 3.2. Total: $165,000.
27	• Materials for execution of conservation jobs of community members (clothing, boots, communication materials, mobility etc.) ($30,000); Output 3.2. Total: $30,000.
28	• Field equipment for CFMGs and community groups working on watershed / catchment protection and REDD+ MRV work: GPSs, crow-bars, spades, hacks etc. ($20,000); these 2 items are linked to Output 3.2. Total: $20,000.
29	Costs for meetings, trainings, workshops and conferences as follows: • Training of community members involved in conservation jobs (principles and practice of patrolling, maintenance works, fire-fighting, awareness raising, biodiversity etc.) ($40,000); these 5 items are linked to Output 3.2. Total: $40,000.
	Component 3 – LDCF
30	IC costs for TA on assessment and development of crop and wildlife insurance mechanism pilots ($40,000) and REDD+/PES valuation studies and development of participatory MRV+ approaches ($40,000) (Output 3.2), TA for adapting and upgrading of EFRC guidelines for design and construction of climate-resilient roads ($30,000) (Output 3.3). Total: $110,000.
31	LC costs for support on: • the promotion of organically-produced farm produce, through certification, branding, marketing and value-chain development ($40,000), • assessment and development of crop and wildlife insurance mechanism pilots and roll-out of actual insurance pilots ($60,000), • REDD+/PES and PWS valuation studies and development of participatory MRV+ approaches, including watershed protection assessments and advisory

	services ($30,000), these LCs are linked to Output 3.2. • adapting and upgrading of EFRC guidelines for design and construction of climate-resilient roads, in collaboration with IC ($30,000), • consulting services for support to the implementation of the climate-proofing of the Shingkhar-Nyimshong GC road and the Wangdigang-Zhimbaling GC road as demonstration sites ($50,000), and • development of capacity of farmers to maximize value addition in the supply chain ($20,000); these 3 LCs are linked to Output 3.3. Total: $230,000.
32	Contractual services costs for: • labour contribution of communities for implementation of SLM activities; 2,000ha and LDN pilot sites ($100,000), • development and management of community and private seed banks ($80,000), • contractors to implement construction and rehabilitation of irrigation channels, construction of reservoirs and tanks and labour contribution of involved communities ($350,000), and • development of training curricula for capacity building of Dzongkhag and extension staff to promote best practices on SLM, CSA and climate smart livestock practices ($30,000); these 4 items are linked to Output 3.1. • support to farmer groups, cooperatives and private enterprises to promote organic commercialization ($40,000), • support to CFMG's and community groups for protection interventions in watersheds (labour costs for plantation, rehabilitation, water source protection works etc.) ($80,000), • contractors to build and upgrade GC climate-resilient roads (the Shingkhar-Nyimshong GC road and the Wangdigang-Zhimbaling GC road) ($300,000) • installation and training of community members of supplied machinery and processing facilities for Post-harvest storage and packaging and processing (100,000) • development of smartphone apps and/or SMS service platforms to enhance information access for rural communities ($40,000), and • NGO's, farmer groups and cooperatives to develop capacity to enhance market access ($20,000); these 4 items are linked to Output 3.3. Total: $1,140,000.
33	Cost of purchasing and installation of materials and goods as follows: • Planting materials for SLM work and preparing 2,000ha of SLM interventions (dryland and wetland terracing, stone bunding, check dam construction, bamboo plantation etc.) ($620,000), • Supply of seeds and planting materials ($100,000) and IPM materials ($80,000), totalling $180,000, • Materials to construct and rehabilitate irrigation channels, ponds, tanks and reservoirs (cement, sand, aggregates, steel, timber, HPE pipes) and materials needed for innovative irrigation practices (hoses, pipes, pumps, sprinkles etc.) ($950,000), • Supply of improved breeds, materials to construct improved FYM sheds for stall feeding (cement, timber, aggregates, sand), improved grass seeds and agro-forestry planting materials for 1,000ha to be prepared ($520,000), and • Materials for demonstration at farmer field level for capacity building of Dzongkhag and RNR extension staff and groups and cooperatives ($40,000); these 5 items are linked to Output 3.1.

	• Materials for value-addition of priority climate resilient commodities including inputs (seeds etc.) for community seed banks, dairy processing materials, cardamom, maize, ginger and potato processing materials ($120,000), • Materials to support post-production value addition of organic produce (processing, packaging and marketing materials) ($60,000), • Materials for protection interventions in watersheds (plantation, rehabilitation and water source protection materials, seedlings etc.) ($450,000), and • Materials and goods needed for the climate-proofing of two GC roads (Shingkhar-Nyimshong and Wangdigang-Zhimbaling), with an emphasis on cement, sand and aggregates and black topping materials (bitumen etc.) for the Shingkhar-Nyimshong road and planting materials for the bio-engineering works for the Wangdigang-Zhimbaling road, ($570,000) • Materials and inputs needed to construct sales facilities (cement, sand, aggregates, steel etc.), PH loss materials (silos, bins and other storage materials), electric dryers for cardamom processing , small (gender-friendly) farm machinery and packaging materials for farm produce ($260,000), • Materials for Gewog information centers and farm shops and other goods for innovative application to enhance information access for rural communities ($45,000), and • Support materials for training and extension services on value addition and market exploration ($10,000); these 5 items are linked to Output 3.3. Total: $3,825,000.
34	Cost of purchasing equipment as follows: • A range of field equipment for SLM interventions (hacks, shovels, spades, crow bars, clino meters, altimeters, GPSs etc.) ($50,000), • Farm tools for seed banks and demo plots; IMP equipment (laboratory) for IPM, ($50,000), these 2items are linked to Output 3.1. • Tools and equipment for value-addition in priority climate-resilient commodities, including equipment for establishment and management of community seeds banks ($80,000), • Additional tools and equipment to improve marketing infrastructure and post-harvest storage and packaging, processing and sales facilities ($100,000), and • Equipment for gewog information centers, farm shops and other tools to enhance information access (message boards, weather stations, smart phones etc.) ($25,000); these 2 items are linked to Output 3.3. Total: $305,000.
35	Cost of purchasing IT equipment as follows: • Computers and other IT equipment for gewog information centers, farm shops to enhance information access ($10,000); Output 3.3. Total: $10,000.
36	Costs of grants*: • Grants to be provided in the context of the crop and livestock insurance pilot schemes to the Gewog Environment Coordination Committees (GECCs) in hot spot areas of the project landscapes, amongst others Bjena, Korphu, Patala, Phuntenchu, Dovan, Jigmecholing, Bji, Tsento, Phobji and Nubi, totalling $750,000 (Output 3.2). Total: $750,000. *Note: Grants will be issued in accordance with UNDP Guidance on Micro-Capital Grants.*
37	Cost for transport and handling of inputs from suppliers to implementing community sites (planting materials, seeds, cement, pipes, cattle, machinery, sand, aggregates, steel, tools, equipment, bitumen etc.): Output 3.1: $$340,000, Output 3.2: $90,000 and Output 3.3: $200,000. Total: $630,000.

38	Travel costs: Costs of implementers, project staff and consultants and contractors to travel to and from implementation sites and training venues in the (often remote) project Dzongkhags: • Output 3.1: $$30,000, Output 3.2: $120,000 and Output 3.3: $40,000. Total: $190,000.
39	Miscellaneous expenses: contingency allowance for currency fluctuations, potential increases in the cost of goods, materials, supplies and equipment.Total: $200,000
40	Costs for meetings, trainings, workshops and conferences as follows: • Training of farming communities on SLM and practical implementation of SLM techniques (12 Dzongkhags * $8,333 = $$100,000), • Training of framers on CSA, new crop-varieties, climate-resilient practices and IPM ($30,000) • Training of farmers on watershed/catchment interventions and irrigation construction and rehabilitation and training of WUAs in all 12 Dzongkhags ($10,000*12 = $120,000), • Training of farmers on climate-smart livestock practices, improved breed management, stall feeding and cut-and-carry system management ($10,000*12 = $120,000), • ToT of Dzongkhag and Gewog staff on best practices on SLM, CSA, IPM, organic production and climate smart livestock management and support to capacity building events of groups and cooperatives; one Postgraduate studentship in integrated landscape management / climate change adaptation / sustainable rural development ($100,000) totalling ($260,000); these 5 items are linked to Output 3.1. • Training of selected communities on value-addition and use and application of specific processing equipment and machinery (12*$12,500 = $150,000), • Training of farming groups and cooperatives on vale addition to organic produce, including certification, branding, packaging and marketing (12*$10,000 =$120,000), • Training of GECCs and other Gewog and Dzongkhag staff involved in development of crop and livestock insurance pilots (12*$10,000 = $120,000), • Training of CFMGs and community groups on REDD+/ MRV/PES and PWS and watershed-catchment interventions/rehabilitation approaches (12*$15,000 = $180,000), these 4 items are linked to Output 3.2 • Consultation workshop, presentation and training on improved EFRC guidelines and standards for involved national and regional staff of DoR and contractors ($34,000), • Exchange visits and training of DoR regional staff and contractors to field sites on upgraded climate-resilient GC roads ($50,000), • Training of farming communities on use and management of enhanced marketing facilities (post-harvest loss equipment, packaging and processing equipment0 and enhanced commercialization ($30,000), • Training of Dzongkhag and Gewog staff and community groups on improved information on markets, weather/climate and commodity prices ($70,000), and • Training of farmer groups, cooperatives and Government staff/NGO staff to develop their capacity to add vale in the commodity supply chain (skills training/extension service) ($80,000); these 5 items are linked to Output 3.3. Total: $1,464,000.

	Component 4 - GEF
41	IFALM and CCA review workshop Y3 $15,000 (Output 4.1); Stakeholder consultations on communications strategy development $10,000 (Y1); FGDs on best practices in ILM and CCA $45,000 (Output 4.2); inception workshop 15000 (Y1) and MTR workshop 10,000 (Y3); capacity development for effective M&E and RBM $100,000 Output 4.3. Total: $195,000.
	Component 4 – LDCF
42	IC for MTR (25 days at $650) Y3 ($16250) and for TE (30 days at $650) Y6 ($19,500) (Output 4.3). Total: $35,750.
43	LC for MTR (25 days at $350 = $8750) Y3 and for TE (30 days at $350 = $10500) Y6 (Output 4.3). LC inputs for website content development (20,000), knowledge management inputs on gender and SESP lessons learned (10,000), knowledge management on ILM and CCR (10,000); and best practices documentation and dissemination ($30,000) (Output 4.2); applied review of ILM and CCR (10,000) and biodiversity portal input (15,000) (Output 4.1). Total: $144,250.
44	Impact assessment studies (Y1 and Y6) $140,000; (Output 4.3); CD on ILM and CCA training and KM for local university (50,000) (Y3-5); design and content development on ILM and CCA for Biodiversity Portal (25,000) Y3-5 (Output 4.1). Total: $215,000.
45	Travel for inputs associated with Output 4.1 (10,000), Output 4.2 (30,000) and Output 4.3 (10,000). Total: $50,000.
46	AV materials and publications on ILM and CCA case studies, lessons learned (Output 4.2). Total: $45,000.
47	Miscellaneous expenses: contingency allowance for currency fluctuations, etc. Total: $10,000.
	Project Management - GEF
48	PMU staff travel costs Total: $27,124.
49	Audio-visual and Printing: Technical Reports, Proceedings, Lessons Learned, project completion report. Total: $19,000.
50	Professional Services: Annual NIM audit @$4000/year. Total: $24,000.
51	Project Board meetings 12@$1200 = $14,400, TACC Meetings 12@$1200 = $14,400, stakeholder consultation meetings 24@$800 x three landscapes = $19,200. Total: $48,000
	Project Management - LDCF
52	Project Officer (RGOB contracted - $15,559/year x 6 years = $93,354), Project Technical Specialist (UNDP contracted - $20,745/year x 6 years = $124,470) and M&E Specialist (RGoB contracted - $15,559/year = $93,354) for project duration (6 years); Total: $311,175.
53	Reconditioned 4WD vehicle ($40,000); PMU office furniture $3000. Total: $43,000.
54	PMU office supplies - paper, printer cartridges, other consumables Total: $5,979.
55	Computers 5 @ $1500, printer/scanner/fax multifunction 1 @ $500; laser printer 1 @ $500, digital camera 2@$1000, IT accessories $2000, software $3000; mobile phones 5@$400 = $2000; Total: $17,500.
56	Maintenance, repair and replacement of PMU IT equipment; Total: $3180
57	Vehicle maintenance; Total: $4,500
58	This is service support costs (Direct Project Costs) for the services the government requested UNDP to provide. Details on types of services and associated cost breakdown are provided in Annex 11 Letter of agreement between UNDP and Government of Bhutan on country office service support. Total: $160,666.

X. LEGAL CONTEXT

239. The relevant provisions of the Standard Basic Assistance Agreement (SBAA) signed on 14th July 1978 between the United Nations Development Programme (UNDP) and the Royal Government of Bhutan (RGoB) shall apply.

240. Specific reference is made to the Article III- Execution of Projects, Article IV- Information concerning Projects, and Article V- Participation and Contribution of Government in execution of Project of the SBAA shall apply to the implementation of this project.

241. All references in the SBAA to "Executing Agency" shall be deemed to refer to "Implementing Partner." The UNDP Resident Representative in Thimphu is authorized to effect in writing the following types of revision to this Project Document, provided that he/she has verified the agreement thereto by the UNDP GEF Unit and is assured that the other signatories to the Project Document have no objection to the proposed changes:

a) Revision of, or addition to, any of the annexes to the Project Document;
b) Revisions which do not involve significant changes in the immediate objectives, outputs or activities of the project, but are caused by the rearrangement of the inputs already agreed to or by cost increases due to inflation;
c) Mandatory annual revisions which re-phase the delivery of agreed project inputs or increased expert or other costs due to inflation or take into account agency expenditure flexibility; and
d) Inclusion of additional Annexes and attachments only as set out here in this Project Document.

242. Any designations on maps or other references employed in this project document do not imply the expression of any opinion whatsoever on the part of UNDP concerning the legal status of any country, territory, city or area or its authorities, or concerning the delimitation of its frontiers or boundaries.

243. Reproduction and translation of any findings and reports resulting from the execution of this project for non-commercial purposes are authorized, provided the source is acknowledged and the publisher is given prior notice.

XI. ANNEXES

Annex 1 Multi-year work plan
Annex 2 Monitoring Plan
Annex 3 Evaluation plan
Annex 4 GEFTracking Tools at baseline
Annex 5 Terms of Reference for Project Board, Project Manager, Chief Technical Advisor and other positions as appropriate
Annex 6 UNDP Social and Environmental and Social Screening Template (SESP)
Annex 7 Environmental and Social Management Plan (ESMP) for moderate and high risk projects only
Annex 8 UNDP Project Quality Assurance Report
Annex 9 UNDP Risk Log
Annex 10 Results of capacity assessment of the project implementing partner and HACT micro assessment
Annex 11 Letter of agreement between UNDP and Government o Bhutan on country office service support
Annex 12 Letter of Endorsement of GEF Operational Focal Point
Annex 13 co-financing letters
Annex 14 Gender analysis report
Annex 15 M&E Framework Report
Annex 16 Impact Evaluation Design
Annex 17 List of peoples consulted during PPG phase
Annex 18 Landscape profile outline
Annex 19 Climate change vulnerability and adaptation planning report
Annex 20 Value chain and market analysis report
Annex 21 Biodiversity and socio-economic assessment report
Annex 22 Gewog connectivity roads report
Annex 23 REDD+ and carbon assessment report
Annex 24 Population and land cover information for the project landscapes report
Annex 25 Crops & Livestock Insurance Report
Annex 26 Threats and assumptions
Annex 27 Additional information and component 3 activities
Annex 28 List of related initiatives and proposed coordination arrangements
Annex 29 Alignment of the project with national priorities
Annex 30 Plan for engagement of stakeholders in project implementation