

**Government of Himachal Pradesh
Himachal Pradesh Forest Department**

**INTEGRATED PROJECT FOR SOURCE SUSTAINABILITY
AND CLIMATE RESILIENT RAIN-FED AGRICULTURE IN
HIMACHAL PRADESH
(World Bank Assisted)**

Biodiversity Management Plan

**Final Report
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**Himachal Pradesh Forest Department
Project Management Unit
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ESS6 Biodiversity Management Plan

1. Project Background

The Government of Himachal Pradesh (GoHP) is preparing the Integrated Project for Source Sustainability and Climate Resilient Rain-fed Agriculture (IP) in the selected Gram Panchayats of the State, with financing from the World Bank. IP carries forward the ideas and learnings of H.P. Mid Himalayan Watershed Development Project (HPMHWDP). The proposed IP will invest in measures in upstream catchment areas to improve sustainable land and watershed management to promote the sustainability of perennial water sources. It will also support continued diversification and commercialization of agricultural value chains in downstream areas by supporting production and value addition including the promoting efficient water use thereby increasing the productivity of water in agriculture. It will adopt a spatial approach by (i) applying a landscape approach to individual high-risk micro-watersheds within select river basins in Himachal Pradesh; and (ii) overlaying this with a cluster approach to target value chain investments in specific locations to leverage economies of scale and network externalities. In parallel, the project will develop and demonstrate the application of an analytical evidence base to inform strategic policy choices viz. the trade-offs between alternative water use and will pilot a new institutional arrangement for addressing complex multi-sectoral concepts such as sustainable landscape management that involves several sectors and multiple Government departments.

Summary of Proposed Project Interventions

The project development objective of the proposed Integrated Project for Source Sustainability and Climate Resilient Rain-fed Agriculture (IP) is “To improve upstream watershed management and increase agricultural water productivity in selected Gram Panchayats in Himachal Pradesh.”

The proposed project interventions and its four main components are provided below.

Component 1 (Sustainable land and water management) will support a) establishment hydrological monitoring stations; b) preparation of Gram Panchayat Resource Management Plans (GP-RMPs); c) Soil and water conservation measures including afforestation, check dams, bunds water harvesting structures, drainage line treatments, gully plugging; d) Plantations, e) Pasture management with rotational grazing, fodder delineated forest, introduction of voluntary systems of rotational grazing in young forest; e) Development of high-quality seed stands f) construction of centralized seed center and climate-controlled seed bank; g) Nursery development h) Forest fire prevention and suppression measures. i) Innovative silviculture pilots and j) operation, maintenance and investment fund (OMIF).

Component 2 (Improved Agricultural Productivity and Value Addition) will support interventions on a) water harvesting, storage, and distribution infrastructure, small pond excavation, community tank renovation, roof rain-water tanks, traditional

irrigation channels, and gravity and lift intake and distribution structures; b) on farm adoption of Climate Smart Technologies; c) “last-mile” market access infrastructure such as footbridges and manually operated, ropeways (but not roads or investments requiring land acquisition); d) matching grants to individual farmers and farmer groups for essential productive assets.

Component 3 (Institutional Capacity Building for Integrated Watershed Management) will support institutional assessments, functional reviews, institutional strengthening, institutional reforms, change management, capacity building interventions that would enable adoption of more holistic approach towards integrated watershed management, climate change, climate resilient and resource efficient agriculture, including information technology strategy

Component 4 (project management) will support key project staff, monitoring and evaluation, grievance redress mechanisms, Environment and Social Framework (ESF) implementation, overall capacity building, project communication etc.

2. Objectives

Himachal Pradesh is bestowed with distinctive floral and faunal biodiversity having aesthetic, cultural, commercial and genetic values. 95 percent of the floral and faunal species available in the State are endemic. The State has an extensive network of protected areas and wildlife sanctuaries for the protection of biodiversity, as well as internationally recognised sites of biodiversity such as RAMSAR wetlands, a UNESCO Natural World Heritage Site and Endemic Bird Areas and Important Bird Areas. Further, the state has a rich wealth of traditional knowledge and physical cultural heritage within its large number of sacred groves. The objectives of ESS 6 are particularly significant in the state and aim:

- a) To protect and conserve biodiversity and habitats.
- b) To apply the mitigation hierarchy and the precautionary approach in the design and implementation of projects that could have an impact on biodiversity.
- c) To promote the sustainable management of living natural resources.
- d) To support livelihoods of local communities, including Indigenous Peoples, and inclusive economic development, through the adoption of practices that integrate conservation needs and development priorities.

Potential Risks and Impacts

Under the project, potential risks that could result in a loss of biodiversity and ecosystem services could arise from:

- a) unmanaged chemical pesticide and fertilizer use and agricultural run-off
- b) use of non-native varieties and replacement of local varieties with hybrid or exotic trees, plants, and animal species
- c) habitat and land-use conversion
- d) un-sustainable and un-scientific harvesting of NTFPs and
- e) unmanaged grazing

3. Biodiversity Management Plan (BMP)

The (BMP) has been prepared with key strategies for biodiversity conservation that include: i) site screening for avoiding critical natural habitats; ii) promotion of indigenous species in plantations, fodder plots and nurseries and avoidance of exotic, invasive species; iii) adoption of sustainable harvesting and production of NTFP; iv) updating of peoples biodiversity registers in recently denotified wildlife panchayats and community capacity building; v) negative list to ensure biodiversity conservation, prevent forest fires, habitat fragmentation, land use modifications, and prevent felling of trees. The ESMF includes screening and eligibility checklists to ensure exclusion of activities that would adversely affect biodiversity such as felling of trees, activities causing irreversible impacts to critical and natural habitats, activities causing forest fires, felling of trees without a permit, and activities that are inconsistent with forest working plans or Catchment Area Treatment (CAT) plans.

1.1 Site Screening

1.1.1 Identification of Critical Habitats and No-Go Zones

The project will not finance activities in identified critical habitats of the state, unless they are activities explicitly designed to conserve biodiversity and consistent with existing conservation and management plans of these identified habitats. The designated projected areas of the state include all internationally recognised sites of biodiversity including the UNESCO World Heritage Site, RAMSAR Wetlands and Important Bird Areas (IBAs).

Protected Areas of HP

Sl. No.	Protected Areas	Notification Date	Area (sq. km)	District (s)	Fauna
National Parks					
1	Great Himalayan National Park	1984	905.4	Kullu	Blue sheep, snowleopard, Himalayan brown bear, Himalayantahr, andMuskdeer
2	PinValley National Park	1987	675.00	Lahul &Spiti	RedIndian Fox, Tibetan Gazelle, Wooley Hare, Snow Leopard, HimalayanMarmot, Himalayan Mouse-hare, IndianHodgson'sPorcupine, Blue SheepandWolf
3	Khirganga	2010	705	Kullu	Snow Leopards, Wild bears, Himalayan brown bear, Himalayantahr, andMuskdeer

Sl. No.	Protected Areas	Notification Date	Area (sq. km)	District (s)	Fauna
4	Inderkila	2010	94	Kullu	Tigers, Leopards, Deer
5	Simbalbara	2010	27.88	Sirmour	Leopard, Sambhar, Ghoral, Barking Deer, Jackal, Spotted Deer, Wild Boar & Blue Bull. Hornbill, Peafowl, Red Jungle Fowl, Khaleej Pheasant
Wildlife Sanctuaries					
1	Bandli WLS	1962	32.11	Mandi	Himalayan Black Bear, common Palm Civet, Barking Deer, Goral, Indian hare, Rhesus Macaque.
2	Chail WLS	1976	16	Solan	Sambar, Goral, Himalayan Black Bear, Red Deer, Silver-White Oak, Barking Deer, Common Langur, Leopard, Rhesus Macaque, Himalayan Yellow Throated Marten, Indian Porcupine, Giant and Kashmiri Flying Squirrel.
3	Chandratal WLS	2007	38.56	Lahul & Spiti	Ibex and Snow leopard
4	Churdhar WLS	1985	55.52	Sirmaur	Himalayan Black Bear, Barking Deer, Musk Deer, Common Langur and Leopards
5	Daranghati WLS	1962	171.50	Shimla	Himalayan Black Bear, Brown Bear, Himalayan Palm Civet, Barking Deer, Musk Deer, Flying Fox, Goral, Indian Hare, Stripped Hyena, Himalayan Ibex, Leopard, Himalayan yellow throated Marten, Serow, Blue Sheep, Common giant flying Squirrel and Himalayan Weasel
6	Dhauladhar WLS	1994	982.86	Kangra	Nilgai, Sambar, Barking Deer, Wild Buar, Clawless Otter, and Leopard
7	Gamgul Siyabehi WLS	1962	108.40	Chamba	Ibex, bear, langur, leopard, muskdeer, Himalayan tahr,

Sl. No.	Protected Areas	Notification Date	Area (sq. km)	District (s)	Fauna
					Himalayanfox, Himalayan shrew, rhesusmacaque, common giant flying squirrel, Indianbushrate, jackal, barking deer
8	Kais WLS	1954	12.61	Kullu	Serow, blueSheep, red Fox, musk deer, Goral, ibex, Leopard, snow Leopard, brownBear, Himalayan black Bear
9	Kalatop-Khajjar WLS	1958	17.17	Chamba	Ibex, deer, black bearsandleopards
10	Kanawar WLS	1954	107.29	Kullu	Serow, blueSheep, red Fox, musk deer, Goral, ibex, Leopard, snow Leopard, brownBear, Himalayan black Bear
11	Khokhan WLS	1954	14.94	Kullu	Serow, blueSheep, red Fox, musk deer, Goral, ibex, Leopard, snow Leopard, brownBear, Himalayan black Bear
12	Kibber WLS	1992	2220.12	Lahul &Spiti	IbexandSnowleopard
13	Kugti WLS	1962	405.49	Chamba	Brown bear, Asiaticblackbear, Leopard, HimalayanTahr, Himalayanibex,Goral, CommonLangur, Porcupine
14	Lippa Asrang WLS	1692	31	Kinnaur	Yak,Ibex, Leopard, Goral, Blue Sheep, Brown Bear, Musk Deer, Himalayan black Beer
15	Majathal WLS	1954	30.86	Solan	Deer, Bear, Cheer pheasant
16	Manali WLS	1954	29	Kullu	HimalayanBlack Bear, HimalayanPalm Civet, BarkingDeer, Flying Fox, Goral, IndianHare, StrippedHyena, Leopard, Himalayanyellow throatedMarten, Serow, Kashmirflying Squirrel andHimalayanTahr.

Sl. No.	Protected Areas	Notification Date	Area (sq. km)	District (s)	Fauna
17	Nargu WLS	1962	132.37	Mandi	Black Bear, Brown Bear, Himalayan Palm Civet, barking Deer, Indian Hare, common Langur, Leopard, Rhesus Macaque, Himalayan yellow throated stone Marten, Indian Porcupine, common giant flying Squirrel, Himalayan Weasel
18	Pong Dam Lake WLS	1982	207.59	Kangra	Nilgai, Sambar, Barking Deer, Wild Buar, Clawless Otter, and Leopard
19	Rakchham-Chitkul WLS	2013	304	Kinnaur	Leopard, Blue Sheep, Goral, Musk Deer, Himalayan and Black Bear
20	Renuka WLS	2013	4	Sirmaur	Asiatic lions, spotted deer, liontailed macaques, peacocks, nilgai or large grey Indian antelope, barking deer and Himalayan black bears.
21	Rupi Bhaba WLS	1982	503	Kinnaur	Serow, blue Sheep, red Fox, musk deer, Goral, ibex, Leopard, snow Leopard, brown Bear, Himalayan black Bear
22	Sech Tuan Nala WLS	1962	390.29	Chamba	Ibex, bear, langur, leopard, musk deer, Himalayan antahr, Himalayan fox, Himalayan shrew, Rhesus macaque, common giant flying squirrel, Indian bush rate, Jackal, barking deer
23	Shikari Devi WLS	1962	29.94	Mandi	Himalayan palm civet, barking deer, marten, Indian porcupine, Kashmiri flying squirrel, musk deer, common langur, leopard, the common Squirrel,
24	Shimla Water Catchment WLS	1958	10	Shimla	Flying Squirrel, common langur, Serow, Porcupine, Sambar

Sl. No.	Protected Areas	Notification Date	Area (sq. km)	District (s)	Fauna
25	Talra WLS	1962	46.48	Shimla	Flying Squirrel, common langur, Serow, Porcupine, Sambar
26	Tundah WLS	1962	64	Chamba	Ibex, bear, langur, leopard, muskdeer, Himalayan tahr, Himalayan fox, Himalayan shrew, rhesus macaque, common giant flying squirrel, Indian bush rate, jackal, barking deer
Conservation Reserves					
1	Shilli Conservation Reserve	1999	1.49	Solan	Black bear, Panther, Barking Deer
2	Shri Naina Devi Conservation Reserve	1999	17	Bilaspur	Leopards, Rhesus, Himalayan Yellow Throated Marten, Serow, Porcupine, Sambar and Common Giant Flying Squirrel
3	Darlaghat Conservation Reserve		0.67	Solan	Sambar, wild boar, black bears, Jungle fowls

1.2 Screening for Critically Endangered Species

Further, the project will assess the presence of critically endangered species in the project Area to ensure that the project does not finance any activities in habitats where the following critically endangered species of the state are found, even if they are outside the boundaries of the network of protected areas and wildlife sanctuaries. The collection and use of these species, living or dead, is prohibited under the Wildlife Protection Act, 1972 unless it is for research, propagation or scientific investigation with the approval of the State Biodiversity Board. As per the Biological Diversity Act, the Ministry of Environment & Forests and Climate Change, Govt. of India in consultation with the Govt. of Himachal Pradesh, has notified eight species of plants and ten species of animals which are on the verge of extinction. These are as follows:

Plants

1. *Aconitum deinorrhizum* Stapf - Mohra - Ranunculaceae
2. *Aconitum heterophyllum* Wall - Atis - Ranunculaceae
3. *Aconitum violaceum* Jacq. Ex Stapf
4. *Eremostachys superba* Royle ex Benth - Gajar Mula - Lamiaceae

5. *Jasminum parkeri* Dunn - Dwarf Jasmine - Oleaceae
6. *Nardostachys grandiflora* DC - Jatamansi - Boraginaceae
7. *Dactylorhiza hatagirea* D. Don - Salam panja - Orchidaceae
8. *Taxus wallichiana* Zucc Synonym: *Taxus contorta* Griff. - Rakhal/Birmi - Taxaceae

Animals

9. *Murina grisea* Peters, 1872
10. *Cervus duvaucelii* (Cuvier, 1823)
11. *Capra faconeri* (Wagner)
12. *Moschus chrysogaster* (Hodgson, 2839)
13. *Gyps bengalensis* Gmelin - White-rumped vulture - Accipitridae
14. *Gyps tenuirostris* - Gray Slender billed vulture - Accipitridae
15. *Sarcogyps calvus* Scopoli - Red-headed vulture - Accipitridae
16. *Vanellus gregarius* (Pallas, 1771)
17. *Cervus elaphus hanguli*
18. *Capricornis sumatraensis*

1.3 Screening for Sacred Groves

The project will undertake a screening to ascertain if the project Gram Panchayat has any Sacred Groves in its vicinity. The project will not finance any activities within the Sacred Groves of the State unless they are activities explicitly designed to conserve biodiversity and traditional knowledge and consistent with existing rules and in consultation with the local community including the temple committee, usually in charge of the management of these sacred groves. The State has approximately 350 sacred groves documented through various initiatives. An initiative by HP State Biodiversity Board has detailed records of 253 sacred groves in the districts of Shimla and Kullu. These groves are locally named *Dev Van* or *Devta Ka Jungle* and have rules such as a prohibition on cutting trees or carrying dry leaves outside the area. These groves, as documented possess a great heritage of diverse gene pool of many forest species with socio religious attachment and play an important role in water conservation.

1.4 Promotion of Native Species

In its plantation activities, the project will promote Mixed Broad Leaved Native Species of the state as follows:

1. *Toona ciliata*
2. *Dendrocalamus strictus*
3. *Salix alba*
4. *Morus alba*
5. *Syzygium cumini*
6. *Melia azederach*
7. *Terminalia arjuna*

8. *Emblica officianalis*
9. *Bombax ceiba*
10. *Albizzia stipulata*
11. *Tectona grandis*
12. *Acacia catechu*
13. *Sapindus mukorossii*
14. *Dalbegia sissoo*
15. *Quercus* spp.
16. *Agave* spp.

1.5 Sustainable Harvesting of NTFPs

The project will promote forest nurseries and plantation activities that will include strategies and best practices for the conservation and sustainable/ scientific harvesting of Non-Timber Forest products including fuelwood and fodder species. Strategies should include:

1. Avoid/ Prohibit any project activities that disturb habitats containing critically endangered or threatened NTFP species, unless they are designed with the sole purpose of conserving these species.
2. Inclusion of Non Timber Forest Product (NTFP) species, including for fuel wood, fodder, wild fruit and Medicinal and Aromatic Plants (MAPs) in seed stands, forest nurseries and plantation activity
3. Awareness generation and trainings on conservation, protection and scientific harvesting of NTFP species including conservation of the wild gene pool and promotion of best practices to ensure survival of saplings, plantation and adherence to forest working plans.

1.6 Peoples Biodiversity Register (PBR)

The project includes several Gram Panchayats (33+) that were de-notified from Wild Life Sanctuaries / Protected Areas about 5 years ago, and are now administratively designated revenue villages. These Gram Panchayats could have ecologically unique features and the potential to leverage biodiversity linked livelihood activities. Apart from the screening procedures, the project will support the preparation of Peoples Biodiversity Registers in these panchayats in collaboration with the State Biodiversity Board. This involves the formation of a Biodiversity Management Committee (BMC), constituted by local government institutions, within their area of jurisdiction, for the purpose of promoting conservation, sustainable use and documentation of biological diversity including preservation of habitats, conservation of land races, folk varieties and cultivars, domesticated stocks and breeds of animals and micro-organisms and chronicling of knowledge relating to biological diversity.

People's Biodiversity Registers (PBR) is a participatory process that involves community consultations towards documenting folk knowledge of status, uses, history, ongoing changes and forces driving changes in biodiversity resources, gainers

and losers in these processes and people's perceptions of how these resources should be managed. The documents bring together important locality specific information on biodiversity resources and ecological processes affecting them. The main function of the BMC is to prepare People's Biodiversity Register in consultation with local people. The Register shall contain comprehensive information on availability and knowledge of local biological resources, their medicinal or any other use or any other traditional knowledge associated with them.