

Attachment II.3.7.1.3 Potential Species for Planation/ ANR Operations and Potential Medicinal Plant Species in HP

Table 1 Potential Species for Planation and ANR Operations

No	Species	Common Name	Month	Years Required for Tending Works after Planting	Types of Tending Works	Purpose & Utility 1	Purpose & Utility 2	Growth Performance	Preferred Treatment	Feasible Area for Growing	Feasible Project Districts for Growing
1	<i>Abies pindrow</i>	Silver fir	Jul-Aug	a*: 5-7 years b*: 3 years (a: conventional method, b: tall plants)	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	Timber	Smallwood	Shade Bearer	Block Planting/ Gap Planting	High Hill (1800 -2200)	Kullu/ Kinnaur/ Mandi/ Shimla
2	<i>Picea smithiana</i>	Spruce	Jul-Aug	a: 5-7 years b: 3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	Timber	Smallwood	Shade Tolerant	Block Planting/ Gap Planting	High Hill (1800 -2200)	Kullu/ Kinnaur/ Mandi/ Shimla
3	<i>Cedrus deodara</i>	Deodar/ Cedar	Jul-Aug	a: 5-7 years b: 3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	Timber	Smallwood, Medicinal	Shade Tolerant	Block Planting/ Gap Planting/ ANR/ Densification	Mid Hill (650 -1800m) High Hill (1800 -2200)	Kullu/ Kinnaur/ Mandi/ Shimla
4	<i>Pinus roxburghii</i>	Chir/ Chil	Jul-Aug	a: 5-7 years b: 3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	Timber	Medicinal	Light demanding	Block Planting	Shivalik (350 -650 m)/ Mid Hill (650 -1800m)	Bilaspur/ Kullu/ Mandi/ Shimla
5	<i>Pinus wallichiana</i>	Blue Pine/ Kail	Jul-Aug	a: 5-7 years b: 3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	Timber	Smallwood	Light demanding	Block Planting/ Gap Planting	Mid Hill (650 -1800m)/ High Hill (1800 -2200)	Kullu/ Kinnaur/ Mandi/ Shimla
6	<i>Pinus gerardiana</i>	Chilgoza	Dec	a: 5-7 years b: 3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	Medicinal	Fuelwood	Light demanding	Block Planting	Cold Dry (low rainfall)	Kinnaur
7	<i>Juniperus macropoda</i>	Juniper/ Pencil cedar	Dec	a: 5-7 years b: 3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	Timber	Fuelwood	Light demanding	Block Planting	Cold Dry (low rainfall)	Kinnaur/ Lahual & Spiti

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8	<i>Acacia catechu</i>	Khair	Jul-Aug	a: 3-5 years b: 3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	Timber	Smallwood	Light demanding	Block Planting/ Gap Planting	Shivalik (350 -650 m)/ Mid Hill (650 -1800m)	Bilaspur/ Mandi/ Shimla
9	<i>Aegle marmelos</i>	Bel	Jul-Aug	a: 3-5b: 3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	Medicinal	Smallwood	Light demanding	Gap Planting/ Densification	Shivalik (350 -650 m)	Bilaspur/ Mandi/ Shimla
10	<i>Aesculus indica</i>	Khanor	Dec-Jan	a: 5-7 years b: 3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	Fodder	Fuelwood	Shade Tolerant	Gap Planting/ Densification	Mid Hill (650 -1800m)/ High Hill (1800 -2200)	Kullu/ Kinnaur/ Mandi/ Shimla
11	<i>Albizzia lebbek</i>	Kala Siris	Jul-Aug	a: 3-5 years b: 3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	Fodder	Fuelwood	Light demanding	Block Planting/ Fuel & Fodder	Shivalik (350 -650 m)/ Mid Hill (650 -1800m)	Bilaspur/ Mandi/ Shimla
12	<i>Albizzia stipulata</i>	Ohi	Jul-Aug	a: 3-5 years b: 3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	Fodder	Fuelwood	Light demanding	Block Planting/ Fuel & Fodder	Shivalik (350 -650 m)/ Mid Hill (650 -1800m)	Bilaspur/ Mandi/ Shimla
13	<i>Alnus nepalensis/A. nitida</i>	Kunish	Dec-Jan	a: 3-5 years b: 3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	Fuelwood	Fodder	Light demanding	Block Planting	Mid Hill (650 -1800m)/ High Hill (1800 -2200)	Kullu/ Kinnaur/ Mandi/ Shimla
14	<i>Azadirachta indica</i>	Neem	Jul-Aug	a: 3-5 years b: 3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	Medicinal	NTFP	Light demanding	Block Planting/ Gap Planting	Shivalik (350 -650 m)	Bilaspur
15	<i>Bauhinia variegata</i>	Kachnar	Dec-Jan Jul-Aug	a/b:3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	Fodder	Fuelwood	Shade Tolerant	Fuel & Fodder	Shivalik (350 -650 m)/ Mid Hill (650 -1800m)	Bilaspur/ Kull/ Mandi/ Shimla
16	<i>Bombax ceiba</i>	Semal	Jul-Aug	a: 3-5 years	Protection, Bush	Timber	NTFP	Light	Block Planting	Shivalik	Bilaspur/

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				b: 3 years	Cutting/ weeding, cleaning, hoeing, Mulching, Pruning			demanding		(350 -650 m)	Mandi/ Shimla
17	<i>Toona ciliata</i>	Toon	Dec-Jan Jul-Aug	a: 3-5 years b: 3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	Timber	Fodder	Light demanding	Block Planting	Shivalik (350 -650 m)/ Mid Hill (650 -1800m)	Bilaspur/ Mandi/ Shimla
18	<i>Dalbergia sissoo</i>	Tali	Dec-Jan Jul-Aug	a: 3-5 years b: 3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	Timber	Fodder	Light demanding/Shade Tolerant	Block Planting/ Gap Planting	Shivalik (350 -650 m)/ Mid Hill (650 -1800m)	Bilaspur/ Mandi/ Shimla
19	<i>Emblica officinalis</i>	Amla	Dec-Jan Jul-Aug	a: 3-5 years b: 3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	Medicinal	Fodder	Light demanding	Gap Planting/ Densification	Shivalik (350 -650 m)/ Mid Hill (650 -1800m)	Bilaspur/ Mandi/ Shimla
20	<i>Grewia optiva/ G. Oppositifolia</i>	Bihul/Dhaman	Dec-Jan Jul-Aug	a: 3-5 years b: 3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	Fodder	Smallwood	Shade Tolerant	Gap Planting/ Densification	Shivalik (350 -650 m)/ Mid Hill (650 -1800m)	Bilaspur/ Mandi/ Shimla
21	<i>Mangifera indica</i>	Mango	Jul-Aug	a: 3-5 years b: 3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	Smallwood	NTFP	Shade Tolerant	Gap Planting	Shivalik (350 -650 m)	Bilaspur/ Mandi
22	<i>Melia azadirachta</i>	Drek	Dec-Jan Jul-Aug	a: 3-5 years b: 3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	Smallwood	Fuelwood	Light demanding	Block Planting	Shivalik (350 -650 m)	Bilaspur/ Mandi/ Shimla
23	<i>Morus alba</i>	Shehtoot	Dec-Jan	a: 3-5 years b: 3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	Smallwood	Fodder	Shade Tolerant	Block Planting/ Gap Planting	Shivalik (350 -650 m)/ Mid Hill (650 -1800m)	Bilaspur/ Mandi/ Shimla
24	<i>Pongamia pinnata</i>	Pongamia	Jul-Aug	a: 3-5 years b: 3 years	Protection, Bush Cutting/ weeding,	Smallwood	Fuelwood	Shade Tolerant	Gap Planting	Shivalik (350 -650 m)	Bilaspur/ Mandi

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					cleaning, hoeing, Mulching, Pruning						
25	<i>Quercus leucotrichophora</i>	Ban	Jul-Aug	a: 5-7 years b: 3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	Fodder	Fuelwood	Shade Bearer	Gap Planting/ Densification	Mid Hill (650 -1800m)	Kullu/ Mandi/ Shimla
26	<i>Robinia pseudoacacia</i>	Robinia	Dec-Jan	a: 3-5 years b: 3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	Fodder	Fuelwood	Light demanding	Block Planting	Mid Hill (650 -1800m)	Kullu/ Mandi/ Shimla
27	<i>Salix alba</i>	Badha	Dec-Jan Jul-Aug	a: 3-5 years b: 3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	Smallwood	Fuelwood	Shade Bearer	Gap Planting	Mid Hill (650 -1800m), High Hill (1800 -2200)	Kullu/ Kinnaur/ Mandi/ Shimla
28	<i>Sapindus mukorossii</i>	Ritha	Dec-Jan Jul-Aug	a: 3-5 years b: 3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	NTPF	Fuelwood	Shade Tolerant	Gap Planting	Shivalik (350 -650 m)/ Mid Hill (650 -1800m)	Bilaspur/ Mandi/ Shimla
29	<i>Syzygium cuminii</i>	Jamun	Jul-Aug	a: 3-5 years b: 3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	Medicinal	Fodder	Shade Tolerant	Gap Planting	Shivalik (350 -650 m)	Bilaspur/ Mandi/ Shimla
30	<i>Terminalia bellerica</i>	Behra	Jul-Aug	a: 3-5 years b: 3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	Medicinal	Fodder	Shade Tolerant	Gap Planting	Shivalik (350 -650 m)	Bilaspur/ Mandi/ Shimla
31	<i>Terminalia arjuna</i>	Arjuna	Jul-Aug	a: 3-5 years b: 3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	Medicinal	Fodder	Light demanding	Block Planting	Shivalik (350 -650 m)	Bilaspur/ Mandi/ Shimla
32	<i>Terminalia chebula</i>	Harar	Jul-Aug	a: 3-5 years b: 3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing,	NTPF	Fuelwood	Shade Tolerant	Gap Planting	Shivalik (350 -650 m)	Bilaspur/ Mandi/ Shimla

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					Mulching, Pruning						
33	<i>Artocarpus lakoocha</i>	Dheoun	Jul-Aug	a: 3-5 years b: 3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	NTFP	Fuelwood	Shade Tolerant	Gap Planting	Shivalik (350 -650 m)	Bilaspur/ Mandi/ Shimla
34	<i>Hicoria carya</i>	Pecanut	Jul-Aug	a: 3-5 years b: 3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	NTFP	Fuelwood	Shade Tolerant	Gap Planting	Shivalik (350 -650 m)	Bilaspur/ Mandi/ Shimla
35	<i>Dendrocalamus spp</i>	Bans	Jul-Aug	a/b: 2-3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	Smallwood	Fodder	Shade Tolerant	Block Planting	Shivalik (350 -650 m)	Bilaspur/ Mandi/ Shimla
36	<i>Terminalia tomentosa</i>	Sain	Jul-Aug	a: 3-5 years b: 3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	Timber	Fodder	Shade Tolerant	Gap Planting	Shivalik (350 -650 m)	Bilaspur
37	<i>Prunus armenica</i>	Chuli	Dec-Jan	a: 3-5 years b: 3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	Medicinal	NTFP	Shade Tolerant	Gap Planting	Mid Hill (650 -1800m), High Hill (1800 -2200)	Kullu/ Kinnaur/ Mandi/ Shimla
38	<i>Prunus cornuta/ P. Cerassoides/ P.padus</i>	Paza	Jul-Aug	a: 3-5 years b: 3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	Fodder	Fuelwood	Shade Tolerant	Gap Planting	Mid Hill (650 -1800m)	Kullu/ Mandi/ Shimla
39	<i>Olea glandulifera</i>	Thira	Jul-Aug	a: 3-5 years b: 3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	Fodder	Fuelwood	Shade Tolerant	Gap Planting	Shivalik (350 -650 m)	Bilaspur/ Mandi/ Shimla
40	<i>Cassia seamia</i>	Cassia	Jul-Aug	a: 3-5 years b: 3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	Smallwood	Fodder	Light demanding	Block Planting	Shivalik (350 -650 m)	Bilaspur/ Mandi/ Shimla

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41	<i>Acacia nilotica</i>	Kikkar	Jul-Aug	a/b: 2-3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	Fuelwood	Smallwood	Light demanding	Block Planting	Shivalik (350 -650 m)	Bilaspur
42	<i>Butea monosperma</i>	Dhak	Jul-Aug	a: 3-5 years b: 3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	Fuelwood	Smallwood	Shade Tolerant	Gap Planting	Shivalik (350 -650 m)	Bilaspur
43	<i>Populus ciliata/ P. Alba/ P. deltoides</i>	Poplar	Dec-Jan	a/b: 2-3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	Timber	Fodder	Shade Tolerant	Block Planting	Shivalik (350 -650 m)/ Mid Hill (650 -1800m)	Bilaspur/ Kullu/ Kinnaur/ Mandi/ Shimla
44	<i>Juglans regia</i>	Walnut	Nov-Dec	a: 3-5 years b: 3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	NTFP	Timber	Light demanding	Gap Planting	Mid Hill (650 -1800m), High Hill (1800 -2200)	Kullu/ Kinnaur/ Mandi/ Shimla
45	<i>Acer oblonga/ Acer pictum</i>	Maple	Nov-Dec	a: 3-5 years b: 3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	Timber	Smallwood	Shade Tolerant	Gap Planting/ Densification	Mid Hill (650 -1800m), High Hill (1800 -2200)	Kullu/ Kinnaur /Mandi/ Shimla
48	<i>Corylus colurna</i>	Thangi/ Hazelnut	Dec-Jan	a: 5-7 years b: 3 years	Protection, Bush Cutting/ weeding, cleaning, hoeing, Mulching, Pruning	NTFP	Fuelwood	Shade Tolerant	Gap Planting	Mid Hill (650 -1800m), High Hill (1800 -2200)	Kullu/ Kinnaur/ Mandi/ Shimla

Note: a: in case of conventional method, b: in case of tall plants

Source: Compiled by JICA Study Team (2017) based on the information from HPFD

Table 2 Potential Medicinal Plant Species in HP

Agro-climatic Zone	Scientific Name	Local Name	Habits
Shivalik /Lower montane zone (< 800 m asl covering about 35% of the total area and about 1/3 of cultivated area.)	<i>Abrus prectorius</i>	Ratti	Perennial climber
	<i>Acacia catechu</i>	Khair	Deciduous tree
	<i>Acalypha indica</i>	Khokali	Herb
	<i>Achyranthes aspera</i>	Putkanda/chirchitta	Perennial herb
	<i>Adhatoda zeylanica</i>	Basuti/Adusa	Evergreen shrub
	<i>Aegle marmelos</i>	Bael	Deciduous tree
	<i>Albizia lebbek</i>	Kala siris	Deciduous tree
	<i>Aloe vera</i>	Gwar patta	Perennial herb
	<i>Argemone mexicanana</i>	Pila –dhatura	Annual herb
	<i>Asparagus racemosus</i>	Satawar	Perennial climber
	<i>Azadirachta indica</i>	Neem	Tree
	<i>Bacopa monnieri</i>	Neer brahmi/Jal brahmi	Creeping sub succulent herb
	<i>Baliospermum montanum</i>	Danti	Shrub
	<i>Bauhinia variegata</i>	Kachnar/karale	Tree
	<i>Bombax ceiba</i>	Simul, Semal	Tree
	<i>Butea monosperma</i>	Palash	Deciduous tree
	<i>Calotropis gigantea</i>	Ark	Shrub
	<i>Carissa carandas</i>	Karunda	Evergreen shrub
	<i>Cassia absus</i>	Chaksu	Biennial herb
	<i>Cassia fistula</i>	Amaltas	Deciduous Tree
	<i>Centella asiatica</i>	Brahmi	Spreading herb
	<i>Cissus quadrangularis</i>	Hadjod	A rambling shrub
	<i>Coccinia grandis</i>	Kaduri	Climber
	<i>Corallocarpus epigaeus</i>	Akagaddah	Climber
	<i>Cryptolepis buehananii</i>	Dudhi	Twining shrub
	<i>Curculigo orchioides</i>	Kaali musli	Stem less herb
	<i>Cynodon dactylon</i>	Dub	Perennial grass
	<i>Datura fastuosa</i>	Kala Datura	Herb
	<i>Desmodium gangeticum</i>	Salparni	Shrub
	<i>Dioscorea bulbifera</i>	Tardi	Climber
	<i>Dodonaea viscosa</i>	Mehndru	Evergreen shrub
	<i>Eclipta prostata</i>	Bharangraj	Prostate annual herb
	<i>Erythrina stricta</i>		Deciduous tree
	<i>Euphorbia hirta</i>	Dudhi	Annual herb
	<i>Ficus racemosa</i>	Gular	Tree
	<i>Gloriosa superba</i>	Kalihari	Herbaceous climber
	<i>Gmelina arborea</i>	Gambar	Deciduous tree
	<i>Gymnema sylvestre</i>	Gurmar	Extensive twiner
	<i>Hemidesmus indicus</i>	Anantamul	Herb
	<i>Hibiscus rosa-sinensis</i>	Gurhal	Shrub
	<i>Holarrhena antidysenterica</i>	Indrajab	Deciduous shrub/tree
	<i>Mangifera indica</i>	Aam	Tree
	<i>Mimosa pudica</i>	Lajwanti	A diffuse prostate Herb
	<i>Moringa oleifera</i>	Sanjana	Deciduous tree
	<i>Mucuna pruriens</i>	Kaunch/Dragal	Climbing shrub
	<i>Murraya koengii</i>	Gandhelu	Shrub
	<i>Nyctanthes arbor-tristis</i>	Harsinghar	Large shrub/tree
	<i>Ocimum basilicum</i>	Tulsi	Woody herb
	<i>Oroxylum indicum</i>	Tatpalanga/ Shyonaka	Tree
	<i>Phyllanthus emblica</i>	Amla	Deciduous tree
	<i>Pongamia pinnata</i>	Karanj	Semi evergreen tree
	<i>Rauvolfia serpentina</i>	Sarpagandha	Shrub
	<i>Ricinus communis</i>	Arand	Perennial shrub
	<i>Sida acuta</i>	Bariara	Annual herb

Agro-climatic Zone	Scientific Name	Local Name	Habits
	<i>Solanum nigrum</i>	Gurkkamai	Annual herb
	<i>Syzygium cumini</i>	Jamun	Evergreen tree
	<i>Terminalia arjuna</i>	Arjuna	Lofty tree
	<i>Terminalia bellirica</i>	Bahera	Large tree
	<i>Terminalia chebula</i>	Harar	Tree
	<i>Tinospora cordifolia</i>	Gulje	Deciduous climber
	<i>Tribulus lanuginosus</i>	Gokhru	Perennial herb
	<i>Tylophora indica</i>	Antamul	Climber
	<i>Uraria picta</i>	Pithvan/Prshnparni	Perennial Herb
	<i>Vetiveria zizanioides</i>	Khas	Grass
	<i>Vitex negundo</i>	Nirgundi/bahna	Deciduous shrub
	<i>Withania somnifera</i>	Ashwagandha	Shrub
	<i>Wrightia tinctoria</i>	Dudhi	Deciduous tree
Mid hill zone (800-1600 m as covering about 32% of the total area and about 53% of cultivated area)	<i>Abrus precatorius</i>	Ratti	Climber
	<i>Acacia catechu</i>	Khair	Tree
	<i>Achyranthes aspera</i>	Puthkanda	Perennial herb
	<i>Aegle marmelos</i>	Bel/Bael	Tree
	<i>Ajuga bracteosa</i>	Neelkanthi	Perennial herb
	<i>Albizia lebbek</i>	Siris/Kala siris	Tree
	<i>Bauhinia variegata</i>	Kachnar	Tree
	<i>Berberies lycium</i>	Kashmal	Shrub
	<i>Bergenia ciliata</i>	Pashanbed/Patharchat	Perennial herb
	<i>Bombax ceiba</i>	Semal	Tree
	<i>Butea monosperma</i>	Dhak/Palah	Tree
	<i>Cassia fistula</i>	Amal tas	Tree
	<i>Cedrus deodara</i>	Devdar/kelo/Dayar	Tree
	<i>Centella asiatica</i>	Brahmi/Mandukparni	Perennial herb
	<i>Cinnamomum tamala</i>	Tejpatta	Tree
	<i>Cissampelos pareira</i>	Padh/patindu	Twining herb
	<i>Costus speciosus</i>	Keu/Kemuk	Perennial herb
	<i>Cuscuta reflexa</i>	Akash bel	Twining parasite
	<i>Cyperus rotundus</i>	Nagmotha	Herb
	<i>Datura stramonium</i>	Safed Datura	Annual herb
	<i>Dioscorea bulbifera</i>	Tardi	Climber
	<i>Dioscorea deltoidea</i>	Singli-mingli	Perennial twining herb
	<i>Eclipta prostata</i>	Bhringraja	Annual herb
	<i>Emblica officinalis</i>	Amla	Tree
	<i>Hedychium acuminatum</i>	Van-haldi/kapur kachri	Perennial herb
	<i>Helicteres isora</i>	Marorphali	Shrb
	<i>Heracleum candicans</i>	Patrala	Perennial herb
	<i>Holarrhena antidysenterica</i>	Kurchi/kura	Tree
	<i>Hypericum perforatum</i>	Basant	Perennial herb
	<i>Jasminum officinale</i>	Peeli chameli/Pitmali	Shrub
	<i>Juglans regia</i>	Akhrot/Khor	Tree
	<i>Leucas cephalotes</i>	Dronpushpi	Annual herb
	<i>Malloutus philippinensis</i>	Kamala/Rohini	Tree
	<i>Mentha longifolia</i>	Jungli podina	Perennial herb
	<i>Morchella esculenta</i>	Guchhi	Fungi
	<i>Moringa oleifera</i>	Sanjana/drum stick	Tree
	<i>Mucuna pruriens</i>	Kaunch	Annual twining herb
	<i>Murraya koenigii</i>	Gandhela	Shrub
	<i>Myrica esculenta</i>	Kaphal	Tree
	<i>Nerium indicum</i>	Kaner	shrub
	<i>Nyctanthes arbor-tristis</i>	Harsingar	Shrub/tree
	<i>Ocimum sanctum</i>	Tulsi	Perennial herb

Agro-climatic Zone	Scientific Name	Local Name	Habits
	<i>Oroxylum indicum</i>	Tatpalanga	Tree
	<i>Pinus roxburghii</i>	Chil	Tree
	<i>Pistacia khinjak</i>	Kakarsinghi	Tree
	<i>Plumbago zeylanica</i>	Chitrak/Chitra	Perennial herb
	<i>Pongamia pinnata</i>	Karanj	Tree
	<i>Prinsepia utilis</i>	Bhekhal	Shrub
	<i>Prunella vulgaris</i>	Austakhaddus	Annual herb
	<i>Prunus cerasoides</i>	Paja/Padam kashta	Tree
	<i>Punica granatum</i>	Daru	Tree
	<i>Pyracantha crenulata</i>	Chota seb	Shrub
	<i>Randia dumetorum</i>	Madanphal	Thorny shrub
	<i>Rauvolfia serpentina</i>	Sarpgandha	Perennial undershrub
	<i>Rhododendron arboreum</i>	Burah	Tree
	<i>Ricinius communis</i>	Arandi	Tall shrub
	<i>Roscoea alpina</i>	Kakoli/Safed musli	Herb
	<i>Roscoea procera</i>	Kakoli/Safed musli	Herb
	<i>Rubia manjith</i>	Manjistha	Herb
	<i>Salvia moorcroftiana</i>	Thuth/Kali jari	Perennial herb
	<i>Sapindus mukorossi</i>	Ritha	Tree
	<i>Sida cordifolia</i>	Bala	Perennial herb
	<i>Solanum khasianum</i>	Ban-Bhindi/kantkari	Under shrub
	<i>Solanum nigrum</i>	Makoi	Herb
	<i>Solanum surattence</i>	Kantkari	Perennial herb
	<i>Spilanthes acmella</i>	Akarkara	Annual herb
	<i>Swertia chirayita</i>	Chirayita	Annual herb
	<i>Symplocos paniculata</i>	Lodh/Lodar	Shrub/tree
	<i>Tagetes minuta</i>	Jangli gaida	Annual herb
	<i>Taraxacum officinale</i>	Kanphul/Dudhi	Annual herb
	<i>Terminalia arjuna</i>	Arjun	Tree
	<i>Terminalia bellirica</i>	Bahera	Tree
	<i>Terminalia chebula</i>	Harar	Tree
	<i>Tinospora cordifolia</i>	Gulje	Climber
	<i>Thymus serpyllum</i>	Ban ajwain	Perennial herb
	<i>Valeriana jatamansi</i>	Mushkbala	Perennial herb
	<i>Viola serpens</i>	Banaksha/Banfshah	Perennial herb
	<i>Viscum album</i>	Ujjral/Banda	Perennial shrub
	<i>Vitex negando</i>	Nirgandi/Sura/bana	Shrub
	<i>Withania somnifera</i>	Ashvagandha	Perennial under shrub
	<i>Woodfordia fruticosa</i>	Dhai/Dhai ka phul	Shrub
	<i>Zanthoxylum armatum</i>	Tirmir/Tejbal/timbri	Shrub
High hill /Temperate zone (1600-3000 m asl covering about 25% of the total area and about 11% of cultivated area)	<i>Abies spectabilis</i>	Kolroi/Tosh	Tree
	<i>Achillea millefolium</i>	Birnjasif	Perennial herb
	<i>Achyranthes aspera</i>	Puthkanda	Perennial herb
	<i>Aconitum deinorrhizum</i>	Mohra bish	Perennial herb
	<i>Aconitum heterophyllum</i>	Patish/Atish	Perennial herb
	<i>Acorus calamus</i>	Bare/Bach	Perennial herb
	<i>Aesculus indica</i>	Kanor	Tree
	<i>Ajuga bracteosa</i>	Neelkanthi	Perennial herb
	<i>Angelica glauca</i>	Chora	Perennial herb
	<i>Arctium lappa</i>	Jangli kuth	Perennial herb
	<i>Arnebia benthami</i>	Rattan jot	Perennial herb
	<i>Arnebia euchroma</i>	Rattan jot	Perennial herb
	<i>Atropa acuminata</i>	Jharka	Perennial herb
	<i>Berberis aristata</i>	Kashmal	Shrub
	<i>Berberis chitria</i>	Kashmal/daruhalidi	Shrub

Agro-climatic Zone	Scientific Name	Local Name	Habits
	<i>Berberies lycium</i>	Kashmal	Shrub
	<i>Bergenia ciliata</i>	Pashanbed/Patharchat	Perennial herb
	<i>Bergenia stracheyi</i>	Pashanbed/pakhanbed	Perennial herb
	<i>Betula utilis</i>	Bhojpatra	Tree
	<i>Cedrus deodara</i>	Devdar/kelo/Dayar	Tree
	<i>Centella asiatica</i>	Brahmi/Mandukparni	Perennial herb
	<i>Corydalis govaniana</i>	Bhutkeshi	Perennial herb
	<i>Cuscuta reflexa</i>	Akash bel	Twinning parasite
	<i>Dactylorhiza hatagirea</i>	Salampanja/hothpanja	Perennial orchid
	<i>Datisca cannabina</i>	Bajarbhang	Herb
	<i>Datura stramonium</i>	Safed Datura	Annual herb
	<i>Didymocarpus pedicellata</i>	Pathar long/Pathar	Perennial herb
	<i>Dioscorea deltoidea</i>	Singli-mingli	Perennial twining herb
	<i>Eclipta prostata</i>	Bhringraja	Annual herb
	<i>Fritillaria roylei</i>	Kshirkakoli/kakoli	Perennial herb
	<i>Gentiana kurroo</i>	Kutki/Karu	Perennial herb
	<i>Habenaria intermedia</i>	Bridhi	Perennial herb
	<i>Habenaria edgeworthii</i>	Ridhi	Perennial herb
	<i>Hedychium acuminatum</i>	Van-haldi/kapur kachri	Perennial herb
	<i>Heracleum candicans</i>	Patrala	Perennial herb
	<i>Hyoscyamus niger</i>	Khurasani Ajwain	Biennial herb
	<i>Hypericum perforatum</i>	Basant	Perennial herb
	<i>Hyssopus officinalis</i>	Jufa	Shrubby perennial
	<i>Inula racemosa</i>	Poshkar	Perennial herb
	<i>Jasminum officinale</i>	Peeli chameli/Pitmali	Shrub
	<i>Juglans regia</i>	Akhrot/Khor	Tree
	<i>Juniperus communis</i>	Bethar /Juniper	Evergreen shrub
	<i>Jurinea dolomiaea</i>	Dhoop/Jari dhoop	Perennial herb
	<i>Leucas cephalotes</i>	Dronpushpi	Annual herb
	<i>Lilium polyphyllum</i>	Ksheer kakoli	Perennial herb
	<i>Malaxis acuminata</i>	Jiwak	Orchid
	<i>Mentha longifolia</i>	Jungli podina	Perennial herb
	<i>Microstylis muscifera</i>	Rishbhak	Perennial herb
	<i>Morchella esculenta</i>	Guchhi	Fungi
	<i>Myrica esculenta</i>	Kaphal	Tree
	<i>Nardostachys grandiflora</i>	Jatamansi	Perennial herb
	<i>Ocimum sanctum</i>	Tulsi	Perennial herb
	<i>Onosma bracteatum</i>	Ratanjot	Perennial herb
	<i>Origanum vulgare</i>	Van tulsi	Perennial herb
	<i>Paeonia emodi</i>	Udsalap	Perennial herb
	<i>Paris polyphylla</i>	Satva/nagchhatri	Perennial herb
	<i>Phytolacca acinosa</i>	Jharka	Perennial herb
	<i>Picrorhiza kurrooa</i>	Kutki/karru	Perennial herb
	<i>Podophyllum hexandrum</i>	Ban kakari	Perennial herb
	<i>Polygonatum cirrhifolium</i>	Maha meda	Perennial herb
	<i>Polygonatum verticillatum</i>	Meda	Perennial herb
	<i>Polygonum aviculare</i>	Nismoli/machoti	Annual herb
	<i>Potentilla nepalensis</i>	Bajartanti	Perennial herb
	<i>Prinsepia utilis</i>	Bhekhal	Shrub
	<i>Prunella vulgaris</i>	Austakhaddus	Annual herb
	<i>Prunus armeniaca</i>	Chuli	Tree
	<i>Prunus cerasoides</i>	Paja/Padam kashta	Tree
	<i>Punica granatum</i>	Daru	Tree
	<i>Pyracantha crenulata</i>	Chota seb	Shrub
	<i>Randia dumetorum</i>	Madanphal	Thorny shrub

Agro-climatic Zone	Scientific Name	Local Name	Habits
	<i>Rauvolfia serpentina</i>	Sarggandha	Perennial undershrub
	<i>Rheum australe</i>	Revandchini/Chukri	Perennial herb
	<i>Rheum moorcroftianum</i>	Chukri	Perennial herb
	<i>Rhododendron anthopogon</i>	Talishpatra/Dhop	Shrub
	<i>Rhododendron arboreum</i>	Burah	Tree
	<i>Rhododendron campanulatum</i>	Kashmiri patta	Rhambling shrub
	<i>Roscoeia purpurea</i>	Kakoli/Safed musli	Herb
	<i>Rubia manjith</i>	Manjistha	Herb
	<i>Salvia moorcroftiana</i>	Thuth/Kali jari	Perennial herb
	<i>Saussuria costus</i>	Kuth	Perennial herb
	<i>Selinum vaginatum</i>	Bhutkeshi	Perennial herb
	<i>Skimmia laureola</i>	Nayar/ner Dhoop	Perennial shrub
	<i>Swertia chirayita</i>	Chirayita	Annual herb
	<i>Symplocos paniculata</i>	Lodh/Lodar	Shrub/tree
	<i>Tagetes minuta</i>	Jangli ginda	Annual herb
	<i>Taraxacum officinale</i>	Kanphul/Dudhi	Annual herb
	<i>Taxus wallichiana</i>	Birmi/ Rakhala	Tree
	<i>Thalictrum foliolosum</i>	Mamira/ pilijari	Perennial herb
	<i>Thymus serpyllum</i>	Ban ajwain	Perennial herb
	<i>Trillidium govanianum</i>	Nagchatri	Perennial herb
	<i>Valeriana jatamansi</i>	Mushkbala	Perennial herb
	<i>Viola serpens</i>	Banaksha/Banfshah	Perennial herb
	<i>Viscum album</i>	Ujjral/Banda	Perennial shrub
	<i>Zanthoxylum armatum</i>	Tirmir/tejbal/timbri	Shrub
Cold dry zone (> 3000m asl covering about 8% of the total area and about 3% of cultivated area)	<i>Aconitum deinorrhizum</i>	Mohrabish	Herb-perennial
	<i>Aconitum heterophyllum</i>	Patish	Perennial herb
	<i>Aconitum laeve</i>	Mohra	Biennial herb
	<i>Allium consanguineum</i>	Farna/Dimok	Herb perennial
	<i>Atropa acuminata</i>	Kadwa Kafal	Herb perennial
	<i>Angelica glauca</i>	Chora/Chura	Perennial herb
	<i>Arnebia benthamii</i>	Rattanjot	Perennial herb
	<i>Arnebia euchroma</i>	Rattan jot/Dimok	Perennial herb
	<i>Artemesia brevifolia</i>	Seinski/nurcha	Perennial herb
	<i>Bergenia stracheyi</i>	Pashanbed/Dhoklambu	Perennial herb
	<i>Betula utilis</i>	Bhojpatra/Bhuj/Bhooj	Tree
	<i>Bunium persicum</i>	Kala zira/shingu	Perennial herb
	<i>Caltha palustris</i>	Mamiri/Horgul	Perennial herb
	<i>Capparis hamalayensis</i>	Kabra/kiari	Shrub
	<i>Colchicum luteum</i>	Kukum	Perennial herb
	<i>Corydalis govaniana</i>	Bhutjata/Bhutkesi/Nakpo	Perennial herb
	<i>Dactylorhiza hatagirea</i>	Salampanja/Hathpanja	Terrestrial orchid
	<i>Delphinium brunonianum</i>	Nirbisha/lascar	Perennial herb
	<i>Ephedra gerardiana</i>	Somlata /soma/tse	Shrub
	<i>Ferula jeschkeana</i>	Kait	Perennial herb
	<i>Fritillaria roylei</i>	Kshirkakoli/kakoli	Perennial herb
	<i>Gentiana kurroo</i>	Kutki/Karu	Perennial herb
	<i>Heracleum candicans</i>	Patrala	Perennial herb
	<i>Hippophae rhamnoides</i>	Chharma	Shrub
	<i>Hyssopus officinalis</i>	Juffa	Perennial shrub
	<i>Hyoscyamus niger</i>	Khurasani Ajwain	Biennial herb
	<i>Juniperus macropoda</i>	Dhup/Dhupi/Padam	Small Tree
	<i>Meconopsis aculeate</i>	Achat sarmum	Perennial herb
	<i>Nardostachys grandiflora</i>	Jatamansi	Perennial herb
	<i>Peganum harmala</i>	Gandhya	Perennial herb
	<i>Physochlaina praealata</i>	Bajar bang	Perennial herb

Agro-climatic Zone	Scientific Name	Local Name	Habits
	<i>Podophyllum hexandrum</i>	Bankakri	Perennial herb
	<i>Polygonatum cirrhifolium</i>	Maha meda	Perennial herb
	<i>Polygonatum verticillatum</i>	Mahameda/Salammisri	Perennial herb
	<i>Rheum moorcraftianum</i>	Chukri/Revandchini	Perennial herb
	<i>Rhodiola heterodonta</i>	Rose root	Perennial herb
	<i>Rhododendron campanulatum</i>	Kashmiripatta	Shrub
	<i>Saussurea costus</i>	Kuth	Perennial herb
	<i>Saussurea obvallata</i>	Braham Kamal	Perennial herb
	<i>Valeriana jatamansii</i>	Mushkbala/Nihani	Perennial herb

Source: Non-Timber Forest Produce as Livelihood Option for Rural Communities of Mid Himalayas in Himachal Pradesh, FRLHT (2008)

Attachment II.3.7.1.4 Indicative Work Descriptions of ANR Operations**1. Types of Indicative ANR Operations****Table 1 Indicative Planting Density and Description of ANR**

Type of Operation	Indicative Planting Density (Seedlings/ Ha)	Description
Assisted Natural Regeneration (ANR)	Without Gap Planting	Prescription of following silvicultural operations to facilitate natural regeneration: <ul style="list-style-type: none"> - High-stump cutting - Singling of coppice shoots - Climber cutting - Clearance of weeds
ANR with Seed Sowing	Sowing of Seed Patches	In addition to the above silvicultural prescriptions for ANR, regeneration is further supported through sowing of seeds of desired species in patches.
ANR with Gap Planting	Gap Planting (200~ 500 plants)	In addition to the above silvicultural prescriptions for ANR, gap planting/ enrichment planting of timber, fuel wood, fodder, fruit, medical and other NTFP species to be conducted.

Source: Compiled by JICA Study Team (2016) based on existing literature and interviews from concerned stake holders.

2. Indicative Work Schedule

The following work schedule are indicative and shall be determined as per the latest work norms and site conditions.

Assisted Natural Regeneration (ANR) without Gap Planting or Seed Sowing**Table 2 Indicative Work Schedule of ANR without Gap Planting**

Year	Period	Activities
Yr 0 (April- March)	May - June	<u>Followings can be also conducted in earlier years:</u> <ul style="list-style-type: none"> - Selection of Area for ANR, - Measurement of area, - GPS Coordinates and Polygon Formation, - Check for seedlings of desired species, <u>Followings must be conducted in this year:</u> <ul style="list-style-type: none"> - Remove overshadowing weeds/ grasses around desired seedlings/wildlings, - Remove seedlings of undesired species, - Do soil working for aeration - In case of seed sowing, prepare soil worked patches of 45cm × 45cm, apart by removing weeds/ grasses
	July - Aug	<ul style="list-style-type: none"> - Plant wildlings of desired species in the gaps. - Singling of desired species to remove competition - In case of seed sowing, sowing of seeds collected from the area in the soil worked patches (2-3 seeds per patch)
	Oct - Nov	- Remove overshadowing weeds/ grasses around desired seedlings
Yr +1 (April- March)	Oct - Nov	- Remove overshadowing weeds/ grasses around desired seedlings
Yr+2 (April- March)	Oct - Nov	- Remove overshadowing weeds/ grasses around desired seedlings
Yr +3	May - June	- Remove overshadowing weeds/ grasses around desired seedlings,

Year	Period	Activities
(April- March)		- Remove seedlings of undesired species. - Do soil working for aeration
	Oct - Nov	- Remove overshadowing weeds/ grasses around desired seedlings
Yr +4 (April- March)	May - June	- If required repeat activities of Yr +3
Yr +5 (April- March)	May - June	- If required repeat activities of Yr +3

Note: Indicative/ suggestive in-situ SWC works are- Contour Trenching, Dry stone Check Dams/ Gully Plugs, Live Hedges and shall be determined based on site requirements

Source: Compiled by JICA Study Team (2017) based on existing literature and interviews from concerned stake holders

Assisted Natural Regeneration (ANR) with Gap Planting

Following work schedule assumes planting of seedlings which require 2 years of production in nursery.

Table 3 Indicative Work Schedule of ANR with Gap Planting

Year	Period	Activities
Yr -2 (April- March)	April- May	<u>Followings can be also conducted in earlier years:</u> - Selection of Area for ANR, - Measurement of area, - GPS Coordinates and Polygon Formation, - Decide on species - Calculate number of plants/ seedlings of each species to be raised in the nursery (keep margin of 20% extra seedlings),
	June-July	- Start nursery operations to raise seedlings
Yr -1 (April- March)	April - June	- Continue with Nursery operations, - Fence (close) the area, - Do preventive in situ SWC works, - Clean the area from undesired bushes/ weeds - Do the layout (spacing) for digging pits, - Pit digging of appropriate size (conifer – 30cm x 30cm/ BL – 45cm x 45cm),
	July – Aug.	- If required, put appropriate Live Hedge cuttings (Ipomea)/ Bulbils (Agave) along fence (inner side)
Yr 0 (April- March)	May - June	- Remove overshadowing weeds/ grasses around desired seedlings/wildings, - Remove seedlings of undesired species, - Do soil working for aeration
	July - Aug	- Transport the nursery raised seedlings to planting sites - Plant seedlings of desired species in the gaps. - Singling of desired species to remove competition
	Oct - Nov	- Remove overshadowing weeds/ grasses around desired seedlings - Do mulching, hoeing around planted seedlings.
Yr +1 (April- March)	April- May	- Remove overshadowing weeds/ grasses around desired seedlings - Do mulching, hoeing around planted seedlings. - Do repair for fencing - Do maintenance of SWC
	July - Aug	- Replace dead seedlings
	Oct - Nov	- Remove overshadowing weeds/ grasses around desired seedlings - Conduct watch and ward,
	Dec. Mar	- Remove overshadowing weeds/ grasses around desired seedlings - Do mulching, hoeing around planted seedlings.
Yr+2 (April- March)	Oct - Nov	- Remove overshadowing weeds/ grasses around desired seedlings

Year	Period	Activities
Yr +3 (April- March)	May - June	-Remove overshadowing weeds/ grasses around desired seedlings, - Remove seedlings of undesired species. - Do soil working for aeration
	Oct - Nov	- Remove overshadowing weeds/ grasses around desired seedlings
Yr +4 (April- March)	May - June	- If required repeat activities of Yr +3
Yr +5 (April- March)	May - June	- If required repeat activities of Yr +3

Note: Indicative/ suggestive in-situ SWC works are- Contour Trenching, Dry stone Check Dams/ Gully Plugs, Live Hedges and shall be determined based on site requirements

Source: Compiled by JICA Study Team (2017) based on existing literature and interviews from concerned stake holders

Attachment II.3.7.1.5 Indicative Work Descriptions of Planation Operation**1. Types of Indicative Plantation Operations****Table 1 Indicative Planting Density and Description of ANR**

Types of plantation	Indicative Planting Density (Seedlings/ Ha)	Description
Fuelwood and Fodder plantation	~1,100 (normal plants) 200~500 (tall plants)	Fast growing species/ desired species will be planted for production of soft timber, fuel wood and fodder. Planting arrangement should ensure alternating plants of Large tree with Medium and Small tree species for formation of canopy layers in future. Inter cropping of grasses for fodder shall be also introduced based on desires of PFM institutions as well as site suitability
NTFP plantation	~1,100 (normal plants) 200~500 (tall plants)	Mixed planting of NTFP species of smaller trees and larger trees on the alternate rows shall be considered. Inter cropping of NTFPs, medicinal plants, grasses shall be also introduced based on desires of PFM institutions as well as site suitability
Other Block Plantation	~1,100 (normal plants) 200~800 (tall plants)	Plantation for timber production, special interest/ niche species, or for environmental protection.

Source: Compiled by JICA Study Team (2016) based on existing literature and interviews from concerned stake holders.

1. Indicative Work Schedule

The following work schedule and designs are indicative and shall be determined as per the latest work norms and site conditions.

Block Plantations

Following work schedule assumes planting of seedlings which require 2 years of production in nursery.

Table 2 Indicative Work Schedule of Block Planation

Year	Period	Activities
Yr -2 (April- March)	April- May	<ul style="list-style-type: none"> - Selection of Area, - Measurement, GPS Coordinates and Polygon Formation, - Map of area with features- (Drainage, Altitudinal range, Aspect, Erosion points, Gullies, Nallahs), - Decide on species and species mixtures - Calculate number of plants/ seedlings of each species to be raised in the nursery (keep margin of 20% extra seedlings),
	June- July	<ul style="list-style-type: none"> - Start nursery operations to raise desired
Yr -1 (April- March)	April - June	<ul style="list-style-type: none"> - Continue with Nursery operations, - Fence (close) the area, - Do preventive in-situ SWC works, - Clean the area from undesired bushes/ weeds or other undesired species, - Do the Layout (spacing) for digging pits, - Pit digging of appropriate size (conifer – 30cm x 30cm/ BL – 45cm x 45cm),
	July – Aug.	<ul style="list-style-type: none"> - If required, put appropriate Live Hedge cuttings (Ipomea)/ Bulbils (Agave) along fence (inner side)
Yr 0 (April- March)	July - Aug	<ul style="list-style-type: none"> - Transport the nursery raised seedlings to plantation site - Do planting as per the design and requirement.
	Oct. – Dec	<ul style="list-style-type: none"> - Do mulching, weeding, hoeing, cleaning operations
Yr +1	April -May	<ul style="list-style-type: none"> - Do mulching, weeding, hoeing, cleaning operations , repair fence,

Year	Period	Activities
(April- March)	July - Aug	- Replace dead seedlings
	Oct - Nov	- Enforce strict watch and ward, - Watering (if budget permitting), - Maintenance of in situ SWC
	Dec- Mar.	- Weeding, hoeing, cleaning operations, enforce strict watch and ward
Yr +2 (April- March)		- Repeat operations as for Yr +1
Yr +3 (April- March)		- Repeat operations as for Yr +1, - If required singling of seedlings
Yr +4 (April- March)		- If required, repeat operations as for Yr +3
Yr +5	(April- March)	- If required Repeat operations as for Yr +4

Note: Indicative/ suggestive in-situ SWC works are- Contour Trenching, Dry stone Check Dams/ Gully Plugs, Live Hedges and shall be determined based on site requirements

Source: Compiled by JICA Study Team (2017) based on existing literature and interviews from concerned stake holders

Fuel and Fodder Plantations

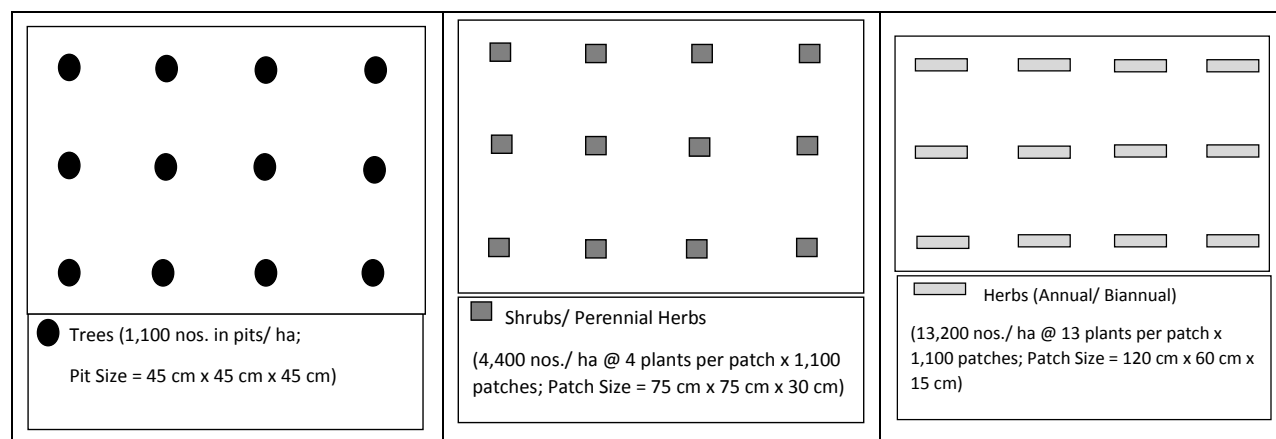
Basically, similar work schedule as that of the block planation can be followed.

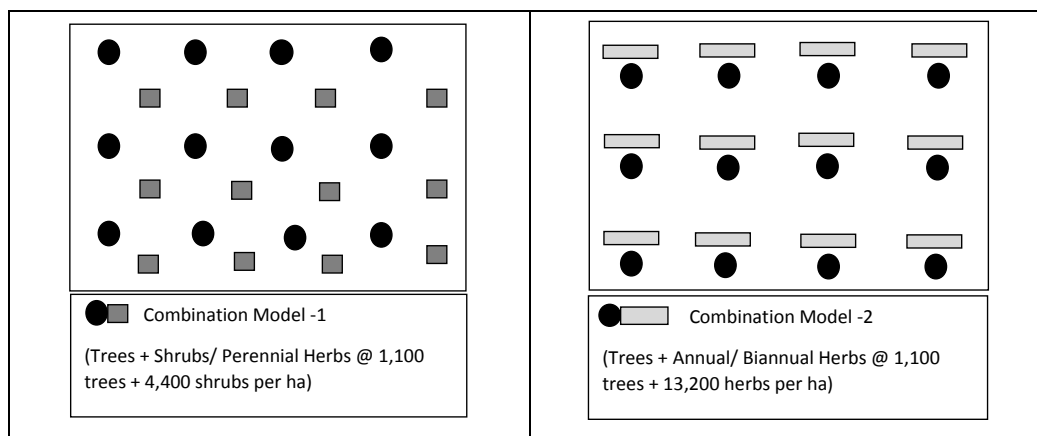
In principle, this will be taken up near habitations in small areas (as per availability) with the objective of growing fast growing, short rotation, fuel and fodder species so as to meet future requirements of fuel and fodder of the nearby communities.

NTFP Plantations

Basically, similar work schedule as that of the block planation can be followed.

As per the existing cost norm in HPFD, not only the planation establishment model, but also models for shrubs/perennial herb establishment, herb (annual/ biannual herbs) establishment, and combinations of these can be considered. Following figures illustrate indicative layouts of such models.





Source: Compiled by JICA Study Team (2017) based on existing literature and interviews from concerned stake holders

Figure 1 Indicative Layout for NTFP Developments

Bamboo Plantations

Basically, similar work schedule as that of the block planation can be followed.

Can be planted as part of NTFP development but in case of pure planation establishment, indicative basic design is as follows:

- ◆ Areas are fenced preventing biotic interference (human & Wild animals),
- ◆ 400-500 / Ha pits of appropriate size(45cm . 45cm) dug in desired predefined lay out(8m × 8m),
- ◆ nursery raised Poly bag seedlings of Bamboo planted in monsoon with appropriate tending operations for next 1-3 years

Two species of hill bamboos i.e. *Arundinaria falcata* (=Sinarundinaria falcata/ Drepanostachyum falcatum) and *Arundinaria spathiflora* (=Thamnocalamus spathiflorus) occur naturally in HP. These species, known locally as ‘nirgal’, occupy the cool and moist niches in the temperate regions in the State and are mainly put to local use for basketry purposes. This very important group of species is still to attract focused management initiatives.

Dendrocalamus strictus is the only species of tropical bamboos that is found wild in the sub-tropical tracts in the State with total spread of 508 km² (SFR, 2011). However, only about 10,000 hectare of forest land in the State bears concentrated populations of bamboo and is being specifically managed under Bamboo Working Circle. In addition to the native populations of tropical bamboos, the State also has good stock of introduced tropical species like *Dendrocalamus hamiltonii* (Maggar Bans) and *Bambusa nutans* (Dharench) that form an important component of the local agro-forestry practices.

Bamboo plantations can be raised or improvement of existing bamboo can be undertaken, such areas are in Bilaspur, Suket, Jogindernagar, Mandi and Shimla forest divisions besides potential areas of Hill Bamboo *Arundinaria falcata* and *Arundinaria spathiflora*.

Improvement of Existing Bamboo Stock

In relation to bamboo development, if required, improvement operations of existing bamboo stocks to get sustained yield of bamboo and maintain the health of bamboo clumps from congestion and degradation can be also considered. Indicative work schedule is as follows.

Table 3 Indicative Work Schedule of Bamboo Improvement

Year	Period	Activities
Yr -0 (April- March)	Oct- Feb	<ul style="list-style-type: none"> - Remove mature culms to get sustained yield, equivalent to / not exceeding no. Of culms which have come up in the last three years.. - Do cleaning, climber cutting and decongestion of clump to maintain its health. - Cleaning by removing dry culms (completely dry clump to be clear felled) - Clumps to be worked in horse shoe manner, from middle of the clump towards periphery. - Rhizome not to be disturbed. - while removing culms, cut should be given as low as possible

Source: Compiled by JICA Study Team (2017) based on existing literature and interviews from concerned stake holders

Special Interest/ Niche Species Plantations

Basically, similar work schedule as that of the block planation can be followed. However depending of the species, longer maintenance/ tending may be required.

Rehabilitation of Forest Areas with Invasive Species

For planation establishment or gap planting to shade out the area, basically, similar work schedule as that of the block planation and ANR can be considered. However, prior to planation establishment, eradication of invasive species need to be conducted and continual maintenance for eradication are also required concurrently with the planation establishment. The following tables describe indicative work schedule for eradication operations for invasive species.

Table 4 Indicative Work Schedule of Lantana Eradication

Year	Period	Activities
Yr 0 (April- March)	April- May	<ul style="list-style-type: none"> - Identify area to be eradicated of invasive sp. - A strip be created around boundary by removing Lantana or other invasive sp.
	Sept - Oct	- Local grass seed (collected /procured in Sept-Oct) be mixed with soil to make pallets.
	Dec- Jan	<ul style="list-style-type: none"> - Lantana bushes will be removed using Cut Root Stock Methods (CRS) - Bushes be stacked upside down (reverse polarity) & allowed to dry.
	Jan-Feb	- Pallets be broadcasted in the area in the month of Jan-Feb (with the onset of winter rains).
Yr +1 (April- March)	April - June	- Remove Lantana sprouts
	July- Aug	- Broadcasting Grass Seed Pallets
	Oct-Dec	- Remove Lantana sprouts
Yr +2 (April- March)		- Repeat as for Yr+1

Source: Compiled by JICA Study Team (2017) based on existing literature and interviews from concerned stake holders

Table 5 Indicative Work Schedule of Parthenium/ Ageratum/ Eupatorium Eradication

Year	Period	Activities
Yr 0 (April- March)	Sept - Oct	- Identify area to be eradicated of invasive sp. - Complete plants uprooted (before onset of flowering) , collected in heaps and burn
	Dec- Jan	- Remove new sprouts
Yr +1 (April- March)	Sept-Oct	- Remove new sprouts
	Dec- Jan	- Remove new sprouts

Source: Compiled by JICA Study Team (2017) based on existing literature and interviews from concerned stake holders

Attachment II.3.7.1.6 Indicative Work Descriptions of Models for Improvement of Pastures and Grasslands

1. Overviews

Following models/treatments are prepared for cost estimate purposes. The actual treatments to be determined reflecting the ground situations of the concerned pastures/ grasslands.

Dry Alpine Pasture:

1. Broadcasting Method (Grass Seeds)
2. Patch/Strip Methods (Grass Tufts or Grass Seeds and Legumes Seeds)

Other Grasslands:

1. Silvipastoral Fodder Development Methods (Fodder Trees, Grass Tufts or Grass Seeds, and Legumes Seeds)
2. Patch/Strip Methods (Grass Tufts or Grass Seeds and Legumes Seeds)

2. Dry Alpine Pasture Models

2.1 Broadcasting Method (Grass Seeds)

Since the natural conditions are hostile and growing period is very short in dry alpine pasture areas, broadcasting of grass seeds after soil working can be introduced as the main interventions for improvement of dry alpine pastures. Following table describes year-wise major activities of this method.

Table 2.1 Broad Casting Method for Dry Alpine Pasture

Year	Period	Activities
Yr -0 (April-March)	April	<ul style="list-style-type: none"> - Selection of Area, - Measurement of GPS Coordinates and Polygon Formation, - Mapping of area with features- (Drainage, Altitudinal range, Aspect, Erosion points, Gullies, Nallahs), - Selection on species of grasses. - Calculation of quantity of seed required
	May	<ul style="list-style-type: none"> - Fencing (close) of the area, - Conducting preventive in-situ Soil & Water Conservation (SMC) measures - Weeding and soil working.,
	June	<ul style="list-style-type: none"> - Broadcasting seeds of grasses
	Sept -Oct	<ul style="list-style-type: none"> - Fertilization: 60 Kg Nitrogen/ ha and 60 Kg Phosphate/ Ha applied in three splits [first split basal application, second after seedling reaches around 30cm and third at initiation of boot stage of grasses. - Protection work (watch and ward, weeding)
Yr +1 (April-March)	April -March	<ul style="list-style-type: none"> - Protection Work (watch and ward, weeding) - Fertilization
Yr +2 (April-March)	April -March	<ul style="list-style-type: none"> - Protection Work (watch and ward, weeding) - Fertilization

Source: Compiled by JICA Study Team (2017) based on information from Indian Grassland and Fodder Research Institute

2.2 Patch/Strip Methods (Grass Tufts or Grass Seeds and Legumes Seeds)

For dry alpine pasture areas where patching of grass tufts or sowing of grass seeds are feasible, either patch method or strip method will be adopted for improvement of pastures. Following table describes year-wise major activities of these methods

Table 2.2 Patch/Strip Methods for Dry Alpine Pasture

Year	Period	Activities
Yr -0 (April- March)	April	<ul style="list-style-type: none"> - Selection of Area, - Measurement of GPS Coordinates and Polygon Formation, - Mapping of area with features- (Drainage, Altitudinal range, Aspect, Erosion points, Gullies, Nallahs), - Selection on species of grasses and legumes - Calculation of quantity of seeds/tufts/ seedlings required to be raised in the nursery
	May	Patch Method: <ul style="list-style-type: none"> - Start nursery operations to raise desired seedlings. and procure legume seeds Strip Method: <ul style="list-style-type: none"> - procure legume/ grass seeds
	June	<ul style="list-style-type: none"> - Fence (close) the area, - Do preventive in-situ SWC - Clean the area from undesired bushes/ weeds/other sp., Patch Method: <ul style="list-style-type: none"> - Do the Layout (spacing) for patches, (30 × 30×10cm), 1m apart in line (along Contour); Line to line distance 4m depending upon slope. Patches should be dug in staggered manner. (approx- 1500 patches) Strip Method: <ul style="list-style-type: none"> - Do the Layout (spacing) for strips, 20cm wide continuous strips scratched against slope of all Scrub and weeds and soil dug (10-15 cm). Strip to strip distance 2 -4 m depending upon slope (gentle slopes distance should be 2 m).
	July – Aug.	Patch Method: <ul style="list-style-type: none"> - Plant grass tufts in alternate patches, 13 tufts per patch, 10cm apart from each other. Keep length of 10cm from base of seedling (remove upper portion) (10,000 tufts) - Sow legume seeds in alternate patches (6-8 grains of seeds in each patch) Strip Method: <ul style="list-style-type: none"> - Alternate strips to be sown with grasses and legumes seeds. (10,000 Tufts). 10kg legume seed/ Ha. Each running metre of strip should have 8-10 grains of seeds
	Sept -March	<ul style="list-style-type: none"> - Fertilization: 60 Kg Nitrogen/ ha and 60 Kg Phosphate/ Ha applied in three splits [first split basal application, second after seedling reaches around 30cm and third at initiation of boot stage of grasses. - Protection work (watch and ward, weeding)
Yr +1 (April- March)	April -March	<ul style="list-style-type: none"> - Fertilization: 60 Kg Nitrogen/ ha and 60 Kg Phosphate/ Ha applied in three splits [first split basal application, second after seedling reaches around 30cm and third at initiation of boot stage of grasses. - Protection work (watch and ward, weeding)

Source: Compiled by JICA Study Team (2017) based on information from Indian Grassland and Fodder Research Institute

3. Grassland Models

3.1 Silvipastoral Fodder Development Method

Silvipastoral systems have been found to be viable option for obtaining a very high biomass per unit area. Some species consider for fodder trees are *Albizia lebbek*, *Bauhinia variegata*, *Grewia optiva*, *Leucaena leucocephala*, *Dendrocalamus hamiltonii*, *Quercus incana*, *Quercua leucotricophora*.

Following table describes year-wise major activities of this method.

Table 3.1 Silvipastoral Fodder Development Methods for Other Grasslands

Year	Period	Activities
Yr -1 (April- March)	April	<ul style="list-style-type: none"> - Selection of Area, - Measurement of GPS Coordinates and Polygon Formation, - Mapping of area with features- (Drainage, Altitudinal range, Aspect, Erosion points, Gullies, Nallahs), - Selection on species of trees grasses and legumes - Calculation of quantity of seeds/tufts/ seedlings required to be raised in the nursery
	May	- Start nursery operations to raise desired tree seedlings
Yr 0	June	<ul style="list-style-type: none"> - Continue with Nursery operations, - Fence (close) the area, - Do preventive in situ Soil & Water Conservation (SWC) - Clean the area from undesired bushes/ weeds/other sp., - Do the Layout (spacing) for Trees, 5m × 5m, pits(45× 45×45cm) , patches for grasses/ legumes, (30 × 30×10cm), 1m apart in line (along Contour); Line to line distance 2-4m depending upon slope. Patches should be dug in staggered manner
	July – Aug.	<ul style="list-style-type: none"> - -Plant Fodder Trees (approximately 200); grass tufts in alternate patches, 10-15 tufts per patch, 10cm apart from each other. Keep length of 10cm from base of seedling (remove upper portion) - Sow legume seeds in alternate patches (6-8 grains of seeds in each patch)
	Sept -March	<ul style="list-style-type: none"> - Fertilization: 60 Kg Nitrogen/ ha and 60 Kg Phosphate/ Ha applied in three splits [first split basal application, second after seedling reaches around 30cm and third at initiation of boot stage of grasses. - Protection work (watch and ward, weeding)
Yr +1 (April- March)	April -March	<ul style="list-style-type: none"> - Protection Work (watch and ward, weeding) - Fertilization

Source: Compiled by JICA Study Team (2017) based on information from Indian Grassland and Fodder Research Institute

3.2 Patch/Strip Methods (Grass Tufts or Grass Seeds and Legumes Seeds)

Year-wise major activities of these methods are basically the same as that of dry alpine pasture.

Table 3.2 Patch/Strip Methods for Other Grasslands

Year	Period	Activities
Yr -0 (April- March)	April	<ul style="list-style-type: none"> - Selection of Area, - Measurement of GPS Coordinates and Polygon Formation, - Mapping of area with features- (Drainage, Altitudinal range, Aspect, Erosion points, Gullies, Nallahs), - Selection on species of grasses and legumes - Calculation of quantity of seeds/tufts/ seedlings required to be raised in the nursery
	May	Patch Method: <ul style="list-style-type: none"> - Start nursery operations to raise desired seedlings. and procure legume seeds Strip Method: <ul style="list-style-type: none"> - procure legume/ grass seeds
	June	<ul style="list-style-type: none"> - Fence (close) the area, - Do preventive in-situ SWC - Clean the area from undesired bushes/ weeds/other sp., Patch Method: <ul style="list-style-type: none"> - Do the Layout (spacing) for patches, (30 × 30×10cm), 1m apart in line (along Contour); Line to line distance 4m depending upon slope. Patches should be dug in staggered manner. (approx- 1500 patches) Strip Method: <ul style="list-style-type: none"> - Do the Layout (spacing) for strips, 20cm wide continuous strips scratched against slope of all Scrub and weeds and soil dug (10-15 cm). Strip to strip distance 2 -4 m depending upon slope (gentle slopes distance should be 2 m).
	July – Aug.	Patch Method: <ul style="list-style-type: none"> - Plant grass tufts in alternate patches, 13 tufts per patch, 10cm apart from each other. Keep length of 10cm from base of seedling (remove upper portion) (10,000 tufts) - Sow legume seeds in alternate patches (6-8 grains of seeds in each patch) Strip Method: <ul style="list-style-type: none"> - Alternate strips to be sown with grasses and legumes seeds. (10,000 Tufts). 10kg legume seed/ Ha. Each running metre of strip should have 8-10 grains of seeds
	Sept -March	<ul style="list-style-type: none"> - Fertilization: 60 Kg Nitrogen/ ha and 60 Kg Phosphate/ Ha applied in three splits [first split basal application, second after seedling reaches around 30cm and third at initiation of boot stage of grasses. - Protection work (watch and ward, weeding)
Yr +1 (April- March)	April -March	<ul style="list-style-type: none"> - Fertilization: 60 Kg Nitrogen/ ha and 60 Kg Phosphate/ Ha applied in three splits [first split basal application, second after seedling reaches around 30cm and third at initiation of boot stage of grasses. - Protection work (watch and ward, weeding)

Source: Compiled by JICA Study Team (2017) based on information from Indian Grassland and Fodder Research Institute

Attachment II.3.7.1.7 Installation and Maintenance of Forest Boundary Pillars

An important activity in forest boundary management is markings on the ground depicting forest boundaries known as boundary pillars (large) and check pillars (small). There are specifications and design for boundary pillars and check pillars. Boundary pillar registers are maintained at range level showing serially number of boundary pillar and its forward and backward bearing and distance from next pillar, and so on.

1. Installation of Forest Boundary Pillars

Objective of this activity is to delineate forest boundary, prevent any encroachment in the forest, physical manifestation of forest boundary for staff and communities to see and function. The timing as well as activities required for the installation of forest boundary pillars are described in the table below.

Table 1 Activities for Installation of Forest Boundary Pillars

Year	Period	Activities
Year 0	Sept -Oct	1) Ascertain location of Boundary Pillar (BP) from maps 2) Take GPS coordinate 3) Clear area of all grass, bush, debris, roots. 4) Dig foundation (80×80 ×25 cm), 5) Stone rubble filling. 6) Construct BP in cement concrete masonry as per design. 7) Plaster in cement mortar all sides. 8) Engrave BP number on side opposite to next BP. 9) White wash

Source: JICA Study Team (2017)

2. Maintenance of Forest Boundary Pillars

Objective of this activity is to improve longevity of BP, to delineate forest boundary, prevent any encroachment in the forest, physical manifestation of forest boundary for staff and communities to see and function. The timing as well as activities required for the installation of forest boundary pillars are described in the table below.

Table 2 Activities for Maintenance of Forest Boundary Pillars

Year	Period	Activities
Year 0	Sept -Oct	1) Re-Ascertain location of Boundary Pillar (BP) from maps. 2) Take GPS coordinate 3) Assess damage. 4) Repair BP. 5) Plaster in cement mortar all sides. 6) Engrave BP number on side opposite to next BP. 7) White wash

Source: JICA Study Team (2017)

Attachment II.3.7.1.8 Indicative Seedling Production Information for Potential Species for the Project

The following tables were compiled based on following sources of information:

- ◆ Plantation Techniques of Important Trees/ Shrubs/ Herbs of Himachal Pradesh- HPFD (2015)
- ◆ Forest Nursery Handbook; C.D. Katoch (1991)
- ◆ Technology of Forest Nurseries; A. N Chaturvedi(1994)
- ◆ Information for HPFD officers/staff

(1) Normal Plant Seedlings

Table 1. Seedling Production Information for Normal Plants

No	Species	Vernacular Name/ English Name	Type of Seedling Pot, (P), Bare Root (B), Root/ Shoot Cutting (R/S)	Pot Size (cm) Width (W) and Length (L)		Standard Size of Seedling for Planting (cm) Height (H) and Collar Girth (CG)		Sowing Month	Total Nursing Period (month)	Planting Month
				W	L	H	CG			
1	<i>Abies pindrow</i>	Silver fir	P	12.5	22.5	>30	>1.2	Oct-Dec	36 - 42	Jul-Aug
2	<i>Picea smithiana</i>	Spruce	P	12.5	22.5	>30	>1.2	Jun-Jul	36-42	Jul-Aug
3	<i>Cedrus deodara</i>	Deodar/ Cedar	P	12.5	22.5	> 30	> 1.2	Nov-Dec	24- 30	Jul-Aug
4	<i>Pinus roxburghii</i>	Chir/ Chil	P	12.5	22.5	> 30	> 1.2	Sep-Oct	18-24	Jul-Aug
5	<i>Pinus wallichiana</i>	Blue Pine/ Kail	P	12.5	22.5	> 30	>1.2	Mar-Apr	18-30	Jul-Aug
6	<i>Pinus gerardiana</i>	Chilgoza	P	12.5	45	> 23	> 1.0	Jul-Aug	24 - 36	Dec
7	<i>Juniperus macropoda</i>	Juniper/ Pencil cedar	B/P	12.5	22.5	> 30	> 1.0	Nov-Dec	24-36	Dec
8	<i>Acacia catechu</i>	Khair	P	12.5	22.5	>45	> 1.0	Mar	6	Jul-Aug
9	<i>Aegle marmelos</i>	Bel	P	12.5	22.5	>45	>1.0	Jul (Soon after seed collection)	2-24	Jul-Aug
10	<i>Aesculus indica</i>	Khanor	B			>45	>1.5	Dec	12	Dec-Jan
11	<i>Albizzia lebbek</i>	Kala Siris	P	12.5	22.5	>45	>1.5	Feb-Mar	6-18	Jul-Aug
12	<i>Albizzia stipulata</i>	Ohi	P	12.5	22.5	>60	>1.5	Feb-Mar	9-12	Jul-Aug
13	<i>Alnus nepalensis/ A. nitida</i>	Kunish	B			>60	>1.5	Feb-Mar	21	Dec-Jan

No	Species	Vernacular Name/ English Name	Type of Seedling Pot, (P), Bare Root (B), Root/Shoot Cutting (R/S)	Pot Size (cm) Width (W) and Length (L)		Standard Size of Seedling for Planting (cm) Height (H) and Collar Girth (CG)		Sowing Month	Total Nursing Period (month)	Planting Month
				W	L	H	CG			
14	<i>Azadirachta indica</i>	Neem	P	12.5	22.5	>45	>1.2	Jun-Jul	12	Jul-Aug
15	<i>Bauhinia variegata</i>	Kachnar	R/S	12.5	22.5	>60	1-2	May-Jun	12-15	Jul-Aug
16	<i>Bombax ceiba</i>	Semal	P	12.5	22.5	>60	>1.2	May-Jun	12	Jul-Aug
17	<i>Toona ciliata</i>	Toon	P	12.5	22.5	>60	>1.5	Feb-Mar (Soon after seed collection)	12-18	Jul-Aug
18	<i>Dalbergia sissoo</i>	Tali	P	12.5	22.5	>60	1.5 - 2	Feb-Mar	6-18	Dec-Jan Jul-Aug
19	<i>Emblica officinalis</i>	Amla	P	12.5	22.5	>60	>1.5	Mar-Apr	6-18	Dec-Jan Jul-Aug
20	<i>Grewia optiva/ G. Oppositifolia</i>	Bihul/Dha man	P	12.5	22.5	>60	>1.5	Feb-Mar	18-24	Dec-Jan Jul-Aug
21	<i>Mangifera indica</i>	Mango	P	12.5	22.5	>60	>1.5	Jun-Jul	12	Jul-Aug
22	<i>Melia azadirachta</i>	Drek	P	12.5	22.5	>60	>1.5	Feb-Mar	12	Dec-Jan Jul-Aug
23	<i>Morus alba</i>	Shehtoot	B			>200	>2	May-Jun	6-18	Dec-Jan
24	<i>Pongamia pinnata</i>	Pongamia	P	12.5	22.5	>60	1-2	May-Jun	12	Jul-Aug
25	<i>Quercus leucotrichophora</i>	Ban	P	12.5	22.5	>45	>1.5	Dec	18-24	Jul-Aug
26	<i>Robinia pseudoacacia</i>	Robinia	R/S			>60	>1.5	Mar-Apr	9	Dec-Jan
27	<i>Salix alba</i>	Badha	B			>200	>2 - 2.5	Dec-Jan	6-12	Dec-Jan Jul-Aug
28	<i>Sapindus mukorossii</i>	Ritha	P	12.5	22.5	>60	>1.5	Jan-Feb	12-18	Dec-Jan Jul-Aug
29	<i>Syzygium cumini</i>	Jamun	P	12.5	22.5	>45	>1.5	Jun-Jul	12	Jul-Aug
30	<i>Terminalia bellerica</i>	Behra	P	12.5	22.5	>60	>1.2	Feb-Mar	18	Jul-Aug
31	<i>Terminalia arjuna</i>	Arjuna	P	12.5	22.5	>60	>1.5	Jun-Jul	12	Jul-Aug
32	<i>Terminalia chebula</i>	Harar	P	12.5	22.5	>45	>1.5	Jun-Jul	18-30	Jul-Aug
33	<i>Artocarpus lakoocha</i>	Dheoun	P	12.5	22.5	>60	>1.2	Jun-Jul	12-24	Jul-Aug

No	Species	Vernacular Name/ English Name	Type of Seedling Pot, (P), Bare Root (B), Root/Shoot Cutting (R/S)	Pot Size (cm) Width (W) and Length (L)		Standard Size of Seedling for Planting (cm) Height (H) and Collar Girth (CG)		Sowing Month	Total Nursing Period (month)	Planting Month
				W	L	H	CG			
34	<i>Hicoria carya</i>	Pecanut	P	12.5	22.5	>60	>2.0	Mar-Apr	12	Jul-Aug
35	<i>Dendrocalamus spp</i>	Bans	P	12.5	22.5	>60	>1.2	Apr	15-27	Jul-Aug
36	<i>Terminalia tomentosa</i>	Sain	P	12.5	22.5	>45	>1.5	Feb-Mar	18	Jul-Aug
37	<i>Prunus armenica</i>	Chuli	B			>45	>1.5	Sep-Oct	24	Dec-Jan
38	<i>Prunus cornuta/ P. Cerassoides/ P.padus</i>	Paza	P	12.5	22.5	>45	>1.5	Sep-Oct	9	Jul-Aug
39	<i>Olea glandulifera</i>	Thira	P	12.5	22.5	>45	> 1.2	May -Jun	12	Jul-Aug
40	<i>Cassia seamia</i>	Cassia	P	12.5	22.5	>60	>1.2	Feb-Mar	12	Jul-Aug
41	<i>Acacia nilotica</i>	Kikkar	B	12.5	22.5	>45	>1.0	Mar	6-18	Jul-Aug
42	<i>Butea monosperma</i>	Dhak	P	12.5	22.5	>30	>1.0	Feb-Mar	12	Jul-Aug
43	<i>Populus ciliata/ P. Alba/ P. deltoides</i>	Poplar	Cutting			>200	>2-2.5	Dec-Jan	12	Dec-Jan
44	<i>Juglans regia</i>	Walnut	R/S			>45	>2.0	Nov-Dec	24	Nov-Dec
45	<i>Acer oblonga/ Acer pictum</i>	Maple	B			>60	>1.5	Mar-Apr	12	Nov-Dec
48	<i>Corylus colurna</i>	Thangi/ Hazelnut	B/P	12.5	22.5	>45	>1.0	Nov-Dec	24-36	Dec-Jan

Source: Compiled by JICA Study Team (2017)

(2) Tall Plant Seedlings

Table 2. Seedling Production Information for Tall Plants

No	Species	Vernacular Name/ English Name	Type of Seedling Pot, (P), Bare Root (B), Root/Shoot Cutting (R/S)	Pot Size (cm) Width (W) and Length (L)		Standard Size of Seedling for Planting (cm) Height (H) and Collar Girth (CG)		Sowing Month	Total Nursing Period (month)	Planting Month
				W	L	H	CG			
1	<i>Abies pindrow</i>	Silver fir	P	20	30	>40	>1.5	Oct-Dec	48 - 52	Jul-Aug
2	<i>Picea smithiana</i>	Spruce	P	20	30	>40	>1.5	Jun-Jul	48-52	Jul-Aug
3	<i>Cedrus deodara</i>	Deodar/ Cedar	P	17.5	30	> 35	> 1.4	Nov-Dec	36-42	Jul-Aug
4	<i>Pinus roxburghii</i>	Chir/ Chil	P	17.5	30	> 40	> 1.5	Sep-Oct	36-42	Jul-Aug
5	<i>Pinus wallichiana</i>	Blue Pine/ Kail	P	17.5	30	> 40	>1.5	Mar-Apr	36-42	Jul-Aug
6	<i>Pinus gerardiana</i>	Chilgoza	P	20	25	> 30	> 1.2	July-Aug	42-48	Dec
7	<i>Juniperus macropoda</i>	Juniper/ Pencil cedar	B/P	17.5	30	> 35	> 1.2	Nov-Dec	42-48	Dec
8	<i>Acacia catechu</i>	Khair	P	17.5	30	>60	> 1.5	Mar	12-18	Jul-Aug
9	<i>Aegle marmelos</i>	Bel	P	17.5	30	>60	>1.5	Jul (Soon after seed collection)	24-36	Jul-Aug
10	<i>Albizzia lebbek</i>	Kala Siris	P	17.5	30	>60	>1.7	Feb-Mar	18-24	Jul-Aug
11	<i>Albizzia stipulata</i>	Ohi	P	17.5	30	>60	>1.7	Feb-Mar	18-24	Jul-Aug
12	<i>Alnus nepalensis/A. nitida</i>	Kunish	B			>60	>1.5	Feb-Mar	18-24	Dec-Jan
13	<i>Azadirachta indica</i>	Neem	P	17.5	30	>60	>1.5	Jun-July	18-24	Jul-Aug
14	<i>Bombax ceiba</i>	Semal	P	17.5	30	>60	>1.5	May-Jun	18-24	Jul-Aug
16	<i>Toona ciliata</i>	Toon	P	17.5	30	>60	>1.5	Feb-Mar (Soon after seed collection)	18-24	Dec-Jan Jul-Aug
17	<i>Dalbergia sissoo</i>	Tali	P	17.5	30	>60	1.5 - 2	Feb-Mar	24-30	Dec-Jan Jul-Aug
18	<i>Emblica officinalis</i>	Amla	P	17.5	30	>60	>1.5	Mar-Apr	18-24	Dec-Jan Jul-Aug
19	<i>Grewia optiva/ G. Oppositifolia</i>	Bihul/ Dhaman	P	17.5	30	>60	>1.5	Feb-Mar	24-30	Dec-Jan Jul-Aug
20	<i>Melia azadirachta</i>	Drek	P	17.5	30	>60	>1.5	Feb-Mar	12-18	Dec-Jan Jul-Aug

No	Species	Vernacular Name/ English Name	Type of Seedling Pot, (P), Bare Root (B), Root/Shoot Cutting (R/S)	Pot Size (cm) Width (W) and Length (L)		Standard Size of Seedling for Planting (cm) Height (H) and Collar Girth (CG)		Sowing Month	Total Nursing Period (month)	Planting Month
				W	L	H	CG			
21	<i>Pongamia pinnata</i>	Pongamia	P	17.5	30	>60	1-2	May-Jun	12-18	Jul-Aug
22	<i>Quercus leucotrichophora</i>	Ban	P	17.5	30	>60	>1.5	Dec	24-30	Jul-Aug
23	<i>Sapindus mukorossii</i>	Ritha	P	17.5	30	>60	>1.5	Jan-Feb	18-24	Dec-Jan Jul-Aug
24	<i>Syzygium cuminii</i>	Jamun	P	17.5	30	>60	>1.7	Jun-Jul	18-24	Jul-Aug
25	<i>Terminalia bellerica</i>	Behra	P	17.5	30	>60	>1.5	Feb-Mar	24	Jul-Aug
26	<i>Terminalia arjuna</i>	Arjuna	P	17.5	30	>60	>1.5	Jun-Jul	18-24	Jul-Aug
27	<i>Terminalia chebula</i>	Harar	P	17.5	30	>60	>1.5	Jun-Jul	30-36	Jul-Aug
28	<i>Artocarpus lakoocha</i>	Dheoun	P	17.5	30	>60	>1.5	Jun-Jul	24-30	Jul-Aug
29	<i>Hicoria carya</i>	Pecanut	P	17.5	30	>60	>2.0	Mar-Apr	18-24	Jul-Aug
30	<i>Terminalia tomentosa</i>	Sain	P	17.5	30	>60	>1.5	Feb-Mar	24-30	Jul-Aug
31	<i>Prunus cornuta/</i> <i>P. Cerassoides/</i> <i>Ppadus</i>	Paza	P	17.5	30	>60	>1.5	Sep-Oct	18-24	Jul-Aug
32	<i>Olea glandulifera</i>	Thira	P	17.5	30	>60	> 1.2	May -Jun	18	Jul-Aug
33	<i>Cassia seamia</i>	Cassia	P	17.5	30	>60	>1.2	Feb-Mar	18	Jul-Aug
34	<i>Butea monosperma</i>	Dhak	P	12.5	22.5	>30	>1.2	Feb-Mar	18	Jul-Aug
35	<i>Corylus colurna</i>	Thangi/ Hazelnut	B/P	17.5	30	>60	>1.2	Nov-Dec	30-40	Dec-Jan

Source: Compiled by JICA Study Team (2017)

Attachment II.3.7.1.9 Indicative Tending Operations

Secondary Silvicultural Operations¹ (Tending) is defined as operations carried out for the benefit of a forest crop at any stage of its life between the seedling and mature stages; it essentially covers operations on the crop itself and on the competing vegetation, and includes thinning/ improvement felling, cleaning, thinning, climber cutting and weeding. Following tending operations are described hereunder:

- ◆ Thinning/ improvement felling
- ◆ Climber Cutting
- ◆ Cleaning
- ◆ Pruning

1 Thinning

Thinning is defined as a felling made in an immature stand for the purpose of improving the growth and form of the trees that remain, without permanently breaking the canopy. Whereas the main object in view in weeding and cleaning is the removal of undesirable elements from a crop, thinning is chiefly concerned with promoting good growth in the stems that are retained.

One of the main reasons for thinning tree crops is to minimize the risks of loss from pests and diseases. On exposed sites, possible damage from physical agencies has also to be avoided as far as possible. With exposure to strong winds, it is important to develop a good root system, and where there is liability to snow-break, well-balanced crowns are desirable. The windward margin of a plantation requires special consideration to ensure maximum protection for rest of the stand.

As a given site is only capable of yielding a definite maximum increment, it is important that the yield shall be in the most profitable form. What is most profitable will depend on species and markets. An assessment will usually have been made when the object of management were laid down, but in general terms it will involve steps to concentrate the potential increment on the best available stems in numbers determined by the dimensions and rates of growth aimed at. Thus it may be desired to produce saw-logs in as short a time as possible, or to obtain a maximum outturn of smaller poles or pulpwood. Quality of wood may be as important as quantity, and depends on such factors as ring width and knottiness.

Standard Grades of Ordinary Thinning:

(1). Light Thinning (A-grade)

This is limited to the removal of dead, dying, diseased and suppressed trees, i.e. classes V, IV and III. Grade A is of no practical use, but forms a convenient initial stage, especially in comparative research on the effect of thinning on increment.

(2). Moderate Thinning (B-grade)

This consists in the further removal of defective dominated stems and whips. Branchy advance growth which it is impracticable or not desirable to prune may also be taken, i.e. classes V, IV, III,

¹ General Silviculture For India, Champion & Seth

II (b) and I(d) and an occasional I (c). B-grade is also of little use in ordinary practice, having but little influence on the increment of the remaining stems.

(3). Heavy Thinning (C-grade)

This consists in the further removal of the remaining dominated stems and such of the defective dominants as can be removed without making lasting gaps in the canopy, i.e. classes V, IV, III, II and I (b), (c) and (d).

(4). Very heavy thinning (D-grade)

The distinguishing feature of this grade is that it also takes some of the good dominants, subject to the same condition of not making any lasting gap in the canopy. The trees selected for removal are such that the remaining crop consists as far as possible of trees with good boles and crowns, well and evenly distributed over the area, and with space for further development, i.e. classes V, IV, III, II, I (b), (c), (d) and some I (a).

Application of thinning:

Ordinary thinning is best suited to pronounced light-demanders such as teak and chir pine in which the dominants require plenty of room and the trees which drop into the lower canopy layers practically cease growth and die. Sissu must be well thinned from earliest youth, whereas mulberry and many shade-bearers must be kept close to eliminate side branches and give clean timber.

Thinning interval:

The rate of growth of trees varies with age, the typical pattern being an S-curve with a somewhat slow start for a few years then a period of rapid development that subsequently falls off with approaching maturity, and finally a relatively slow rate of growth particularly in height. For simplicity in management, there is a tendency to conform to the cycle most commonly adopted for operations in the natural forest, with a thinning cycle of 10 years for crops of middle age, reduced to 5 years for the youngest stages. Such schedules will vary with species and site quality, and is indicated in the working plan, based on all the experience available.

Improvement felling:

The standard definition of Improvement Felling is “the removal or destruction of the less valuable trees in a crop in the interest of the better growth of the more valuable individuals “. The operation does not ordinarily aim at getting regeneration though it usually includes aiding advance growth and encouraging the filing up of blanks; above all, realisation of revenue should never be considered as one of its objects, any return from the material removed being purely incidental.

Improvement fellings are usually prescribed for inferior forest, especially those which owe their poor condition to over felling, excessive grazing or burning, as offering the best means of bringing them back into regular production. Consequently many working plans in all parts of India have an “Improvement working circle” in which such fellings are the chief prescription –Improvement fellings are also often prescribed for the as-yet unconverted parts of forest under conversion to even-aged form.

2 Climber Cutting:

Climbers are a great menace to young generation and must be closely watched, or in the course of a month or two, they may pull over the saplings, break the leading shoots, and smother the crowns; their removal constitutes a regular part of weeding operations. The heavy-foliaged soft climbers, larger woody species may become equally bad. Cutting back is usually not very efficacious, and it is often more economical in the long run to trace back the climbing stems to the rootstocks and dig them out. Such measures should obviously be taken before any seed has set, and before the season of maximum growth, which usually means during the rainy season when also the ground is soft.

3 Cleaning

Cleaning is defined as a tending operation done in a sapling crop involving the removal or topping of inferior growth (including individuals of the favoured species), climbers etc, when they are interfering with the better grown individuals of the favoured species. It merges with thinning as the saplings grow into poles.

Cleaning natural regeneration:

Natural regeneration of the desired species is almost always accompanied by regeneration, both seedling and coppice, of less desirable trees, shrubs, herbs and climbers. Weeding and cleaning are accordingly very generally necessary from an early stage, and continue with decreasing intensity for a period of years depending on conditions. 'Cleaning' is taken to include the spacing out of dense young regeneration under 10 cm (4") diameter. In mixed coniferous regeneration, the dangerous weeds are chiefly woody shrubs such as *Spiraea*, *Rubus*, *Indigofera* etc, and tall herbaceous growth of *Senecio* or ferns etc, but sometimes blue pine, silver fir or oak have to be removed in cleanings when the more valuable deodar requires assistance.

The amount of such cleaning that must be done has to be determined separately for each type and set of conditions. It is evident that knowledge of the relative rates of growth of the species that it is desired to retain is essential, or it may be found that the secondary species overtop the chief one at a stage when it is difficult to remedy the position. Not rarely, it is desirable to retain these secondary species as an admixture with the major species, but to keep them to the lower canopy layers.

Cleaning artificial regeneration:

Treatment is exactly same as for natural regeneration.

4 Pruning:

Pruning methods developed to concentrate as much as possible of the potential increment of an area on selected elite stems, necessitate pruning to realize their full benefit. The necessary stimulus being thus provided, it has been shown that pruning can be done at reasonable cost and need not result in unsoundness. Such pruning should of course only be done on the elite stems numbering up to a small multiple of the final yield crop. It must be commenced at an early stage, at the second or third thinning, and completed in about three stages up to the height adopted.

Method of pruning:

Dead, moribund and some green branches are cut off as near the bole as possible. The use of a short light ladder with an ordinary hand-saw is preferable. Pruning can be mechanized through the use of a small circular saw mounted on a handle of suitable length, driven from a small portable motor (like the portable chain-saw), or a tractor engine.

Height of Pruning:

The height up to which pruning should be carried varies with species and conditions, but in young plantations is usually about one half to three fifths of the total height. The operation is repeated at successive thinning till the maximum height which has been decided on as practicable and necessary is reached. This is most usually about 4-5 m to ensure a clean bottom log, but is not rarely taken up to the second log, say 7-8 m. Ordinarily not more than the lower 20-30% of the total length of the green crown should be removed; more than this will cause some loss of increment.

Attachment II.3.7.1.10 TOR for Monitoring Data Accumulation for Nursing /Planting of Tall Plants

1. Introduction

In HPFD, introduction of tall plants is adopted for better survival and growth of planted seedlings, and the Project will utilize tall plants for some treatments and species in accordance with notifications issued by the state government and HPFD. In this regard, the Project is expected to carry out monitoring of the project activities for nursing, planting, protection of tall plants under the project area and compile and analyse the compiled data to identify/ propose the appropriate and realistic work norms for better tall plants management in the state.

2. Objectives

The objectives of the study are to;

- ◆ Identify realistic work norms (for materials and labours) for nursery operations, planting/ tending operations, and
- ◆ Assess the growth performance on the tall plants,

3. Agencies to be engaged and process of selection

The PMU will request the listed institutions for submission of proposals to conduct the study as an outsourced work. The procurement committee or a special committee constituted at the PMU level with representatives from HPFD, PMCs and external experts will evaluate the proposals and commission the task to the eligible institution.

4. Approach and Methodology

4.1 Collection and Analysis of Existing Tall Plants Relevant Information

The outsourced agency shall collect i) existing cost norms, work norms, handbook, or technical information on tall plants (e.g. Plantation Techniques of Important Trees/ Shrubs/ Herbs of Himachal Pradesh- HPFD (2015), Forest Nursery Handbook; C.D. Katoch (1991), Technology of Forest Nurseries; A. N Chaturvedi (1994)) and ii) satellite images showing the vegetation conditions procured by the Project before the 1st batch of plantation and iii) other required information from HPFD officers/ staff.

4.2 Identification and Selection of Monitoring Sites

The outsourced agency shall identify the monitoring sites by analysing the data collected in Section 4.1 and consultation with PMU/ PMC and other key informants who have knowledge of nursing/ planting operation on tall plants. The agency shall select one or two site/s each in different ecosystems (vegetation) in the project area. In total, maximum 16 sites shall be selected from eight major types of vegetation as follows;

- | | |
|-------------------------------------|-----------------------------------|
| 1. Tropical Moist Deciduous Forest | 5. Himalayan Dry Temperate Forest |
| 2. Tropical Dry Deciduous Forest | 6. Sub-alpine Forest |
| 3. Sub-Tropical Pine Forest | 7. Moist Alpine Forest |
| 4. Himalayan Moist Temperate Forest | 8. Dry Alpine Forest |

4.3 Conduct of the Monitoring and Data Accumulation

The outsourced agency shall conduct monitoring of nursing/ planting operations at the selected sites and compile data which to be submitted to PMU semi-annually. The agency shall be responsible for, but not be limited to, the following items for the monitoring and data accumulation. The monitoring items shall be finalised after consultation with PMU/ PMC after the commencement of the project.

[At the Stage of Seedling Production]

Name of species, types of seedlings, size of seedlings (Height and Collar Girth), nursing period, planting date, soil conditions, weather conditions (e.g. precipitation, air humidity, temperature number of rainy days), etc.

[At the Stage of Planting and Tending]

Name of species, planting date, species-wise growth performances (including survival rates), tending work (period, type of work), soil conditions, weather conditions, etc.

5. Duration

The overall study shall be completed within 8 years, considering tall plants require longer nursing period compared with normal plants (some species require nearly 5.5 years) and planting period also needs to be monitored during the implementation course of the Project.

6. Outputs

- Report on the selected monitoring sites to be set-up
- Semi-annual monitoring reports on accumulated monitoring data, and analysis on the results
- Report on recommended work norms for nursing/planting operation of tall plants to be adopted in HP state

7. Required Human Resource Inputs

Indicative human resource inputs required are indicated in **Table 1** below.

Table 1 Indicative Human Resource Inputs for the Proposed Study

No.	Activity	Input
1	Collection and Analysis of Tall Plants Relevant Information in the Project	Input: 3 experts/ Duration: 3 months
2	Identification and Selection of Monitoring Sites	Input: 3 experts/ Duration: 6 months
3	Conduct of the Monitoring and Data Accumulation	Input: 3 experts and 6 assistants Duration: 7 years
4	Report Writing and Presentation/Consultation	Input: 2 experts/ Duration: 1 months/ 6 months

Source: JICA Study Team (2017)

END

Attachment II.3.7.1.11 TOR for Monitoring Data Accumulation for Effective Pasture Management

1. Introduction

The dry alpine pasture has a total of 707,708 ha (470,564 ha in 10 territorial divisions and 237,143ha in five wildlife divisions) in the proposed project division areas. One of the project activities will focus on the improvement of dry alpine pastures. And the models developed by the Indian Grassland and Fodder Research Institute are to be adopted for better biomass productivity and re-sowing of pastures/grasslands. In this regard, monitoring data of these interventions such as nursing/ planting and tending for pasture management is required to assess the project approach on pasture improvement and identify/ propose the more appropriate and realistic work norms for further effective pasture management in the state.

2. Objectives

The objectives of the study are to;

- ◆ Identify and propose realistic work norms (for materials and labours) for nursery operations, planting/ tending operations for pasture management, and
- ◆ Assess the growth performance/ biomass records after planting/sowing

3. Agencies to be engaged and Process of Selection

The PMU will request the listed institutions for submission of proposals to conduct the study as an outsourced work. The procurement committee or a special committee constituted at the PMU level with representatives from HPFD, PMC and external experts will evaluate the proposals and commission the task to the eligible institution.

4. Approach and Methodology

4.1 Collection and Analysis of Information of Existing Pasture

The outsourced agency shall collect i) information on the selected project intervention area of pasture improvement in dry alpine pasture (e.g. area (ha), type of species, GPS data, etc.), ii) existing cost/work norms within HPFD and other relevant organisations, iii) satellite images showing the dry alpine pasture conditions procured by the Project at the initial stage of the Project, and iv) other required information from Indian Grassland and Fodder Research Institute, HPFD and other relevant organisations.

4.2 Identification and Selection of Monitoring Sites

The outsourced agency shall identify the monitoring sites by analysing the data collected in Section 4.1 and consultation with PMU/ PMC and other key informants who have knowledge of nursing/ planting operation on pasture management. The agency shall select three or four sites located in dry alpine pasture under the project area.

The dry alpine pasture is dominated in three divisions (Kinnaur: 205,065ha, Lahul: 162,185ha, Spiti wildlife: 115,741ha), which covers about 68% of the area. Six other divisions (GHNP, Saharan wildlife, Pangi, Rohru, Chamba wildlife, and Kullu wildlife) have the dry alpine pasture exceeding 20,000ha. Therefore, the monitoring sites shall be selected from above nine divisions which account for about 93% of the dry alpine pasture.

4.3 Conduct of the Monitoring and Data Accumulation

The outsourced agency shall conduct monitoring of nursing/ planting operations at the selected sites and compile data which to be submitted to PMU semi-annually. The agency shall be responsible for, but not be limited to, the following items for the monitoring and data accumulation. The monitoring items shall be finalised after consultation with PMU/ PMC after the commencement of the Project.

[At the Stage of Seedling Production]

Name of species, types of seedlings, size of seedlings (Height and Collar Girth), nursing period, planting date, soil conditions, weather conditions (e.g. precipitation, air humidity, temperature number of rainy days), etc.

[At the Stage of Planting / Tending]

Name of species, planting date, growth performance, biomass record, tending work (period, type of work), soil conditions, weather conditions, etc.

5. Duration

The overall study shall be completed within 8 years, considering the monitoring is required both seedling and planting period during the course of the project implementation.

6. Outputs

- Report on the selected monitoring sites to be set-up
- Semi-annual monitoring reports on accumulated monitoring data, and analysis on the results
- Report on recommended work norms for nursing/planting operation of pasture management to be adopted in HP state

7. Required Human Resource Inputs

Indicative human resource inputs required are indicated in **Table 1** below.

Table 1 Indicative Human Resource Inputs for the Proposed Study

No.	Activity	Input
1	Collection and Analysis of Information of Pasture Management under the Project	Input: 3 experts Duration: 3 months
2	Identification and Selection of Monitoring Sites	Input: 3 experts Duration: 5 months
3	Conduct of the Monitoring and Data Accumulation	Input: 2 experts and 2 assistants Duration: 7 years
4	Report Writing and Presentation/Consultation	Input: 2 experts Duration: 1 months/ 6 months

Source: JICA Study Team (2017)

END

Attachment II.3.7.1.12 TOR for Study of Effective SWC and Land Slide Control Measures

1. Introduction

While large-scale land slide control will not be covered as an intervention by the Project, occurrence of land-slides/ slips especially along road side is prevalent in HP. In order to contribute to tackle such issues, a study to envisage effective SWC and land slide/slip control measures will be implemented in the Project.

2. Objectives

The objectives of the study are to propose recommended procedures to examine effective SWC and land slide/slip control measures applicable in HP state.

3. Agencies to be engaged and Process of Selection

The PMU will request the listed institutions having expertise in land slide/slip control for submission of proposals to conduct the study as an outsourced work. The procurement committee or a special committee constituted at the PMU level with representatives from HPFD, PMC and external experts will evaluate the proposals and commission the task to the eligible institution.

4. Approach and Methodology

4.1 Collection and Analysis of Information/ Data on Land Slide/Slip and its Measures

The outsourced agency shall collect i) existing secondary information/ data such as technical handbook/ manual on land slide/ slip measures, geological features, frequency/ location of earthquake, climate conditions, etc. ii) satellite images procured by the Project, and other required information from HPFD officers/ staff. Also, field surveys to the specific sites requested by HPFD shall be conducted to confirm current status of land slide/slip and measures to be taken.

4.2 Preparation of Draft Technical Guidelines

The outsourced agency shall prepare draft of technical guidelines by analysing the data collected in Section 4.1. Firstly, the overall structure of each guideline needs to be prepared and made consensus with PMU/ PMC, then the draft guidelines shall be submitted for their comments. The agency shall revise the draft guidelines based on the comments before conducting the field trial/ investigation as mentioned in Section 4.3. Types of technical guidelines are indicated as follows;

- i. Technical guideline for overall surveying, planning and designing,
- ii. Technical guidelines for hazardous area identification/ hazard map preparation,
- iii. Technical guideline for field survey at the landslide/slip areas, and
- iv. Technical guideline for planning and designing of SWC and landslide/slip control measures

4.3 Conduct of the Field Trial/ Investigation

Following the drafted technical guidelines, field trial/ investigation activities shall be carried out with selected two or three divisions. The activities shall be mainly conducted by officers/staff of selected divisions with instruction/supervision of the outsourced agency. Through this trial, outputs such as hazard map, results of field survey and planning and designing of SWC and landslide/slip control measures are expected.

4.4 Exposure Visit to Uttarakhand

For training and exposure to landslide/land slip related technologies/ implementation in other states, the outsourced agency is requested to arrange an exposure trip to Uttarakhand and mainly visiting the JICA technical cooperation project and loan project which are tackling on capacity development and implementation of landslide/land slip prevention technologies.

The exposure visit is assumed in following number of participants and duration:

Maximum Participants: 10 project related HPFD officers

Duration: 5 days

4.5 Finalisation of the Technical Guidelines

The outsourced agency shall organise consultation meetings with officers/staff of selected divisions for further improvement of the guidelines. The results of the field trial/ investigation activities as well as updated guidelines shall be submitted PMU/ PMC for their comments and finalisation.

5. Duration

The overall study shall be completed within two years.

6. Outputs

- a) Technical guideline for overall surveying, planning and designing
- b) Technical guidelines for hazardous area identification/ hazard map preparation
- c) Technical guideline for field survey at the landslide/slip areas
- d) Technical guideline for planning and designing of SWC and landslide/slip control measures

7. Required Human Resource Inputs

Indicative human resource inputs required are indicated in **Table 1** below.

Table 1 Indicative Human Resource Inputs for the Proposed Study

No.	Activity	Input
1	Collection and Analysis of Information/ Data on Land Slide/Slip and its Measures	Input: 3 experts Duration: 3 months
2	Preparation of Draft Technical Guidelines	Input: 3 experts Duration: 6 months
3	Conduct of the Field Trial/ Investigation	Input: 3 experts and 4 assistants Duration: 10 months
4	Finalisation of the Technical Guidelines	Input: 3 experts Duration: 5 months

Source: JICA Study Team (2017)

END

Attachment II.3.7.2.1 Indicative TOR for Pilot Projects on Biodiversity Corridor

1. Overview

There are 31 protected areas within the state and the total area is about 15% of state's geographical areas. Under the targeted project areas, four protected areas and two wildlife ranges are located. Numbers and areas of protected areas are in mass scale, but some protected areas are isolated. Protected areas such as national parks and wildlife sanctuaries play a critical role in protection and recovery of some endangered species, while human-wildlife conflicts need to be addressed as one of the key issues outside protected areas. In order to tackle these different issues without interfering the efforts of each other, a carefully-designed network of protected areas needs to be examined, which involves establishment of biodiversity corridors to bridge isolated protected areas and connect them effectively. Conservation reserves and community reserves are one of potential designations to constitute biodiversity corridors. Management of biological corridors would require understanding and cooperation of local communities, and human-wildlife conflict would need to be mitigated while securing local people's sustainable livelihood.

Though the proposed Project is not planned to establish biodiversity corridors in the given time frame and the current project framework, components and activities of the proposed Project shall contribute to support enhancing biodiversity corridors.

2. Objectives

- To identify potential areas for biodiversity corridor designation
- To assess the impact of biodiversity corridor designation of the potential areas on the livelihood of local communities, biodiversity conservation and human-wildlife conflict mitigation
- To design and suggest some effective networks of protected areas with potential corridor designation

3. Methods

3.1 Baseline Survey

The contracted agency shall coordinate and collaborate with HPSBB, territorial divisions and wildlife divisions of HPFD to prepare biodiversity inventory in the project area of HPFEM&LIP. People's Biodiversity Register (PBR) data of HPSBB would be able to provide vital data for inventory, however some data of PBR were confidential and careful discussion with HPSBB would be required to access and manage these data. Some areas may not have developed PBR by the time of the survey, and the contracted agency shall select some sampling sites for field surveys to supplement the inventory.

3.2 Identification of the Sites

The contracted agency shall analyze the data with GIS to identify 10 potential areas with focus on the area around four protected areas and two wildlife ranges for corridor designation. The contracted agency shall discuss with PMU to carry out initial identification of the area. Once the areas are identified, a field team of the agency shall visit the identified area and discuss with the BMC to see if they would agree to take part in the pilot project. The participating community shall be explained that the community will be interviewed for various data collection such as human-wildlife conflict and presence of certain species of fauna/flora.

3.3 Impact Assessment

The contracted agency shall assess the impact of corridor designation on livelihood of local communities by analyzing the current status of natural resource utilization by the communities and potential regulation imposed by designation conservation reserves, community reserves, or other designation which can serve as part of biodiversity corridors. The project shall also conduct impact assessment of corridor designation on biodiversity conservation and human-wildlife conflict mitigation in the area to evaluate the merit/demerit of the designation. The assessment shall cover the whole year to monitor the seasonal impacts.

3.4 Designing the Protected Area Network with Potential Biodiversity Corridors

The contracted agency shall design the protected area network with potential biodiversity corridors, describing the merit/demerit of the designed network. Several patterns of the network should be suggested for further examination with HPSBB, HPFD, and other concerned agencies.

4. Outputs

The contracted agency shall produce the following outputs.

1. Quarterly reports
2. Report on 10 potential sites for corridor designation (to explain why they are selected as potential sites)
3. Impact Assessment Report (to evaluate merit/demerit of the designation)
 - Impact assessment on livelihoods of local communities
 - Impact assessment on biodiversity conservation
 - Impact assessment on human-wildlife conflict mitigation
4. Report on Suggested Protected Area Network with Potential Biodiversity Corridors
 - Suggestion of several protected area network with potential biodiversity corridors
 - Each suggested network is explained with respective merit/demerit, anticipated management issues, and suggestion of countermeasures to these issues

5. Required Inputs

The pilot project would take 28 months in total inclusive of preparation, baseline survey, site identification, field survey and report preparation. Indicative inputs required are indicated in **Table 1** below.

Table 1 Indicative Inputs for the Proposed Pilot Project

No.	Activity	Input
1	Baseline Survey	Input: 4 experts Duration: 5 months
2	Identification of the Sites	Input: 4 experts Duration: 6 months
3	Impact Assessment	Input: 4 experts and 4 assistants Duration: 12 months
4	Designing the Protected Area Network with Potential Biodiversity Corridors	Input: 4 experts Duration: 2 months
5	Report Writing and Presentation/Consultation	Input: 4 experts Duration: 3 months

Source: JICA Study Team (2017)

END

Attachment II.3.7.2.2 Indicative TOR for Basic Study for Designing Biodiversity Assessment

1. Overview

The state has rich flora and fauna, and the entire state falls into the Himalayan Hotspot. There are 28 Key Biodiversity Areas (KBAs) and other sites/areas of high biodiversity values within the state. Data and information on flora/fauna/biodiversity of the state have been accumulated, however scientific data are still insufficient for effective planning and management and the updated status of biodiversity is not fully clear. Chronological data, such as species gradual disappearance and ecological degradation, are also limited, which makes it difficult to understand the dynamics and its ecological meaning and to monitor the natural environment on a long-term basis. Comprehensive biodiversity assessment and baseline surveys are therefore required to establish extensive database and develop strategies to address issues for improved scientific conservation and management of biodiversity in the state.

2. Objectives

- To develop methodology and select areas for assessment on a long-term basis, for improved scientific conservation and management of biodiversity

3. Methods

3.1 Baseline Survey (review of biodiversity assessments in other areas)

The contracted agency shall conduct literature/web survey on long-term assessment for biodiversity, not only in India but around the globe, to continuously monitor biodiversity in the area with a minimum effort. The survey shall review them by analyzing;

- Basic framework of the assessment, such as objectives, scales, selection methodology for assessment areas, methodologies of data collection in the field, data collectors in the field, range of target species, assessment frequency, methodologies of centralizing data for analysis, data analyzers, level of information disclosure and its methodology, etc.
- Cost of the assessment, such as data collection, data analysis, information disclosure, human resource development, facility development, public relations, etc.
- Output of the assessment data, such as application in nature conservation planning, provision of baseline data to EIA for development projects, utilization in research activities, etc.

People's Biodiversity Register (PBR) is one of the existing activities of biodiversity assessments in India, which should be analyzed in the same way for comparison. Another possible example is "Monitoring Site 1000" by Biodiversity Center of Japan. Some more examples shall be explored around the world and analyzed for further study. This baseline survey is expected for a duration of around three months.

3.2 Development and Designing of Biodiversity Assessment for the State

The contracted agency shall review and examine the examples, and develop basic concept of long-term biodiversity assessment, which is expected to fit to the needs and situation and to be most effective in the state. A system to involve local communities, how to centralize and analyze the data, and utility as biodiversity data would be a few of the key points to design the assessment. This development is expected for a duration of around three months.

3.3 Basic Study for Designing the Assessment

A basic study shall be conducted to test the assessment methodologies in the field. Two sites per ecosystem shall be identified from the following nine major ecosystem (vegetation) types in HP state for the trial assessment.

- a) Tropical Moist Deciduous Forest
- b) Tropical Dry Deciduous Forest
- c) Sub-Tropical Pine Forest
- d) Himalayan Moist Temperate Forest
- e) Himalayan Dry Temperate Forest
- f) Sub-alpine Forest
- g) Moist Alpine Forest
- h) Dry Alpine Forest
- i) Dry Aline Pasture

Tentative methodologies are followed to examine its practicability, and biodiversity data shall be collected, centralized and analyzed by the agency, the whole process of which shall be carefully monitored for future improvement. The process and outcome of the trial assessment shall be analyzed and revised, through which the design of the assessment shall be finalized for suggestion. The trial assessment and its revision would take one and a half year (18 months), since the assessment in the field should cover the whole season.

4. Outputs

The contracted agency shall produce the following outputs.

1. Quarterly reports
2. Report on the Review of Biodiversity Assessment around the Globe
3. Draft Biodiversity Assessment Plan
 - Suggested methodologies for data collection in the field
 - Suggestion of data centralization and its analysis, including its disclosure
 - Strategy for effective and efficient implementation and anticipated management issues

5. Required Inputs

The pilot project would take 27 months inclusive of preparation, baseline survey, site identification, field survey and report preparation. Indicative inputs required are described in **Table 1** below.

Table 1 Indicative Inputs for the Proposed Pilot Project

No.	Activity	Input
1	Baseline Survey	Input: 4 experts Duration: 3 months
2	Development and Designing of Biodiversity Assessment for HP state	Input: 4 experts Duration: 3 months
3	Basic Study for Designing the Assessment	Input: 4 experts, and 4 assistants Duration: 18 months
4	Report Writing and Presentation/Consultation	Input: 4 experts Duration: 3 months

Source: JICA Study Team (2017)

END

Attachment II.3.7.2.3 Indicative Activities for Eco Tourism

1. Overview

Himachal Pradesh is known for its natural beauty and tourism is a prominent sector in the state's economy. Especially, home stays, tents, and other tourism attractions taking advantage of the local socio-cultural heritages have been developed with assistances of various government initiatives. HPFD is also a part of the concerted efforts of promoting sustainable tourism and established Eco Tourism Society of Himachal Pradesh. The preliminary SWOT analysis of eco-tourism sector in the state is given below.

Table 1.1 SWOT – Eco-tourism in Himachal Pradesh

Strengths	Weaknesses	Opportunities	Threats
Access to rural areas with rich and untouched biodiversity 26 Wildlife Sanctuaries 5 National Parks	Detrimental to natural habitats with possible impact on flora and fauna, local vegetation, and plantations	Increased trend amongst domestic travellers for nature treks, camps, and eco-experience, bird watching, habitat observers, wildlife tours	Existing established eco-tourism
Himachal Pradesh's natural endowment – flora and fauna, accessible treks and hikes, and possibility for recreational activities	Air and noise pollution, danger to water bodies, risk of land slides and soil erosion, waste management	Social mobilisation through CBOs, Forest Committees etc. at GP levels	Strong influence of local deities in opening up local communities (Kullu, Kinnaur, Lahaul & Spiti) – Cultural shock and vulnerability
Policy support under HPFD Eco Tourism Policy for training, infrastructural development, marketing support through HP ECOSOS	Special skill training for community to run nature specific tourist programme	Local community participation in decision making and planning process	Unplanned construction an eyesore to local heritage and traditional architecture
Increased Foreign Exchange Generation	Language hindrances and hygiene training to cater foreign travellers	Unemployed trained youth as tour guides, trek guides	Mass tourism vs. Quality Tourist
Funds for Natural Resource Conservation, Protect Areas	Cultural threat from opening to increased tourist footfall	World heritage site in tribal areas such as Buddhist Monastery of Tabo in Spiti	
Increased Awareness on Environmental Issues	Seasonal and Cyclic trend	Ayurveda, Yoga, and Meditation centres such as Tibetan medicines	
	Status of basic amenities such as health care, money exchange, banking, etc. in tribal areas	Educational institutes – schools and colleges' growing interest in eco-clubs, green tasks etc.	

Source: JICA Study Team (2017)

2. Survey and Planning

Prior to the implementation of activities, the following works shall be undertaken.

- ◆ *Site Selection Survey / Consultations / Feasibility Study* – Under HPFD Eco-tourism policy, provisions are made for identification and development of new sites/circuits. Under the guidance of HP ECOSOC, liaison with existing scheme and the State Tourism

Department can be sought for initial scouring for sites. GP Mobilisers and Ward facilitators would play a key role in ascertaining the intent of community and nature of intervention

- ◆ **GP Level Implementation Plan** – Homestay and Eco-tourism schemes can be introduced in amalgamation at GP level. In tandem with other livelihood options suggested through the project, Homestay/Eco-tourism is proposed to be a *complementary activity* instead of a *mainstream focus* (owing to its seasonal nature), as it stands to benefit and offer synergies to former. Here, willing GPs will be required to mobilise the existing SHGs/CIGs, or FUGs to prepare a micro-plan in support from mobilisers/facilitators and VFDS/ sub-committees of BMC, and officials from HPFD, and Department of Tourism. Details of activities to be undertaken by the participating community are elaborated in next section.
- ◆ **Infrastructure Assessment and Development** – Economic (accommodation, roads and paths, communication) and Social (Health and Medicine, Sanitation) Infrastructure development are the heart of successful implementation of homestay/Eco-tourism based interventions. With reference to GPs in Kinnaur, Lahaul & Spiti, the relevance of these developments grows many folds to ensure a comfortable stay for the tourists and ease of service delivery by the community. HPFD stands to play a pivotal role in furthering the pre-requisite developments in tandem with its inter-departmental understanding with I&PH, DoRD, and Tourism Department.

3. Indicative Activities

Based on the assessment of the infrastructure, market orientation, and scale of investment, the activities can be designed for individual based, group based, or cluster based. An outline of each package is given in the table below. PMU shall make necessary assessment during its preparatory phase and develop the work plan.

Table 3.1 Indicative Outlines of the Project Activities under Eco Tourism

Category	Outline
Homestay (Individual)	<p>Not a preferred mode of intervention unless group level activity is not practical</p> <p>Selective HH (Women) to be supported to avail benefits under HP Homestay Scheme, 2008</p> <p>Financial Assistance for <i>One-room set up</i> on approval of a business-plan for homestay unit with special consideration of sustainability features such as energy and water conservation, waste collection/disposal/recycling, green construction, traditional architecture, experiential theme such as wooden art, organic farming, etc.</p> <p>Assistance for only One-room set up covering cost for aesthetic amenities and facilities</p> <p>Business-plan to be approved by VFDS/sub-committees of BMC in consultation with HPFD and Officials from Department of Tourism.</p>

Category	Outline
Homestay (Group)	<p>For villages en-route existing nature treks or where no nature based interventions are found to be suitable, there only homestay support can be extended as a group.</p> <p>SHG-BPL model (Women only) can be adopted where in the mobilised groups can create a rotation roaster to host guests (one at a time) and arrange for basic spending through their intra-group savings.</p> <p>No new construction to be supported under the project. Assistance to set-up one room per HH with basic amenities of bed linen, buckets, etc.</p> <p>HP Homestay Scheme has no provision to offer group level assistance other than individual registration based incentives and exemptions.</p>
Eco-Tourism (Group)	<p>Necessarily a group activity with inputs from village community to aid and assist in planning, implementation, and sustainable operations.</p> <p>Amalgamation of two schemes i.e. homestays and eco-tourism wherein benefits under former can be availed to meet the accommodation requirements for nature walks, treks, experiences.</p> <p>Group participation on Two-Models:</p> <p>Model 1: One room in each HH in addition to other support services such as guides, porters, cooks etc. No new construction to be supported under the project.</p> <p>Model 2: ECO-CAMPS – Project to fund the setup and group to take responsibilities of operation, maintenance, and other support services. Based on the topography and the group intent additional recreational activities can be introduced such as</p> <ul style="list-style-type: none"> Rock/Mountain Climbing Craft Making Organic Farming Fishing and Angling <p>For above mentioned activities, costs to be born by the project for initial infrastructural setup that would entail tentage, mountaineering equipment, sleeping bags, bedding, camping material etc.</p> <p>Nature of activities not to be enforced on the community and to be decided through a participative process.</p> <p>Both the schemes do not offer any financial incentives; therefore selected groups can be assisted for initial set up and support from HP ECOSOC.</p> <p>HPFD existing facilities such as Forest Rest Houses and Inspection Huts at vantage huts and closer to wilderness can also be engaged in cases where additional accommodation is desired.</p>

Source: JICA Study Team (2017)

Attachment II.3.7.3.1 Indicative TOR for Pilot Projects on Hydroponic Fodder

1. Overview

In the project areas of HPFEM&LIP, livestock rearing has been a common livelihood activity. Apart from the nomadic and semi-nomadic communities, on an average 1-2 cattle/ cows are kept at homestead for domestic consumption as well as for sales of surplus. On the other hand, many of the households are experiencing shortage of green fodder and degradation of grazing areas and thus they are bound to purchase the fodder to supplement the requirement. In some areas, non lactating animals can be set free. Shortage of fodder grasses also means added burden on women in many villages in search of fodder as they are the primary care takers of livestock at household level. On the other hand, fodder harvesting in the grass land where the vegetation is not given sufficient time for rejuvenation would also mean the exploitation of the resources and accelerates the cycle of degradation. Although it is becoming common for households to purchase the dry fodder from outside of the areas, that has financial implication on the household economy. Thus HPFEM&LIP attempts to explore alternatives sources of fodder.

2. Objectives

- To assess the feasibility of hydroponic fodder production in the project areas
- To identify necessary technical improvements to be made to suit different geo-ecological zones of the project areas
- To assess the economic viability of hydroponic fodder
- To assess the changes in the fodder consumption, animal health and production of milk
- To design an extension programmes for hydroponic fodder production

3. Methods

3.1 Identification of the Sites

The contracted agency shall identify 10 pilot wards where the project interventions are implemented. The contracted agency shall discuss with PMU to carry out initial identification of the area. Once the areas are identified, a field team of the resource organization shall visit the identified area along with FCCU and FTU and discuss with the FWC and sub-committee members to see if they would agree to take part in the pilot project. The participating community shall be explained that the community will be interviewed for various data collection while they will be provided with the facilities for free. They should also be informed that the units shall be handed over to the community as a common asset once the pilot project is completed.

3.2. Pilot Project

As for the pilot project, the project shall bear the cost of installing the hydroponic fodder production unit in the pilot site. Necessary training and technical guidance shall be carried out by the resource organization for the community. The process of pilot projects shall be documented

so that the qualitative aspects shall also be captured. The changes in the fodder availability, expenditure, health of livestock, productivity shall be monitored on a regular basis by the resource organization.

4. Outputs

The resource organization shall produce the following outputs.

1. Quarterly reports
2. Feasibility Assessment Report
 - Technical feasibility assessment
 - Economic assessment
 - Animal health and Productivity report
 - Extension strategy and mechanism in case the technical feasibility is found out to be positive.

5. Duration of the Pilot Project

The pilot project is 2 years inclusive of preparation, site identification, field trial and report preparation.

END

Attachment II.3.7.3.2 TOR for Assessment of Potentiality and Production of NTFPs and Development of Plan for Conservation, Resource Development and Sustainable Management of NTFPs Indicative TOR for Pilot Projects on Hydroponic Fodder

1. Introduction

HP Forest Ecosystem Management and Livelihood Improvement Project has set up a State level Him Jadi-Buti Cell in PMU to coordinate all activities relating to conservation, promotion, sustainable management of NTFPs including Medicinal Plants. 11 nos. of Cluster level Him Jadi-Buti Societies/ Producer Groups have been set up to help right holders and growers of NTFPs and medicinal plants in sustainable management of NTFP and market access. The Project interventions on NTFP improvement include plantation in forest areas, plantation and cultivation in non-forest areas, conservation and sustainable harvesting of NTFPs, research & development, enterprise development and market access. The Project will undertake assessment of availability of different NTFPs and Medicinal Plants in 11 clusters with the help of external resource institutions, universities etc.

2. Objectives

The basic objectives of this assessment are to;

- ◆ Identify the potential areas within the cluster for production of NTFPs,
- ◆ Estimate the current level of production of different NTFPs,
- ◆ Assess the status regeneration of different NTFPs,
- ◆ Identify the issues in conservation, regeneration, harvesting and management of NTFPs in the cluster, and
- ◆ Prepare a plan for conservation, resource development and sustainable management of NTFPs in the cluster.

3. Agencies to be engaged and Process of Selection

This activity will be outsourced to the Research Institutions such as HFRI, IHBT, YS Parmar University of Horticulture and Forestry, and other Universities. The PMU will request for submission of proposals from these institutions and a committee will be constituted at the PMU level with representatives from Forest Department (Research Wing etc.), Project Management Consultants and External Experts to review the proposals and commission the task to the eligible institutions. Multiple agencies may be engaged to carry out the task during the second year of the project (During the preparatory phase of the Project).

4. Target Areas and Clusters

The assessment will be carried out in 11 NTFP clusters located in 6 districts i.e. Bilaspur, Lahaul & Spiti, Kinnaur, Kullu, Mandi and Shimla.

5. Approach and Methodology

Empirical investigation will be a basic approach for this assessment. A combination of tools such as mapping, inventorying in sample plots, transects, focus group discussions, consultations with the communities and other stakeholders will be adopted by the outsourced agency for carrying out the assessment. Sampling will be done based on the forest area and occurrence of different species, and in consultation with the local Forest Officers. Efforts will be made for mapping of NTFPs potential areas using GIS and Remote sensing technology.

The plan for Conservation, Resource Development and Sustainable Management of NTFPs and Medicinal Plants will be prepared in consultation with different stakeholders (FD, JFMCs, Right holders and producers, Producers organisation/ societies, local pharmacies/ processing industries etc.). For each cluster, 4-5 NTFPs/ medicinal plants will be prioritized for resource development, value addition and marketing.

6. Duration

The assessment in each cluster will be completed within one month.

7. Human resources required for the task

In each cluster, one Researcher/Scientist, one Field Botanist and 3 Community Facilitators will be engaged to carry out the assessment and consultations with the communities and other stakeholders (Forest Department, Traders, Local Healers, Gram Panchayats etc.).

8. Outputs

- a) A report on current and potential production of different NTFPs and Medicinal Plants and threats in conservation and sustainable management of different NTFPs and Medicinal Plants
- b) A cluster level plan for conservation, resource development and management of NTFPs and Medicinal Plants, which will include strategies, methods and interventions for *in situ* conservation, plantation/ enrichment in the forest areas and JFM area, cultivation of medicinal plants on the non-forest land, sustainable harvesting of different NTFPs and strategies for post-harvest management.

END

Attachment II.3.7.3.3 TOR for Development of Agro-Techniques of Selected NTFPs and Medicinal Plants

1. Introduction

HP Forest Ecosystem Management and Livelihood Improvement Project has set up a State level Him Jadi-Buti Cell in PMU to coordinate all activities relating to conservation, promotion, sustainable management of NTFPs including Medicinal Plants. 16 nos. of Cluster level Him Jadi-Buti Societies/ Producer Groups have been set up to help right holders and growers of NTFPs and medicinal plants in sustainable management of NTFP and market access. The Project interventions on NTFP improvement include plantation in forest areas, plantation and cultivation in non-forest areas, research & development, enterprise development and market access.

Around 80 per cent of NTFPs and Medicinal Plants traded in the market are sourced from forest and the rest is procured from cultivated sources. There are several reasons contributing to poor progress in cultivation of NTFPs and Medicinal Plants and one of the reasons is lack of simplified agro-techniques for cultivation of several NTFPs including Medicinal Plants. For number of high altitude medicinal plants the agro-techniques are yet to be developed. The Project will engage Scientific Research Institutes to develop agro-techniques of about 10 NTFPs/ Medicinal Plants. The agro-techniques will include package of practices for selection of appropriate land for cultivation, nursery establishment, propagation methods and raising of plants, soil, water and nutrient management, weed control, appropriate number of plants to be raised per unit area, harvesting time, harvesting methods, post-harvest management, primary value addition in order to keep the active chemical ingredients, cost of cultivation etc.

2. NTFPs to be selected for Development of Agro-techniques

Agro-techniques in the context of Himachal Pradesh need to be developed for a) Nagchhatri (*Trillium govanianum*), b) Salampanja (*Dactylorhiza hatageria*), c) Salam Misri (*Polygonatum spp.*), d) Talispatra (*Abies spectabilis*), e) Tilpuspi (*Digitalis lanata*), f) Ratanjot (*Arnebia spp.*), g) Dhoop (*Jurinea macrocephala*) and h) Pasanbhed (*Bergenia ligulata*) etc. Some possibilities may be explored for cultivation of Guchhi (*Morchella esculenta*), Jangli Lahsun, Jangli Piaz (*Urgenia indica*). The list will be finalized in consultation with different research institutions.

3. Agencies to be engaged and Process of Selection

The study will be outsourced to the Research Institutions such as HFRI, IHBT, YS Parmar University of Horticulture and Forestry, and CSKHP Agriculture University. The PMU will request for submission of proposals from these institutions to carry out the assessment. The procurement committee or a special committee constituted at the PMU level with representatives from Forest Department (Research Wing etc.), Project Management Consultants and External Experts will evaluate the proposals and commission the task to the eligible institutions.

4. Approach and Methodology

The basic approach would be to carry out experimental cultivation/ field trials and develop the package of practices for cultivation of specific medicinal plants. The Scientific Research Institutions have to identify suitable sites for experimental cultivation of different NTFPs. Experiments will be carried out for nursery and propagation techniques, undertaking cultivation using multiple propagation materials, monitoring the growth behaviors of the plants, soil, water and nutrient management, cost involved in cultivation and maintenance etc. Data from the cultivation will be collected, recorded and analyzed periodically.

5. Duration

The agro-techniques for different NTFPs and Medicinal Plants will be developed within a period of 4 years.

6. Outputs

Agro-techniques for cultivation of 10 nos. of NTFPs and Medicinal Plants

END

Attachment II.3.7.3.4 TOR for Impact Assessment of 4-year extraction cycle of NTFPs

1. Introduction

HP Forest Ecosystem Management and Livelihood Improvement Project has set up a State level Him Jadi-Buti Cell in PMU to coordinate all activities relating to conservation, promotion, sustainable management of NTFPs including Medicinal Plants. 11 nos. of Cluster level Him Jadi-Buti Societies/ Producer Groups have been set up/ formed to help right holders and growers of NTFPs and medicinal plants in sustainable management of NTFP and market access. The Project interventions on NTFP improvement include plantation in forest areas, plantation and cultivation in non-forest areas, research and development, enterprise development and market access.

NTFPs are collected from the forest areas as per the prescription of working plan and the Forest Department adopts a 4-year extraction cycle for collection of most of the NTFPs and Medicinal Plants. One Range area is open for collection of specific MFPs for one year and the same Range will be again opened for harvesting of NTFPs and Medicinal Plants after 4 years. Despite restrictions on wild collection, there has been a significant decline in production of NTFPs from the forest. The Project with the help of Scientific Research Institutions will undertake a study on impact of 4-year extraction cycle on the regeneration of different NTFPs and Medicinal Plants. The scope of work of the study will also include the extent of implementation of 4-year extraction cycle.

2. Objectives

The objectives of the study are to;

- ◆ Assess the implementation of 4-year extraction cycle and issues thereof,
- ◆ Assess the impact on the regeneration and production of NTFPs in selected ranges,
- ◆ Suggest necessary strategies and interventions for conservation and sustainable management of NTFPs.

3. Agencies to be engaged and Process of Selection

The study will be outsourced to the Research Institutions such as HFRI, IHBT, YS Parmar University of Horticulture and Forestry, and other Universities. The PMU will request for submission of proposals from these institutions to carry out the assessment. The procurement committee or a special committee constituted at the PMU level with representatives from Forest Department (Research Wing etc.), Project Management Consultants and External Experts will evaluate the proposals and commission the task to the eligible institution.

4. Target Areas and Clusters

The study will be carried out in 4 ranges i.e. one Range from each bio-geographic regions.

5. Approach and Methodology

The outsourced agencies have to adopt multiple tools and techniques for conducting the study. Both rapid and intensive assessment will be conducted through mapping, transects, regeneration assessment in sample plots etc. Efforts will also be made to have focus group discussions with the communities, local forest officials on the implementation of 4-year extraction cycle. Consultations will be organised at the Range level with the Forest Officers, Community Leaders, Traders, Processing Industries, Gram Panchayats, Research Institutions and other agencies involved in procurement and trade of NTFPs and Medicinal Plants. Possibility of application of GIS and Remote Sensing in impact assessment will be explored.

6. Duration

The study will be completed within 4 months.

7. Human resources required for the study

Two Senior Scientists, two Field Botanists and 4 Community Facilitators will be engaged for the study.

8. Outputs

- a) A study report on efficiency, effectiveness and impact of 4-year extraction cycle on the conservation and sustainable management of NTFPs including Medicinal Plants.
- b) Recommendations for species wise extraction cycles to be adopted.

END

Attachment II.3.7.3.5 TOR for Follow-up Assessment of Availability of NTFPs in the Target Clusters

1. Introduction

HP Forest Ecosystem Management and Livelihood Improvement Project has set up a State level Him Jadi-Buti Cell in PMU to coordinate all activities relating to conservation, promotion, sustainable management of NTFPs including Medicinal Plants. 11 nos. of Cluster level Him Jadi-Buti Societies/ Producer Groups have been set up/ formed to help right holders and growers of NTFPs and medicinal plants in sustainable management of NTFP and market access. The Project interventions on NTFP improvement include plantation in forest areas, plantation and cultivation in non-forest areas, research & development, enterprise development and market access.

The Project with the help of scientific research institutions has undertaken NTFP assessments in 11 clusters during the preparatory phase of the Project and now it intends to undertake the follow up assessment of availability of different NTFPs and Medicinal Plants in 50% of these clusters with the help of outsourced resource institutions. These Clusters (6 nos.) will be identified based on a) the scale of project interventions in the cluster, b) volume of procurement and trade of NTFPs and Medicinal Plants, and c) active engagement of the Cluster Jadi-Buti Society with JFMCs, SHGs, CIGs etc.

2. Objectives

The basic objectives of this assessment are to;

- ◆ Assess the impact of project interventions on the regeneration, production and sustainable management of NTFPs in the forests areas of the cluster with reference to the baseline assessment carried out during the beginning of the project,
- ◆ Assess the status regeneration of different NTFPs and MAP species,
- ◆ Estimate the current level of production of different NTFPs and the potentiality in near future,
- ◆ Identify the issues in conservation, regeneration, harvesting and management of NTFPs in the cluster, and
- ◆ Review the implementation of conservation and sustainable management plan and suggest required changed in the plan.

3. Agencies to be engaged and Process of Selection

This activity will be outsourced to the Research Institutions such as HFRI, IHBT, YS Parmar University of Horticulture and Forestry, and other Universities. The PMU will request for submission of proposals from these institutions to carry out the assessment. The procurement committee or a special committee constituted at the PMU level with representatives from Forest Department (Research Wing etc.), Project Management Consultants and External Experts will evaluate the proposals and commission the task to the eligible institutions.

4. Target Areas and Clusters

The assessment will be carried out in 6 nos. of NTFP clusters.

5. Approach and Methodology

The basic approach of the assessment is empirical investigation. The outsourced agencies have to adopt a combination of tools such as mapping, inventorying in sample plots, transects, focus group discussions, consultations with the communities and other stakeholders etc. Purposive sampling methods will be adopted for inventorying and impact assessment. Efforts will be made for mapping of NTFPs potential areas using GIS and Remote sensing technology.

6. Duration

The assessment in each cluster will be completed within one month.

7. Human resources required for the task

In each cluster, one Researcher/Scientist, one Field Botanist and 3 Community Facilitators will be engaged to carry out the assessment and consultations with the communities (Right holders) and other stakeholders (Forest Department, Traders, Local Healers, Gram Panchayats etc.).

8. Outputs

- a) A report on regeneration of different NTFPs and MAPs and changes noticed in last 5 years; current and potential production of different NTFPs and Medicinal Plants; and threats in conservation and sustainable management of different NTFPs and Medicinal Plants.
- b) A revised cluster level plan and strategy for conservation, resource development and management of NTFPs and Medicinal Plants.

END

Attachment II.3.7.3.6 TOR for Market Survey

1. Background

HP Forest Ecosystem Management and Livelihood Improvement Project has set up a State level Him Jadi-Buti Cell in PMU to coordinate all activities relating to conservation, promotion, sustainable management of NTFPs including Medicinal Plants. 11 nos. of Cluster level Him Jadi-Buti Societies/ Producer Groups have been set up/ formed to help right holders and growers of NTFPs and medicinal plants in sustainable management of NTFP and market access. The Project interventions on NTFP improvement include plantation in forest areas, plantation and cultivation in non-forest areas, enterprise development and market access. More than 1,000 ha of forest and non-forest areas will be brought under NTFP Improvement - plantation and cultivation, which will contribute significantly to the enhancement of production of NTFPs including high altitude medicinal plants both from the forest as well as from farms. Both PMU/ Jadi-Buti Cell and Cluster Level Societies/ Producer Groups are responsible for providing fair market access to the right holders and growers of NTFPs including medicinal plants. Periodic market survey will keep these societies updated on the dynamics, trends, changes, issues and challenges in the market and accordingly adopt strategies for market access. The project intends to engage external experts – institution/ individual to carry out market survey, which would help the project developing its market access strategies.

2. Objectives

The objectives of the market survey are provided below:

- 1) To understand the value chain of NTFPs including demand and supply, price mechanisms, sourcing, issues and challenges etc.
- 2) To assess the raw materials requirement of selected processing industries including pharmaceuticals, exporters and key traders.
- 3) To understand the quality standards, value addition requirements for supply of different NTFPs including medicinal plants to processing industries, exporters and traders.
- 4) To establish linkages with different processing industries, exporters and traders.
- 5) To help developing market access strategy of the Project/ State Him Jadi-Buti Society.

3. Approach and Methods

The methods of the survey include consultation of primary and secondary sources of data. The Expert will consult with a variety of stakeholders and collect data through interviews using a semi-structured checklist and from physical observation. Especially in the trade of NTFPs including Medicinal Plants there are inadequate recorded data available on the potential, production, value addition and marketing. It is well anticipated that there would be discrepancies in getting recorded information on markets- volumes, prices, qualities etc. Efforts will be made to consult a number of stakeholders to understand the trade practices, challenges, and trends in

production etc. High altitude medicinal plants will be the key products for the market survey. The PMU/ Jadi-Buti Cell will provide the list of NTFPs including medicinal plants to be covered in the market survey.

Sources of Data

- 1) Markets – Amritsar, Delhi, Haridwar/ Ramnagar, Mumbai
- 2) Important Exporters, Traders, Wholesalers/Suppliers
- 3) Processing industries – Dabur, Zandu, Himalaya, Patanjali, Tibetan Astro and Medical Institute, Hamdard, IMPCL, HP Government Ayurvedic Pharmacies
- 4) Market research organisations/ institutes

4. Eligible Institutions/ Experts

Market research institutions with at least 5 years of experience in market survey in NTFPs including medicinal plants at the national level will be eligible for this assignment. Individual Experts with at least 5 years of experience in conducting NTFP market research at the national level will be eligible for this survey.

5. Timeframe and Duration of Market Survey

The market survey will be carried out during peak production season of NTFPs including medicinal plants.

6. Outputs of the Market Survey

A report on the market survey with details of value chain, supply chain, current demands and productions, prices and pricing mechanisms, quality standardization, value addition requirements, strategies for market access

END

Attachment II.3.7.3.7 TOR for Development of Publicity and Communication Materials

1. Background

HP Forest Ecosystem Management and Livelihood Improvement Project has set up a Him Jadi-Buti Cell in PMU to coordinate all activities relating to conservation, promotion, sustainable management of NTFPs including Medicinal Plants. 11 nos. of Cluster level Him Jadi-Buti Societies/ Producer Groups have been set up/ formed to help right holders and growers of NTFPs including medicinal plants in sustainable management of NTFP and market access. The Project interventions on NTFP improvement include widespread campaign on conservation and sustainable management of NTFPs including medicinal plants, plantation in forest areas, plantation and cultivation in non-forest areas, enterprise development and market access. In order to create awareness among the right holders and other stakeholders for conservation, sustainable management, domestication of selected NTFPs including medicinal plants, a massive awareness campaign will be organised in the project area by the PMU in collaboration with the field project implementation units. The Project will also organise orientation and training programmes for the communities including the right holders on sustainable harvesting protocols for collection from the wild, cultivation of selected NTFPs including medicinal plants etc. The Project will prepare communication and campaign materials to be used in the campaign as well as in the orientation and training programmes for the communities. The PMU will engage professional agency to prepare the campaign materials through competitive bidding.

2. Objectives

The objective of this task is to produce a) short animation films/ movies (10 nos. of films each of 3-4 minutes) and b) short video films (10 nos. of films each of 10 minutes duration) on a) conservation and sustainable management of NTFPs including medicinal plants, b) agro-techniques for selected NTFPs including medicinal plants, c) sustainable harvesting protocols for selected NTFPs including medicinal plants, and d) post-harvest management of NTFPs including medicinal plants.

3. Scope of Work

The selected agency/ firm will have inception meetings with the PMU, PMC and Him Jadi-Buti Cell to a) determine the detailed scope of work, b) select NTFPs including medicinal plants for materials development, c) review of existing materials and scripts, d) to finalize the schedule for different activities including shooting in the field, interviews with different resource institutions, communities etc.

Basic materials for script writing will be provided by the PMU and the contracted agency has to prepare a draft script for each film and submit it to the PMU for finalization.

The contracted agency will prepare a rough cut of the films for review and pre-test by the Project and thereafter the agency will submit the draft mixed version for screening and comments by the Project. Then the materials will be finalized.

4. Eligible Agencies/ Firms

The eligible agency/ firm must have at least 10 years of experience in professional films and documentary making. The firm must have done at least 5 nos. of similar projects/ assignments at national/ state level. The firm should be empaneled with the Directorate of Advertising and Visual Publicity (DAVP), the Government of India. The core team – director, script writer, camera person and editor, for the task should be constituted of in-house staff of the firm.

5. Timeframe for Developing the Materials

The task will be completed within a period of 6 months from the date of signing of contract.

6. Outputs of the Task/ Assignment

Subject	Treatment	Length	Main User	Main Target Audience	Preview Media	Language
Agro-techniques for cultivation of NTFPs including medicinal plants (10 NTFPs)	Short films	10 minutes (10 nos. of films each of 10 minutes)	PMU and State Jadi-Buti Cell	Communities in project area including right holders	TV/ PC/ Big screen	Hindi
Conservation and sustainable management of NTFPs including medicinal plants	Short 2D Animation movies	3-4 minutes (5 nos. of movies each of 3-4 minutes)	PMU and State Jadi-Buti Cell	Communities in project area including right holders, and other stakeholders (local traders, Gram Panchayat, project staff)	TV/ PC/ Big screen	Hindi
Agro-techniques for cultivation of NTFPs including medicinal plants	Short 2D Animation movies	3-4 minutes (5 nos. of movies each of 3-4 minutes)	PMU and State Jadi-Buti Cell	Communities in project area including right holders	TV/ PC/ Big screen	Hindi

The outsourced agency/ firm has to submit 5 sets of DVDs of each film as the final output along with soft and hard copies of the scripts of all the films/ movies.

END

Attachment II.3.7.3.8 Assessment of Non-NTFP Based Livelihood Options

Part I: The Context

Himachal Pradesh despite being highly vulnerable to external shocks and internal constraints resulting from undulating topography and severe climatic conditions has maintained a moderate growth rate of 7.1 percent (Economic Survey, HP 2017) and emerged as a developed state in the country. The economic growth in the State is predominantly governed by agriculture, horticulture and its allied activities.

1. State Economy

Despite a decline in the contribution of agriculture sector (including horticulture and animal husbandry) in GSDP which declined from 21.1 percent in 2000-01 to 9.4 percent in 2015-16, the agriculture sector continues to occupy a significant place in the state economy. Fluctuation in the production of food grains/ fruits directly affects the economy and the share of primary sector which include agriculture, forestry, fishing and mining & quarrying has declined from 25.1 percent in 2000-01 to 14.9 per cent during 2015-16. The Secondary sector, which occupies the second important place in the state economy, has witnessed a significant improvement since 1990-91. Its contribution increased from 26.5 percent in 1990-91 to 41.1 percent in 2015-16, reflecting signs of industrialisation and modernisation in the State. The share of the electricity, gas and water supply sector which is a component of secondary sector has also increased from 4.7 percent during 1990-91 and to 8.0 percent during 2015-16 (Economic Survey, HP 2017). Tertiary sector which is comprised of sectors like trade, transport, communications, banking, real estate & business services, community and personal services has also witnessed a change in its share, which share in GSDP for the year 2015-16 was 44.0 percent (Economic Survey, HP 2017).

2. Status of Education and Unemployment in HP

HP has progressed well in the social development sectors and reached to 82.8 % with male literacy rate 89.55 while that of females is 75.9% (Census of India 2011). In rural areas total literacy rate is 81.9% (male- 81.9% and female-74.6%). In the rural areas of project districts literacy level among females is significantly lower than males. Table 2.1 shows total literacy as well as rural literacy level in the district to be covered under this study.

Table 2.1 Literacy level in the Prioritised Project Districts

Unit: %

#	District	Total			Rural		
		Total	Male	Female	Total	Male	Female
1	Bilaspur	84.6	91.2	78.0	84.1	90.1	77.2
2	Kinnaur	80.0	87.3	71.0	80.0	87.3	71.0
3	Kullu	79.4	87.4	70.9	78.5	87.0	69.5
4	Lahaul & Spiti	76.8	85.7	66.8	76.8	85.7	66.8
5	Mandi	81.5	89.6	73.7	80.8	89.2	72.6
6	Shimla	83.6	89.6	77.1	80.5	87.5	72.7

Source Economics and Statistics Department HP, 2015-16

3. Number of Job Seekers Status of Employment in HP

According to data provided by Employment Department, HP (Statistical abstract 2015-16) the number of educated job seekers (post graduates and graduates) has shown an increasing trend during the past one decade while the same for undergraduate and below was either decreasing or constant trend. Table 3.1 shows the status of job-seekers up to 2015-16 in HP.

Table 3.1 Number of Job Seekers till 2015-16

S.No	Category	Job seekers
1	Post Graduate	69,355
2	Graduates	116,233
3	Matriculates and above	591,197
4	Other literates	50,492
5	Illiterates	771
	Total	828,048

Source: Economics and Statistics, Department HP, 2015-16

Analysis of the job seekers data for year 2015-16 available with the Department of Economics, HP indicated that the demand of jobs was the highest in Mandi and Shimla districts whereas in Lahaul & Spiti and Kinnaur was the least. Table 3.2 provides the status of job seekers in the proposed project districts.

Table 3.2 Status of Job Seekers in the Proposed Project Districts

No	District	No. of job seekers	% of Total job seekers
1	Bilaspur	14,138.00	1.70%
2	Kinnaur	2,190.00	0.26%
3	Kullu	8,435.00	1.02%
4	Lahaul Spiti	907.00	0.11%
5	Mandi	33,971.00	4.10%
6	Shimla	20,561.00	2.48%
	Total of Proposed Districts	93,205.00	11.26%
	Total of Himachal Pradesh	8,28,048.00	

Source: Economics and Statistics, Department HP, 2015-16

4 Socio-economic Conditions in the Project Districts

1) Bilaspur

Bilaspur is in the west of Himachal Pradesh bordering with Punjab. Its geographical area covers 1,167 km² which provide a home to 382,056 persons. Out of which, male population is 192,764 and that of female is reported to be 189,192 (Census 2011). Since it is located in the Satluj catchment, the population density is high showing 327 persons/ km².

Agriculture and service sector are the main hold in the district's economy. Wheat, maize, rice, sugarcane, mustard, gram and ginger are grown in Bilaspur with the overall cropped area of 56,901 ha which accounts for nearly 50% of the total of agriculture land. Among the horticulture, Mango stands out amongst other fruits, which is planted on the areas of 5,150 ha accounting for 79.9% of the total area coming under fruits production in the district. In Bilaspur, the number of buffalo, poultry, and goats are high and reported to be 100,586 heads, 96,017 birds, and 59,244

animals respectively. The substantial area of land comes under permanent pasture and other grazing area taking nearly 40% or 39,583 ha of the total agriculture land¹.

Although having better connection to the market areas and flat terrain, small and medium industries are yet to come up². In Bilaspur, woolen, silk & artificial thread based industries, ready-made garments & embroidery, wood & wooden based furniture, metal and leather based industries are currently found. As for the service sector, entertainment, cable/ DTH services, printing, and many others are included. The report of MSMEDI in Solan³ suggested that more investments are needed in the handcraft sectors and for the repair services for electronic appliances, agriculture implements, vehicles and etc. As of now, the district does not have any clusters based on the above mentioned goods and services. The issues are 1) lack of skilled and unskilled labour, 2) lack of awareness among the financial institutions on small and micro enterprises.

2) Chamba⁴

In the far north western side of Himachal Pradesh, Chamba district is situated. Steep terrain gives the character to the district with an average elevation of 1,006m. During the winter, higher elevation areas in the district are covered with snow. The total population of the district is 20,312 of which 52% are male and 48% are female. The district is also known for the home of Gujjars and Gaddi who are the pastoralists. The former is mostly nomadic and the latter is recognized as semi-nomadic. The total geographical area is 6,528 km². Out of the total agriculture land (692,419 ha), 67,775 ha is the total cropped area whereas the permanent pasture accounts for 348,869ha which is nearly 50% of the total land under agriculture land use. The population of sheep, goats, poultry and cows are high. DSMEDI in Solan identifies repair services of various equipments and appliances including computers and mobiles, along with the woolen, silk & artificial thread based industries, garment/ embroidery and food and food products can be invested in the district.

3) Kinnaur:

Majority of the population of Kinnaur's is a tribal district and its economy is based primarily on agriculture and allied activities. It has ideal natural conditions to grow multiple crops. It has approximately 1.50 percent of its total geographical area under cultivation. As per the available data from planning department, HP, Kinnaur contributes in GDP of primary sector about 30%. (http://himachal.ninc.in/economics/reports/sin_glance.pdf) The main agriculture crops include Maize, Paddy, Wheat, Barley, Peas, Rajmah and Potato. Rajmah is cultivated in approximately 1,000 ha area which is approximately 10.1 percent total agriculture area. Apples, chilgoza, almonds, opla, apricot, grapes and other dry fruits grown here are famous for their quality. Apple

¹ Statistical Abstract, Himachal Pradesh 2015-2016.

² The data in this paragraph derives from "Brief Industrial Profile of Bilaspur District, 2016-17. MSMEDI, Solan".

³ ibid

⁴ This section is based on "Brief Industrial Profile of Chamba District, 2016-17. MSMEDI, Solan".

cultivation is undertaken approximately 10,000 ha (Kinnaur district statistical handbook 2010-11).

4) Kullu:

As per Census 2011, Kullu has a population of around 437,000 persons. The primary sector contributes to around 45% towards district GDP. The agriculture crops grown in the district are maize, wheat, paddy, and lentils. Kullu is one of the leading fruit producer districts of HP. Total cultivated area in Kullu is around 64,256 ha and, out of which, 37.6% is used for wheat cultivation. Maize is another important crop of the district which covered 26% of cultivated area. Apple is grown in approximately 23,870 ha of land and annually produces 160,000 Mt.

Kullu district has a large number of Hotels and Guest houses, which nearly employ 2,066 people. Existing enterprises are woolen, silk & artificial thread based clothes, wood/wooden based furniture, agro-based units, readymade garments & embroidery, repairing and servicing, metal based steel fabrications, paper & paper products, and cotton textile. Food processing, textile, electrical and electronic good servicing, and wooden products are some of the activities having potential to be promoted in the district.

5) Lahaul & Spiti:

Lahaul & Spiti is generally called as cold desert area which remains snowbound for almost six months during the year and totally cut from the rest of state. The economy of the district is agriculture based. Agriculture and allied sectors contribute about 21% of the district economy. About 80% of the population is engaged in agriculture and allied activities. Secondary sector constitutes to over 46% of the district economy. Most of the industrial units are handloom based such as shawls, caps, patti and woolen garments woven on handlooms.

6) Mandi:

As per the Census 2011, Mandi district has a population of around 999,000 persons. Agriculture and animal husbandry are the main stay of the district's economy. The total cultivated area of the district was 157,684 ha. Its climatic condition is favorable for high value medicinal and aromatic plants, orchid, flowers like roses and chrysanthemum. Its climate is also favorable for Sericulture. The main agriculture crops grown in the district are wheat, maize, barley, paddy, lentils, potato, onion, ginger and chilly. Fruits like apple, nuts, dry fruits, citrus and sub-tropical fruits like mango and litchi are also grown. Primary sector contributes 25% in the district economy, while secondary and tertiary sectors contribute 30% and 45% respectively.

7) Shimla:

According to the 2011 census Shimla district has a population of 813,384 persons with males 424,486 and females 388,898. The rural population is 611,884 and urban population is 201,500. The district has a population density of 159 inhabitants per square kilometer. The economy of the district is highly dependent upon tourism sector and the small scale industries like jute processing,

food processing and wood industry. Primary sector contributes 36%, secondary sector contributed to over 23% and tertiary sector contributes approximately 41% of the district's economy. Main agriculture crops are maize, wheat, barley, paddy, lentils, potato, and chilly. Fruits such as apples, stone fruits, dry fruits, citrus and sub-tropical fruits are grown in plenty and the total cultivation area in Shimla is around 89,454 ha.

5. Livelihood Options Identified by the Government Department/ Agencies

The focus of forestry and watershed development programs, which were implemented in lower and middle altitudes, were intended to improve landscape practices like agriculture, horticulture, animal husbandry (primary sector) and in certain clusters on skill-based activities whereas the situation in high altitude regions are significantly different from the lower and mid altitude regions. As for the high altitude areas, enterprises based on traditional skills, services, primary level processing of agriculture and horticulture products, dairying and animal husbandry based activities like milk collection, wool and meat production have been recommended by different industrial and rural enterprise promotion departments. Khadi and Handloom & Handicraft development agencies have emphasised over strengthening village based industries, weaving and artisan clusters in such areas. Table 5.1 provides a summary of livelihood activities proposed by different government agencies.

Table 5.1 Livelihood activities proposed by government agencies

	Board category	Sub-category	Specific activities
1	Primary sector	Farm and off farm based	Fruit and vegetable production, Vermin-composting Dairying, wool and meat production
2	Secondary	Agro-Based industries Traditional Skill based Engineering fabrication Repair	Fruit and vegetable processing , Shawl weaving Handicrafts, Knitting, Stitching, Iron works, Repair and service of agriculture tools, automobiles
3	Tertiary	Services hospitality Financial services	Hotel & restaurants Home stays, Eco-tourist Guide

Source: Industrial Policy, 2017. GoHP

Industrial Policy 2017 of Himachal Pradesh (<http://emerginghimachal.hp.gov.in/>) also place an emphasis on promotion of industrial units which have high economic potential and deemed to be clean and non-polluting and identified fruit processing, sericulture, NTFP based industries, wool and wool products as thrust areas. State government has resolved to provide incentives for establishment of industrial enterprises in B and C categories of areas.

The state government has identified enterprises like horticulture produce based enterprise, fruits/vegetable/herbs/honey/spices based wineries, production of ciders/ate/liquors, sericulture/handlooms/khadi industries related manufacturing industrial activities, medicinal herbs and aromatic herbs processing, horticulture, maize based industries, herbal based and agro based industries, wool and wool products, woven fabrics, eco-tourism-hotels, handicrafts, NTFP based industries (Directorate of Industries, 2017).

Micro, Small, Medium Enterprise Development Institute, Solan, a government of India organisation, has identified sectors which have good presence and provide employment opportunity to local community. It too has selected farm based, off-farm and service sector enterprises as viable enterprises. It also identified few clusters in each district for example iron fabrication in Rampur, Shimla, shawl weaving in Kullu, wooden furniture in Mandi district. A district-wise list of activities and person engaged in such activities is provided below.

Table 5.2 District wise Existing Enterprises and Number of Persons Engaged

	Enterprises	Districts									
		Bilaspur		Kullu		Kinnaur		Mandi		Lahaul and Spiti	
		No. of units	Person engaged	No. of units	Person engaged	No. of units	Person engaged	No. of units	Person engaged	No. of units	Person engaged
1	Agro-based enterprises	166	1,600	301	883	73	147	1,009	4,036	42	85
2	Woolen, Silk and polyester yarn based clothes	143	143	727	6,579	169	264	437	1,908	230	375
3	Readymade garments and embroidery	33	158	102	735	1	3	37	148	1	5
4	Wood/Wooden Furniture	267	671	257	807	46	79	399	1,596	5	12
5	Leather based	98	152	23	58	-	-	11	44	-	-
6	Metal/steel fabrication	108	265	135	639	20	64		368	15	30
7	Repair and service Units	191	420	161	648	12	42		552	14	50

Source: MSME DI

A district-wise general list of livelihood activities which have been identified by Micro and Small Enterprise Development Institution (MSME-DI) are provided in the Table 5.3.

Table 5.3 General List of Livelihood Activities in Project District

No	Potential Activities	Districts					
		Bilaspur	Kullu	Kinnaur	Mandi	Lahaul & Spiti	Shimla
1	Handloom (traditional shawls, patti, caps)	X	√	√	√	√	√
2	Weaving & knitting woolen garment	√	√	√	√	X	√
3	Readymade garments, school uniform, embroidery	√	√	X	√	X	√
4	Milk production, milk product diversification	√	√	√	√	X	√
5	Off-seasonal Mushroom cultivation	X	√	√	√	X	√
6	Vegetable and fruit processing	X	√	X	√	X	√
7	Beekeeping and honey processing	√	√	√	√	X	√
8	Wool and meat production	√	√	√	√	√	√
9	Poultry	√	√	√	√	X	√
10	Vermi composting & bio-composting	√	√	X	√	X	√
11	Wooden furniture	√	√	√	√	X	√
12	Steel fabrication	√	√	√	√	X	√
13	Iron-grill and shutter making	√	√	X	√	X	√
14	Electrical and electronic appliances repair	√	√	√	√	X	√
15	Agriculture implement repair	√	√	√	√	√	√
16	Eco-tourism & hospitality	√	√	√	X	√	√
17	Computer typing, card designing, screen printing	√	√	√	√	X	√
18	Bio-briquetting from pine needle & agriculture waste	√	X	X	√	X	√

Source: Compiled by JICA Study Team 2017 based on the information of MSME-DI

Part II: Indicative Livelihood Activities for HPFEM&LIP

1. Criteria for Identification of the Livelihood Options for HPFEM&LIP

To select district-wise livelihood activities, criteria like availability of raw material, traditional skills, manpower, on-going cluster development program, climatic condition of the production place (number of snowbound days, number of days roads are open for vehicular movement and trade), markets (size of local and outside), presence of business development service providers were taken into consideration. Table 1.1 provides a list of the criteria identified for selection of livelihood activities.

Table 1.1 Criteria for selection of livelihood activities

S.No	Criteria	Remarks
1	Availability of raw-material	Very important for enterprises based on farm production and for livestock based activities which requires fodder
2	Availability of traditional skills among entrepreneurs	Important for activities like traditional shawl weaving
3	Availability of man-power	Skilled and un-skilled man-power, availability of time
4	Suitability to climatic condition	Favorable temperature, humidity for the particular enterprise to be promoted.
5	Identified for cluster development program/possibilities of cluster	Government has identified various clusters and allocated budget.
6	Presence of market	Finished product could be sold within working cycle.
7	Regional belief about particular activity/product	Certain activity may not be fit into religious belief like slaughtering of cattle, and piggery.
8	Suitable for the women	Enterprise should be easily operated by women.
9	Environmentally sound	There should not be negative impact on forest water, prohibited by forest and government.

Source: JICA Study Team, 2017

In the high-altitude regions favorable condition for outdoor work is only in summer season (May-October). During this limited period, villagers have to harvest crops, plough their agriculture fields and sow new crops and at the same time various government department carries out infrastructure development activities. To supplement the household income, many households would have some male members either engaged in wage work or working outside of the village for employment.

Women in the project districts have to devote almost 12-16 hours daily in domestic activities like cooking meals, cleaning home, fetching water, arranging fodder, fuel wood, attending cattle and doing agriculture works. Despite doing extremely hard labor on daily basis, women's economic conditions are weak in the project villages. Engagement of women in enterprises other than farm-based is very low due to lack of time, harsh climatic condition, non-availability of raw material, hurdles in transportation of finished goods to markets, low influx of tourist and low local consumption.

However, on the basis of lessons learnt in the past forestry development and livelihood programs and focus group discussion with women, a tentative list of preferred enterprises has been developed. Some of the activities are based on the traditional skills like shawl weaving, and hand knitting could be done both in summer as well as winter, while activities like dairying, poultry,

mushroom cultivation, wild honey collection, vegetable cultivation, vermicomposting could be undertaken during summer time. Table 1.2 provides the list of suggested livelihood activities for women that can be taken up in different seasons (summer and winter) especially in the higher altitude.

Table 1.2 Livelihood Activities Suitable for Women in Different Season

#	Potential Activities	Suitability for summer	Suitability in winter
1	Handloom traditional shawls, patti, caps)	√	√
2	Weaving & knitting woolen garment	√	√
3	Dairying/ Milk production	√	X
4	Backyard Poultry	√	√
5	Mushroom cultivation	√	X
6	Vegetable and fruit processing	√	X
7	Wild honey processing	√	X
8	Vermicomposting & bio-composting	√	X
9	Eco-tourism & hospitality	√	X
10	Soft toys making (memento for tourists)	√	√

Source: JICA Study Team, 2017

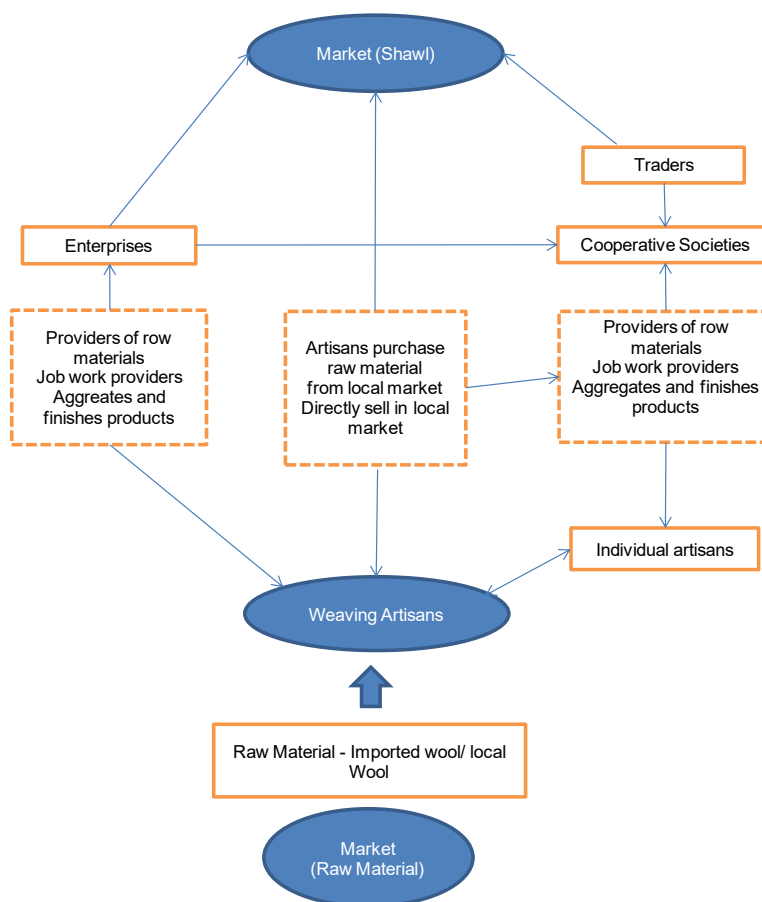
2. Handloom, Handicraft based Enterprises

In Himachal Pradesh, there are 13,458 weavers and weaving workers and 5,578 handlooms.

Agencies supporting handloom, handicraft sector in the state are Khadi Village Industries Board, HP State Handloom and Handicraft Development Corporation. Handloom and Handicraft based enterprises covers traditional shawl weaving, woolen garment knitting, wooden and metal artifacts.

2.1 Value Chain of Traditional Shawls

Himachali Shawls (Kullu and Kinnaur) are famous for its ethnic pattern, design and craftsmanship. Weaving of shawls is tedious process and artisan has to source quality raw material from different sources, draw pattern and



Source: JICA Study Team (2017)

Figure 2.1 Production and Sale Process of Traditional Shawl

spends several days weaving on handlooms (communally called as Khadi). In a competitive market environment, its trading has become very complex process.

Two types of producers can be seen: One is the 1) amateur and 2) professional weavers. An amateur artisan uses his own design and pattern for weaving shawls and contact buyer or her/himself sell in the market. Professional weavers work on the basis of order received by their affiliated institutions/societies wherein design and pattern is provided by the marketing agency. In case of amateur weaver, he/she has to procure raw material (yarn, fiber thread etc.) directly from the market, while professional weavers get everything from their affiliated agency. Amateur weavers' objective for doing weaving is to utilise spare time left after doing other activities and produce material for local consumption and earn additional income. In this case, the artisan doesn't give more emphasis on finishing and presentation aspects of the product and therefore they find it very difficult to find a buyer from outside the regions. Professional weavers get all type of support either from their federation or marketing agency. Figure 2.1 illustrates process of interaction between the market, artisans and institutions of traditional shawl.

1) Identifying Improvement in Value Chain of Shawl: SWOT

SWOT analysis helps in understanding controllable factors (internal strengths and weaknesses of the sub-sector) and non-controllable factors (opportunities and threats to the subsector) that the interventions should address for the entire value chain.

Table2.1 SWOT Analysis of Shawl Weaving (Handloom)

Element	Results of Analysis
Strengths	Shawl and woolen items have readily available markets in Northern plains and cold countries. Patented traditional and ethnic design and pattern Availability of skills, master weavers Climate of state is suitable for production. Wide network of sale outlets all over the state and important cities in country Availability business service providers like banks, designing institutes, machinery suppliers, government support and policy environment
Weakness	Market is skewed in favor of middlemen, bulk buyers, exporters Non-availability of high quality raw material, depend upon imported wool High transport costs of raw material and finished good No processing facilities available in new clusters Outdated production technologies Lack of market information system and customer preference Weak artisan institutions(dependent upon external funding) Lack of consumer awareness about hand made products among consumers
Opportunities	High demand for quality shawls in Northern India and cold countries Tourist's inflow from all over the world Handloom products environmentally friendly Organic artifacts have huge export potential. Scope for new design, pattern and product diversification Scope for online marketing to reduce marketing overhead charges Bring youths in the trade Global certification to control infringement of design and pattern
Threats	Competition from products of power looms based in Punjab and Haryana Competition from spurious shawls being sold in name of traditional shawls Fluctuation in raw supply from outside country Low-margin dissuades youths from trade

Source: JICA Study Team (2017)

To improve value chain of shawl weaving enterprise, there is a need to further improve marketing of products by shortening the value chain by way of forming cooperatives and collectively purchase raw material to reduce cost of production. Institutional arrangement could be done by promoting agencies through enhancing incentive mechanism like group pension, insurance, buy-back guarantee scheme, etc. Issue of infringement of design should be tackled by introducing bar-coding or GR marking of the products. Each and every artisan should be registered and proper identity cards could be given and retail outlets must keep records of artisans so that buyers can directly talk to artisans (societies) in case there is doubt about the product. A customer feedback system could be introduced at retail outlets to know their preference on various aspects, for example many young customers require light-weight shawls while artisans produces heavy shawls. Feedback will improve in design and quality adjustment in response to the customers' preferences, which in other words mean the market demand.

2) Establishment of Shawl Weaving Enterprise and Financing

Shawl weaving enterprise setting requires to follow some steps, which are as below;

- i) Identification of cluster- Ideally a micro cluster has 30-50 artisans.
- ii) Diagnostic study: To understand situation of the artisans, design and production system.
- iii) Institutional arrangement: Formation of artisan cooperative and linkages with existing federation.
- iv) Capacity building: Technical training on production, designing, finishing, and packaging
- v) Market exposure: Artisans are required to know market of their products

Once institutional arrangement and technical trainings are completed, financial proposals can be prepared so that the banks or any other financial institutions can be approached. For setting of handloom enterprise in cooperative model with 20 artisans, a financial investment of approximately INR 425,000 is required as fixed cost. Working capital of INR 90,000 (per quarter) is required. If all the artisan work for 250 days in a year and produce 700 shawls on value INR 800 per unit and other 500 pieces of other accessories of INR 200 per unit, it is expected that the cooperative would earn INR 180,000 in a year after paying loan installment and interest on capital investment. The indicative cost estimate of the shawl and woolen accessories enterprise (cooperative model) is given in the table below.

Table 2.2 Indicative Financial Analysis of Woolen Shawl and Accessories Enterprise for one Household

#	Particulars	Qty	Rate/Unit	Total Cost (INR)
A	Plant and Machinery (Fixed cost)			
1	Handloom for shawl making units (khadi)	1	11,000	11,000
2	Charkha	1	1,500	1,500
2	Tana Machine	1	25,000	25,000
3	Small Khadi	1	2,500	2,500
4	Accessories sets	1	1,000	1,000
	Total fixed cost			41,000
B	Operational cost			

#	Particulars	Qty	Rate/Unit	Total Cost (INR)
	Raw material (One shawl INR 520, 2 shawls per week)	100	520	52,000
	Other expenses (market and transport 5% of cost of the shawl)	100	50	5,000
	Interest on working capital and fixed capita (6% subsidized rate, total loan INR 50,000 payable in 36 instalments)			2,200
	Total operational cost (B)			59,200
C	Production/sales			
	Shawls (cost price+ 30% margin)	100	1,300	130,000
	Total sales ©			130,000
	Income before payment of loan instalment and interest of working capital (C-B)			70,800
	Loan instalment of fixed investment (INR 4,000 @ 6% p.a for 36 months)			3,500
D	Net income after payment of loan instalment			67,300

Source: JICA Study Team (2017)

An entrepreneur is assumed to be able to earn approximately INR 67,000 per annum from shawl weaving enterprises. Operational cost can be reduced by 10-15%, if entrepreneur work in a cooperative model.

2.3 Potential for Cluster Development

1) Approach

To develop a cluster, the model promoted under the Scheme for Fund for Regeneration of Traditional Industries (SFURTI) of KVIC or cluster development approach of Development Commissioner Handloom can be adopted. These models suggest three types of interventions namely 'soft interventions', 'hard interventions' and 'thematic interventions'.

1) Soft interventions include:

- i) General awareness, counseling, motivation and trust building,
- ii) Skill development and capacity building,
- iii) Institution development,
- iv) Exposure visits,
- v) Market promotion initiatives,
- vi) Design and product development,
- vii) Participation in seminars, workshops and training programmes on technology up-gradation, etc.

2) Hard Interventions includes infrastructure for production, storage, marketing, and training like:

- i) Common facility centers (CFCs),
- ii) Raw material banks (RMBs)/ Yarn bank,
- iii) Up-gradation of production infrastructure,
- iv) Tools and technological up-gradation such as charkha up-gradation, tool-kit distribution, etc.

- v) Warehousing facility,
- vi) Training center,
- vii) Value addition and processing center.

- 3) Thematic interventions are mostly focused on market intervention, research and institutional linkages:
- i) Brand building and promotion campaign,
 - ii) New media marketing,
 - iii) e-Commerce initiatives,
 - iv) Innovation,
 - v) Research & development initiatives,
 - vi) Developing institutional linkages with the existing & proposed clusters.

2) Funds

Handloom cluster development is relatively long process. It takes around four years to set a cluster under a normal circumstance. Since community members involved in weaving activities are poor & marginal and reside in scattered manner, cost of bringing the weavers under one umbrella and enhance their capacity requires time and funds.

The central and state government has set a four year tenure for establishment of a handloom cluster. A budget of INR 11.315 million is required for cluster development program in which central government can contribute INR 6.05 million would be mobilized from state government schemes and INR 180,000 from JICA project. The detailed break-up of development cost is provided Table 2.3.

Table 2.3 Indicative Budget Break Ups for Handloom Cluster Development Scheme (200 – 500 weavers)

S.No	Sub-components handloom cluster development	Budget	Funding sources (Amount in INR.)			
			GoI	GoHP	JICA	Weaver
1	Baseline survey- diagnostic study, formation of SHG, CIG, consortium ad awareness programs	200,000	200,000	0	0	0
2	Technology up-gradation for on-loom activities (* Please see Table 2.3.(a) for break ups)	4,800,000	4,320,000	240,000	240,000	0
3	Product development/diversification	200,000	200,000	0	0	0
4	Engagement of designer-cum-marketing executive	30,000	30,000	0	0	0
5	Purchase of Computer Aided Textile Design System (CATD) including purchase of card punching machine	500,000	250,000	150,000	100,000	0
6	Corpus fund for setting up Yarn Depot	300,000	300,000	0	0	0
7	Market Development-holding exhibitions, buyer-seller-meets, publicity	200,000	40,000	40,000	120,000	0
8	Skill up-gradation (3000 per weaver)	1,500,000	225,000	225,000	1,050,000	0
9	Setting up common facility center/dye center	500,000	400,000	0	100,000	0
10	Credit support	200,000	40,000	0	160,000	0
11	Construction of work shed (20 Sq. mt)	35,000	26,250	0	5,250	3,500
12	Documentation of cluster activities	50,000	25,000	0	25,000	0

S.No	Sub-components handloom cluster development	Budget	Funding sources (Amount in INR.)			
			GoI	GoHP	JICA	Weaver
13	Human resource expenses for 4 years@ INR100,000/pm	4,800,000	960,000	0	3,840,000	0
14	Coordination cost(transport, communication)	400,000	0	0	400,000	0
	Total	13,315,000	6,056,250	655,000	1,800,250	3,500

Source: JICA Study Team (2017)

*Table 2.3. (a) shows a list of items required for technology up-gradation in handloom sub-sector.

Table 2.3 (a) List of Items Required for Technology Up-gradation in Handloom sub-sector

S.No	Items	Price(INR)
1	Pneumatic jacquard system for a set of 4 handloom	40,000
2	Motorized jacquard on the existing handloom	12,000
3	Take-up and let off motions on the existing handloom	4,000
4	Multiple box motion	3,000
5	Multiple buti weaving sley	7,000
6	Twin cloth weaving mechanism	4,000
7	Jacquard	12,000
8	Dobby	5,000
9	Healds, reeds, bobbins, shuttles, harness	4,000
10	Wrap beam and fabric beam	5,000
11	Purchase of new handloom	20,000
12	Normal warping machine	20,000
13	Motorized warping machine	35,000

Source: Report of Development commissioner, Handloom

3) Institutional Arrangement required for Development of Shawl Weaving Clusters

Weavers are generally poorly organized and majority of them have tendency to work independently which increases cost of production, technology access/up-gradation and marketing. Financial institutions also see high risk in lending an individual and hence charge higher rate of interest on loan. These factors ultimately reduce their profit margin in a long run and they become vulnerable to exploitation by the middlemen. Hence, to develop a viable traditional skill based enterprise, in which individual unit produces, requires regular financial and handholding support from external development agencies/government agencies, and it would help to organise them into groups in the form of common interest group, self- help group or cooperatives.

For JICA project, weavers could be organised into cooperatives (because in later stage it could function as an independent body and could be linked with the existing weaver's apex body). Cooperatives will directly deal with its members in skill development, technology up-gradation, raw material procurement, finishing of products and marketing. Cooperative functionaries will take lead in dealing with business providers which will save valuable time for the primary producers. Direct marketing by cooperative (either own outlets or through apex body outlets) will also help in reducing length of the value chain by eliminating middlemen and commission

agents. Sales realisation would be smooth and there would not be holding up of working capital for the primary producer. Cooperative will also establish feedback mechanism to know customer preference (which is difficult in case of individual production unit).

4) Supporting Institutions

The agencies and types of assistances given for handloom and khadi sub sector cluster development are summarized in the table below.

Table 2.4 Agencies Provide Support for Handloom and Khadi Sub-sector

#	Name of Agency	Affiliation	Nature of support	
			Non-financial	Financial
1	Khadi Village Industries Commission	Central Govt.	Yes	Yes
2	Development commissioner Handloom	Central Govt.	Yes	Yes
3	National Handloom Development Corporation	Central Govt.	Yes	Yes
4	National Institute of Design	Autonomous	Yes	No
5	Khadi Village Industries Board	State Govt.	Yes	Yes
6	HP Handloom & Handicraft Development corporation	State Govt.	Yes	Yes
7	HP Kaushal Vikas Nigam Ltd	State Govt.	Yes	No
8	NABARD	Central Govt.	Yes	Yes

Source: JICA Study Team, 2017

3. Knitting of Woolen Garments Enterprise

Being a hilly state, climate remains cold throughout the year in Himachal Pradesh. People wear winter clothes (woolen garments, jackets, Sleeveless jackets) throughout the year. There is consistent demand for woolen caps and socks for all age groups of people. Earlier woolen garments were hand woven but now trend is changing and people prefer machine knitted garments also. Individual and group enterprises could be promoted in the villages.

Woolen knitting is one of the options that can be adopted by the women. This activity can be started by them in their leisure time and there is a large scope for selling products in nearby local market. The cluster approach would help them to organise its trade in a better way. For woolen garment enterprise fixed cost requirement for a 10 member SHG is INR. 62,500/- and recurring cost is first year of operation would be INR. 262,000/-. The group will knit five items namely socks, caps, mufflers, kid's suits, and sweater and sell in the local and weekly markets and other regional markets. After one year of successful operation, each group member can earn approximately INR 4,000 per month. Table 3.1 provides detailed financial analysis of woolen garment production unit in SHG mode.

**Table 3.1 Indicative Financial Analysis of Woollen Garment for 10 Members
SHG**

Sl.No	Particulars	Unit	Qty	Rate	Amount(INR)
A	Fixed cost				
1	Hand knitting machine	Nos	10	5500	55,000
2	Woollen binder	Nos	10	750	7,500
	Total fixed cost				62,500
B	Recurring cost per annum				
1	Wool (60 kg/ member)	Kg	600	250	150,000
2	Accessories (button, zip, well-groves, elastic) @ 10% of the value garment	INR			75,000
3	Market expenses (5% of sale value)	INR			37,500
4	Interest on working capital	INR			18,000
5	Annual Loan instalment (36 instalments)	INR			6,250
	Total recurring cost				262,500
C	Sales				
1	Socks	No	1,000	50	50,000
2	Kids garment	No	1,000	200	200,000
3	Mufflers	No	1,000	100	100,000
4	Caps	No	1,000	100	100,000
5	Sweater	No	1,000	300	300,000
	Total sales				750,000
D	Gross income	INR			487,500
E	Annual Interest on fixed cost @8% per annum	INR			5,000
F	Principal in fixed cost	INR			20,833
G	Net income after paying interest on fixed cost (in 36 instalments @8%/year)	INR			461,667
H	Income per member	INR			46,167
I	Income per month/member	INR			3,847

Source: JICA Study Team, 2017

4. Food Processing sector: Fruits & Vegetables Processing

HP has made significant progress in the development of Horticulture sub-sector. The topographical variations and altitudinal differences coupled with fertile, deep and well drained soils favour the cultivation of temperate to sub-tropical fruits. During the year 2016-17 up to December 2016, approximately 510,000 tonnes of fruits were produced in the state and it is envisaged to bring 3,000 hectares of additional area under fruit plantation against which 2,817 hectares of area has already been brought under plantation and 753,000 fruit plants of different species were distributed by December 2016.

HP has emerged as major producing state of apple, plum, peach, pear in the country. It has been observed that cereal based cultivation system is gradually changing into cash crop cultivation system. Table 4.1 provides production figures of fruits during 2015-16 in HP.

Table 4.1 Production of Fruits in 2015-15 in HP

S.no	Fruit variety	Area under cultivation(Ha)	Production in MT
1	Apple	110,679	777,126
2	Plum	8,601	20,523
3	Peach	5,076	8,045
4	Apricot	3,661	5,172
5	Pear	6,977	32,039
6	Cherry	449	617
7	Pomegranate	2,482	1,986
8	Orange	8,724	13,028
9	Malta	1,694	2,219
10	Kagzi Lime	11,185	7,410
11	Galgal	2,407	3,828
12	Mango	41,523	37,628
13	Litchi	5,409	6,071
14	Guava	2,266	2,610
15	Aonla	2,524	2,155

Source: <http://hpagrisnet.gov.in/hpagris/Horticulture/Default.aspx?SiteID=5&PageID=1034> accessed on 21 Sep 2017

Growing of off-season vegetables has also picked up in the state. During the year 2015-16, 1.61 million of vegetables were produced as against 1.58 million tonnes in 2014-15 recorded a growth rate of 2.1 percent. It is anticipated that the production of off season vegetables will be of the order of 1.50 million tonnes in 2016-17. Increase in production fruits and vegetables have enhanced the potential of fruits and vegetable processing in state.

Market arrival data reveals that there is gap of 15-25% in the production and arrival of produce; it may be attributed to local consumption or post-harvest wastage. However due to lack of storage facilities and remoteness of the production sites, farmers have to sell their produces at the lower margin. Higher transportation charges too demotivate farmers to send their produce to interstate markets.

To overcome wastage of produces, value addition at production site could be viable option for producers. Union and state governments are intensifying their efforts to double the production of horticulture crops through technological interventions in next few years and have launched many programs for the benefits of farmers, which can be seen as an opportunity.

4.1 Advantage of Fruits and Vegetables based Enterprises

There are a number of advantages of processing for different stakeholders. Primary producer could reduce wastage of his/her product and add value through processing. It also enhances shelf life of the produce and hence better bargaining capacity. Producer also gets safety net in case of

bumper production and falling of prices in primary market. For the retailers, processed product is a fast moving goods which has higher margin than raw products. Consumers have more choices in the product line and could also find the off season produces at various timing of the year. In the Table 4.2, a summary of advantages of processing has been provided.

Table 4.2 Advantages of Processing

Reasons for processing	Technology adopted	Beneficiaries
To increase self-life of the food products	Pasteurization of milk or juice, pickling or salting	Consumers, distributors, retailers
To eradicate, pathogens and prepare the food for consumption (food safety)	Washing, cleaning, pasteurizing, salting, freezing and chilling	Consumers - at lower risk for food borne illness
To change flavor, texture, aroma or form of the food products.	Milling of grains, adding food flavors and colors and enzymes. Increase variety of food available	Consumers – more choice Manufactures- increased profit potential
Reduce preparation time and make food portable	Burgers, fries etc. Convenience foods: Bottled drinks, meat, jerky, cakes, cookies breakfast cereal bars, frozen pizzas, baby food	Consumers – more choice Manufactures- increased profit potential
To restore or raise the nutrition levels	Fortifying milk with vitamin D, salt with iodine and grains with vitamin B, iron and folic acid	Consumers- access to healthier products Manufactures - gain USP(unique selling proposition) for products

Source: JICA Study Team 2017

4.2 District-wise Potential of Processing Fruit and Vegetable

In the proposed project districts, there is a potential for chutney production, fruit pulping, squash, jam, pickle and juice. District wise status of fruit and vegetable processing is provided in Table 4.3.

Table 4.3 Proposed District-wise Production of Processed Products

S.No	Product	Potential Districts (Production in Kgs)					
		Bilaspur	Kullu	Kinnaur	Mandi	Lahaul & Spiti	Shimla
1	Chutney	6,667	19,500	NA *	NA	NA	10
2	Fruit pulp	8,520	NA	NA	329,933	3,000	20,000
3	Fruit squash	NA	50,900	NA	800	NA	NA
4	Jam	10,667	102,400	1,868	1,380	NA	20,020
5	Jelly	NA	NA	NA	NA	NA	NA
6	Juice	15,100	85,400	3,737	340,754	NA	101,800
7	Pickle	25,667	95,400	3,737	104,620	NA	30,050

Source: Diagnostic report-Developing food processing industries in HP, Grant Thornton * Not available

4.3 Value Chain of Fruits and Vegetable Processing

Value chain of fruits and vegetables starts from cultivation of crops in the farm, which has sub-components like sowing of seeds, flowering & fruiting, maturity or ripening and harvesting. Once crop is harvested producer take a call whether to sell or to store the produce. Produce changes various hands during its journey from producer to consumers. If produce is unprocessed, producers have to show urgency in reaching to primary market to off-load his/her inventory. With certain degree of primary processing (like, sorting, grading, and packing) shelf life can be enhanced by a few days, while, after secondary processing, shelf life as well prices can be enhanced multiple times. Value chain process is explained in the Figure 4.1.



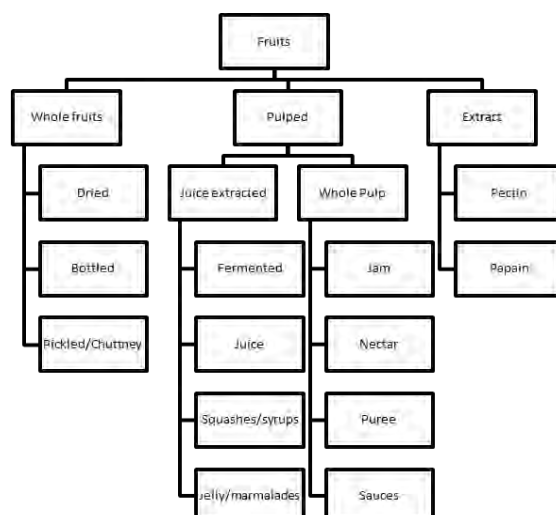
Source: JICA Study Team (2017)

Figure 4.1 Value Chain of Fruits and Vegetable Processing Sector

4.4 Value Addition

1) Fruits

There are a number of options for value addition in fruit processing. Fruits can be packed in corrugated packages and transported to desired market places. Some fruits can be dried and pickled (Mango, Lemon) and others can be peeled and canned. Majority of the fruits can be pulped and preserved for converting into juice, jam, jelly, squashes, sauces, marmalades. Extraction of fruits can also be made and packed either to mixed with other items like frozen dessert or bakery items. Value addition in fruits is explained in the Figure 4.2.



Source: JICA Study Team (2017)

Figure 4.2 Options for Value Addition of Fruits

2) Vegetables

Vegetables too can be converted into a number of items. Fresh vegetables can be packed in poly-propylene packs to conserve its freshness for a few extra days. Vegetables like cauliflowers, cabbage can be wrapped in poly films to keep it fresh and hygienic for several days. Potato can be processed into a number of items like chips, finger chips, mixture etc. Tomato can be processed in sauce, puree, soup, chutney etc. Spices like ginger, chilly, garlic can either be dried or converted into paste. Fresh peas can be frozen and packed in poly packs for longer shelf-life.

4.5 SWOT Analysis of fruits and vegetables processing sub-sector

Fruits and vegetables processing sub-sector has own strengths, weaknesses, opportunities and threats which have to be taken into consideration while designing a long term programme.

Table 4.4 SWOT Analysis of Fruits and Vegetables Processing Sub-Sector

Elements	Analysis
Strengths	Availability of raw material Availability of semi-skilled labour for primary processing work Availability of power to run machinery and cold chain system Priority sector status from state government and central government
Weaknesses	Non-availability of skilled labourers to operate machinery and equipment Non-availability of modern warehouses for fresh fruits and vegetables in rural areas Low awareness among producers about long term benefits of processing
Opportunities	Helpful in generating employment opportunities to rural youths near their villages Multiplier effect would be visible and services like machinery repair, packaging, retailing take place. Rate of technology transfer from research institutes to entrepreneurs will increase. Entrepreneurship training institutions will become more proactive in the region and new trade could be set up. Producer will get opportunity to pool their resources and collectively establish processing units, which will evenly spread risk and reward.
Threats	There is a trade-off between sales of unprocessed and processed fruits & vegetable in hilly region due to off-seasonal nature of produces. Processing unit based on single product line would not be feasible. Fulfilling legal requirements and branding development is a lengthy process and would require support of expert agency. Retailing would need strong communication and promotional initiatives.

Source: JICA Study Team (2017)

4.6 Fruit Pulping Enterprise

In fruit processing, pulping could be a suitable enterprise for the community because it requires less investment in terms of land and machinery, skill and marketing. There is a potential to make pulp of fruits having short shelf life like malta, mango, plum, cherry, peach and etc. Pulp could be sold to the juice producing agencies of the state. Pulping technique is simple activity which involves a pulping machine and small work shed and storage vessel. Raw material could be either brought from local farmers or from own field.

1) Financial analysis of proposed pulping unit fruit and vegetable processing

Fixed cost for pulping unit is INR 205,000/- and working capital would be INR124,000. Enterprise will remain operational during peak fruit harvesting season roughly 4 months in year. Pulp would be sold to beverage and juice making firms in the state. It would be group based enterprise with 10 members. Successful operation will earn INR2,000 per month for the members in 4 months (effectively INR 6,000 per month during operation duration). Table 4.5 provides financial analysis of fruit pulping enterprise.

Table 4.5 Indicative Financial Analysis of Fruit Pulping Enterprise for a Group (10HHs)

S.No	Particulars	Unit	Qty	Rate	Amount(INR)
A	Fixed cost				
1	Pulping machine	No	1	35,000	35,000
2	Fitting and fixture	No	1	15,000	15,000
3	Stainless steel Storage vessels of 100 lts	No	10	5,000	50,000
4	Stainless steel tray	No	10	5,000	50,000
5	Knife, peelers, gloves, mask	Set	10	500	5,000
6	Bio-digester to convert peels and residue in compost	No	1	50,000	50,000
	Total fixed cost				205,000
B	Recurring cost per annum				
1	Raw material (ripe fruits- cherry, plum, peach, malta, mango, pomegranate, apricot)	Kg	5,000	20	100,000
2	Rent of work shed for 4 months	INR	4	1,000	4,000
3	Electricity charges for 4 months	INR	4	5,000	20,000
4	Marketing expenses(5% of sale price of pulp)	INR			20,000
5	Interest on working capital	INR			9,920
6	Annual Loan instalment (36 instalments)	INR			3,444
	Total recurring cost				124,000
C	Sales				
1	Pulp	Kg	4,000	100	400,000
2	Bio-Compost form residual	No	1,000	7	7,000
	Total sales				407,000
D	Gross income				283,000
E	Annual Interest on fixed cost @8% per annum				16,400
F	Principal in fixed cost				68,333

S.No	Particulars	Unit	Qty	Rate	Amount(INR)
G	Net income after paying interest on fixed cost(In 36 instalment @8%/year)				198,267
H	Income per member				19,827
I	Income per month/member				1,652

Source: JICA Study Team (2017)

4.7 Pickle Making Enterprise

Pickle consumption is very common in the state and country. Women generally prepare different types of pickle in their houses for own consumption. Pickles are prepared from fruits as well vegetables. Common pickles consumed in state are of mango, lemon, amla, chilli, radish, carrot, garlic. Pickles of mushrooms produced locally could be made. Pickles require ingredients like spices and condiments which are locally available in HP. For a successful pickle making enterprise quality of raw material, spices, and proper hygiene is mandatory requirement. For a group enterprise capital investment for pickle making is approximately INR. 50,000/- (mostly for utensils and drying trays). Working capital requirement for a unit of 100 kg finished products would be INR10,000/ (for certain raw material not available in their agriculture land, spices and oil). Good quality pickles are sold at INR 200/kg in the open market. Pickle making would be a seasonal activity. It will supplement income of the women and reduce wastage of fruits and vegetables. Central and state government have launched several programs for the promotion of fruit and vegetable processing sub-sector in the state.

5. Beekeeping Enterprise

Beekeeping could be developed as allied activities with horticulture. In HP, under the Bee keeping program, 263.80 MT of honey has been produced up to 31.12.2016. It is a complementary activity for the horticulture sector, which renders pollination services for improvement of fruit setting and productivity, and also produces products like honey and bee wax. With an increase in the area under fruit cultivation, requirement of bees (friendly natural pollinators) is also increasing. Only for apple orchards (approximately 110,000 ha) there is requirement of 300,000 bee colonies. Rural youths can take beekeeping activity along with processing and packing of honey. There are well developed support systems for beekeeping in the state. The Table 5.1 provides details of the available infrastructure.

Table 5.1 Infrastructure Available in Proposed District for Beekeeping

#	Infrastructure	Number.
A	Total Beekeeping stations in state	32
1	Shimla	5
2	Mandi	2
3	Kullu	3
4	Bilaspur	1
5	Chamba	7
6	Kinnaur	4

#	Infrastructure	Number.
7	Lahaul & Spiti	1
B	Honey Ag-marking Laboratories in state	2
1	Hatkoti, Shimla	1
2	Chaitru, Kangra	1
C	Bee Breeding and Multiplication Centers (Private Sector)	3

Source: hphorticulture.nic.in/

5.1 Value Chain of Beekeeping Enterprise

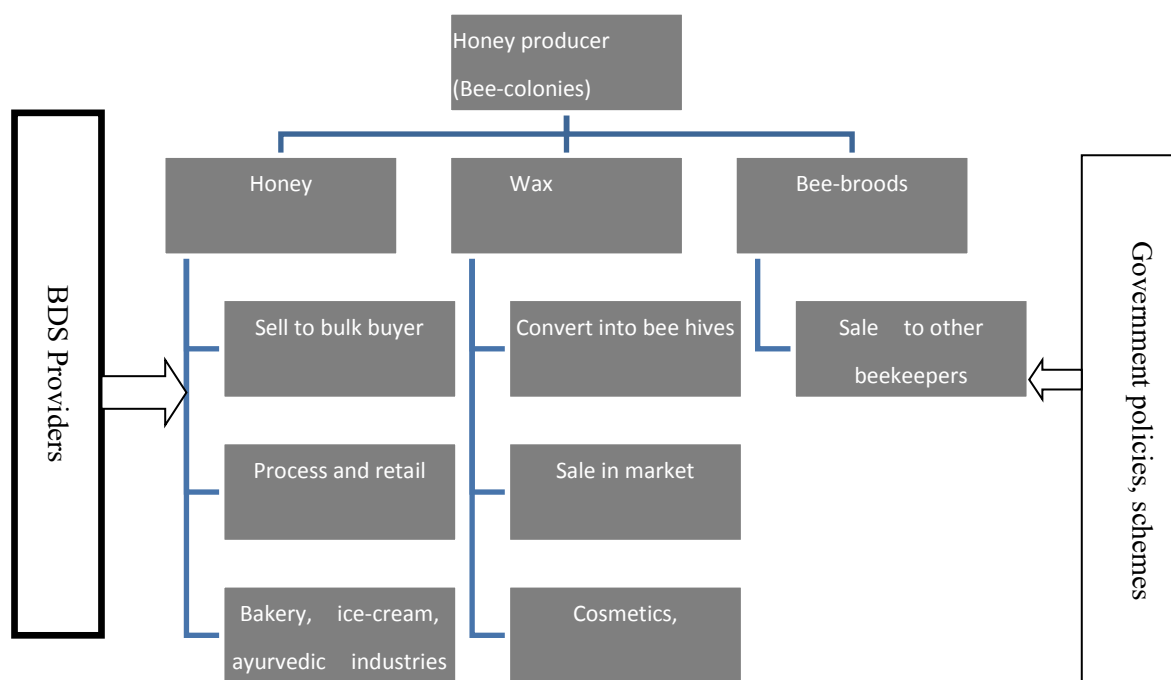
Beekeeping enterprise value chain starts with beekeeper who extracts honey in suitable season. The beekeeper periodically migrate the bee-boxes and manage the apiary unit (a group of bee boxes is called apiary unit). Generally, three products are produced in the apiary unit 1) honey 2) wax and 3) bee-broods (young bees).

For selling honey, the producer has two options; 1) to sell to bulk buyer directly from the apiary unit just after production or 2) to send to nearby processing unit for filtration and moisture reduction and store for appropriate time and buyer. It has been seen that if beekeepers are away from their home (migration), they directly sell honey to bulk buyer to avoid transportation charges, storage and supervision cost. Wax is either sold to hive makers/trader or converted into hive for expansion of own units. Bee-broods are sold to new beekeepers (if he has sufficient number of units and not interested in expansion).

Once raw honey reaches to bulk buyers, either s/he will do processing and sell to industries for product diversification or s/he will sell raw honey to big industries directly. Industries after further processing will bottle the honey and sell. Industries who are multiproduct business will use honey in a number of products like bakery, wellness products etc. Ayurvedic drug manufacture will use honey in formulation. Export oriented agency after conducting all necessary tests will export to European markets.

In this value chain there is an important role of business development service providers like wooden bee box makers, ironsmith (for stand, cover, honey extractors, tools), transporter, training institutions, agriculture universities, processing unit manufacturers, packaging industries and financial institutions.

Government policies and schemes play critical role in development of beekeeping enterprises. Subsidy-oriented schemes could motivate a youth to become entrepreneurs; taxation policies could help processor and retailer in marketing honey. Figure 5.1 explains value chain of the beekeeping sub-sector.



Source: JICA Study Team (2017)

Figure 5.1 Value Chain of Beekeeping

5.2 SWOT Analysis of Beekeeping Sub-Sector

Table 5.2 SWOT Analysis of Beekeeping Sub-Sector

Elements	Analysis
Strengths	<p>Due to increase in horticulture activities, availability of flora in state have increases.</p> <p>Climatic condition is suitable for rearing of Italian bee <i>apis mellifera</i>.</p> <p>Strong government support for proliferation of beekeeping activity in state</p> <p>Network of training and resource center spread across the state</p> <p>Bees have become critical factor in sustaining apple production (pollination agent).</p>
Weaknesses	<p>Beekeeping required periodic seasonal migration as per availability of flowers and extreme cold condition are not suitable for honey production.</p> <p>Beekeeping is done in wooden boxes and availability of suitable wood would be a limiting factor.</p> <p>Excess use of insecticides and pesticides can harm bees and quality of honey.</p> <p>Constant supervision is needed for the beekeeping units.</p>
Opportunities	<p>Increase in the area under horticulture demands more number of bee boxes.</p> <p>Apple orchards required approximately 300,000 colonies.</p> <p>Demand of honey in wellness and Ayurvedic industries is growing up.</p> <p>Honey is becoming important food item in middle income group.</p> <p>It can be easily processed and packed for retailing.</p> <p>Vertical and horizontal integration could be done with milk processing units and fruit processing units.</p> <p>Organic honey has huge demand in the export market.</p>
Threats	<p>Indiscriminate use of insecticides and pesticides in the fields has direct impact on lives of bees and quality of honey.</p> <p>Adulteration is common problem which harms market sentiments and consumer preference.</p> <p>Export market is volatile and requires stringent quality control.</p>

Source: JICA Study Team (2017)

5.3 Investment required for Setting Up Beekeeping Enterprise

Beekeeping enterprise could be started with 50 boxes of bee colonies. Initially an entrepreneur requires training on basic management of beekeeping. He can get support from already practicing beekeeper during the initial stage. Skills of migration, colony division, honey extraction, and disease control can be learnt in different phases. Processing and packing machinery are available in the market and entrepreneur can buy as per his requirement. In the first year, a fixed investment of INR 310,000 is required. In addition to the fixed variable cost requirement is INR 250,000. At the end of one year, the entrepreneurs could earn net income of INR 150,000. Bank loans are available for beekeeping enterprise. Table 5.3 provides financial analysis of beekeeping enterprise.

Table 5.3 Indicative Financial Analysis of Beekeeping Enterprise for One Household

#	Items	Qty	Rate	Amount(INR)
A	Fixed cost			
1	Bee boxes with top lid with 10 frames(each) of bee colonies	50	5,000	250,000
2	Additional empty boxes for contingency and division	5	1,000	5,000
3	Wax foundation sheets for contingency and division	50	20	1,000
4	Wooden frame with wire	50	50	2,500
5	Honey extraction machines of stainless steel	1	15,000	15,000
6	Tent (10*10 feet)	1	10,000	10,000
7	Veil, clothes, protective gear	3	2,000	6,000
8	Food grade storage can for honey of 20 kg capacity	25	300	7,500
9	Mosquito net large size(15*15Feet)	2,000	1	2,000
10	Tools and equipment set	2	1,000	2,000
11	Bee queen separator	50	200	10,000
12	Miscellaneous	20	50	1,000
	Total fixed cost(A)			312,000
B	Variable cost			
1	Wages for one employees 0 year one employee and onward 2)	12	12,000	144,000
2	Feed expenses for colonies during lean season (sugar and pollen 6 kg box/year)	300	42	84,000
3	Medicines(INR 5 per box)	50	5	250
4	Migration site survey expenses (conveyance, food and lodging)	2,000	3	6,000
5	Migration charges (truck , labor)	200	50	10,000
6	Miscellaneous	20	50	1,000
	Total variable cost(B)			245,250
C	Production/Sales			
1	Honey production (40kg per box in normal condition)	2,000	200	400,000
2	New colonies (in one year double if division done)	250	400	100,000
3	Wax (150 gm per box)	7.5	400	3,000
	Total sales©			503,000

#	Items	Qty	Rate	Amount(INR)
D	Income (C-B)			257,750
E	Payment of loan instalment with interest on fixed cost (Interest @10%, loan tenure 5 years) and additional investment 1st year onwards			105,000
F	Net income(D-E)			152,750

Source: JICA Study Team (2017)

Apart from the above cost, expenses are needed for regular training, refresher training of promoter and additional investment would require in setting up processing units, branding and promotional events.

Beekeepers can also get various supports from government schemes either by forming a cooperative institution or producer company. Horticulture department and Khadi and Village Industries Board (KVIB) have various schemes for development of beekeeping sub-sector in the state.

5.4 Wild Honey Collection

Kinnaur district is known for traditional honey collection. Tribal people rear *Apis cerena* in the wall of their houses in specially designed wall fixed hives. These bee colonies produce 3-5 kg honey per year. Honey obtained from wall fixed hives is of best quality, provided it is collected and stored in hygienic manner. It has been observed that changes in structure of houses, traditional beekeeping is disappearing from many parts, hence there is a need to preserve this tradition by bringing technological improvement in collection and storage. Non-destructive method of honey collection and use of centrifugal machine to extract honey could be used. Proper packing and ethnic branding will fetch good revenue for the wild organic honey. To develop apiary based beekeeping sub-sector SFURTI model can be used.

5.5 Scope for Women in Beekeeping Sub-sector

Women can undertake beekeeping especially of *Apis Cerena* (which doesn't need migration) near their houses. They need proper training and handholding support for beekeeping. Beekeeping enterprise will provide them additional income as well improve productivity of the horticulture crops. Production activity could be taken on individual basis while marketing could be done collectively as a group (CIG/ SHG). Necessary support for establishment of beekeeping unit would be provided through SHG/CIG mode. Training would be provided in the villages itself. Group can employ a local trained youth to supervise day to day activity of colony in the initial 3-6 months duration.

5.6 Beekeeping Cluster

Beekeeping could be taken up in Kullu, Kinnaur, Mandi, Shimla districts. Clusters may be developed in the area where sufficient horticulture activities are undertaken. Lahaul & Spiti may not be suitable for bee keeping cluster development. Youth club or Yuvak Mandal may be considered for the basis for cluster development. For women, special training would be provided

for *Apis Cerena* breed. Training could be provided at beekeeping centers or agriculture colleges. Training can be provided in villages too for women.

6. Mushroom Cultivation Enterprise

Mushroom is considered to healthy food and suitable for all age groups. Due to its exotic flavor, taste and fleshiness, it has become an important delicacy in human diet. Mushrooms are rich in proteins, dietary fiber, vitamins and minerals. They have insignificant lipid level and high proportion of polyunsaturated fatty acids resulting in low calorific value. The protein content, though varies greatly in different mushrooms, is usually high. Mushrooms are an excellent source of vitamins especially C and B (Folic acid, Riboflavin, Niacin and Thiamine) and minerals like potassium, sodium and phosphorus. It also contains other essential minerals like Cu, Zn and Mg in traces. Mushrooms are also known to have medicinal values as these have been shown to promote immune function, boost health, lower risk of cancer inhibiting tumour growth and support body's detoxification mechanism. Mushroom, thus has great potential for the production as quality food.

6.1 Outline of Mushroom Cultivation

Mushroom production has two important components; 1) Production of compost & spawn and 2) production of mushroom. First activity i.e. production of compost & spawn requires huge investment in land area, shed, laboratory, trained manpower and technology support. These are generally done by large entrepreneurs. Second activity production of mushroom from ready-made compost bags is suitable for small entrepreneurs & self-help groups. Interested entrepreneurs can purchase required number of bags from government or private mushroom compost producing units and start cultivation.

Button Mushroom cultivation is lucrative household enterprise for rural women and youths. It has potential to enhance/supplement household income of the family. This enterprise if done at household level then doesn't require land, large scale investment and machinery. A person can start cultivation by doing an investment of INR 20,000-25,000 initially. Villagers residing in the areas situated above 2,000 m can take up with enterprise as off-seasonal activity (from March to June) when temperature is limited source of cash flow for villagers. Most of the marriages also take place in during that period there is huge demand of mushroom dishes in feasts. In HP, can be grown in all the districts but production depends on temperature and humidity. Different areas of districts like Chamba, Shimla, Kullu, Mandi have potential for two to three crops in a year. In extremely cold regions, one crop during spring season is possible. During 2016-17 up to December, 2016, 435.07 MT of pasteurized compost for mushroom was prepared and distributed in the department units located at Chambaghat, Bajoura and Palampur. A total of 5,103.00 MT of mushroom was produced in the state up to December, 2016. District wise potential of mushroom cultivation is provided in the Table 6.1.

Table 6.1 District-wise Potential of Mushroom Crop

S.No	District	Climate zone	Potential crops/per year (No)
1	Bilaspur	Low hill	One crop
2	Chamba	Mid/High hill	Two-three crops
3	Kinnaur	Cold & dry hill	One crop
4	Kullu	Kullu	Two-three crops
5	Lahaul & Spiti	Cold & dry hill	One crop
6	Mandi	Low/Mid/High	Two-three crops
7	Shimla	Low/Mid/High	Two-three crops

Source: [https://www.nabard.org/demo/auth/writereaddata/ModelBankProject/1612160659Mushroom_cultivation_\(E\)in_Himachal_Pradesh_-E.pdf](https://www.nabard.org/demo/auth/writereaddata/ModelBankProject/1612160659Mushroom_cultivation_(E)in_Himachal_Pradesh_-E.pdf) accessed on 21 Sep 2017

6.2 SWOT Analysis of Mushroom Production Enterprise

Table 6.2 SWOT Analysis of Mushroom Production Enterprise

Elements	Analysis
Strengths	<p>Climate conditions of proposed project divisions/districts are favorable for mushroom cultivation.</p> <p>Availability of raw material for preparing compost bags, necessary technology for spawn production, technology providers, premium level research center (National Mushroom Research Center, Solan).</p> <p>Enabling Union and State government policies for development of mushroom sub-sector.</p> <p>Consistent demand of mushroom from hotels and restaurant throughout the state</p> <p>High consumption of mushroom by local community</p>
Weaknesses	<p>Mushroom enterprise production cycle is short, two to three months and fresh investment is required to purchase new bags at the beginning of production cycle.</p> <p>Technical capacity of community is low.</p> <p>Chances of getting whole lot of mushroom bags spoiled if proper temperature and humidity not maintained.</p> <p>Transportation cost to rural areas is high and handholding support to producer is costly.</p>
Opportunity	<p>Mushroom produced in plain areas are grown in artificial condition and consumes lot of energy, which increases cost of production, while in higher altitude of HP mushroom can be grown in natural conditions.</p> <p>Shelf-life of mushrooms produced in air-conditioned chambers is short and require cold chain system for transportation whereas in higher altitude no air-conditioning or no cold chain system is required. Poly-propylene packing is sufficient for storing mushroom for a week.</p> <p>Mushroom cultivation does not require landholding, hence suitable for women, marginal farmers, and rural youths.</p>
Threats	<p>Mushroom production in high altitude areas has threat from supplier of poor quality composting material.</p> <p>Increase in transportation cost and blockage of road can trouble/delay timely movement of composting material to production sites and mushroom to markets.</p>

Source: JICA Study Team, 2107

6.3 Financial Analysis of Mushroom Cultivation

An entrepreneur should start button mushroom cultivation with 200 bags for better results. At present a batch of 200 bags will cost around INR18,000-20,000 (transportation charges may be extra depending upon). In a cropping cycle of 3-4 months these 200 bags have potential to produce an average of 400-450 kg of mushroom whose market value is between INR. 50,000-55,000. Marketing cost comes around INR 8,000-10,000 which includes packaging, transportation. Thus, in a time period of 4 months an entrepreneur can earn net income of INR

18,000-22,000 which is nearly 100% of his/her investment. Once mushroom is fully harvested its spent compost is excellent manure for crops like apple, maize, potato, and other vegetable crops. financial analysis of button mushroom cultivation enterprise is provided in the Table 6.3.

Table 6.3 Indicative Financial Analysis of Mushroom Cultivation Unit

#	Items	Qty	Rate (INR.)	Amount(INR)
A	Fixed Cost			
1	Tools and equipments (Thermometer, Hygrometer, knives)	1	2,500	2,500
2	Cost of wooden rack (100 Sq ft)	1	1,000	1,000
	Total fixed cost (A)			3,500
B	Recurring cost			
1	Mushroom compost bags	200	90	18,000
2	Transportation charges	1	3,000	3,000
3	Marketing cost(packing and transportation) INR 10/kg	450	10	4,500
4	Rent of room(10*10 ft)	1	2,000	2,000
	Total recurring cost (B)			27,500
C	Sales			
	Value of mushroom	450	120	54,000
	Total sales (c)			54,000
C	Income (B-A)			26,500

Source: JICA Study Team, 2107

6.4 Scope for Women in Mushroom Cultivation

Women can do mushroom cultivation in their houses or villages by form common interest groups comprising of 5-10 members. Mushroom producing clusters would be formed by aggregating 10-15 groups. Priority would be given in the areas where two crops are possible. The potential number of women that can be engaged for mushroom cultivation could be 1,600 women.

The marketing of mushroom can be done along with honey or apiary based products through CIGs/ SHGs. It is difficult to promote a single product based cooperative or society; therefore, best option would be to associate honey producer and mushroom growers with milk cooperative federation for marketing of products under its already recognized brand name and market channel will immensely benefit the small growers. This arrangement will be win-win situation for the community and dairy plants. 'SAFAL'- an initiative of Delhi based milk federation is example of such initiative in which green vegetable and mushroom are sold by dedicated stores. It is suggested to do detailed study of the SAFAL model to replicate in the state. Milk federation (for example Duttnagar in Rampur, Shimla) or can be motivated to install honey process unit (which would add to their product line). It will buy honey from local producer after processing in its plant market through established brand name. A successful arrangement marketing under brand name of milk has been done in Muzaffarpur, Bihar few years ago.

7. Animal Husbandry based Livelihood Options

Rearing of livestock is an integral component of rural economy. In Himachal Pradesh there is a dynamic relationship between common property resources (CPRs) such as forests, water and grazing land, livestock and crops. Livestock depends on fodder and grass grown on CPRs to some extent and on crops and residues. At the same time the animals provide manure in CPRs that could promote rejuvenation of the fodder grasses and works as draught power on the grasslands. The contribution of major livestock products during the year 2015-16 was 1.28 million tonne of milk, 1,411 tonne of wool, 81.17 million eggs and 4,005 tonnes of meat which will likely to be of the order of 1.32 million tonne of milk, 1,475 tonnes of wool, 97.00 million eggs and 4,130 tonne of meat during 2016-17 (Economic Survey 2017).

HP is endowed with the large livestock population. According to 2012 Livestock Census, total livestock population of H.P. is 4.67 million (Livestock census 2012, Govt. of HP).

7.1 Milk production

The state produced around 1,120 thousand tons of milk in 2011-12, registering 2.2% Compound Average Growth Rate (CAGR) over (2008 - 2012), while the national milk production grew at 4.3% CAGR (2008 - 2012). The key contributors to the growth in HP were districts of Chamba, Hamirpur, Mandi and Sirmour. HP is primarily a cow milk producing state with cow milk contributing 61% to the total milk production.

The average yield from exotic/crossbred cows stood at approximately 4.6 kg/day compared to national average of 6.8 kg/day. In case of indigenous/non-descript cows, the yield in HP was 1.5 kg/day, compared to national average of 2.2 kg/day. For buffaloes, the yield in the state stood at 3.5 kg/day compared to national average yield of 4.58 kg/day. In case of goats, the yield in HP stood at 0.49 kg/day, while the national average was 0.4 kg/day. HP with an estimated 446 grams ranks at number four in the country as against the national average of 281 grams. Key district with higher milk production are Kangra, Mandi (19% each) and Shimla (11%). In year 2016-17 total milk production was 132.82 million tons. (Source- Ministry of Agriculture: 18th Livestock Census -2007). Table 7.1 provides milk production data in prioritised project districts.

Table 7.1 Milk Production in Prioritised Project Districts

#	District	Milk production		% change
		2014-15	2015-16	
1	Bilaspur	49,457	71,700	45%
2	Kinnaur*	0	0	
3	Kullu	7,683,347	8,113,297	6%
4	Lahaul & Spiti*	0	0	
5	Mandi	8,316,637	8,460,931	2%
6	Shimla	2,307,861	2,272,387	-2%

Source: Department of Economics, 2017 Remarks: *Date not available

7.1.1 Supply Chain and Value Chain of Milk and Milk Products

Milk from producers to consumers reaches through primarily four channels.

- 1) Producer – consumer (direct door to door selling): This system is prevalent in the locations where there are urban centers or Industrial Township. Producers distribute milk door to door in the morning and evening to the fixed consumers and payment is collected to at the end of calendar month. Direct selling system is best when demand of milk is predictable throughout the year. In this case producer takes the risk of unsold inventory if either production has increased or number of customers declined. In that case producer sells produce to local sweatshops and restaurant at discounted price. Producers are not entitled to get any bonus or subsidised cattle feed from government supported dairy units however he gets higher prices as compared to government dairy.
- 2) Producer- Middlemen-Consumers: The producers who are mainly residing in rural areas and urban center are far preferred to sell their produce to middlemen (either from village or nearby area) at wholesale price. Prices offered by middlemen are slightly higher than the government supported dairy (to maintain goodwill among producers). However, during the peak production season middlemen reduce purchase prices.
- 3) Producer-Private dairy-Consumers: This model has emerged as competitor to government dairies. Private dairy collect milk from individual or may form groups in their operational areas.
- 4) Producer-Primary Cooperative society-State owned milk union processing centers-consumers- This model is also called ‘AMUL’ model due to its origin. In this model milk producer form a primary cooperative society and link themselves with district level milk unions. Milk union opens collection center with necessary equipment in the villages or cluster of villages. Milk is procured from members only and proper records are maintained. Procurement prices of the milk are fixed by APEX body of milk union called as Milk Federation and paid as the percentage of fat and solid not fat (SNF). Milk federation provides cattle feed and nutrients to its members on subsidized basis. In case of profit, milk federation also provided annual bonus to its members.

7.1.2 SWOT Analysis of Dairying Enterprise

Table 7.2 SWOT Analysis of Dairy Enterprise

Elements	Analysis
Strength	<p>Many rural households in the HP rear cattle for milk.</p> <p>Per capita milk consumption is showing increasing trend from past several years.</p> <p>Consumption of milk products like ghee, butter, paneer, curd is increasing both at local and national level.</p> <p>Climate suitable for crossbreed cows</p> <p>Government infrastructure is available for veterinary services.</p>
Weaknesses	<p>Productivity per cattle is lower than national average.</p> <p>Quality green fodder is not available throughout year.</p> <p>Transportation of milk from remote location is expensive.</p>
Opportunities	<p>Demand of packaged milk and milk products is increasing in rural and urban areas.</p> <p>Private firms are also venturing into dairy business and hence competition is increasing.</p> <p>Technology of cold chain is improving and storage at local level is now possible.</p>
Threats	<p>Change in agriculture practices (cereal to cash crop) is reducing supply of green fodder</p>

Elements	Analysis
	Pasture land are shrinking, so natural environment for cattle is decreasing. Competition from other states is increasing.

Source: JICA Study Team (2017)

7.1.3 Available Support for Milk Production and Processing in State

At present there are 921 village dairy cooperative societies working in the state out of which nearly 20% i.e. 185 are exclusive women cooperatives. There are 10 fully operational dairy plants and 23 milk chilling plants. To avoid spoilage of milk in the remote villages (where reaching milk collection van is not possible on day-day basis) 103 bulk milk coolers of 1000 liter capacity have been installed Snap shot of milk cooperative in HP. Table 7.3 provided information of supporting structure for dairying activities in HP.

Table 7.3 Supporting structure for dairying in HP

#	Critical information	Numbers
1	Village dairy cooperative societies	921
2	Women village dairy cooperative societies	185
3	No. of dairy plants	10
4	No. of milk chilling centers	23
5	Milk chilling capacity	96,500 lt/day
6	Milk processing capacity	95,000 lt/day
7	No. of bulk milk coolers installed	103
8	Powder plant at Duttanagar, Rampur, Shimla	5MT/day
9	Cattle feed plants	One(16MT/day)
10	Milk procurement per day	85,000 lt
11	Turnover of Milk Federation	INR 1,070 Million
12	Production of Panjiri at Mandi unit	45-50,000 qt/ annum
13	Procurement price of milk from producers for cow milk 4% fat and 8.5% SNF	INR 22.80/ lt
14	Procurement price of milk from producers for buffalo milk 6.5% fat and 8.5% SNF	INR. 27.00/lt

Source; <http://hp.gov.in/milkfed/> accessed on 18 September 2017

7.1.4 Milk Production Enterprise: Crossed Breed Cow based Dairy Unit

It is best suited for farmers having 3-4 acres of landholding where he/she can grow fodder and feed his/her cattle. A farmer can supplement his/her income by establishing a milk production unit of two crossed breed cows in the initial year. Table 7.4 provides fconomic analysis of crossed breed cow dairy unit.

Table 7.4 Indicative Financial Analysis of Crossed Breed Cow Dairy Unit for One Household

#	Items	Qty	Rate	Amount(INR)
A	Fixed cost			
1	Crossed breed Cows(Jersey) with calves at foot in early stage of 1st and 2nd lactation	2	25,000	50,000
2	Cow shed (15* 15 Ft) proper lightings and heating	1	20,000	20,000
3	Improved manger	2	1,000	2,000
4	Feed & Fodder storage	1	5,000	5,000
5	Chaff cutter	1	5,000	5,000
6	Bio-composting unit	1	5,000	5,000
	Total fixed cost(investment)			87,000

#	Items	Qty	Rate	Amount(INR)
B	Working capital			
1	Dry fodder (kg) per annum @ 5kg per day	1,825	2	3,650
2	Green fodder per annum @ 20 kg per day From own field)	7,300	1	7,300
3	Concentrate per annum @ 2kg per day	730	8	5,840
4	Salt & Mineral mixture (in gram) 30 gm per day	10	20	200
5	Veterinary expenses per annum	1	500	500
6	Annual insurance per cattle(5% of cattle value)	1,250	2	2,500
7	Loan instalment with interest@10%)			26,100
	Total working capital (yearly)			46,090
c	Sales			
1	Milk Production/Sales			
2	Average milk production(6 litres 300 days lactation)	3,600	25	90,000
3	Sale of manure/compost	6,000	5	30,000
	Total sales			120,000
	Gross income			73,910

Source: JICA Study Team, 2107

7.1.5 Clusters Promoted for Dairying:

Since Bilaspur, Kullu, Mandi, and Shimla are major producer of milk and most of the village are accessible dairying clusters would be promoted un-served areas. An area covering 2,000 cattle rearing house-holds would be required to develop an economically viable dairy cluster.

7.2 Poultry Enterprise

Consumption of eggs and meat is common by community residing in higher altitude of HP. During snowbound period non-vegetarian food provide them necessary source of calorie. Backyard poultry would be viable option for the households to supplement their income with less effort. Backyard Poultry enterprise could be started with 200 birds of 4 weeks. These birds are scavenging and don't need regular in house feeding.

Rear 400 L.I.T birds in backyard: To rear 400 straight run birds provision of 200 chicks in two batches in a gap of one & half year would be done. In this enterprise male would be reared up to 16 weeks while female will be kept for one year. Apart from meat there would be production of 120 eggs per bird during one year period. Cost of feeding to these birds negligible because these are scavenging birds and little hand-feeding especially kitchen-waste is used. If enterprise starts in the beginning of summer month the in cold place most the chicks would become adult and survive the snowbound condition. Per bird will yield INR 95/month for the household. Table 7.5 provides financial analysis of backyard poultry enterprise for one household.

Table 7.5 Indicative Financial Analysis of Backyard Poultry

#	Particulars	Unit	Qty	Rate	Amount
A	Non-recurring expenditure				
1	Night shelter/initial feeding of newly procured chicks	INR	1	15,000	15,000
	Total fixed cost (A)				15,000
B	Recurring expenditure				
1	Cost of birds at 4 weeks of age	No	400	50	20,000
2	Cost of feeding				
2.1	For females & males (8 to 16 weeks) 56 days @30 gm/bird/day and taking into account mortality 10%	Kg	720	30	21,600
2.2	For females (16 to 72 weeks) @15 gm/bird/day	Kg	1,080	30	32,400
3	Miscellaneous expenses	No.	400	5	2,000
	Total recurring cost(B)				76,000
C	Sales				
1	Males	no.	200	180	36,000
2	Spent hens	No.	160	100	16,000
3	Table eggs	No.	192,00	5	96,000
	Total sales ©				148,000
D	Gross profit per cycle of 18 months				57,000
E	Profit per bird for 18 months				142.5
F	Income per month per bird				95

Source: JICA Study Team, 2017

8. Traditional Enterprises with Specific Group of People

There are certain activities like broom making, bamboo basket making, leather accessories, wooden artifacts making which are done by certain groups of people. In the proposed projects such activities would be promoted on SHG mode. These enterprises would not be capital intensive but need working capital support to purchase raw-material in bulk. Product, design, and quality improvement training will improve efficiency and prices of the products.

9. Skills

Government of India and State Government are providing all types of support in enhancing skill level of youth so that s/he can get gainful employment.

HP Kaushal Vikas Nigam Limited has been created by Government of HP to empower all individuals of the state between the ages of 15 to 45 years to enhance learning and lifelong employment opportunities so as to increase the productive wage force of the state to take part in the economic growth of Himachal Pradesh and India and bridge its skill deficit. The State Government has fixed the targets under Skill Development activities according to the targets fixed by Government of India, as 455,000 for 2012–17 and 515,000 for 2017–22 (<http://hpkvn.nic.in/mission.html>). In prioritised project districts, skill development target is for 52,606 youths.

Table 9.1 Skill Development Target of HP State for 2017-22 in the Prioritised Project Districts

Unit: persons

S.No	Districts	Skilled	Semi-skilled	Minimally skilled	Total
1	Bilaspur	1,564	2,116	3,195	6,875
2	Kinnaur	105	352	1,512	1,969
3	Kullu1538	1,538	3,075	4,307	8,920
4	Lahaul & Spiti	13	226	630	869
5	Mandi	5,185	2,274	11,259	18,718
6	Shimla	10,076	2,681	2,498	15,255
	Total	18,481	10,724	23,401	52,606

Source: <http://hpkvn.nic.in/mission.html>

Attachment II.3.7.4.1 Indicative TORs for Pasture Management Specialist, NTFP/Value Chain /Marketing Specialist and Sustainable Tourism Specialist

A. Pasture Management Specialist

1. Objectives of the Assignment

The pasture management specialist shall provide technical inputs for PMU of HPFEM&LIP in relation to surveying, planning, designing and monitoring of pasture management related activities of the Project.

2. Tasks

1. Review and design the pasture management activities including implementation plan and budget;
2. Review and finalises capacity development plan/ programme/ training modules for pasture management;
3. Facilitate convergence with other programmes and schemes.
4. Prepare TOR for specialized agencies to undertake the pasture productivity and ecosystem valuation;
5. Design and organizing exposure visits for PMU and other project implementation units.
6. Provide any other technical inputs requested by PMU in relation to the task

3. Duration of the Assignment

The specialist shall be engaged for 15 person months.

4. Outputs

- i. Survey reports
- ii. Pasture management plans
- iii. Capacity development plans
- iv. TOR for the pasture productivity and ecosystem valuation
- v. Report of the Training given and training materials produced
- vi. Assignment Report

5. Desired Qualification

- i. Post Graduate in biodiversity conservation, forestry, natural resource management, or other related fields
- ii. Experience in the field of pasture/ grassland management: 10 years or more
- iii. Proven experience of relevant fields in HP

6. Others

The specialist shall be recruited from the open market.

B. NTFP/ Value Chain / Marketing Specialist

1. Objectives of the Assignment

The NTFP/ Value Chain / Marketing specialist shall provide technical inputs for PMU of HPFEM&LIP in relation to surveying, planning, designing and monitoring of NTFP development and cluster business promotion.

2. Tasks

1. Review and confirm existing resource status and utilisation status of major NTFPs/MAPs in the project areas;
2. Identify market potential of NTFPs and other products relevant to project interventions in national and international market in collaboration with the NTFP/ MAP Specialist;
3. Review and preparation of value chain/ marketing/ NTFP/MAP development guidelines and manuals;
4. Develop marketing strategies for each identified product;
5. Develop strategies and action plan for cluster business promotion for the Project;
6. Design and prepare NTFP/MAP development plans for the Project
7. Prepare TOR for the specialised agencies to undertake market and value chain assessment for the Project and procurement of such agencies;
8. Plan and conduct training for relevant stakeholders in various skills in value chain /marketing / NTFP/MAP development;
9. Assist execution of NTFP/MAP development plans and cluster business promotion action plans;
10. Provide any other technical inputs requested by PMU in relation to the task

3. Duration of the Assignment

The specialist shall be engaged for 15 person months.

4. Outputs

- vii. Survey reports
- viii. Relevant manuals and guidelines
- ix. NTFP/MAP development plans
- x. Cluster business promotion action plans
- xi. Report of the Training given and training materials produced
- xii. Assignment Report

5. Desired Qualification

- i. Post Graduate Degree in Forest Management/ Natural Resource Management/ Forest Products/ Botany/ Marketing / Economics/ Sociology/ Business Administration and other related fields
- ii. Experience in the NTFP development & management, value chain, marketing and livelihood development: 10 years or more
- iii. Proven experience of relevant fields in HP

6. Others

The specialist shall be recruited from the open market.

C. Sustainable Tourism Specialist

1. Objectives of the Assignment

The sustainable tourism specialist shall provide technical inputs for PMU of HPFEM&LIP in relation to survey, planning and designing of sustainable tourism development plans.

2. Tasks

1. Collect information that are necessary for the development of sustainable community-based tourism, such as environmental and social carrying capacity of the area, monitoring methodology for tourism impact, consensus building among local communities on tourism development and benefit sharing
2. Conduct survey to identify the sites, tourism attraction and its management methodology to secure sustainability
3. Develop a strategy for sustainable tourism and community based ecotourism for the target sites
4. Design a plan with concrete ideas of sustainable tourism and community-based ecotourism development
5. Identify capacity development requirement of stakeholders and design capacity development plans
6. Identify national collaborators and establish linkages
7. Assist execution of the development plans.
8. Provide any other technical inputs requested by PMU in relation to gender

3. Duration of the Assignment

The specialist shall be engaged for 6 person months.

4. Outputs

- i. Survey reports
- ii. Sustainable tourism and community based ecotourism strategies
- iii. Sustainable tourism and community based ecotourism development plans
- iv. Capacity development plans
- v. Assignment Report

5. Desired Qualification

- i. Post Graduate in tourism, natural resource management, community development or other related fields
- ii. Experience in the field of tourism and ecotourism for 10 years or more
- iii. Proven experience of relevant fields in HP

6. Others

The specialist shall be recruited from the open market.

Attachment II.3.7.4.2 (a) Indicative TOR for Gender Specialist

1. Objectives of the Assignment

The gender specialist shall provide technical inputs for PMU of HPFEM&LIP to finalise gender action plan, gender monitoring system and gender training modules and prepare gender training plan.

2. Tasks

1. To review, revise and finalise Gender Action Plan in
2. To review, revise and finalise Gender Training Modules
3. To prepare training plan
4. To develop and institutionalize Gender Monitoring System
5. To prepare necessary training materials for Gender Training Modules
6. To act as a resource person during the Gender Training (TOT mode)
7. To provide any other technical inputs requested by PMU in relation to gender

3. Duration of the Assignment

The specialist shall be engaged for 6 person months.

4. Outputs

- i. Finalised Gender Action Plan
- ii. Finalised Gender Training Modules
- iii. Finalised Gender Training Plan
- iv. Report of the Training given
- v. Training materials produced
- vi. Assignment Report

5. Desired Qualification

- i. Have proven records of experiences in gender action planning and monitoring
- ii. Have acted as a resource person of more than 5 gender training programmes to cater for various levels of trainees
- iii. Have relevant academic background (Post graduate in gender studies, rural sociology, rural development and etc.)
- iv. Have more than 15 years of working experiences as a gender specialist

6. Others

The specialist shall be recruited from the open market.

Attachment II.3.7.4.2 (b) Preliminary Gender Action Plan for HPFEM&LIP

1. Overview

Gender mainstreaming is a way to create an enabling environment for women's empowerment. In the context of sustainable forest management and biodiversity conservation, women are known to be a key stakeholder in management and conservation as they bear the responsibilities of fodder collection and fuelwood in many parts of the state. In other words, the degradation of the forest resources would directly affect their well being as it also means longer hours to search for fodder and fuelwood.

Although in HP, alternatives are available for fodder and fuelwood, it is important for women, as key actors in SFM and BC, to be part of the planning, implementation and M&E of the sustainable forest management and biodiversity conservation activities.

2. Project Components and Gender Action Plan

Project Components/ Sub-Components	Gender Action	Data Required	Means of Verification
Component 1: Sustainable Forest Ecosystem Management	Men and Women are to hold separate discussion during the planning process.	Report by the facilitators	Report by FTU
	Gender budgeting is to be adopted (40% of the total budget.)	Budget of FEMP	Project MIS
Component 2: Sustainable Biodiversity Management	Women's working group shall be constituted under VFDS/ BMC by the representatives of sub committees of VFDS/ BMC women members.	Number of groups established	Project MIS
	Women's working group shall be constituted under sub-committees of FWC/ BMCs at ward level.	Number of groups established	Project MIS
	Male and female adult members of ward sabha shall become the sub committee member of VFDS/ BMC to constitute a general body. The right to vote shall be given to one for each member.	Gender segregated number of Sub Committees of VFDS/ BMC members	Project MIS
	Outsourced agencies are to comply with the project gender norms. - No gender segregation in wages/ remuneration - 30% of the staff members/ specialists are to be women, in case of a team	TOR and assessment criteria	TOR and Contract
	At least 50% of the VFDS/ BMC executive committee members are to be women.	Gender segregated number of VFDS/ BMC sub committee members	Project MIS
	Either chair person or vice chairperson is to be made woman of VFDS/ BMC. (Reserving the position of the vice chair person is not acceptable.)	Gender segregated number of chair person/ vice chair person	Project MIS
	Women workers are engaged at least 40% of the total number of work force for plantation and other related forestry works.	Gender segregated number of work days consumed by the workers	Project MIS
	No gender segregation in wages	Gender segregated wages paid	Project MIS

Project Components/ Sub-Components	Gender Action	Data Required	Means of Verification
	While deciding the treatment areas, women representatives shall be present.	Minutes of meeting	Report by FTU
	During species identification/ selection for the treatment areas, women should be give opportunity to identify/ select on their own.	Minutes of meeting	Report by FTU
	Women researchers are to be included at least 30% of the total number of researchers engaged.	Gender segregated number of researchers engaged in the project assisted research projects	Project MIS
	All officers/ staff/ community level groups are to be trained on gender.	Gender segregated number of trainees attended gender training	Project MIS
	All the community based training programmes / exposure visits should have at least 40% of women participation.	Gender segregated number of trainees	Project MIS
	Training venues and timings need to be set to accommodate women's daily schedule and requirement.	Assessment by the participants	Report by FTU
	Training facilities shall have gender segregated toilet facilities.	Assessment by the participants	Report by FTU
	Community level training programmes may be conducted in the local languages other than Hindi.	Assessment by the participants	Report by FTU
	Guidelines and manuals intended for community level organisations shall be prepared in Hindi and designed to be made simple and easy understanding.	Number of guidelines and manuals prepared in Hindi Assessment of the usability by the users	Report by FTU Report by FTU
Component 3: Livelihood Improvement Support	During planning, men and women should discuss separately to formulate their own plan, which gets synthesised in plenary.	Gender segregated number of attendance Minutes of meeting	Project MIS Report by FTU
	Drudgery reduction related activities are to be included as part of CD&LIP.	CD&LIP	Project MIS
	Women are encouraged to take part in livelihood activities.	Gender segregated number of CIGs/ individuals Gender segregated amount of CD&LIP funds used (grant/ revolving portion)	Project MIS
	Gender budgeting is to be adopted (40% of the total budget.)	Budget of CD&LIP	Project MIS
	Research topics that are related to drudgery reduction and sustainable forest management/ biodiversity conservation shall be included.	Number of research proposals related to drudgery reduction and sustainable forest management/ biodiversity conservation	Research Reports
	All officers/ staff/ community level groups are to be trained in gender.	Gender segregated number of trainees attended gender training	Project MIS
	All the community based training programmes / exposure visits should have at least 40% of women participation.	Gender segregated number of trainees	Project MIS

Project Components/ Sub-Components	Gender Action	Data Required	Means of Verification
	Training venues and timings need to be set to accommodate women's daily schedule and requirement.	Assessment by the participants	Report by FTU
	Training facilities shall have gender segregated toilet facilities.	Assessment by the participants	Report by FTU
	Community level training programmes may be conducted in the local languages other than Hindi.	Assessment by the participants	Report by FTU
	Guidelines and manuals intended for community level organisations shall be prepared in Hindi and designed to be made simple and easy understanding.	Number of guidelines and manuals prepared in Hindi Assessment of the usability by the users	Report by FTU Report by FTU
	Key aspects of the project shall be prepared in the audio visual materials in the local languages other than Hindi.	Number of audio/ visual programmes prepared in local language other than Hindi	Report by Programme Manager (Monitoring, Safeguards & Publication)
Component 4: Institutional Capacity Strengthening	Gender segregated monitoring indicators are to be adopted and the data to be collected accordingly.	Project Monitoring Evaluation Guideline M&E Indicators and data collected	Project MIS
	All officers/ staff/ community level groups are to be trained in gender.	Gender segregated number of trainees attended gender training	Project MIS
	All the community based training programmes / exposure visits should have at least 40% of women participation.	Gender segregated number of trainees	Project MIS
	Training venues and timings need to be set to accommodate women's daily schedule and requirement.	Assessment by the participants	Report by FTU
	Training facilities shall have gender segregated toilet facilities.	Assessment by the participants	Report by FTU
	Community level training programmes may be conducted in the local languages other than Hindi.	Assessment by the participants	Report by FTU
	Guidelines and manuals intended for community level organisations shall be prepared in Hindi and designed to be made simple and easy understanding.	Number of guidelines and manuals prepared in Hindi Assessment of the usability by the users	Report by FTU Report by FTU
	Key aspects of the project shall be prepared in the audio visual materials in the local languages other than Hindi.	Number of audio/ visual programmes prepared in local language other than Hindi	Report by Programme Manager (Monitoring, Safeguards & Publication)
	Women staffs/ officers are to be engaged more than 40% of the total staff members.	Gender segregated number of staff/ officers	Project MIS
	One male and one female ward facilitators are to be engaged in each VFDS/ BMC.	Gender segregated number of ward facilitators	Project MIS
	No gender segregation in wages of ward facilitators	Gender segregated financial report of honorariums paid to the ward facilitators	Project MIS
	More number of women are assuming the leadership position.	Gender segregated number of chair/ vice chair of the committees/ community level groups	Project MIS

Project Components/ Sub-Components	Gender Action	Data Required	Means of Verification
	FEMP/ CBMP and CD&LIP are revised by adopting the same principles during the preparatory stage.	Gender segregated number of attendants Minutes of meeting Gender budget	Report by FTU Project MIS
	Gender specialist is to be engaged in PMC.	TOR of PMC PMC proposal	Contract

Source: JICA Study Team (2017)

3. Implementation Framework

The gender action plan is to be embedded in the project implementation process through project guidelines/ manuals/ training programmes and also through the gender mainstreamed recruitment process. The project design so far has taken gender into consideration as much as possible and thus, the implementation shall not require separate set up.

4. M&E System

Although the gender action plan has already been embedded in the project design, M&E needs to be done with a focus although the data can be drawn from the project MIS and pre institutionalised M&E mechanism. Therefore, at PMU level, executive committee shall assume the function of gender M&E committee which would monitor and take decisions on necessary corrective actions to be taken in the project implementation process. Review meeting shall be held after receiving the quarterly report from FCCU. The nodal person at PMU, Programme Manager *Monitoring, Safeguards, Publication) will prepare the quarterly report and annual report on the status of gender action plan.

At DMU level, the Subject Matter Specialist shall monitor and assess the situation on a quarterly basis and report to the committee. At FTU, FTU coordinator shall be the focal person to monitor and assess the gender situation at range level and compiles the quarterly report based on the project MIS and field observation.

5. Gender Training

The indicative gender training modules for various stakeholders are given in the table below. The training programme can be reviewed and modules can be prepared by the Gender Specialist engaged by PMU during the 1st year of the project implementation. The training programmes for FTU staffs are to be undertaken as TOT so that they can deliver the gender training programmes for the VFDS/ BMC/ Cluster Organisations/ and ward level sub committees, and CIG/ SHG members. In case the outsourced agency is to be engaged for TOT for DMU/ FTU, the Gender Specialist shall prepare TOR and assist PMU in shortlisting the competent agencies. Procurement can be done by quotation by more than 3 short listed organizations. By the time PMC is placed, PMC gender specialist can also provide inputs as resource person.

Indicative Outline of the Gender Training

Project Implementation Unit	Topics to be covered	Duration	Category of the Participants
PMU/FCCU	Human Rights and legal provisions in India Gender based violence Gender awareness Gender and leadership and governance Gender Action Plan for HPFEM&LIP and M&E Gender Budgeting Gender Analysis (Role play)	1 Day	PMU officials/ staffs
DMU/FTU (TOT Mode)	Human Rights and legal provisions in India Gender based violence Gender awareness Gender and leadership and governance Gender roles and relations in the project areas Gender Action Plan for HPFEM&LIP Gender Budgeting Gender Analysis (including field exercise) Gender Monitoring	4 days	DMU subject matter specialists/ FTU coordinators
VFDS/ BMC/ Clustr Organisations	Understanding gender Gender situation in the villages through gender analysis Gender action plans for HPFEM&LIP Gender budgeting Gender dimensions in FEMP and CD&LIP preparation Gender dimensions in VFDS/ BMC/ BMC sub committees/ Cluster Organisations – leadership & governance	2 days	Executive members of VFDS/ BMC/BMC sub committee members/ Cluster Organisations/ GP Mobilisers/ Ward Facilitators
CIG/ SHG	Understanding Gender Gender situation in the villages through gender analysis Gender awareness Gender relations in the project areas Gender action plans for HPFEM&LIP	2 days	Representatives of CIG/ SHGs

Source: JICA Study Team (2017)

End

Attachment II.3.7.4.3 Basic TORs for Environmental and Social Consideration Expert and Environmental and Social Consideration Field Expert

ESAF has identified a number of environmental and social safeguard issues and provided overall guidance on their avoidance, management and mitigation. In order to fully respond the requirement of ESAF, i.e. JICA Guideline and relevant legal framework in India and HP state, following additional experts are required to be employed by PMU for the provision of more detailed and specific guidance, capacity development and follow-up during project implementation. This is particularly the case due to the fact that detailed assessments of specific impacts on the ground have been limited during the Study.

The following TORs provide a basic summary of the key tasks for the Environmental and Social Consideration Expert (ESCE) and Environmental and Social Consideration Field Expert (ESCFE).

(1) Environmental and Social Consideration Expert (ESCE)

ESCE will be mobilised from the initial Preparatory Phase, before the procurement of the Project Management Consultant (PMC) and following-up the ESAF requirements with close communication with Environmental and Social Consideration Specialist deployed under PMC and Environmental and Social Consideration Field Expert (ESCFE) mentioned hereunder. The expert is expected to work on the following key aspects;

- a) To facilitate and coordinate with various implementation and line departments for smooth implementation of ESAF/VSTPF,
- b) To update and finalise ESAF/VSTPF,
- c) To develop appropriate training materials on environmental and social safeguards, following the requirements in ESAF,
- d) To provide training courses and capacity enhancement of selected participants, at the different levels of stakeholders who will be designated with additional responsibility to ensure implementation of environment and social safeguards, and
- e) To supervise/ manage the project activities to ensure that the required procedures indicated in ESAF are followed properly. The expert may also be required to follow-up in the field where particular issues are identified and report to the ESCS. In the absence/ termination of the assignment of the ESCE, he/she will report directly to PMU.

(2) Environmental and Social Consideration Field Expert (ESCFE)

ESCFE will be required to assist ESCE for the above identified tasks, especially for the preparation of the relevant capacity development programme. Considering the wide coverage of project targeted area and the requirements to ESCS, this position is highly required for smooth implementation of the ESC relevant activities. The expert will be mainly mobilised during the planned capacity development training period.

Attachment II.3.7.4.4 Terms of Reference for Training Needs Assessment (TNA)

1. Tasks to be Carried Out by the Agency/ Individual

The agency/ individual will undertake the following specific tasks using consultative and participatory approaches and methods:

- ◆ Undertake a Stakeholder analysis (as per institutional arrangements) to identify all stakeholders and actors in the project at all levels
- ◆ Asses the knowledge and skill gaps and identify the capacity-building needs for each stakeholder;
- ◆ Undertake a Situational analysis in order to establish baseline capacity
- ◆ Identify required training and modes of training for identified stakeholder needs (who, what training, how and when)
- ◆ Present the findings at a stakeholder workshops at PMU level (key stakeholders from field level to participate for feedback)

2. Skills and Experience Required

The agency/ individual is expected to have the following skills and expertise:

- ◆ Agency/ individual undertaken similar assignments
- ◆ Advance degrees in development studies, social sciences or related discipline;
- ◆ A minimum of ten (10) years' experience in conducting organizational capacity needs assessments, experience with self-assessment processes will be an advantage;
- ◆ At least 5 years of experience working in organizational development, capacity building in the specified area;
- ◆ Excellent writing and communication skills in English;
- ◆ Strong interpersonal skills and the ability to communicate and work well with diverse people.

3. Study Duration

2~3 months

Attachment II.3.7.4.5 Indicative Capacity Development Programme for Environmental and Social Safeguards

Different levels of officials/staff, other relevant stakeholders are targeted for the training programmes for the capacity enhancement to handle ESC issues. The indicative capacity development programmes for environmental and social safeguards is described hereunder.

Table 1 Indicative Capacity Development Programme for Environmental and Social Safeguards

Item	Descriptions
Training 1 Programme for Management/ Administrative Level	
Key Participants	Designated officials (and staff) of PMU, FCCU
Training Programme	Topic 1: General Orientation on ESAF and VSTPF for the Project <ul style="list-style-type: none"> - Legal framework on environmental and social safeguard of India and JICA - Basic introductory concept of safeguard - Environmental and social impact assessment: overview & regulations - Safeguard issues (vulnerable groups, SCs, STs, transhumance, Gender, etc.) - ESAF: steps and procedures with respect to the Project - FPIC Topic 2: Monitoring and Evaluation for Environmental and Social Safeguard <ul style="list-style-type: none"> - Concept of M&E - M&E and reporting procedures - Use of M&E results and feedback, including Grievance Redress Mechanism (GRM)
Duration	Two days training (once a year in the first four years at each division)
Training 2 Programme for Field/ Operational Level	
Key Participants	<ul style="list-style-type: none"> - Designated officials and staff of FTU - Designated field level officers - facilitators, village level mobilizers/ organizers - (If necessary) representatives of PRI/ Gram Panchayat/ JFMC
Training Programme	Topic 1: General Orientation on ESAF and VSTPF for the Project <ul style="list-style-type: none"> - Basic introductory concept of safeguard - Environmental and social impact assessment: overview - Environmental protection, EIA and social safeguard regulations (specific) - Safeguard issues (vulnerable groups, SCs, STs, transhumance, gender etc.) - Process of community consultation and public participation - FPIC - PRA for data collection, analysis and report preparation - Micro-planning Topic 2: Monitoring and Evaluation for Environmental and Social Safeguard <ul style="list-style-type: none"> - Concept of M&E - M&E and reporting procedures - Use of M&E results and feedback, including GRM
Duration	Two days training (once a year in the first four years at each division)
Training 3 Community Facilitation and Environmental and Social Assessment for ESC	
Key Participants	<ul style="list-style-type: none"> - Designated field level officers - facilitators, village level mobilizers/ organizers - (If necessary) representatives of PRI/ Gram Panchayat/ JFMC
Training Programme	<ul style="list-style-type: none"> - Project activities planning (and micro planning) - Role of Panchayats, JFMC - Participatory ESA procedures - Working with vulnerable groups - Gender issues - Conflict resolution/ grievance procedures
Duration	One session as part of other community related trainings (Once a year in the first four years/ location and timing shall be determined accordingly)
Training 4 Specific Training for Specific Techniques/Tasks to be Required	
Key Participants	To be defined according to the main topics
Training Programme	<ul style="list-style-type: none"> - For example: - Appropriate chemical use - Environment health & safety standard for construction - Occupational health & safety - Mitigation planning and implementation
Duration	To be defined when necessary

Source: JICA Study Team (2017)

Attachment II.3.7.4.6 Indicative M&E System for the Project

Following the M&E system, activities for tracking project progress and performance will be systematically carried out during the project implementation. M&E system will enable the Project to take remedial actions based on the lessons learnt. M&E system for the Project will have following 15 key elements grouped into a) Monitoring, b) Impact Assessment, and c) Audits and Transparency, and d) Performance Indicators. PMU would ensure to put the system in place during preparatory phase of the Project and develop M&E guidelines and manual. PMU will also take necessary steps to build capacities of the project staff at all level of operations on M&E aspects.

A) MONITORING

(1) Biodiversity Monitoring System

Biodiversity in a protected area encompasses thousands of life-forms, many of them not even named and described, yet the resources and people available to manage and monitor biodiversity are limited. Since the Project has focused on biodiversity conservation, the Biodiversity Monitoring System (BMS) is a minimum starting point that needs to be instituted under the Project, which one can expect should be evolved over a period of time, and later be internalized in the forest department as routine system for protected area (PA) management. Adequate equipment and human resources also need to be arranged to execute the BMS plan.

Monitoring of biodiversity should be able to answer questions such as:

Biodiversity monitoring specific questions: a) Are habitats and ecosystems being degraded? b) Are the populations of threatened species of plants and animals declining?

Performance monitoring questions c) What are the causes? d) Has management intervention had the intended impact on the ecosystem? e) Are there increased benefits to local communities from sustainable natural resource use?

In other words, monitoring should be able to answer if the management interventions in the area are effective in addressing biodiversity conservation.

Monitoring biodiversity is not the same as measuring biodiversity. Measuring biodiversity provides a snapshot of biodiversity at the time of measurement, whereas monitoring is a continuous process which allow managers to identify changes and trends over time so that they can assess whether interventions are achieving biodiversity goals and adapt its management accordingly. It would be a good approach for the short duration project to focus on monitoring trends rather than measuring absolute values. Thus, the Project will undertake a comprehensive biodiversity baseline survey engaging a qualified and credible institution/ agency during the preparatory phase of the Project. Most threats to biodiversity result from human activities which, in turn, depend on social and economic factors. Therefore, when looking performances for biodiversity related aspects, results of monitoring of socioeconomic factors as well as institutional factors shall be examined and if required, additional surveys to be conducted and monitored to evaluate the biodiversity performance.

Thus, a meaningful and operationally relevant biodiversity monitoring system will encompass a broad range of subjects to be monitored, including direct achievements of project interventions such as changes in biomass, changes in surrounding environment such as species compositions/ number of species/ biomass as impacts of project interventions, socio-economic factors, community involvement and institutional and regulatory factors. It will also be important to define the spatial and temporal scales of monitoring activities, as biodiversity management deals with ecological processes which are generally long-term changes (e.g. changes in population of a key species) resulting from management interventions may be slow to emerge, sometimes beyond the project timeframe.

The methods to be developed for monitoring purposes should aim for ensuring that no major change in a protected area's biodiversity can go undetected. Measurements aids like data loggers, cameras, automated weather stations (AWS), etc. shall be utilized for the purpose of data recording and analysis. The methods should have scope for involving local people, equipment and funds. In addition, the methods should be backed up by satellite-based monitoring of land-use on a regular basis as well as in-depth monitoring of selected habitats and species. This exercise would be undertaken once every two years from project initiation.

(2) Concurrent Monitoring and Periodic Reviews

For the project components other than biodiversity conservation, concurrent monitoring would be the key approach to bring in transparency and efficiently track the project implementation. The monitoring would be undertaken following multiple approaches – field visits, periodic reviews, reporting, assessments and feedbacks etc. Regular monitoring would be an in-house routine affair. Standard checklist, semi-structured questionnaire and set of indicators would be developed by PMU for undertaking concurrent monitoring. If required, monitoring could also be undertaken by hiring independent credible monitoring agency from time-to-time. The planned activities would be monitored against the approved Annual Plan of Operation (APO). A set of Operation & Effect indicators would be identified and necessarily be updated on annual basis by PMU.

PMU would create a system for undertaking field visits by PMU officials at regular intervals, and feedback the project management by way of structured 'Back-to-Office Reports'. IT/ GIS Cell would be made responsible to facilitate generation of analytical maps & reports based on the data captured through various GIS/ MIS modules at different level of project implementation. The analytical reports would be utilized by sectoral head for identifying critical gaps, and such issues would be transmitted by the Chief Project Director along with action points to all the divisions through circle offices at a regular interval.

Periodic reviews will be undertaken at all levels of project operations. The key institutions that would be responsible for periodic reviews are – GPs, project divisions, circles, PMU, and stakeholders/ agencies that would be interested in keeping regular track of the project implementation and performance, e.g. state/ central government, JICA. Following would be the frequency of monitoring & review by various stakeholders/ agencies:

Table 1 Frequency of Monitoring & Review Meetings

Frequency of Monitoring & Reviews	Stakeholders/ Agency
Fortnightly	Gram Panchayats
Monthly	Project Divisions
Quarterly	Circles and PMU/ GB
Six-monthly	HPC members, JICA representatives

Source: JICA Study Team (2017)

(3) Community Self-monitoring

System of self-monitoring by community institutions based on the annual implementation plans would also be in place at GP/village level. Community institutions would be facilitated and guided to fine-tune and adopt simple participatory tools for generating performance reports based on actual achievements.

PMU will ensure to implement colour-code based performance rating system for the project GPs. Based on the rating system Quarterly performance Report Card would be prepared for each GP, and would be displayed at range level. A caution is required that such a system should get evolved by community themselves rather than be project-driven.

To ensure that it happens initial hand-holding and capacity development on participatory M&E tools and processes, both for community representatives and project staff, would be required. To facilitate the process guidelines for the Community base Self-monitoring would be developed by PMU, and disseminated at the field level.

(4) Computerised MIS

Web-enabled MIS would be utilized for capturing the progress and achievements on day-to-day basis. MIS will be planned till range-level from where the data would get integrated upwards. This would be done in phased manner. Paper-based formats or mobile based app system would be used to capture information at GP and community institution level. The output reports generated by the MIS would give status of project progress and performance.

The existing MIS software will be modified by PMU within first year of the project initiation. In-house capacities of the forest department would be utilized to design or modify MIS modules as per the project requirements considering the project logical framework and proposed M&E system. Later, PMC would also guide PMU to strengthen the MIS reporting. IT/ GIS Cell within HPFD will also have mandate to provide technical back-stopping to project divisions and ranges during the project implementation. Training manual would be developed for the project specific MIS modules prior to commissioning, and will be used to train the project staff at all level of operation. Details on MIS is being provided in separate section of the report.

(5) Computerised Accounting System

Financial and accounting procedures and policies would be developed and adopted for the Project. These policies and procedures will be published in form of Financial Management and Accounting Manual, and will be disseminated to all key stakeholders. This manual will be key reference

document for maintaining transparency, providing clarity regarding financial aspects to the various stakeholders and finance staff, ensuring uniformity, and enforcing accountability. All units of operations will comply and follow the accounting procedures and policies as per the Financial Management and Accounting Manual approved by HPC and adopted by the Project. Training on using the financial management and accounting manual, and project account keeping would be planned for all key stakeholders.

Computerised accounting system based on standard accounting software would be utilized for maintaining financial records till range-level for real-time reporting. The accounting software would be customized and adopted for financial management, tracking disbursement as per annual plans and efficiently compiling Statement of Expenditures (SOEs) for submission to JICA, state government, and Central Aids, Accounts and Audit Division (CAAA) under Ministry of Finance, Department of Economic Affairs.

The accounting software would be procured for newly created project offices whereas the software already available with the forest divisions through Compensatory Afforestation Fund Management and Planning Authority (CAMPA) funds will be utilized for the project after customization.

All operational levels would be strengthened both in terms of equipment/ connectivity and human-resource to implement the plans. Systematic training would be planned for all key staff at all levels to handle and utilize these software for maintaining financial records and generating reports.

(6) Technology based Monitoring - GIS Applications

Through the Project, IT/ GIS Cell would be further strengthened for undertaking GIS/ MIS operations. All the project sites and treatment areas would be geo-coded and plotted on digitized maps to be utilized for planning and analysis. It would also be important to record geographical location (GPS based coordinates) of each individual asset created under the Project for closely monitoring the work progress. Location specific inventory of assets with geo-codes would be created and photographs would be tagged to better manage the assets in future.

In addition, IT/ GIS Cell would also be capacitated of undertaking technology based analysis and related assessments utilizing both MIS and GIS tools. Details on GIS is being provided in separate section of the report.

(7) Annual Strategy Planning & Review Workshops

The strategy planning and review workshops would be organized annually at circle and state-level. At several stages during project implementation, it would be necessary to have consultations on various generic issues and areas where project may require views, collaborations and for sharing successes as well. This would also provide a good opportunity to PMU to listen to learning and best practice from outside experts, engage with like-minded people with shared interests, inspire and generate ideas and new thinking, to form new partnerships and networks, to get results and disseminate messages face to face, to initiate action and collectively bring about change, to encourage public-relation and media coverage, and to celebrate achievements.

At circle level two days event would be organized, whereas at state it would be a three days event.

PMU would be responsible to organize state level annual workshop every year, and would also follow-up with the circles for proposing Circle Annual Planning and Review Workshops every year. PMU would also guide Circles to prepare structure and agenda for the workshops.

Responsibility to organize this annual event at circle level would be with the Chief, and would be assisted by DFO (HQ) as well as the FCCU. These events would be planned during February/ March or October/ November (as per climatic conditions) in which representatives of Gram Panchayats, community institutions, NGOs, and project and forest staff would participate. The event at circle level would be chaired by the CCF.

During the circle workshops, circle heads would review the annual progress. Representatives of divisional and range offices would make presentations on achievements vis-à-vis annual plan. Performing GPs and community institutions would share their experiences and achievements vis-à-vis annual implementation plan. The efforts of performing GPs/ community institutions would be recognized by way of some citations/ awards system. The workshop will also discuss next year planning, and would take inputs from participants for preparing subsequent annual plans. The circles would prepare and submit a report on the template circulated by the PMU within a reasonable timeframe soon after completion of the event.

State level event would be organized after the circle-level workshops are concluded. Synthesis and learnings of the workshops would be compiled by PMU and published.

B) IMPACT ASSESSMENT

(1) Annual Outcome Assessments

Annual Outcome Assessments (AOAs) will focus on outcomes in context of the project outputs achieved by the Project. Framework of the AOA would be developed by PMU in assistance from PMC following the logical framework of the Project. AOA will also review APO, quarterly reports, and other reports produced during the financial year, and will include assessment on the institutional and financial performance of GPs, community institutions and NGOs as well as project divisions. This exercise would also highlight key bottlenecks and constraints where immediate remedial actions are required.

The exercise would be undertaken immediately after completion of a financial year, and would necessarily be completed during ensuing quarter every year. This could be an in-house exercise, and if required eligible and credible agency could be hired by PMU for such exercise. If required, the TOR and procurement details could be shared with JICA for information and feedbacks. Suitable assessment tools would be developed in consultation with the stakeholders, and later fine-tuned and finalised by PMU with assistance from PMC prior to the exercise.

(2) Baseline and Impact Surveys

Two set of baselines would be created prior to initiation of project interventions viz., a) socio-economic, and b) physical situations of the project areas. Information from representative target groups and project areas on identified parameters and variables would be collected by a qualified and credible agency. Based on the actual situations and after studying the field conditions, the ToR for baselines and impact surveys would be developed by PMC in consultation with PMU. The TOR

and procurement details should be shared with JICA for information and feedbacks. The baselines should necessarily be completed during the preparatory phase of the Project, and would capture gender segregated data and analysis as well.

Prior to initiation of the project interventions, baseline surveys will be undertaken in collaboration of the project units, to collect primary data on the key project indicators including gender, and following the methodology agreed with PMU. Randomized sampling design will be followed for selection of project sites/ areas or target groups. Baseline will also capture situations in control villages/ sites, and data will be utilized as reference for making comparisons during evaluations exercise. The baselines should get completed for all batch sites during first two year of project initiation.

To ensure that methodologies and approach for analysing data generated out of the surveys are comparable, as far as possible one credible and eligible agency should be identified for one type of surveys viz., a) Socio-economic, and b) Physical to be engaged at each of the stages viz., baseline, mid-term and end-term. Use of GIS technologies should be considered to further strengthen the survey information. GPS coordinates of all the sample sites should also be recorded. GIS maps of selected sample survey sites should be created, and scope for spatial analysis with associated primary survey data should also be included.

This baseline data set would be utilized for future comparisons to know the performance and impact of the project investments. The impact surveys would be planned one at mid-point (after 4th year) and end-term (after 8th year). Indicative TORs for socio-economic surveys (baseline, mid-term and end-term) are presented in **Annex 1**, and that of physical surveys are presented in **Annex 2**.

(3) Thematic and Short Studies

While the robust monitoring system planned under the Project would be helpful to provide alerts or flagging concerns to the project management during implementation, however, there would be some areas where in-depth analysis would be required to further understand the causes/ factors responsible for some situations or for getting not so satisfactory results through defined processes as envisaged. It may also happen that some project areas could be innovating and exceptionally performing well, and in-depth study would be desired to learn about the factors of success that could be utilized for further replication, adoption and dissemination. All such areas of interest could be identified from time to time by PMU based on the reviews and feedbacks from the field.

Thematic/ short studies would be undertaken as and when required to understand the issues and impact of certain interventions/ processes during the project implementations as well as document best practices and innovations identified in the Project. These studies would be for 3-4 months durations, and could be planned from 2nd year onwards till 7th year; one study per year. The TOR and procurement details should be shared with JICA for information and feedbacks.

C) AUDITS AND TRANSPARENCY

(1) Social Audits

To empower the GP members and community in decentralized planning and decision making, and to bring in transparency in the processes, a system of six-monthly social audits would be in place. This one-day event would give an opportunity to all community members to know about the project activities and raise voice, if concerns are identified, while Forest Works Committee (FWC) shares all the records, proceedings, achievement vis-à-vis annual plan, accounts, expenditure, wage-payment details, etc. in public. Other stakeholders including representatives of GP, forest department, line departments, NGOs, project/ forest staff, etc. will also participate in this event. Community institution representatives/ members and project staff at field level will receive training for systematically conducting Social Audits. PMU will develop and disseminate guidelines for conducting Social Audits. The Social Audits would be conducted twice in a year preferably during May and November each financial year at a common place. Advance announcement of dates for Social Audits to be made by office bearers to ensure maximum participation by members, particularly women.

Proceeding of the Social Audits would be compiled by FWC office bearers with assistance from project/ forest staff and NGO staff, and would submit the copy of the same to concern range and division highlighting action to be taken by respective stakeholders on identified issues. The division would compile the results/ findings of all the Social Audits and submit a report to the circle and PMU every time.

(2) Statutory Financial Audits

Project would provide support to undertake annual statutory financial audits of the funds provided to various implementing agency during a financial year. Separate bank accounts would be opened for the GPs and the project divisions/ ranges for transferring the project funds, and would be annually audited by qualified and credible CA firm(s). Indicative TOR for statutory financial audits is presented in **Annex 3**.

(3) Concurrent Audits

Beside the annual Statutory Audits, there would be a system of undertaking concurrent audits every six-months at PMU and project divisions to keep close track of funds and its utilization, and also capacitate various project offices to maintain systematic and proper records as per the JICA norms. Qualified and credible CA firms experienced in auditing externally aided projects would be engaged for concurrent audits. Indicative TOR for concurrent audits is presented in **Annex 4**.

(4) Grievance Redressal, Right to Information Act (RTI) and Public Disclosure

In democratic set-ups, it is obvious to receive grievances, and thus during the project implementation, there may be instances where there are dis-agreements and dis-satisfactions at various level of operations. To ensure proper redressal of grievances under the project there would be two systems in place to register the grievances and provide adequate solutions viz., a) Quarterly

public hearing at circle offices, and b) Six-monthly Social Audits.

Proper records of all such applications received on grievances in the office of CCF would be maintained, and status on these application would be entered in the Grievance Register after each hearing. This register would be necessarily maintained at circle level and would be regularly monitored by PMU. Similarly, at GP level, grievances would be included in the Social Audit proceedings and follow-up would be taken-up at divisional level for its redressal in a time-bound manner.

Right to Information Act (RTI) has created additional opportunities for enhancing transparency and accountability. Thus, Project will make efforts to enhance sharing and disclosure of project information and facilitate community institutions, NGO/ civil society partnership resulting in increased responsiveness. The key elements of strategy that PMU would work on must include:

- a) Enhance disclosure of information utilizing project website;
- b) Facilitate NGO/ civil society involvement for social intermediation and other support;
- c) Develop a credible system to handle comments, suggestions and grievances;
- d) Define clearly incentives, benefits and remedies available; and
- e) Develop monitoring indicators for compliance to the above

D) PERFORMANCE INDICATORS

(1) Operation and Effect Indicators

To have the basis for evaluation of effects of the interventions that may produce substantial measurable results towards end of the Project, continuous monitoring and assessment is required in the project areas, which spreads over project divisions of the state. While tracking the physical and financial progress on an on-going basis would be a critical project management requirement, monitoring the project progress towards the project goals/ objectives, and sustainability dimension of the project intervention would be of immense strategic importance.

Performance Indicators basically are measure of project progress and realization for achieving project development objectives. Sustainable forests and biological diversity management is an adaptive management process, and requires evaluations of social, economic, and ecological conditions and trends that contribute to sustainability and that, therefore, reflect achievements toward the project goals.

As per JICA Operation Indicator and Effect Indicator Reference in ODA loan projects (Evaluation Department, JICA, July 2014) “Operation indicator” is used to quantitatively measure the operation of the Project, and “Effect indicator” is used to quantitatively measure the effects of the Project. In other words, when equipment, facilities, etc. (outputs) are installed or established by the Project, (1) ‘operation’ indicator is used to measure whether or not the outputs are appropriately run and used, and (2) ‘effect’ indicator is used to measure the effects which the outputs had on the recipients and the project area.

PMU will adopt ‘operation’ and ‘effect’ indicators for tracking project progress, and update status on the indicators in the Quarterly and Annual Reports. Key Operation and Effect Indicators are given in the log frame of the Project.

Annex 1: Indicative Terms of Reference (ToR) for Socio-Economic Surveys

A. Baseline Surveys

1. Introduction/ Background

Japan International Cooperation Agency (JICA) is providing financial assistance to Government of Himachal Pradesh to implement Himachal Pradesh Forest Ecosystem Management and Livelihood Improvement Project (HP FEM&LIP) through a registered autonomous society - Project Management Unit (PMU) created by the HP Forest Department (HPFD).

The overall goal/ objective of the project is – “Ecosystems services from forest areas are improved for sustainable socio-economic development in the state of Himachal Pradesh”.

For undertaking systematic evaluation on socio-economic dimension at different stages of the project it is essential to establish baseline prior to initiating interventions that would be useful to monitor the impact of project interventions and later utilize such data for comparison of the project performance and results. The socio-economic baseline data would be compared with the similar data collected at the mid-term and end-term stages to know the changes in socio-economic profile of the beneficiaries that occurred due to project interventions. The mid-term survey would be conducted after 5th year, whereas the end-term would be conducted after 10th year.

2. Objectives of the Study

The specific objectives of baseline survey is to:

- 1) To provide information on socio-economic status and related aspects to guide the planning of activities pertaining to the household and environment;
- 2) To determine the economic dependency of people living in the survey area on forests;
- 3) To explore suitable improvement in ecosystems and conservation strategies based on current use and value attached to forests;
- 4) To provide the variables that seem to change over time resulting from the project impacts; and,
- 5) To provide a monitoring framework to assess project impact during the project mid-term review and end of project evaluation.

3. Agencies to be Engaged and Process of Selection

A qualified specialized agency or institution would be hired following prescribe project procurement guidelines. Quality and Cost Based Selection (QCBS) method would be adopted for engaging the agency/ institution. This agency would be supervised and guided by the PMU/ PMC team.

4. Target Areas

The survey would cover representative VFDSs/ BMCs selected under different batches. For baseline ‘control’ villages from non-project areas having more or less similar conditions would also be selected. Sample would be drawn from the villages falling within project divisions and ranges.

5. Approach and Methodology – Outline

The selection of project villages would be done following randomized sampling techniques. Simple random sampling will be adopted to select households to participate in the survey as respondents. A highly representative sample with low uncertainty will, under almost any realistic circumstances, be 90-100 units for population over 1000 or say approximately 10%. If the target population is less varied, which may be the case with the target population around forest areas under the project, even less than 10% sample size may be chosen. Standard survey tools like questionnaire, check-list for FGD, and interview schedule etc. will be developed and pre-tested prior to initiation of survey. List of indicators will be finalized with the PMU prior to developing the tools.

Face-to-face interviews with households will be done during the survey. Prior to initiation of survey the PMU/ PMC will orient the survey team for developing better understanding on the requirements. Training would also focus on caution need to be taken by all interviewers/ survey teams. It would be mandatory for all survey staff to attend this training/ orientation, including data entry operators and key professionals, to be deployed by the survey agency. List of villages in sample would be finalized in consultation with PMU/ PMC.

6. Duration of the Study

The survey period would be not less than 4~5 months. The duration will include surveying the identified households/ areas as per the sampling plan, data compilation and cleaning, coding and data processing, table generation, analysis and report writing.

7. Outputs expected from the Agency/ Firm and Time Schedule

The agency/ firm is expected to submit following deliverables/ outputs to PMU as per the time schedule indicated in the following table.

Report	Submission Date
Inception Report Given the scope - understanding on the assignment, Approach and Methodology, survey tools, table of content/ template of the reports, Work Plan, Staff deployed along with the roles and responsibility of the Key Professionals etc. Inception report must also present the key identified baseline indicators for continuously monitoring and frequency for updating each of these indicators.	Within three weeks of signing of contract; three hard copies along with electronic file.
Baseline Study Reports (for all Batches) The baseline survey is expected to be completed within three months (each batch) from the date of signing of contract. The agency/ firm would inform about initiation and completion of survey work by written communication to PMU.	Within one-and-half months from completion of survey work; three hard copies along with electronic file.

8. Required Human Resources Inputs

Two key positions have been indicated, however at the time of actual execution of baseline and as per the scope of the survey, team of experts could be constituted. The survey agency must deploy a three teams comprising of 3 surveyors each (2 males and one female). Each team must be supervised by a senior Supervisor who is experienced in survey supervision and trained in conducting FGDs. The Supervisor would be responsible to guide the team, ensure quality data collection, conduct FGDs in sampled villages, and document FDG findings for report. Overall team would be guided by some senior management professional of the agency.

Position	Experience	Role/ Responsibility
Team Leader (one)	Demonstrated experience of minimum 10 years in development sector, particularly in forestry and in conducting of similar studies	For overall guidance and liaison with PMU. Responsible for preparation Inception Report and Baseline Report, presentations, and other outputs of desired quality and as per time-schedule. Should devote 20% of his time in field visits to familiarise with local conditions and supervise survey.
Sociologist (one)	Sociologist/ Social Scientist with minimum of 7 years of experience in development sector / conducting similar studies/research work. Having expertise in designing socio-economic surveys tools and indicators, FGDs and other field-based data gathering techniques etc.	Assisting Team Leader and work as per direction and TOR scope. Should devote 40% of his time in field visits to familiarise with local conditions and supervise survey.
Data Analyst (one)	Demonstrated experience of minimum 5 years in analysing similar studies, having training on statistical tools and can use software like SPSS for tabulation and data analysis	Assisting Team Leader and work as per direction and TOR scope. Database creation, data management, programming, table generation/ analysis etc.
Supervisors (Three)	Demonstrated experience of some 3-4 years in conduct of assessment surveys. Familiar with rural situations and local dialect.	Supervisor with the survey agency shall be responsible for collecting information from all secondary sources and as per survey tools, and to oversee, motivate and guide the surveyors. They are required to stay with the Surveyors in villages/ survey camp established in project areas. They would also take stock of day-to-day work and shall fix targets for next day.
Surveyors (9 nos.)	Demonstrated experience of some 2 years in conduct of assessment surveys, and administering the survey schedules. Familiar with rural situations and local dialect.	Surveyors would be responsible to interview respondents using survey tools, and report to Supervisors about the day's work. They need to consult their supervisors in case they feel any difficulty. Supervisor may further refer the query to superiors in case it is not handled at his / her level.

9. Performance Evaluation of Deliverables

Project Management Unit (PMU) would review the performance of the agency/ firm and would provide acceptance to the outputs delivered as per the TOR. The progress of the survey will be monitored by the PMU officials and its field officers from time to time.

B. Mid-Term Impact Surveys

1. Introduction/ Background

Japan International Cooperation Agency (JICA) is providing financial assistance to Government of Himachal Pradesh to implement Himachal Pradesh Forest Ecosystem Management and Livelihood Improvement Project (HP FEM&LIP) through a registered autonomous society - Project Management Unit (PMU) created by the HP Forest Department (HPFD).

The overall goal/ objective of the project is – “Ecosystems services from forest areas are improved for sustainable socio-economic development in the state of Himachal Pradesh”.

After the baseline has been established during the preparatory phase of the project, prior to start of the interventions, mid-term impact survey would be undertaken after 5th year of project initiation for making comparison and recording the changes in the socio-economic parameters of the target population that are directly benefitted from the project. The framework and methodology would be the same as has been adopted at the time of creation of baseline.

2. Objectives of the Study

The specific objectives of mid-term survey is to:

- 1) To measure changes in socio-economic status and related aspects pertaining to the households and environment;
- 2) To measure changes in the economic dependency of people living in the survey area on forests;
- 3) To measure changes in improvement in ecosystems and conservation strategies based on current use and value attached to forests;
- 4) To measure the changes in the variables identified during the baseline and may have resulted in the project impacts.

3. Agencies to be Engaged and Process of Selection

A qualified specialized agency or institution would be hired following prescribe project procurement guidelines. Quality and Cost Based Selection (QCBS) method would be adopted for engaging the agency/ institution. This agency would be supervised and guided by the PMU/ PMC team.

4. Target Areas

The survey would be undertaken as per the sampling plan finalized given the set of representative VFDSs/ BMCs under different batches covered during the baseline survey. The same set of ‘control’ villages from non-project areas that were considered during the baseline would be studied.

5. Approach and Methodology – Outline

The selection of project villages would be done following randomized sampling techniques. Simple random sampling will be adopted to select households to participate in the survey as respondents. Around 50% sample villages would be covered during the mid-term, out of those covered during the baseline survey. Standard survey tools like questionnaire, check-list for FGD, and interview

schedule etc. will be developed considering the baseline data set, and pre-tested prior to initiation of survey. List of indicators that was finalized with the PMU at the baseline would be updated after the mid-term survey.

Face-to-face interviews with households will be done during the survey. Prior to initiation of survey the PMU/ PMC will orient the survey team for developing better understanding on the requirements. Training would also focus on caution need to be taken by all interviewers/ survey teams. It would be mandatory for all survey staff to attend this training/ orientation, including data entry operators and key professionals, to be deployed by the survey agency. List of villages in sample would be finalized in consultation with PMU/ PMC.

6. Duration of the Study

The survey period would be not less than 3~4 months. The duration will include surveying the identified households/ areas as per the sampling plan, data compilation and cleaning, coding and data processing, table generation, analysis and report writing.

7. Outputs expected from the Agency/ Firm and Time Schedule

The agency/ firm is expected to submit following deliverables/ outputs to PMU as per the time schedule indicated in the following table.

Report	Submission Date
Inception Report Given the scope - understanding on the assignment, Approach and Methodology, survey tools, table of content/ template of the reports, Work Plan, Staff deployed along with the roles and responsibility of the Key Professionals etc. Inception report must also present the key identified at the baseline, and needs to be updated during the mid-term survey.	Within three weeks of signing of contract; three hard copies along with electronic file.
Mid-Term Study Reports (for all Batches) The baseline survey is expected to be completed within two-and-half months from the date of signing of contract. The agency/ firm would inform about initiation and completion of survey work by written communication to PMU.	Within one-and-half months from completion of survey work; three hard copies along with electronic file.

8. Required Human Resources Inputs

Two key positions have been indicated, however at the time of the mid-term survey and as per the scope of the survey, team of experts could be constituted. The survey agency must deploy a three teams comprising of 3 surveyors each (2 males and one female). Each team must be supervised by a senior Supervisor who is experienced in survey supervision and trained in conducting FGDs. The Supervisor would be responsible to guide the team, ensure quality data collection, conduct FGDs in sampled villages, and document FDG findings for report. Overall team would be guided by some senior management professional of the agency.

Position	Experience	Role/ Responsibility
Team Leader (one)	Demonstrated experience of minimum 10 years in development sector, particularly in forestry and in conducting of similar studies	For overall guidance and liaison with PMU. Responsible for preparation Inception Report and Baseline Report, presentations, and other outputs of desired quality and as per time-schedule. Should devote 20% of his time in field visits to familiarise with local conditions and supervise survey.
Sociologist (one)	Sociologist/ Social Scientist with minimum of 7 years of experience in development sector / conducting similar studies/research work. Having expertise in designing socio-economic surveys tools and indicators, FGDs and other field-based data gathering techniques etc.	Assisting Team Leader and work as per direction and TOR scope. Should devote 40% of his time in field visits to familiarise with local conditions and supervise survey.
Data Analyst (one)	Demonstrated experience of minimum 5 years in analysing similar studies, having training on statistical tools and can use software like SPSS for tabulation and data analysis	Assisting Team Leader and work as per direction and TOR scope. Database creation, data management, programming, table generation/ analysis etc.
Supervisors (Three)	Demonstrated experience of some 3-4 years in conduct of assessment surveys. Familiar with rural situations and local dialect.	Supervisor with the survey agency shall be responsible for collecting information from all secondary sources and as per survey tools, and to oversee, motivate and guide the surveyors. They are required to stay with the Surveyors in villages/ survey camp established in project areas. They would also take stock of day-to-day work and shall fix targets for next day.
Surveyors (9 nos.)	Demonstrated experience of some 2 years in conduct of assessment surveys, and administering the survey schedules Familiar with rural situations and local dialect.	Surveyors would be responsible to interview respondents using survey tools, and report to Supervisors about the day's work. They need to consult their supervisors in case they feel any difficulty. Supervisor may further refer the query to superiors in case it is not handled at his / her level.

9. Performance Evaluation of Deliverables

Project Management Unit (PMU) would review the performance of the agency/ firm and would provide acceptance to the outputs delivered as per the TOR. The progress of the survey will be monitored by the PMU officials and its field officers from time to time.

C. End-Term Impact Surveys

1. Introduction/ Background

Japan International Cooperation Agency (JICA) is providing financial assistance to Government of Himachal Pradesh to implement Himachal Pradesh Forest Ecosystem Management and Livelihood Improvement Project (HP FEM&LIP) through a registered autonomous society - Project Management Unit (PMU) created by the HP Forest Department (HPFD).

The overall goal/ objective of the project is – “Ecosystems services from forest areas are improved for sustainable socio-economic development in the state of Himachal Pradesh”.

After the baseline and the mid-term surveys have been completed, end-term impact survey would be undertaken after 10th year of project initiation for making comparison and recording the final impact and changes in the socio-economic parameters of the target population that are directly benefitted from the project. The framework and methodology would be the same as has been adopted at the time of baseline and mid-term surveys.

2. Objectives of the Study

The specific objectives of end-term survey is to:

- 1) To measure changes in socio-economic status and related aspects pertaining to the households and environment, and compare with baseline and mid-term status;
- 2) To measure changes in the economic dependency of people living in the survey area on forests, and compare with baseline and mid-term status;
- 3) To measure changes in improvement in ecosystems and conservation strategies based on current use and value attached to forests, and compare with baseline and mid-term status;
- 4) To measure the changes in the variables identified during the baseline and may have resulted in the project impacts, and compare with baseline and mid-term status.

3. Agencies to be Engaged and Process of Selection

A qualified specialized agency or institution would be hired following prescribe project procurement guidelines. Quality and Cost Based Selection (QCBS) method would be adopted for engaging the agency/ institution. This agency would be supervised and guided by the PMU/ PMC team.

4. Target Areas

The survey would be undertaken as per the sampling plan finalized given the set of representative VFDSs/ BMCs under different batches covered during the baseline survey. The same set of ‘control’ villages from non-project areas that were considered during the mid-term would be studied.

5. Approach and Methodology – Outline

The selection of project villages would be done following randomized sampling techniques. Simple random sampling will be adopted to select households to participate in the survey as respondents. Around 50% sample villages would be covered during the end-term, out of those covered during the baseline survey. These villages may be different (or some of these may be same) from the mid-

term survey villages, as 50% of the villages are randomly selected from those surveyed for the baseline. Standard survey tools like questionnaire, check-list for FGD, and interview schedule etc. will be developed considering the baseline and mid-term survey data set, and pre-tested prior to initiation of survey. List of indicators that was finalized with the PMU at the baseline would be updated after the end-term survey, and would also be compared with the mid-term status.

Face-to-face interviews with households will be done during the survey. Prior to initiation of survey the PMU/ PMC will orient the survey team for developing better understanding on the requirements. Training would also focus on caution need to be taken by all interviewers/ survey teams. It would be mandatory for all survey staff to attend this training/ orientation, including data entry operators and key professionals, to be deployed by the survey agency. List of villages in sample would be finalized in consultation with PMU/ PMC.

6. Duration of the Study

The survey period would be not less than 3~4 months. The duration will include surveying the identified households/ areas as per the sampling plan, data compilation and cleaning, coding and data processing, table generation, analysis and report writing.

7. Outputs expected from the Agency/ Firm and Time Schedule

The agency/ firm is expected to submit following deliverables/ outputs to PMU as per the time schedule indicated in the following table.

Report	Submission Date
<p>Inception Report</p> <p>Given the scope - understanding on the assignment, Approach and Methodology, survey tools, table of content/ template of the reports, Work Plan, Staff deployed along with the roles and responsibility of the Key Professionals etc. Inception report must also present the key identified at the baseline, and needs to be updated during the end-term survey and compared with the mid-term status.</p>	<p>Within three weeks of signing of contract; three hard copies along with electronic file.</p>
<p>End-term Study Reports (for all Batches)</p> <p>The baseline survey is expected to be completed within two-and-half months from the date of signing of contract. The agency/ firm would inform about initiation and completion of survey work by written communication to PMU.</p>	<p>Within one-and-half months from completion of survey work; three hard copies along with electronic file.</p>

8. Required Human Resources Inputs

Two key positions have been indicated, however at the time of end-term survey and as per the scope of the survey, team of experts could be constituted. The survey agency must deploy a three teams comprising of 3 surveyors each (2 males and one female). Each team must be supervised by a senior Supervisor who is experienced in survey supervision and trained in conducting FGDs. The Supervisor would be responsible to guide the team, ensure quality data collection, conduct FGDs in sampled villages, and document FDG findings for report. Overall team would be guided by some senior management professional of the agency.

Position	Experience	Role/ Responsibility
Team Leader (one)	Demonstrated experience of minimum 10 years in development sector, particularly in forestry and in conducting of similar studies	For overall guidance and liaison with PMU. Responsible for preparation Inception Report and Baseline Report, presentations, and other outputs of desired quality and as per time-schedule. Should devote 20% of his time in field visits to familiarise with local conditions and supervise survey.
Sociologist (one)	Sociologist/ Social Scientist with minimum of 7 years of experience in development sector / conducting similar studies/research work. Having expertise in designing socio-economic surveys tools and indicators, FGDs and other field-based data gathering techniques etc.	Assisting Team Leader and work as per direction and TOR scope. Should devote 40% of his time in field visits to familiarise with local conditions and supervise survey.
Data Analyst (one)	Demonstrated experience of minimum 5 years in analysing similar studies, having training on statistical tools and can use software like SPSS for tabulation and data analysis	Assisting Team Leader and work as per direction and TOR scope. Database creation, data management, programming, table generation/ analysis etc.
Supervisors (Three)	Demonstrated experience of some 3-4 years in conduct of assessment surveys. Familiar with rural situations and local dialect.	Supervisor with the survey agency shall be responsible for collecting information from all secondary sources and as per survey tools, and to oversee, motivate and guide the surveyors. They are required to stay with the Surveyors in villages/ survey camp established in project areas. They would also take stock of day-to-day work and shall fix targets for next day.
Surveyors (9 nos.)	Demonstrated experience of some 2 years in conduct of assessment surveys, and administering the survey schedules Familiar with rural situations and local dialect.	Surveyors would be responsible to interview respondents using survey tools, and report to Supervisors about the day's work. They need to consult their supervisors in case they feel any difficulty. Supervisor may further refer the query to superiors in case it is not handled at his / her level.

9. Performance Evaluation of Deliverables

Project Management Unit (PMU) would review the performance of the agency/ firm and would provide acceptance to the outputs delivered as per the TOR. The progress of the survey will be monitored by the PMU officials and its field officers from time to time.

Annex 2: Indicative Terms of Reference (ToR) for Physical Surveys for the Forest Growing Stock including NTFP/ MFP species, Soil & Water quality in Project Areas

A. Baseline Surveys

1. Introduction/ Background

Japan International Cooperation Agency (JICA) is providing financial assistance to Government of Himachal Pradesh to implement Himachal Pradesh Forest Ecosystem Management and Livelihood Improvement Project (HP FEM&LIP) through a registered autonomous society - Project Management Unit (PMU) created by the HP Forest Department (HPFD).

The overall goal/ objective of the project is – “Ecosystems services from forest areas are improved for sustainable socio-economic development in the state of Himachal Pradesh”.

The objective of establishing baseline on physical parameters is to monitor the impact of the project and later use the data for comparison of project performance and results. This will help to measure the success of projects with reference to changes in the growing stock, both qualitative and quantitative. Ideally it is useful to conduct Baseline/ Benchmark survey in the beginning of the project intervention. The baseline data would be compared with the similar data collected at the mid-term and end-term stages to know the changes in physical indicators that occurred due to project interventions. The mid-term survey would be conducted after 5th year, whereas the end-term would be conducted after 10th year.

2. Objectives of the Study

The baseline survey will concentrate on the following:

- ◆ Study of growing stock in general both in natural forests and plantations, quality of forest cover under different canopy density classes and distribution of major tree species of timber in plantations. Such study will also cover forests and plantations brought under the cover of PFM.
- ◆ NTFP plantations and natural forests including improved forests. The study will also identify areas for preservation of gene pool of medicinal herbs and shrubs in different forest types distributed in the selected tracts.
- ◆ Assessment of potential production of important NTFPs, the collection and processing of NTFPs which can significantly add to the enhancement of income beyond the project period.

Some of the aspects that should be covered under physical parameters for baseline survey, but not limiting to, include followings:

- ◆ Stock assessment – Total number, DBH, Height, Density
- ◆ Survival and growth of planted trees
- ◆ Quantitative and qualitative assessment of the forest produce
- ◆ Potential production of important NTFPs
- ◆ Identification of areas for preservation of gene pool of medicinal herbs and shrubs

- ◆ Carbon sequestration
- ◆ Groundwater level assessment and Water quality
- ◆ Soil characteristics , soil erosion and fertility

3. Agencies to be Engaged and Process of Selection

A qualified specialized agency or institution would be hired following prescribe project procurement guidelines. Quality and Cost Based Selection (QCBS) method would be adopted for engaging the agency/ institution. This agency would be supervised and guided by the PMU/ PMC team.

4. Target Areas

The survey would cover representative VFDSs/ BMCs selected under different batches. At the baseline ‘Long-term Ecological Monitoring (LTEM)’ plots would also be selected and geo-coded for data collection in future. Sample would be drawn from the forest areas falling within project divisions and ranges.

5. Approach and Methodology – Outline

Changes in forest condition are likely to be slow and gradual, with improvements in overall basal area density being around one per cent or less per year. The Long-term Ecological Monitoring (LTEMs) plots would be utilized for baseline data collection and for impact assessment, and thus one need to focus on parameters that are measurable and attributable to changes in forest composition reasonably expected within the lifespan of the project. Baseline would concentrate on creating status of the exiting situations in the project areas where interventions are being planned and implemented in coming years. This information set would be later utilized for detecting changes in populations of young and pole stage trees, herbs, shrubs, grasses, bamboo etc. The field based information would be incorporated in GIS platform using GPS based location coordinate information. This information can be utilized anytime for mapping activity using satellite based information. The selection of plots or survey tracts would be done following randomized sampling techniques.

Related studies indicate that the most significant and measurable changes can be anticipated in short period is in the <5 cm DBH size class and 5-10 cm DBH size class in terms of their overall representation (stems per hectare), and the occurrence of economic species within these classes. Changes will be more measurable in moderately open forest (40% ~ 70% canopy cover) and open forest (<40 % canopy cover), and rather less in densely stocked forest (>70 per cent canopy closure). Thus, one need to pay particular attention to detecting small changes in populations of young trees of economic species. This requires the use of LTEM plots that can be precisely relocated and measured again after a 4-5 years gap.

6. Duration of the Study

The survey period would be not less than 5~6 months. The duration will include surveying the identified households/ areas as per the sampling plan, data compilation and cleaning, coding and data processing, table generation, analysis and report writing.

7. Outputs expected from the Agency/ Firm and Time Schedule

The agency/ firm is expected to submit following deliverables/ outputs to PMU as per the time schedule indicated in the following table.

Report	Submission Date
Inception Report Given the scope - understanding on the assignment, Approach and Methodology, survey tools, table of content/ template of the reports, Work Plan, Staff deployed along with the roles and responsibility of the Key Professionals etc. Inception report must also present the key identified baseline indicators for continuously monitoring and frequency for updating each of these indicators.	Within three weeks of signing of contract; three hard copies along with electronic file.
Baseline Study Reports (for all Batches) The baseline survey is expected to be completed within four months (each batch) from the date of signing of contract. The agency/ firm would inform about initiation and completion of survey work by written communication to PMU.	Within one-and-half months from completion of survey work; three hard copies along with electronic file.

8. Required Human Resources Inputs

Three key positions have been indicated, however at the time of actual execution of baseline and as per the scope of the survey, team of experts could be constituted. Overall team would be guided by some senior management professional of the agency.

Position	Experience	Role/ Responsibility
Team Leader (one)	Demonstrated experience of minimum 10 years in development sector, particularly in forestry and in conducting of similar studies	For overall guidance and liaison with PMU. Responsible for preparation Inception Report and Baseline Report, presentations, and other outputs of desired quality and as per time-schedule. Should devote 30% of his time in field visits to familiarise with local conditions and supervise survey.
Forester/ Surveyor (one)	Demonstrative experience of minimum of 5 years for laying permanent plots/ similar studies/research work.	Assisting Team Leader and work as per direction and TOR scope. Would establish LTEM plots with the help of team and Forest staff at field level. He would also guide the survey team in data collection. Should devote 70% of his time in field visits to familiarise with local conditions and supervise survey.
GIS Specialist (one)	Demonstrated experience of minimum 3 years in analysing similar studies, having training on GIS tools and can use GIS software for data analysis/ producing outputs	Assisting Team Leader and work as per direction and TOR scope. He would geo-tag/ reference the LTEM plots. Database creation, data management, programming, map generation/ analysis etc.
Survey Team (6-9 nos.)	Demonstrated experience of some 3-4 years in conduct of forest baseline surveys and data collection, and preferably having forestry background. Familiar with rural situations and local dialect.	Shall be responsible for collecting information from all secondary/ primary sources and as per survey tools.

9. Performance Evaluation of Deliverables

Project Management Unit (PMU) would review the performance of the agency/ firm and would provide acceptance to the outputs delivered as per the TOR. The progress of the survey will be monitored by the PMU officials and its field officers from time to time.

B. Mid-term Impact Surveys

1. Introduction/ Background

Japan International Cooperation Agency (JICA) is providing financial assistance to Government of Himachal Pradesh to implement Himachal Pradesh Forest Ecosystem Management and Livelihood Improvement Project (HP FEM&LIP) through a registered autonomous society - Project Management Unit (PMU) created by the HP Forest Department (HPFD).

The overall goal/ objective of the project is – “Ecosystems services from forest areas are improved for sustainable socio-economic development in the state of Himachal Pradesh”.

The objective of undertaking the mid-term survey would be to measure changes in the growing stock, both qualitative and quantitative, along with other physical parameters for which the baseline has been created. The mid-term survey would be conducted after 5th year of project initiation. This will help to measure the success of projects with reference to changes in physical indicators that occurred due to project interventions.

2. Objectives of the Study

The mid-term survey will concentrate on the following:

- ◆ To measure changes in the growing stock in general both in natural forests and plantations, quality of forest cover under different canopy density classes and distribution of major tree species of timber in plantations. Such survey will also cover forests and plantations brought under the cover of PFM.
- ◆ To measure changes in the NTFP plantations and natural forests including improved forests. The survey will also measure changes in the areas for preservation of gene pool of medicinal herbs and shrubs in different forest types distributed in the selected tracts.
- ◆ To measure changes in the potential production of important NTFPs, the collection and processing of NTFPs which can significantly add to the enhancement of income beyond the project period.

Some of the aspects that should be covered to measure changes under physical parameters for mid-term survey, but not limiting to, include followings:

- ◆ Stock assessment – Total number, DBH, Height, Density
- ◆ Survival and growth of planted trees
- ◆ Quantitative and qualitative assessment of the forest produce
- ◆ Potential production of important NTFPs
- ◆ Identification of areas for preservation of gene pool of medicinal herbs and shrubs
- ◆ Carbon sequestration
- ◆ Groundwater level assessment and Water quality
- ◆ Soil characteristics , soil erosion and fertility

3. Agencies to be Engaged and Process of Selection

A qualified specialized agency or institution would be hired following prescribe project procurement guidelines. Quality and Cost Based Selection (QCBS) method would be adopted for

engaging the agency/ institution. This agency would be supervised and guided by the PMU/ PMC team.

4. Target Areas

The survey would cover representative VFDSs/ BMCs selected under different batches. The sampling plan and the sample size would be finalized based on the sites covered for the baseline. During the mid-term survey, already established/ identified 'Long-term Ecological Monitoring (LTEM)' plots would also be surveyed for data collection. Sample would be drawn from the forest areas already identified and surveyed during the baseline from within the project divisions and ranges.

5. Approach and Methodology – Outline

Changes in forest condition are likely to be slow and gradual, with improvements in overall basal area density being around one per cent or less per year. The Long-term Ecological Monitoring (LTEMs) plots would be utilized for data collection at mid-term stage as well for impact assessment based on the parameters that are measurable and attributable to changes in forest composition reasonably expected within the lifespan of the project. Mid-term survey would concentrate to measure changes in the existing situations in the project areas where interventions are being planned and implemented during the past 5 years. This information set would be utilized for detecting changes in populations of young and pole stage trees, herbs, shrubs, grasses, bamboo etc. The field based information would be incorporated in GIS platform using GPS based location coordinate information. This information will be utilized to make comparison with baseline stage, and for mapping activity using satellite based information. The selection of plots or survey tracts would be done following randomized sampling techniques. The mid-term survey would adopt the same methodology as has been adopted during the baseline so that the findings are comparable.

6. Duration of the Study

The survey period would be not less than 4~5 months. The duration will include surveying the identified households/ areas as per the sampling plan, data compilation and cleaning, coding and data processing, table generation, analysis and report writing.

7. Outputs expected from the Agency/ Firm and Time Schedule

The agency/ firm is expected to submit following deliverables/ outputs to PMU as per the time schedule indicated in the following table.

Report	Submission Date
Inception Report Given the scope - understanding on the assignment, Approach and Methodology, survey tools, table of content/ template of the reports, Work Plan, Staff deployed along with the roles and responsibility of the Key Professionals etc. Inception report must also compare the key indicators identified at baseline for updating and comparison.	Within three weeks of signing of contract; three hard copies along with electronic file.
Mid-term Study Reports (for all Batches) The mid-term survey is expected to be completed within three and half months from the date of signing of contract. The agency/ firm would inform about initiation and completion of survey work by written communication to PMU.	Within one-and-half months from completion of survey work; three hard copies along with electronic file.

8. Required Human Resources Inputs

Three key positions have been indicated, however at the time of actual execution of mid-term survey and as per the scope of the survey, team of experts could be constituted. Overall team would be guided by some senior management professional of the agency.

Position	Experience	Role/ Responsibility
Team Leader (one)	Demonstrated experience of minimum 10 years in development sector, particularly in forestry and in conducting of similar studies	For overall guidance and liaison with PMU. Responsible for preparation Inception Report and Baseline Report, presentations, and other outputs of desired quality and as per time-schedule. Should devote 30% of his time in field visits to familiarise with local conditions and supervise survey.
Forester/ Surveyor (one)	Demonstrative experience of minimum of 5 years for laying permanent plots/ similar studies/research work.	Assisting Team Leader and work as per direction and TOR scope. Would establish LTEM plots with the help of team and Forest staff at field level. He would also guide the survey team in data collection. Should devote 70% of his time in field visits to familiarise with local conditions and supervise survey.
GIS Specialist (one)	Demonstrated experience of minimum 3 years in analysing similar studies, having training on GIS tools and can use GIS software for data analysis/ producing outputs	Assisting Team Leader and work as per direction and TOR scope. He would geo-tag/ reference the LTEM plots. Database creation, data management, programming, map generation/ analysis etc.
Survey Team (6-9 nos.)	Demonstrated experience of some 3-4 years in conduct of forest baseline surveys and data collection, and preferably having forestry background. Familiar with rural situations and local dialect.	Shall be responsible for collecting information from all secondary/ primary sources and as per survey tools.

9. Performance Evaluation of Deliverables

Project Management Unit (PMU) would review the performance of the agency/ firm and would provide acceptance to the outputs delivered as per the TOR. The progress of the survey will be monitored by the PMU officials and its field officers from time to time.

C. End-term Impact Surveys

1. Introduction/ Background

Japan International Cooperation Agency (JICA) is providing financial assistance to Government of Himachal Pradesh to implement Himachal Pradesh Forest Ecosystem Management and Livelihood Improvement Project (HP FEM&LIP) through a registered autonomous society - Project Management Unit (PMU) created by the HP Forest Department (HPFD).

The overall goal/ objective of the project is – “Ecosystems services from forest areas are improved for sustainable socio-economic development in the state of Himachal Pradesh”.

The objective of undertaking the end-term survey would be to measure changes in the growing stock, both qualitative and quantitative, along with other physical parameters for which the baseline and mid-term status has been created. The end-term survey would be conducted after 5 years from mid-term assessment or 10th year of project initiation. This will help to measure the success of projects with reference to changes in physical indicators that occurred due to project interventions.

2. Objectives of the Study

The end-term survey will concentrate on the following:

- ◆ To measure changes in the growing stock in general both in natural forests and plantations, quality of forest cover under different canopy density classes and distribution of major tree species of timber in plantations. Such survey will also cover forests and plantations brought under the cover of PFM.
- ◆ To measure changes in the NTFP plantations and natural forests including improved forests. The survey will also measure changes in the areas for preservation of gene pool of medicinal herbs and shrubs in different forest types distributed in the selected tracts.
- ◆ To measure changes in the potential production of important NTFPs, the collection and processing of NTFPs which can significantly add to the enhancement of income beyond the project period.

Some of the aspects that should be covered to measure changes under physical parameters for end-term survey, but not limiting to, include followings:

- ◆ Stock assessment – Total number, DBH, Height, Density
- ◆ Survival and growth of planted trees
- ◆ Quantitative and qualitative assessment of the forest produce
- ◆ Potential production of important NTFPs
- ◆ Identification of areas for preservation of gene pool of medicinal herbs and shrubs
- ◆ Carbon sequestration
- ◆ Groundwater level assessment and Water quality
- ◆ Soil characteristics , soil erosion and fertility

3. Agencies to be Engaged and Process of Selection

A qualified specialized agency or institution would be hired following prescribe project procurement guidelines. Quality and Cost Based Selection (QCBS) method would be adopted for engaging the agency/ institution. This agency would be supervised and guided by the PMU/ PMC team.

4. Target Areas

The survey would cover representative VFDSs/ BMCs selected under different batches. The sampling plan and the sample size would be finalized based on the sites covered for the baseline as well as mid-term survey. During the end-term survey, already established/ identified 'Long-term Ecological Monitoring (LTEM)' plots would also be surveyed for data collection. Sample would be drawn from the forest areas already identified and surveyed during the baseline and mid-term from within the project divisions and ranges.

5. Approach and Methodology – Outline

Changes in forest condition are likely to be slow and gradual, with improvements in overall basal area density being around one per cent or less per year. The Long-term Ecological Monitoring (LTEMs) plots would be utilized for data collection at end-term stage as well for impact assessment based on the parameters that are measurable and attributable to changes in forest composition reasonably expected within the lifespan of the project. End-term survey would concentrate to measure changes in the exiting situations in the project areas where interventions are being planned and implemented during the past 5 years. This information set would be utilized for detecting changes in populations of young and pole stage trees, herbs, shrubs, grasses, bamboo etc. The field based information would be incorporated in GIS platform using GPS based location coordinate information. This information will be utilized to make comparison with baseline and mid-term status, and for mapping activity using satellite based information. The selection of plots or survey tracts would be done following randomized sampling techniques. The end-term survey would adopt the same methodology as has been adopted during the baseline and mid-term so that the findings are comparable.

6. Duration of the Study

The survey period would be not less than 4~5 months. The duration will include surveying the identified households/ areas as per the sampling plan, data compilation and cleaning, coding and data processing, table generation, analysis and report writing.

7. Outputs expected from the Agency/ Firm and Time Schedule

The agency/ firm is expected to submit following deliverables/ outputs to PMU as per the time schedule indicated in the following table.

Report	Submission Date
<p>Inception Report Given the scope - understanding on the assignment, Approach and Methodology, survey tools, table of content/ template of the reports, Work Plan, Staff deployed along with the roles and responsibility of the Key Professionals etc. Inception report must also compare the key indicators identified at baseline and mid-term for updating and comparison.</p>	<p>Within three weeks of signing of contract; three hard copies along with electronic file.</p>
<p>End-term Study Reports (for all Batches) The mid-term survey is expected to be completed within three and half months from the date of signing of contract. The agency/ firm would inform about initiation and completion of survey work by written communication to PMU.</p>	<p>Within one-and-half months from completion of survey work; three hard copies along with electronic file.</p>

8. Required Human Resources Inputs

Three key positions have been indicated, however at the time of actual execution of end-term survey and as per the scope of the survey, team of experts could be constituted. Overall team would be guided by some senior management professional of the agency.

Position	Experience	Role/ Responsibility
Team Leader (one)	Demonstrated experience of minimum 10 years in development sector, particularly in forestry and in conducting of similar studies	For overall guidance and liaison with PMU. Responsible for preparation Inception Report and Baseline Report, presentations, and other outputs of desired quality and as per time-schedule. Should devote 30% of his time in field visits to familiarise with local conditions and supervise survey.
Forester/ Surveyor (one)	Demonstrative experience of minimum of 5 years for laying permanent plots/ similar studies/research work.	Assisting Team Leader and work as per direction and TOR scope. Would establish LTEM plots with the help of team and Forest staff at field level. He would also guide the survey team in data collection. Should devote 70% of his time in field visits to familiarise with local conditions and supervise survey.
GIS Specialist (one)	Demonstrated experience of minimum 3 years in analysing similar studies, having training on GIS tools and can use GIS software for data analysis/ producing outputs	Assisting Team Leader and work as per direction and TOR scope. He would geo-tag/ reference the LTEM plots. Database creation, data management, programming, map generation/ analysis etc.
Survey Team (6-9 nos.)	Demonstrated experience of some 3-4 years in conduct of forest baseline surveys and data collection, and preferably having forestry background. Familiar with rural situations and local dialect.	Shall be responsible for collecting information from all secondary/ primary sources and as per survey tools.

9. Performance Evaluation of Deliverables

Project Management Unit (PMU) would review the performance of the agency/ firm and would provide acceptance to the outputs delivered as per the TOR. The progress of the survey will be monitored by the PMU officials and its field officers from time to time.

Annex 3: Terms of Reference (ToR) for Statutory Financial Audits

1. Introduction/ Background

Japan International Cooperation Agency (JICA) is providing financial assistance to Government of Himachal Pradesh to implement Himachal Pradesh Forest Ecosystem Management and Livelihood Improvement Project (HP FEM&LIP) through a registered autonomous society - Project Management Unit (PMU) created by the HP Forest Department (HPFD).

The overall goal/ objective of the project is – “Ecosystems services from forest areas are improved for sustainable socio-economic development in the state of Himachal Pradesh”.

According to the Society Registration Act, a society is required to undertake a statutory annual audit conducted by a Chartered Accountant (CA). Thus, annual statutory audits by CA would be carried out for the accounts of PMU, and if required further investigate the project accounts at the divisions and with the community level institutions.

2. Objectives of the Study

The specific objectives of financial audits is to:

- 1) To comply with the government laws and regulations;
- 2) To establish financial discipline and control;
- 3) To supply annual Audited Reports to JICA to confirm the reimbursement claims.

3. Agencies to be Engaged and Process of Selection

A qualified specialized agency or institution would be hired following prescribe project procurement guidelines. Quality and Cost Based Selection (QCBS) method would be adopted for engaging the agency/ institution. Multiple CA firms could be hired for auditing the VFDS/ BMC project accounts. One CA Firm will be hired exclusively to audit PMU and DMU accounts.

4. Target Locations

All key accounting locations where the project funds are extended for implementation/ execution of works viz., PMU, DMUs and VFDSs/ BMCs selected under the project.

5. Outline of the Tasks/ Scope of Assignment

- 1) To carry out statutory audit at PMU, DMU and VFDS/ BMC levels immediately after the close of financial year.
- 2) Thoroughly check all the financial transaction, and confirming that transactions are properly recorded as per financial and accounting rules/ system.
- 3) To check all major payments, tenders and their administrative & financial approval.
- 4) To check proper accounting/indenting of stores, inventory, physical verification of all inventory and reconciliation and neutralization of difference as per accounts and as per the physical verification.
- 5) To check that fixed asset register is updated at the time of capitalization/purchase/disposal of assets and location/situation of each fixed assets is properly reflected in the register. To check

proper accounting entries in cases where assets have been declared obsolete/ unserviceable/ buyback. Status of physical verification and proper identification on fixed assets.

Reconciliation of fixed asset register with financial records and difference if any between the two figures be rectified.

- 6) To check bank reconciliation statement of the bank account and passing of adjustment entries;
- 7) To check the log books of the vehicles;
- 8) Any other item relevant to the work of auditing and also to look into the other financial matters related to the project implementation;
- 9) Preparations, Compilation and Certification of Annual Accounts to ensure their arithmetical accuracy as well as its presentation according to the Uniform Format for Autonomous Bodies issued by Comptroller General of Accounts, New Delhi/ JICA.

6. Duration of the Study

The audit period would be not less than 2~3 months. The duration will include visiting all project accounting locations and preparing audit report.

7. Outputs expected from the Agency/ Firm and Time Schedule

Audit Report on standard auditing format applicable for externally aided projects. In addition, suggestion will be provided for improving and strengthening accounting and financial discipline.

8. Required Human Resources Inputs

Based on the volume of work/ accounting locations and number of VFDS/ BMC, duration of the audit would be fixed by PMU at the time of contract.

9. Performance Evaluation of Deliverables

Project Management Unit (PMU) would review the performance of the CA firm and would provide acceptance to the outputs delivered as per the TOR.

Annex4: Terms of Reference (ToR) for Concurrent Financial Audits

1. Introduction/ Background

Japan International Cooperation Agency (JICA) is providing financial assistance to Government of Himachal Pradesh to implement Himachal Pradesh Forest Ecosystem Management and Livelihood Improvement Project (HP FEM&LIP) through a registered autonomous society - Project Management Unit (PMU) created by the HP Forest Department (HPFD).

The overall goal/ objective of the project is – “Ecosystems services from forest areas are improved for sustainable socio-economic development in the state of Himachal Pradesh”.

To establish internal financial discipline and control, concurrent audits would be instituted by PMU, quarterly or biannually. Such concurrent audits would be regularly reviewed by GB.

2. Objectives of the Study

The specific objectives of financial audits is to:

- 1) To build the capacities of the key stakeholders to ensure proper accounting and book keeping;
- 2) To keep close track of funds and its utilization, and to establish financial discipline and control;
- 3) Preparatory exercise to prepare error-free Statement of Expenditures (SOEs) and file accurate reimbursement claims with JICA/ CAAA.

3. Agencies to be Engaged and Process of Selection

A qualified specialized agency or institution would be hired following prescribe project procurement guidelines. Quality and Cost Based Selection (QCBS) method would be adopted for engaging the agency/ institution. One CA Firm will be hired exclusively to conduct concurrent audit of PMU and DMU accounts every six-months.

4. Target Locations

All key accounting locations where the project funds are extended for implementation/ execution of works viz., PMU and DMUs under the project.

5. Outline of the Tasks/ Scope of Assignment

- 1) To carry out internal audit biannually and report during the financial year;
- 2) To formulate system and procedure, where ever required so that proper accounting and books of accounts are maintained;
- 3) Thoroughly check all the financial transaction, and confirming that transactions are properly recorded as per financial and accounting rules/ system.
- 4) To check all major payments, tenders and their administrative & financial approval.
- 5) To check posting of entries in the Cash Book, Journal and General Ledger and to guide the staff to write these books, in case any deficiencies are observed;
- 6) To check proper accounting/indenting of stores, inventory, physical verification of all inventory and reconciliation and neutralization of difference as per accounts and as per the physical verification.

- 7) To check that fixed asset register is updated at the time of capitalization/purchase/disposal of assets and location/situation of each fixed assets is properly reflected in the register. To check proper accounting entries in cases where assets have been declared obsolete/ unserviceable/ buyback. Status of physical verification and proper identification on fixed assets.
Reconciliation of fixed asset register with financial records and difference if any between the two figures be rectified.
- 8) To check preparation of bank reconciliation statement of the bank account and passing of adjustment entries;
- 9) To check the log books of the vehicles;
- 10) To check if proper compliances of deductions of TDS and payments of taxes as per Income Tax and GST regulations are being made;
- 11) To check if filing of Tax Returns both for Income Tax and GST as per financial transactions are being done regularly and in timely manner;
- 12) To settle the cases if it falls under scrutiny in the Income Tax department and/ or GST
- 13) To check preparation, reconciliation and issuance of Utilization Certificates (UCs) and Statement of Expenditures (SoEs) for their onward submission to JICA and CAAA, Govt. of India, New Delhi;
- 14) To provide clarifications/replies to the queries raised by the Statutory Auditors and all concerned;
- 15) Any other item relevant to the work of auditing and also to look into the other financial matters related to the project implementation;

6. Duration of the Study

The audit period would be not less than 2~3 months every six-months. The duration will include visiting all project accounting locations and preparing audit report.

7. Outputs expected from the Agency/ Firm and Time Schedule

Audit Report on standard auditing format applicable for externally aided projects. In addition, suggestion will be provided for improving and strengthening accounting and financial discipline.

8. Required Human Resources Inputs

Based on the volume of work/ accounting locations, duration of the audit would be fixed by PMU at the time of contract.

9. Performance Evaluation of Deliverables

Project Management Unit (PMU) would review the performance of the CA firm and would provide acceptance to the outputs delivered as per the TOR.

Attachment II.3.7.4.7 TOR for Basic Study for Strengthening of ICT at HPFD

1. Introduction

MIS, GIS and other ICT related activities and their outputs to be produced under the Project are expected to be expanded and to be utilised at entire HPFD. Such transfer of project's assets and resources to entire HPFD is planned to be conducted at the Phase-out phase of the Project and onward. However, in order to make such transfer more effectively and practical to be used by the entire HPFD, a study which enable trial usages of project base MIS/GIS/ICT in non-project divisions and preparation of an improvement plan to reflect lessons from the trial usages i) in existing project GIS/MIS/ICT, and ii) for future usages by the entire HPFD.

2. Objectives

The objectives of the study are to;

- ◆ Assess the applicability of the MIS, GIS and other ICT related methodologies under the Project for further updates in more effective and realistic ways, and
- ◆ Recommend toward future expansion of the project based systems into the entire HPFD

3. Agencies to be engaged and Process of Selection

The PMU will request the listed institutions for submission of proposals to conduct the study as an outsourced work. The procurement committee or a special committee constituted at the PMU level with representatives from HPFD, PMC and external experts will evaluate the proposals and commission the task to the eligible institution.

4. Target Area

Non-Project divisions (at least one division each from territorial divisions and wildlife divisions)

5. Approach and Methodology

5.1 Trial Application of the Project GIS/ MIS /Mobile Applications and Other Developed ICT Methodologies

The actual trial application can be conducted by officers/staff of selected divisions, however, the outsourced agency shall support the trial activities for its smooth implementation. If required, initial trainings for officers/staff of selected divisions shall be designed and provided which needs to be finalised together with PMU/ PMC.

5.2 Review and Assess the Trials and Develop Improvement Plans

The outsourced agency shall review and analyse the results of the trial applications and assess advantages and disadvantages of current adopted methodologies under the Project. Feedback or suggestions from officers/staff from the selected divisions as well as PMC or external experts shall also be compiled. Accordingly, the agency shall prepare a review and assessment report including the improvement plans.

5.3 Update the Existing Methodologies of GIS/MIS/ICT based on Improvement Plans

The outsourced agency shall organise a consultation meeting with PMU/ PMC to finalise the submitted Improvement Plans. Following the approved plan by PMU, applicable interventions shall be made mainly by the concerned staffs/specialists of PMU for the GIS/MIS/ICT updates.

5.4 Recommendation Toward the Application in Entire HPFD

After preparing the review and assessment report as described in section 5.3, the outsourced agency shall prepare a report on recommendation for expanding the project based systems to entire HPFD which to be conducted at the Phase-out phase of the Project and onward.

5. Duration

The overall study shall be completed within two and a half years, including one year for trial application of the project GIS/ MIS/ ICT methodologies and four months for training (if required). This study shall be initiated in the middle of the project period after the project GIS/MIS/ICT are developed.

6. Outputs

- a) Review and assessment report of the trial activities including Improvement Plans, and
- b) Report on recommendation toward the application in entire HPFD

7. Required Human Resource Input

Indicative human resource inputs required are indicated in **Table 1** below.

Table 1 Indicative Human Resource Inputs for the Proposed Study

No.	Activity	Input
1	Trial Application of the Project GIS/ MIS /Mobile Applications and Other Developed ICT Methodologies	Input: 2 experts Duration: 16 months (4 months for training (if required), 12 months for trial)
2	Review and Assess the Trials and Develop Improvement Plans	Input: 2 experts Duration: 5 months
3	Update the Existing Methodologies of GIS/MIS/ICT based on Improvement Plans	Input: 2 experts and 2 assistants Duration: 8 months
4	Recommendation Toward the Application in Entire HPFD	Input: 2 experts Duration: 1 month

Source: JICA Study Team (2017)

END

Attachment II.3.7.4.8 Terms of Reference for Project Management Consultant for Himachal Pradesh Forest Ecosystems Management and Livelihoods Improvement Project

Terms of Reference for Project Management Consultant for Himachal Pradesh Forest Ecosystems Management and Livelihoods Improvement Project

Chapter 1. Background

- The Government of Himachal Pradesh has received a loan from the Japan International Cooperation Agency (hereinafter referred to as "JICA") to finance the Himachal Pradesh Forest Ecosystems Management and Livelihoods Improvement (hereinafter referred to as "the Project") which is to enhance sustainable management of ecosystems of forests in the project area.
- The outline of the Project is as follows:
 - Executing Agency: Project Management Unit (PMU) for the Project, Himachal Pradesh Forest Ecosystem Management Society (HPFEMS)
 - Location of the Project: 17 territorial divisions (Bilaspur, Mandi, Nachan, Suket, Jogindernagar, Kullu, Parbati, Banjar (Seraji), Anni, Lahaul, Kinnaur, Shimla, Theog, Rohru, Chopal, Kotgarh, and Rampur) and 2 wildlife divisions (Kullu Wildlife and Spiti Wildlife)
 - The Project is expected to be completed by 2028.
- At this moment, the Project is expected to comprise of the following components:

Components	Main Activities
Component 1: Sustainable Forest Ecosystem Management	1) Preparatory Works for Participatory Forest Management (PFM) 2) PFM Mode 3) Training of VFDS 4) Department Mode 5) Training of Project related Staff of HPFD 6) Research
Component 2: Sustainable Biodiversity Management	1) Scientific Biodiversity Management <ul style="list-style-type: none"> ➤ Preparatory Works ➤ Protected area management improvement in core zone and buffer zone ➤ Human-wildlife conflict mitigation/management ➤ Wildlife habitat improvement ➤ Recovery programmes for endangered wildlife 2) Training of Project related Staff of HPFD 3) Research 4) Community Based Biodiversity Management <ul style="list-style-type: none"> ➤ Preparatory Works ➤ Community Based Biodiversity Management ➤ SATOYAMA based Biodiversity Conservation Activities 5) Training of BMC and sub-committee
Component 3: Livelihoods Improvement Support	1) Community Development <ul style="list-style-type: none"> ➤ Preparation of CD&LIP ➤ Transfer of Funds ➤ Implementation of CD activities ➤ Training Programmes for Community Development ➤ Research: Pilot Project on Hydro Cultural Fodder Production 2) NTFP based livelihood improvement

	<ul style="list-style-type: none"> ➤ Preparatory Works ➤ NTFP Cluster and Enterprise Development ➤ NTFP Research & Development ➤ NTFP Cultivation ➤ NTFP Market Research and ➤ Training and Extension <p>3) Non-NTFP based livelihood improvement</p> <ul style="list-style-type: none"> ➤ Preparation of Livelihood Improvement Strategy and Plan ➤ Preparation of CD&LIP ➤ Formation/ Reviving CIVs/ SHGs ➤ Implementation of Household/ Community level livelihood improvement ➤ Promotion of Cluster based livelihood activities ➤ Training Programmes for Livelihood Improvement ➤ Capacity Development for CIGs/ SHGs and Cluster Based Organisations
Component 4: Institutional Capacity Strengthening	<p>1) Preparatory Works</p> <p>2) Capacity Development</p> <p>3) M&E</p> <p>4) (Research: Basic Study for Strengthening of ICT at HPFD)</p> <p>5) PMC</p> <p>6) Phase out</p>

■ The Government of Himachal Pradesh intends to use a part of the proceeds of the loan for eligible payments for consulting services for which this ToR is issued.

■ Technical information: available relevant basic data and studies, technical standard or specifications to be used, etc.

■ Related projects: Swan River Integrated Watershed Management Project, Forest Ecosystem Climate Proofing Project, Mid-Himalayan Watershed Management Project

Chapter 2. Objectives of Consulting Services

The consulting services shall be provided by an international consulting firm (hereinafter referred to as "the Consultant") in compliance with Guidelines for the Employment of Consultants under Japanese ODA Loans, April 2012. The objective of the consulting services is to assist the Project Management Unit of the Project (hereinafter referred to as PMU) established at HPFEMS in implementation of the project activities by providing the following services:

- | |
|---|
| <ul style="list-style-type: none">(1) Assistance in the management of the project(2) Technical assistance in the implementation of the project components/activities in an efficient and effective manner(3) Facilitation of implementation of Environmental Management Plan (EMP) and Environmental Monitoring Plan (EMoP)(4) Technology Transfer |
|---|

Chapter 3. Scope of Consulting Services

(1) Assistance in the management of the project

The Consultant shall:

- (a) Assist PMU in managing the project in an effective and efficient manner.
- (b) Assist PMU in periodical monitoring of the project activities with the monitoring formats and improving the project design, framework, and systems based on the monitoring data stored in the GIS-based monitoring system.
- (c) Assist PMU in preparing annual work and budget plans based on the appropriate estimation of work quantity as well as unit costs of the respective inputs.
- (d) Assist PMU in enhancing the capacity of stakeholders in sustainable forest and biodiversity management
- (e) Assist PMU in procuring the necessary small equipment for the project implementation.
- (f) Assist PMU in the proper fund management and smooth communication/coordination with JICA.
- (g) Assist PMU in providing guidance and orientation to FCCUs, DMUs, FTUs and other specialized agencies for implementation of the projects.
- (h) Assist PMU in preparing TORs for the project activities to be outsourced to the contractors.
- (i) Assist PMU in monitoring and supervising the works undertaken specialized agencies to secure the expected outputs.
- (j) Assist PMU in designing and developing information dissemination project materials.
- (k) Assist PMU in monitoring the progress of the project, assessing the results and effects of the project activities, solving any issues and problems that might hinder the effective and efficient operations of the project, and draw lessons learned from the implementation of the project over the course of the project.
- (l) Assist PMU in reporting any matters to JICA.

(2) Technical assistance in the implementation of the project components/ activities in an efficient and effective manner

The Consultant Shall

- (a) Assist PMU in designing participatory forest management component and capacity building sub-component of VFDSs
- (b) Assist PMU in designing community based biodiversity management sub-component
- (c) Assist PMU in implementing Community Development and Livelihood Activities
- (d) Assist PMU in ensuring Gender Mainstreaming
- (e) Assist FCCUs/DMUs / FTUs to strengthen their technical, managerial, and administrative capacities for implementation and management of the project.
- (f) Assist PMU/ FCCUs/DMUs / FTUs in providing orientation, technical guidance, and advice to specialized agencies for the effective implementation of the project activities.
- (g) Assist PMU in developing a GIS-based monitoring system and operationalize at the divisional and

range levels with a user friendly database and simplified monitoring formats necessary for regular monitoring.

- (h) Assist PMU/ FCCUs/DMUs / FTUs in improving the monitoring system by periodically checking the use of the system.
- (i) Assist PMU in monitoring the planning process of VFDS/BMC
- (j) Assist PMU in preparing the phase-out strategies
- (k) Assist PMU in developing guidelines and manuals relevant to implementation of the project
- (l) Assist PMU/ / FCCUs/DMUs / FTUs and other relevant stakeholders in ensuring that local communities could obtain the maximum benefit from the project activities and forest management activities in the post project period.
- (m) Assist PMU in preparing and submitting the plans to JICA for approval.
- (n) Provide technical assistance to PMU/ FCCUs/DMUs / FTUs and other specialized agencies.

(3) Facilitation of implementation of Environmental Management Plan (EMP) and Environmental Monitoring Plan (EMoP)

The Consultant shall:

- (a) Assist PMU in reviewing and updating the environmental management and monitoring plans based on the Environmental and Social Assessment Framework.
- (b) Assist PMU in introducing the project outline including potential environmental and social issues to local communities residing in the target communes through public consultations;
- (c) Assist PMU in reviewing and supervising the contractors' environmental protection/management plans to be prepared by the contractors in accordance with EMP and make recommendations to PMU regarding any necessary amendments for its approval;
- (d) Assist PMU in ensuring that the measures identified in the EMP are implemented;
- (e) Assist PMU in monitoring the effectiveness of EMP and negative impacts on environment caused by the project activities and figuring out feasible solutions and measures so that PMU can improve situation when necessary;
- (f) Assist PMU in enhancing the capacity of / FCCUs/divisional offices/ range offices/ FTUs staff on environmental management through on-the-job training on environmental assessment techniques, mitigation measure planning, supervision and monitoring, and reporting.

(4) Technology transfer

The Consultant shall carry out the technology transfer as an important aspect in design and supervision works. The Consultant shall provide the opportunity to PMU officers and staffs to be involved in the working team of the Consultant during the implementation of the project activities. If requested by PMU, the Consultant shall demonstrate the necessary technical procedures. The consultant shall assist PMU and its staff to build their capacity as a part of on the job training under the Project.

Chapter 4. Expected Time Schedule

The total duration of consulting services will be 36 months. The implementation schedule expected is as shown in Table 4-1.

Table 4-1: Implementation Schedule Expected

Key Activities	Date	Duration in Months
Commencement of Consulting Services	1 st April 2019	36
Assistance in preparation, implementation, and monitoring of sustainable forest ecosystem management related activities	April 2019– end of March 2022	
Assistance in preparation, implementation, and monitoring of sustainable biodiversity management related activities	April 2019– end of March 2022	36
Assistance in preparation, implementation, and monitoring of Livelihood Improvement Support related activities	April 2019– end of March 2022	36
Assistance in preparation, implementation, and monitoring of institutional capacity strengthening related activities	April 2019– end of March 2022	36
Project Management related support	April 2019– end of March 2022	36
Termination of Consulting Services	31st March 2022	-

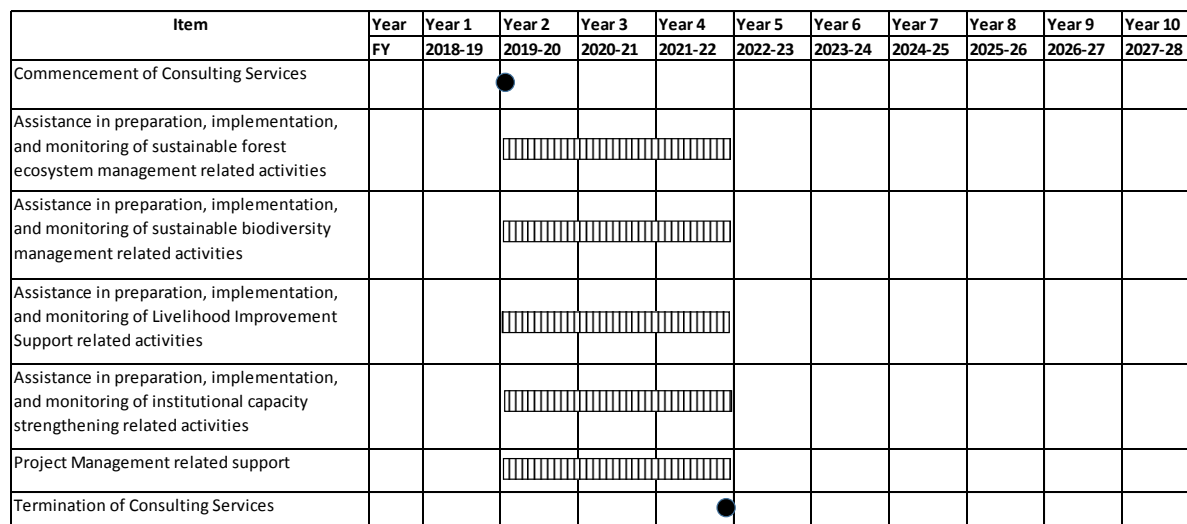


Figure 4-1: Indicative Schedule

Chapter 5. Staffing

One positions of Professional (A) consultants and 8 positions of Professional (B) consultants will be engaged, over 36 months' duration of consulting services, for a total of 10 man-months for Professional (A) and 135 man-months for Professional (B) consultants.

(1) Qualification of key Team Members

The qualification of key Team Members is shown in Table 5-1.

Table 5-1: Qualification of key Team Members

Designation	Qualification
Team Leader/ Project Management/ Community Based Forest & Biodiversity Management (Professional B)	<p><u>Education:</u></p> <ul style="list-style-type: none"> - Post Graduate in Forestry, Natural Resource Management, Biodiversity conservation or other related fields <p><u>Experience:</u></p> <ul style="list-style-type: none"> - Experience in the field of community based forest management, biodiversity conservation/ management: 15 years or more - Experience of consulting services for more than four forest management, afforestation or biodiversity conservation, projects in India or other Asian countries - Experiences in working in the forestry project in other himalayan states including North Eastern States - At least three experiences of leading a consultants' team as the Team Leader or the Co-Team Leader - More than one experience in leading the donor funded projects/studies <p><u>Language (English):</u></p> <ul style="list-style-type: none"> - Proficient in writing and speaking <p><u>Regional Experience:</u></p> <ul style="list-style-type: none"> - Familiarity and Experience in South Asia, particularly in India
Co-Team Leader/ Community Development/ Gender (Professional B)	<p><u>Education:</u></p> <ul style="list-style-type: none"> - Post Graduate in Sociology/ Rural Sociology, Rural Development, Natural Resource Management, Gender studies or other related fields <p><u>Experience:</u></p> <ul style="list-style-type: none"> - Experience in the Community Development/ Natural Resource Management: 15 years or more. - Experience of consulting services for more than three sustainable forest management projects - Experiences in consulting services in other Himalayan states including North Eastern States - At least one experience of leading a consultants' team as the Team Leader or the Co-Team Leader <p><u>Language (English):</u></p> <ul style="list-style-type: none"> - Proficient in writing and speaking
Soil Water Conservation/ Construction Management	<p><u>Education:</u></p> <ul style="list-style-type: none"> - Post Graduate in civil engineering, construction management, or other related fields <p><u>Experience:</u></p>

Designation	Qualification
(Professional A)	<ul style="list-style-type: none"> - Experience in the field of soil water/moisture conservation / civil engineering in the forest area especially civil engineering of landslide, construction management: 15 years or more - Experience of consulting services for more than three projects relevant to planning, designing, supervision of soil water/moisture conservation and construction managements - At least one donor funded project in sustainable forest management/ natural resource management - Experience of designing and implementation of landslide/ landslip control measures is desirable <p><u>Language (English):</u></p> <ul style="list-style-type: none"> - Proficient in writing and speaking
Biodiversity Conservation (Professional B)	<p><u>Education:</u></p> <ul style="list-style-type: none"> - Post Graduate in Biodiversity conservation, Wildlife Management, Forestry, Natural Resource Management, Protected Area Management, or other related fields <p><u>Experience:</u></p> <ul style="list-style-type: none"> - Experience in the field of sustainable biodiversity conservation/ management: 10 years or more - Experience of consulting services for more than three biodiversity conservation, forest management or afforestation projects in India or other Asian countries - At least one donor funded projects in sustainable biodiversity conservation/ management - Experience of designing and implementation of community-based natural resource management (including SATOYAMA initiative) or biodiversity management project is desirable <p><u>Language (English):</u></p> <ul style="list-style-type: none"> - Proficient in writing and speaking
Livelihood (Professional B)	<p><u>Education:</u></p> <ul style="list-style-type: none"> - Post Graduate Degree in Sociology/ Rural Development/ Natural Resource Management/ Rural Marketing/ Economics/ Sociology/ Business Administration and other related field in livelihood improvement <p><u>Experience:</u></p> <ul style="list-style-type: none"> - Experience in the livelihood development: 10 years or more - Experience of consulting services as a livelihood specialist for more than three projects - At least one donor funded projects in livelihood development, sustainable forest management, or natural resource management - Capacity to undertake market/ value chain assessment and business planning - Experience in cluster based livelihood promotion - Proven records of research/ field work on livelihoods interventions in the Himalayan Region <p><u>Language (English):</u></p> <ul style="list-style-type: none"> - Proficient in writing and speaking

Consultant may propose other experts and supporting staffs required to accomplish the tasks outlined in the ToR.

(2) Scope of works for the respective personnel

Detailed information on the major tasks and duties each member of PMC shall perform is provided as follows:

No	Position	I or L	Major Tasks and Duties
B-1	Team Leader/ Project Management/ Community Based Forest & Biodiversity Management	I (Pro-A)	<p>The Team Leader/ Project Management/ Community Based Forest & Biodiversity Management will assist PMU in the following aspects (As the Team Leader / Project Management):</p> <ol style="list-style-type: none"> Maintain close coordination with PMU and offices concerned and assist PMU in coordinating with JICA; Guide and supervise the activities of all PMC specialists, both International and National consultants; supervise the activities of all office staff of Project Consultants; Undertake the managerial responsibilities of PMC, including seeking approvals from PMU on mobilisations/ demobilisations and field visits by PMC specialists; Make suggestions to PMU, and communicate inputs of the specialists on various project aspects; Participate in various meetings and events, and with specialists as per requirement and request from PMU; Preparing/ reviewing guidelines and manuals relating to project management, accounting procedures and procurement; Prepare overall work plan of PMC; Compile all periodical reports of consulting services and responsible for outputs of reports (inception reports, monthly, quarterly, annual reports and completion report); Undertake field visits to project sites and prepare Back-to-Office report for PMU; Prepare monthly accomplishment reports pertaining to his/her speciality, Ensure that all the scope of consultancy is accomplished. <p>The Team Leader/ Project Management/ Community Based Forest & Biodiversity Management will assist PMU in the following aspects (As the / Community Based Forest & Biodiversity Management):</p> <ol style="list-style-type: none"> Prepare and review guidelines and manuals relating to the community mobilization, micro planning/ annual planning, community based organisation management; Plan overall capacity development activities for project implementation units including community based organisations; Monitor the work progress;
A-1	Soil Water Conservation/ Construction Management	I (Pro-A)	<p>The Soil Water Conservation/ Construction Management Specialist will assist PMU in:</p> <ol style="list-style-type: none"> Prepare TOR for subcontracts, strategies and plans for site selection, designs and implementation of soil water conservation, landslide control activities and other construction works to be taken up in the Project; Survey and analysis for identifying locations and designs of soil water conservation, landslide control activities and other construction works in the project area; Recommend alternative project sites/designs if investigation results are not favourable for the project interventions Selection of sites, designs method for types of interventions to be considered for soil and water conservation, landslide control activities and other construction works Prepare TOR and subcontract of preparing of engineering design, drawings, work specification, schedule, cost estimates, contract documents and other requirements of civil engineering works to be constructed in the Project; Procure contractor(s) for civil engineering works; Supervise the activities of above contractor and ensuring the quality of outcome;

No	Position	I or L	Major Tasks and Duties
			<p>h) Monitor soil water conservation, landslide control activities and construction works directly implemented by the Project</p> <p>i) Plan and conduct training for engineers and relevant stakeholders in various technologies in soil water conservation and construction management</p> <p>j) Prepare the soil water conservation, landslide control and construction management related guidelines and manuals;</p> <p>The Soil Water Conservation/ Construction Management Specialist will:</p> <p>a) Act as a resource person for relevant training programs</p> <p>b) Undertake any other tasks requested by the PMC Team Leader;</p> <p>c) Undertake field visits to project sites and prepare Back-to-Office report for PMU</p> <p>d) Prepare brief travel reports and monthly accomplishment reports pertaining to his/ her specialty and submit them to the Team Leader.</p>
B-2	Co-Team Leader/ Community Development/ Gender	L (Pro-B)	<p>The Co-Team Leader/ Community Development/ Gender will assist PMU in the following aspects:</p> <p>a) Assist the team leader of PMC, and serve as the acting team leader during the off-assignment period of the team leader.</p> <p>b) Reviewing manuals/ guidelines and training programmes</p> <p>c) Facilitate the convergence with other stakeholders;</p> <p>d) Monitor performances of motivators, ward facilitators, and resource organisations;</p> <p>e) Revisit TOR for mobilisers, ward facilitators, and resource organisations;</p> <p>f) Plan overall capacity development activities for community development and livelihood improvement.</p> <p>g) Review and finalise gender action plan and develop gender training module for the project staffs at all levels</p> <p>h) Conducting Gender Monitoring</p> <p>i) Organise international training programs;</p> <p>The Co-Team Leader/ Community Development/ Gender will:</p> <p>a) Undertake any other tasks requested by the PMC Team Leader; and</p> <p>b) Undertake field visits to project sites and prepare Back-to-Office report for PMU</p> <p>c) Prepare brief travel reports and monthly accomplishment reports pertaining to his/ her specialty and submit them to the Team Leader.</p>
B-3	Biodiversity Conservation	L (Pro-B)	<p>Biodiversity Conservation Specialist will assist PMU in:</p> <p>a) Design the scientific biodiversity management including implementation plan and budget;</p> <p>b) Design the community based sustainable biodiversity management component adopting SATOYAMA concept including implementation plan and budget;</p> <p>c) Facilitate linkages and collaborations with the State Biodiversity Board and other relevant organisations;</p> <p>d) Facilitate convergence with other programmes and schemes.</p> <p>e) Develop necessary capacity building programs and training materials for the project staffs and community;</p> <p>f) Prepare process documentation;</p> <p>g) Establish network with International Partnership for the SATOYAMA Initiative;</p> <p>h) Prepare TOR for specialized agencies to undertake the biodiversity inventory and ecosystem valuation; and</p> <p>i) Design and organizing exposure visits for PMU and other project implementation units.</p> <p>The Biodiversity Specialist will;</p> <p>a) Act as a resource person for the training programs;</p> <p>b) Undertake any other tasks requested by the PMC Team Leader; and</p> <p>c) Undertake field visits to project sites and prepare Back-to-Office report for PMU</p> <p>d) Prepare brief travel reports and monthly accomplishment reports</p>

No	Position	I or L	Major Tasks and Duties
			pertaining to his/ her specialty and submit them to the Team Leader.
B-4	Livelihood	L (Pro-B)	<p>The Livelihood Specialist will assist PMU in:</p> <ol style="list-style-type: none"> Review and finalise micro plan/ annual plan/ annual convergence plan format and guidelines and manuals as required along with other PMC specialists; Develop objective gender monitoring indicators to be included in the project M&E system; and Develop operation manual for Community Development and Livelihood Improvement Fund; Formulate the overall common interest group (CIG)/ SHG IGA development plan; Review and finalise the CIG/ SHG identification/ adoption criteria; Review and preparation of CIG/ IGA guidelines and manuals; Prepare technical materials of small scale IGA activities for information dissemination; Develop a cluster formation plan; Support the cluster level organisations for their operation, including the procurement of necessary equipment, production support, marketing support, accounting, etc.; Facilitate convergence with other livelihood development schemes; Develop overall strategic and action plan for livelihood activities for the Project; Prepare the guidelines and manuals for CIG/SHGs; and Developing strategies for CSR. <p>The Livelihood Specialist will:</p> <ol style="list-style-type: none"> Work closely with the NTFP/MAP specialist and the value-chain/ marketing specialist; Undertake any other tasks requested by the PMC Team Leader; Undertake field visits to project sites and prepare Back-to-Office report for PMU Prepare brief travel reports and monthly accomplishment reports pertaining to his/ her specialty and submit them to the Team Leader.
B-5	M&E/ MIS	L (Pro-B)	<p>The M&E/ MIS Specialist will assist PMU in:</p> <ol style="list-style-type: none"> Establish effective and efficient monitoring system; Procure contractors for baseline survey, periodical assessments, and other related activities and etc.; Supervise the work of the above contractors and ensuring qualities of their outputs; Review baseline and mid-term surveys reports, and other M&E reports/ documents Prepare guidelines and manuals required for M&E and MIS; Operationalise MIS and project accounting system, and Monitor and evaluate the progress and outputs of Project activities Conduct field validation, prepare physical and financial progress report; Provide progress data and information required to be used by the High Power Committee (HPC), Governing Body (GB) and JICA for review and appropriate decision making; Design, review and revise project performance indicators, and developing methodologies for verification with respect to such indicators; Compile periodical M & E reports; and Organise annual review meetings at State Level. <p>The M&E/ MIS Specialist will:</p> <ol style="list-style-type: none"> Work in collaboration with Remote Sensing/ GIS Specialist for effective monitoring; Assist FCCUs/DMUs in the field validation; Train PMU and other project related staffs in MIS and project accounting system; Accomplish the tasks related to the Project as directed by the Team Leader;

No	Position	I or L	Major Tasks and Duties
			<ul style="list-style-type: none"> e) Undertake field visits to project sites and prepare Back-to-Office report for PMU; and f) Prepare brief travel reports and monthly accomplishment reports pertaining to his/ her specialty and submit them to the Team Leader.
B-6	Remote Sensing /GIS	L (Pro-B)	<p>The Remote Sensing/ GIS Specialist will assist PMU in:</p> <ul style="list-style-type: none"> a) Survey and demarcation and forest boundary delineation of the project area; b) Procure equipment and software necessary for the remote sensing and GIS establishment; c) Procure contractor for satellite remote sensing based mapping, and GIS database development; d) Prepare treatment area maps in GIS environment. e) Supervise the activities of above contractor and ensuring the quality of outcome; f) Process the remote sensing data and other developed GIS database and producing data and maps as required by the project; g) Prepare the survey, remote sensing and GIS related guidelines and manuals; h) Maintain GIS database and GIS-based outcomes; i) Integrate GIS into MIS for effective monitoring; and j) Provide interpretation of imageries for monitoring. k) Set up data QC/QA processes l) Check data/ map quality m) Prepare strategy and plan for expanding project GIS to HPFD <p>The Remote Sensing/ GIS Specialist will:</p> <ul style="list-style-type: none"> a) Work in collaboration with M&E/ MIS Specialist for effective monitoring; b) Train PMU and other project related staffs in MIS and project accounting system; c) Train PMU and other project related staff who will use the GIS; d) Accomplish the tasks related to the Project as directed by the Team Leader; e) Undertake field visits to project sites and prepare Back-to-Office report for PMU; and f) Prepare brief travel reports and monthly accomplishment reports pertaining to his/ her specialty and submit them to the Team Leader.
B-7	Institutional Capacity Building and Training	L (Pro-B)	<p>The Institutional Capacity Building/ Training Specialist will assist PMU in:</p> <ul style="list-style-type: none"> a) Undertake and revisiting training needs assessment b) Identify the relevant institutions for international and national training/ study tours; and c) Plan overall capacity development activities for project implementation units including community based organisations; d) Prepare the training master plan and annual training schedule e) Organise the training programme as per the annual training schedule f) Solicit the resource persons required and procure the specialised agencies to undertake capacity development activities g) Undertake training evaluation and prepare report <p>The Institutional Capacity Building/ Training Specialist will:</p> <ul style="list-style-type: none"> a) Undertake any other tasks requested by the PMC Team Leader; b) Undertake field visits to project sites and prepare Back-to-Office report for PMU; and c) Prepare brief travel reports and monthly accomplishment reports pertaining to his/ her specialty and submit them to the Team Leader.
B-8	Environmental and Social Consideration/ Environmental Economics/PES	L (Pro-B)	<p>The Social and Environmental Consideration Environmental Economics/PES Specialist will assist PMU in:</p> <ul style="list-style-type: none"> a) Prepare and update of Environmental and Social Assessment Framework (ESAF) Plan; b) Prepare and update of Vulnerable Scheduled Tribes Planning Framework (VSTPF);

No	Position	I or L	Major Tasks and Duties
			<ul style="list-style-type: none"> c) Implement and monitor ESAF and VSTPF; d) Develop PES monitoring indicators to be included in the project M&E system; e) Develop TOR for the short term studies on environmental economics and PES in the project areas. f) Update of capacity development plan/ programme/ training modules for environmental and social consideration/ PES; g) Preparation of monitoring reports for environmental and social consideration; h) Develop environmental and social safeguard manual/guidelines for the Project. i) Develop PES monitoring guidelines for the Project. <p>The Social and Environmental Consideration Specialist will:</p> <ul style="list-style-type: none"> a) Work in collaboration with Environmental and Social Consideration Directors/ Managers of PMU and Environmental and Social Consideration Expert(s) hired by PMU, in respect to Project's environmental and social consideration aspect; b) Accomplish the tasks related to the Project as directed by the PMC Team Leader; c) Undertake field visits to project sites and prepare Back-to-Office report for PMU; and d) Prepare brief travel reports and monthly accomplishment reports pertaining to his/ her specialty and submit them to the Team Leader.

Chapter 6. Reporting

Within the scope of consulting services, the Consultant shall prepare and submit reports and documents to PMU as shown in Table 6-1. The Consultant shall provide electronic copy of each of these reports. All reports shall be prepared in English.

Table 6-1 Reports to be Submitted

Category	Type of Report	Timing	No. of Copies
Consultancy Services	Inception Report	Within 1 months after commencement of the services	5 copies each per time
	Monthly Progress Report	Every month except the month overlapping with the Quarterly Progress and Annual Progress Report.	5 copies each per time
	Quarterly Progress Report	Every quarter except the quarter overlapping with the Annual Progress Report	5 copies each per time
	Annual Progress Reports	10 th day of the first month of the next financial year	5 copies each per time
	Completion Report of the Consulting Services	One month before the closure of the contract	10 copies each per time
Other Report	Back to Office Report	Within 7 days on return of the field visit	1 set of copy per submission
	Technical Report	As required or upon request	As required

Contents to be included in each report are as follows:

(Example of Monthly Progress report and Inception report)

- a) Inception Report (5 copies each of English and Vietnamese versions): to be submitted within 1 month after the commencement of the services, presenting the methodologies, schedule, organization, etc.
- b) Monthly Progress Report (5 copies): to describes briefly and concisely all activities and progress for the previous month by the 10th day of each month. Problems encountered or anticipated will be clearly stated, together with actions to be taken or recommendations on remedial measures for correction. Also indicates the work to be performed during the coming month.
- c) Quarterly Progress Report (5 copies): to describe all activities and progress for the reporting period (quarter) by the 10th day of the month on a quarterly basis. Problems encountered or anticipated will be clearly stated, together with actions to be taken or recommendations on remedial measures for correction. Also indicates the work to be performed during the following quarter.
- d) Annual Progress Report (5 copies): to describe all activities and accomplishments made for the year by the 10th day of the 1st month of the year. Problems encountered together with actions taken should be described. Lessons learned from the project activities done in the year should

also be described in the report. The works and activities planned for the following years should be indicated.

- e) Completion Report of the Consulting Services (10 copies): to be submitted one month before the completion of the consulting services. The report should describe the approaches and methodologies taken, all the activities carried out and inputs made by the consultant, the results and accomplishments made by the consulting services, lessons learned for the project as well as consulting services, and recommendations for ensuring the sustainability of the project effect and future projects similar to the project.
- f) Back to Office Report (1 copy): to be submitted to report the findings from the very site visits conducted by the PMC specialists. The report shall be submitted within 7 days from the date of return to the office from the field. One copy of the report shall be submitted to PMU.
- g) Technical Report (as per required): to be submitted as required or upon request by PMU or by the initiation of PMC for technical topics relevant to project implementation.

Chapter 7. Obligations of the Executing Agency

A certain range of arrangements and services will be provided by the Executing Agency to the Consultant for smooth implementation of the Consulting Services. In this context, the Executing Agency will:

(1) Report and data

Make available to the Consultant existing reports and data related to the Project as requested by PMC;

(2) Office space

Provide an office space in the Headquarters of the Executing Agency with necessary equipment, furniture and utility. However, the Consultant's requirement for office space, including necessary equipment, furniture and utilities, should be clearly stated in the proposal with its rental cost for the case where PMU- HPFEMS would be unable to provide such facilities;

(3) Cooperation and counterpart staff

Appoint counterpart officials, agent and representative as may be necessary for effective implementation of the Consulting Services;

(4) Assistance and exemption

Use its best efforts to ensure that the assistance and exemption, as described in the Standard Request for Proposal issued by JICA, will be provided to the Consultant, in relation to

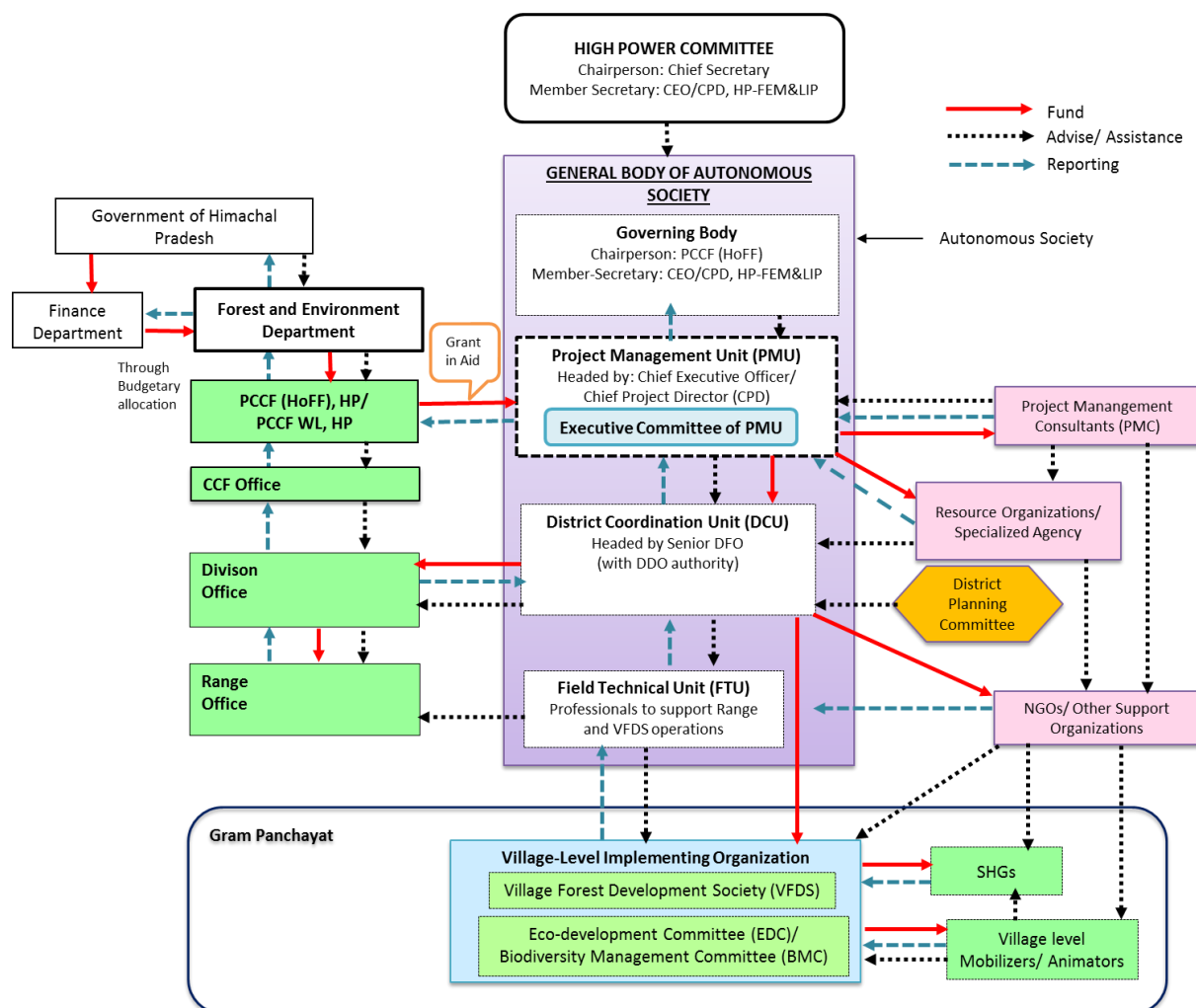
- work permit and such other documents;
- entry and exit visas, residence permits, exchange permits and such other documents
- clearance through customs;
- instructions and information to officials, agent and representatives of the Borrower's Government;
- exemption from any requirement for registration to practice their profession;
- privilege pursuant to the applicable law in the Borrower's Country.

Attachment:

Table - MM of the PMC Specialists/ Staff

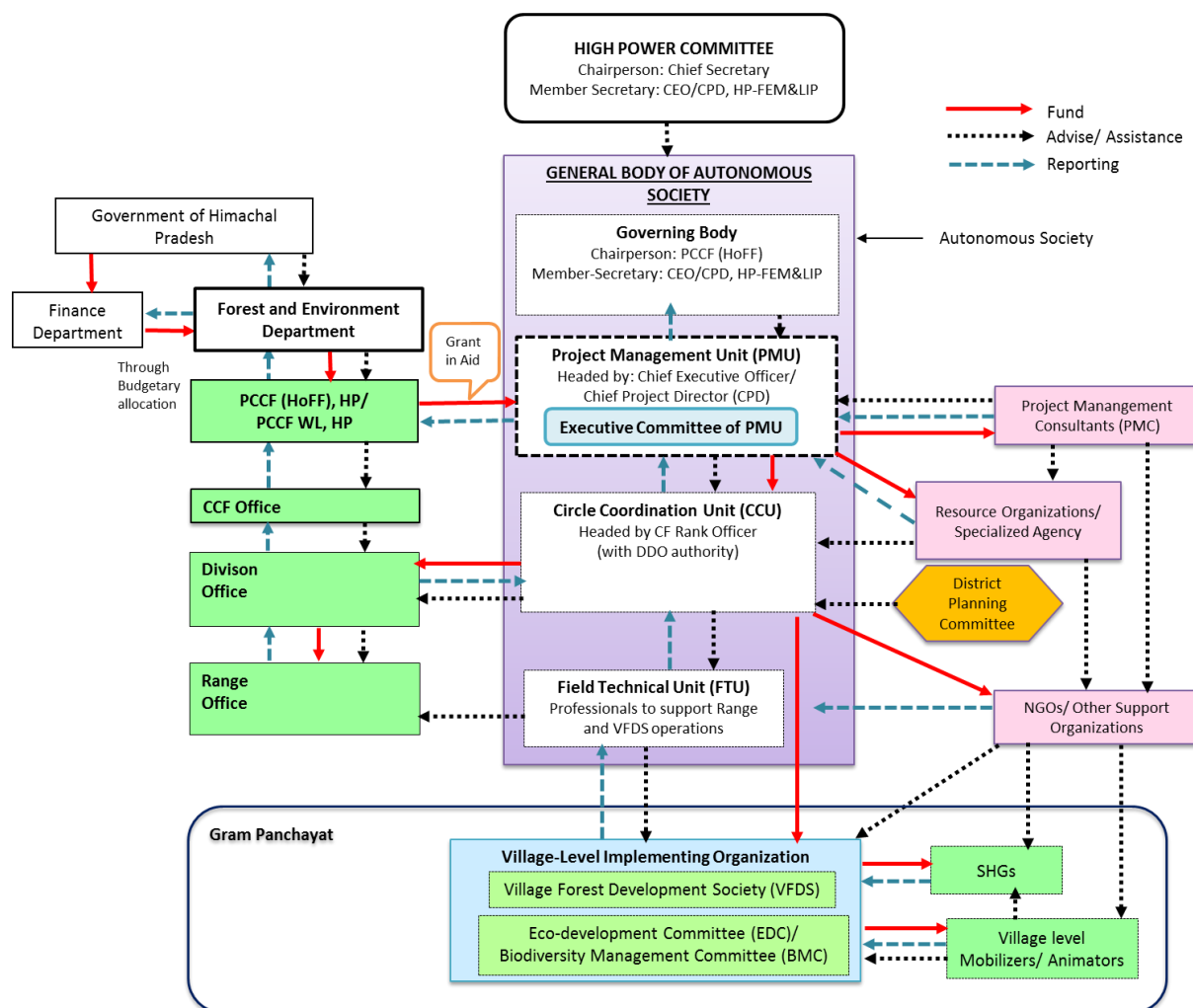
	International (Professional A)	
1	Soil Water Conservation/ Construction Management	10
	Sub Total (1)	10
	National (Professional B)	
1	Team Leader/ Project Management/ Community Based Forest & Biodiversity Management	25
2	Co-Team Leader/ Forest Management	27
3	Biodiversity Conservation	15
4	Livelihood/ Gender	15
5	M&E/ MIS	15
6	Remote Sensing /GIS	18
7	Institutional Capacity Building and Training	12
8	Environmental and Social Consideration/Environmental Economics/PES	8
	Sub Total (2)	135
	Support Staff	
1.	Field Manager (1)	31
2.	Field Manager (2)	31
3.	Field Manager (3)	31
4.	Field Manager (4)	31
5.	Office Manager	36
6.	Computer Operator	36
7.	Personal Assistant	36
8.	Office Boy	36
9.	Driver (1)	36
10.	Driver (2)	36
	Sub Total (3)	340

Attachment II.4.1.1 Priority Options Considered for Indicative Institutional Arrangements



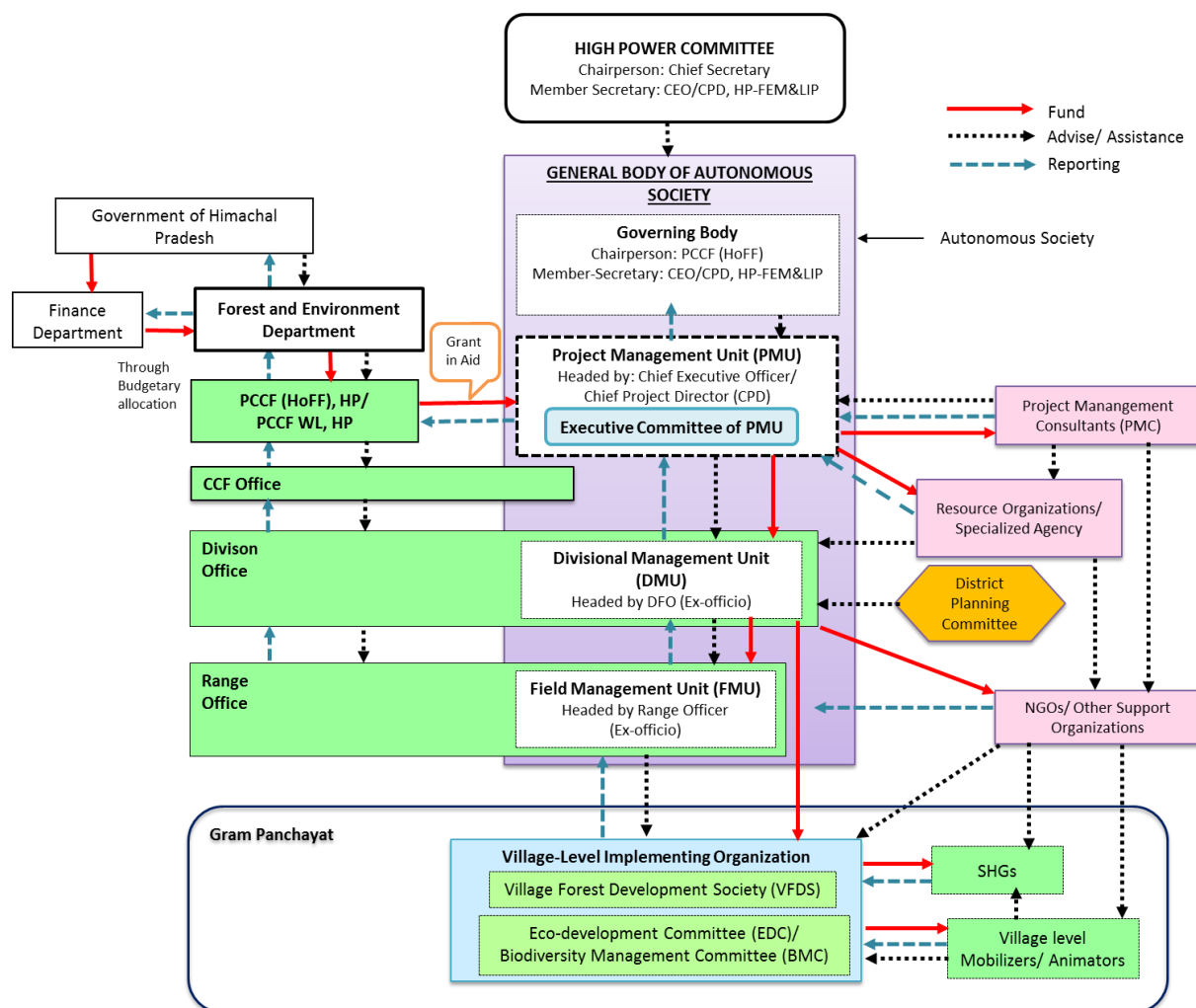
Source: JICA Study Team (2017)

Figure 1 Option 4: Institutional Arrangements for HPFEM&LIP - Society Mode (with district coordination units)



Source: JICA Study Team (2017)

Figure 2 Option 5: Institutional Arrangements for HP FEMLIP - Society Mode (with circle coordination units)



Source: JICA Study Team (2017)

Figure 3 Option 3: Institutional Arrangements for HPFEM&LIP - Society mode (conventional forestry loan project)

Attachment II.4.1.2 Gram Panchayat: Statutory Vehicle of Governance and Development

1. Overview

Panchayati Raj system is three tiered systems of local self-governance adopted in India– a decentralized form of democratic government. This system was adopted by state governments during the 1950s and 60s as laws were passed to establish panchayats in various states. It also found backing in Indian constitution with the 73rd Amendment in 1992 to accommodate the idea. In the history of Panchayati Raj in India, on 24th April, 1993, the constitutional (73rd Amendment) Act 1992 came into force to provide constitutional status to the Panchayati Raj institutions.

Currently, the Panchayati Raj system exists in all the states except Delhi. The states of Goa, Jammu and Kashmir, Mizoram, Meghalaya, Nagaland and Sikkim have two-tier panchayats- one at the village level and the second at the Zila or district level. In Jammu and Kashmir, block is the second level. In all other states Panchayati Raj is a three-tier system- village or *Gram* as first level, block or *Kshetriya* or *Mandal* as second level and Zila or district as the third level.

At the lowest level, Gram Panchayat is basic unit of administration that also performs judicial functions as well as functions related to public welfare and rural/ economic development at village level. According to Article 243-G, the law of state legislature endows the Panchayat with such powers and authority as may be necessary to enable them to function as institutions of self-government. Thus, to achieve the objectives of social justice, economic development, through plans and to implement these, the panchayats have been assigned 29 subjects as listed in the Eleventh Schedule of the Indian Constitution.

Some of the subjects that are listed and falls in the domain of natural resource management are: a) land improvement/ soil conservation, b) minor irrigation, c) water management and watershed development, d) agriculture, e) fisheries, f) social forestry and farm forestry, g) minor forest produce, h) drinking water, i) fuel and fodder, j) non-conventional energy sources etc.

Every panchayat elects a president or *Sarpanch* or *Pradhan* and a Vice-President or *Up-Sarpanch* or *Up-Pradhan*. In some states, the *Sarpanch* is directly elected by the Gram Sabha either through the show of hands or through secret ballot. The *Sarpanch* occupies a pivotal position in Gram Panchayat system. S/he supervises and coordinates the various activities of the panchayat. The panchayat secretary and the village level worker are the two officers at the panchayat level to assist the *Sarpanch* in administration.

A Gram Panchayat fund has been created on the pattern of the consolidated fund of the state. Money comes also as grants-in-aid from the central or the state government or from the Zilla Parishad or Panchayat Samiti. All money received by the Gram Panchayat like contribution or grants made by the state government, union government, Zila Parishad and all sums received by the panchayat in the form of taxes, rates, duties, fees, loans, fines and penalties, compensation, court decree, sale proceeds and income from panchayat property etc. go into that fund.

Village Panchayats have been empowered to levy taxes or fees on subjects like houses and

buildings, professions, trades, callings and employments, fees on registration of vehicles, fairs and melas, sanitary arrangements, water tax, lighting tax, tax on sale of firewood, tax on slaughter houses, private fisheries, license fee on tea stalls, hotels or restaurants, carts, carriages, boats, rickshaws etc.

The Panchayati Raj Act, enacted by the Legislative Assembly of HP in the Forty-fifth Year of the Republic of India, and is called the **Himachal Pradesh Panchayati Raj Act, 1994**. Some of the key provisions would be useful to design ‘institutional’ arrangements for implementation of proposed Project. Some key provisions are highlighted from the Act, and narrated below.

2. Gram Sabha

Every Sabha shall hold four general meetings in each year and every meeting shall be held in the months of January, April, July and October. It shall be the responsibility of the Pradhan to convene such meetings.

For any general meeting of the Gram Sabha, representation of at least one-third of the total number of families represented by one or more members of the Gram Sabha shall form a quorum and decision will be taken by a majority of members present and voting.

The meeting of the Gram Sabha shall be presided over by Pradhan or in absence of Pradhan by Up-Pradhan. In the event of both Pradhan and Up-Pradhan being absent, the meeting of Gram Sabha shall be presided over by a member of the Gram Sabha to be elected for the purpose by the majority of members present in the meeting.

Giving due consideration to the women, provision has been made to constitution of Mahila Gram Sabha in every Gram Sabha. The Mahila Gram Sabha shall hold two meetings, first on 8th March and second on first Sunday of September in each year which shall be convened by the *Mahila* Pradhan or in her absence by the *Mahila* Up-Pradhan and in the absence of both, by the senior Mahila Member of the Gram Panchayat.

3. Gram Panchayat

There shall be a Gram Panchayat for a Gram Sabha. The Gram Sabha shall elect ‘*Pradhan*’ and ‘*Up-Pradhan*’, and shall also elect from amongst its members an Executive Committee called the Gram Panchayat consisting of such number of persons not being less than seven and more than fifteen, including *Pradhan* and *Up-Pradhan*.

The meeting of the Gram Panchayat shall be public and shall be held at least once a month at the office of the Gram Panchayat and at such time as the Pradhan may fix.

4. Maintenance of Gram Panchayat Records

The secretary of the Gram Panchayat, under the overall supervision of the Pradhan and in his absence under the supervision of the Up-Pradhan, shall be responsible for the custody and maintenance of all prescribed records and registers and other property belonging to or vested in the Gram Sabha or the Gram Panchayat.

5. Constitution and functions of Standing Committees

Every Gram Panchayat shall, from amongst its members, constitute by election, following Standing Committees:

Table 1 Standing Committees in Gram Panchayat

No..	Standing Committee	Description of Functions	Headed by
1	Works Committee	All developmental works of the Gram Panchayat shall be executed by the Works Committee, in the manner as may be prescribed, and if considered necessary, the Gram Panchayat may form sub-committees to supervise and monitor performance of such works and to obtain accounts thereof.	Pradhan or Up-Pradhan;
2	Budget Committee	The Budget Committee shall prepare the annual budget of the Gram Panchayat and shall submit the same to the Secretary for placing it before the Gram Panchayat for consideration and approval.	Pradhan or Up-Pradhan;

Source: Compiled by JICA Study Team (2017) based on HP Panchayati Raj Act, 1994

One committee shall be headed by the Pradhan and the other by the Up-Pradhan, as may be decided by the Gram Panchayat by majority vote in its meeting. Each committee shall consist of three members including the Pradhan or the Up-Pradhan, as the case may be.

The Gram Panchayat may constitute more Standing Committees for performing such other functions as may be entrusted to them by the Gram Panchayat.

6. Joint Committee

If two or more Gram Sabhas are jointly interested in transacting any business, they may delegate to the joint committee, formed in accordance with the provisions of section 24 or to the Panchayat Samiti, power, with such conditions as they may think proper to impose, to frame any scheme binding on each Gram Sabha as to the construction and maintenance of any joint work and as to the power which may be exercised by any such Sabha in relation to such scheme:

Provided that the Gram Sabha shall pay the cost of the transaction of the business or the execution of the scheme as to the construction and maintenance of any joint work in such proportion as may be agreed upon in the written instrument.

7. Panchayat Fund

Every Panchayat shall establish a fund to be called the Panchayat Fund and all sums received by the Panchayat, shall form part of the said Fund. The Panchayat Fund shall be kept in the nearest Government Treasury or Sub-Treasury or Post Office or Co-operative Bank or Scheduled Bank.

An amount allotted to the Panchayat by the state government or any other person or local authority for any specified work or purpose shall be utilized exclusively for such work or purpose and in accordance with such instructions as the state government may either generally or specially issue in this behalf.

The amount from the Gram Panchayat Fund shall be withdrawn, only under the joint signatures of the secretary or the Panchayat Sahayak of Gram Panchayat and Pradhan or as per provision in the Act.

8. Grant-in-Aid to Panchayats

After the 73rd Constitutional Amendment became effective, at expiration of every fifth year, the state government shall constitute a Finance Commission¹ to review the financial position of local bodies and make recommendations to the state government in the direction of strengthening the financial position of these institutions. The state government shall make grants-in-aid to the Panchayats as may be decided by it on the basis of the recommendations of the State Finance Commission.

9. Budget and Annual Accounts

Every Panchayat shall prepare annually in such form and in such manner and by such date, as may be prescribed, budget estimates, of its receipts and expenditure for the next financial year. The annual accounts and report of administration by Panchayat shall be presented to the prescribed authority in the prescribed manner.

10. Audit of Panchayats

The accounts of Panchayat may be audited by the Accountant General, HP and the Director of Local Fund Audit who shall have access to relevant information and records of the Panchayats. The annual technical inspection report of the Accountant General, HP as well as the annual report of the audit shall be placed before the State Legislature.

¹ **Finance Commission:** Finance Commission is a body set up under Article 280 of the Constitution. Its primary job is to recommend measures and methods on how revenues need to be distributed between the Centre and states. Besides suggesting the mechanism to share tax revenues, it is the duty of the Commission to make recommendations to the President such as the principles which should govern the grants-in-aid of the revenues of the states out of the Consolidated Fund of India. It also suggests measures needed to augment the Consolidated Fund of a state to supplement the resources of the panchayats and municipalities in the state. Its functions also include finding any other matter referred to the Commission by the President in the interests of sound finance. In the case of 14th Commission, these principles will apply for a five-year period beginning April 1, 2015 to March 31, 2020.

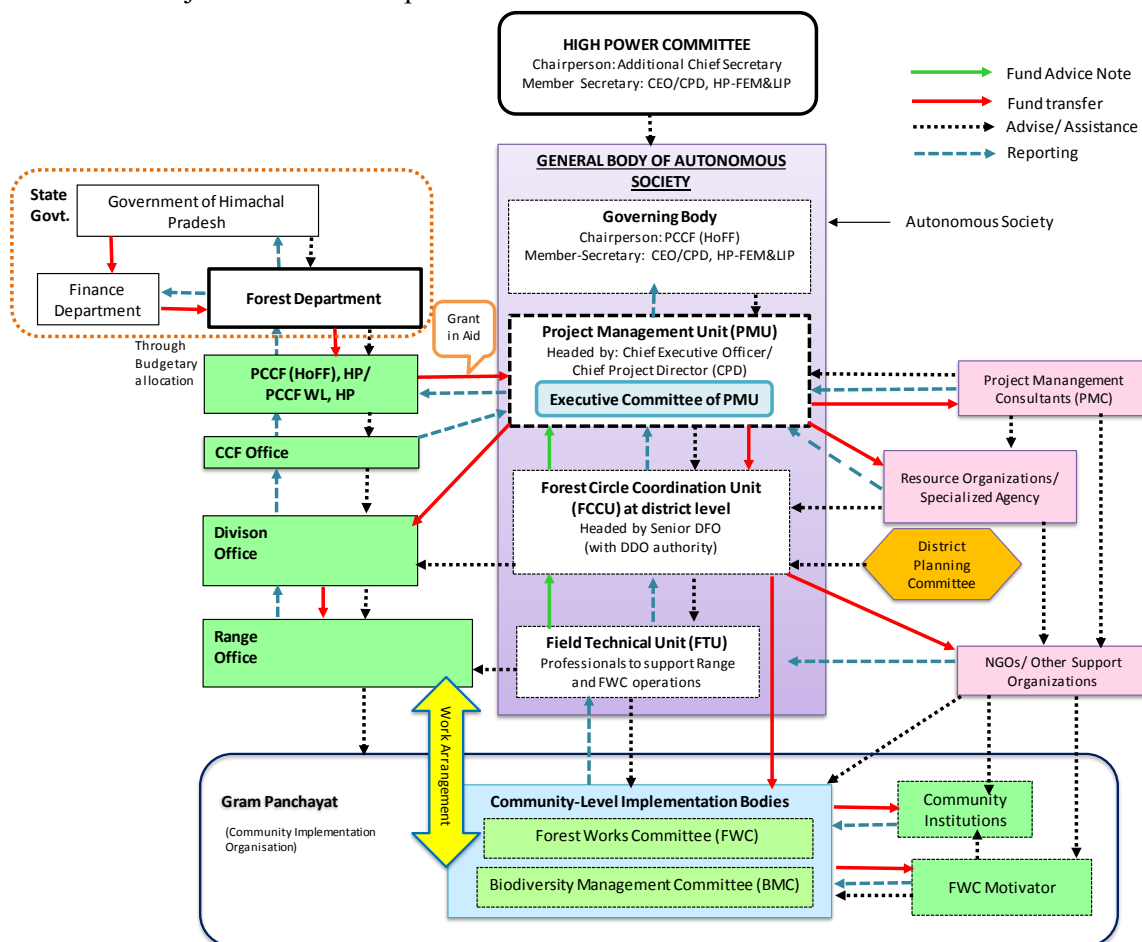
Fourteenth Finance Commission: As per the increased devolution suggested in the report of the 14th Finance Commission. The higher tax devolution will allow states greater autonomy in financing and designing of schemes as per their needs and requirements. The 14th FC had recommended an increase in the share of states in the central tax revenue from the current 32 % to 42 %. The Commission has recommended distribution of grants to states for strengthening duly elected Gram Panchayats and municipal bodies. These grants will be divided into basic grants and performance grants. Due to this recommendation, the share of nine states including HP has decreased. In the 13th Finance Commission share of HP was 0.781 that has now reduced to 0.713 during 14th Finance Commission. The main reason for this decrease is – the Commission has added a new criterion of forest cover for devolution of central taxes which has gone against the nine states. According to the Commission – “We believe that a large forest cover provides huge ecological benefits, but there is also an opportunity cost in terms of area not available for other economic activities and this also serves as an important indicator of fiscal disability.” The panel has assigned 7.5% weight to forest cover for inter-se determination of the shares of taxes to the states, while population carries 17.5% weight, demographic change 10, income distance 50 and area 15 % weight.

Attachment II.4.1.3 Institutional Arrangement Option 4B: Engaging Gram Panchayats

1 Overview of Proposed Institutional Arrangements for the Project

1.1 Overall Framework

Figure 1.1 below shows the detailed institutional arrangement envisaged for the implementation of the Project based on the option 4B.



Source: JICA Study Team (2017)

Figure 1.1 Proposed Institutional Set-up of the Project (Option 4B)

The Project Management Unit (PMU) of the Project would be established as autonomous registered society within HPFD, and be made responsible to manage, coordinate, implement and monitor the proposed activities. All offices created for this Project will exclusively work to assist and facilitate implementation of the proposed activities following the project implementation schedule, annual plan of operations and envisaged processes.

The High Power Committee (HPC) created for the Project will act as highest decision-making body for the Project at state government level, and will not form part of the autonomous society to be created for project implementation. The Governing Body (GB) and the General Body of the Project would be the decision-making bodies for the Project within Society as per the provisions in the HP Societies Registration Act, 2006.

To support project implementation at the field level, PMU will create and coordinate with two set of offices viz., Forest Circle Coordination Units (FCCUs) and Field Technical Units (FTUs) those will work as extended arms for the PMU. The PMU including FCCUs and FTUs will assist and play facilitative roles, and will source funds for project implementation. The main responsibility for project implementation will remain with the regular structure of HPFD, and in no way the project offices created within autonomous society will duplicate or substitute roles and responsibilities of HPFD. The existing divisional and range offices will operate within their respective jurisdictions for the project implementation. The implementing arrangements would be through the forest divisions (DFOs) and the Gram Panchayats.

As required, resources organizations/ support agency will be engaged by PMU to support divisional and range offices, while NGOs would be engaged to support range offices and community level organisations (GPs) in field implementation. Community level organisations will also be supported by motivators, to be identified from within the respective project GPs/ wards by the community level institutions.

PMU will have a comprehensive operation manual that would prescribe guidelines, policies, protocols, procedures and rules on finance, accounting, administration, management for smooth implementation of the Project. The operation manual will necessarily include gender policy and checklist to ensure gender mainstreaming in the Project. The operation manual will convey the internal policy of the PMU to manage the Project and would be approved first by GB and subsequently by HPC during first year of operations of the Project prior to adoption. PMU would evolve mechanism for tracking the project implementation, progress reporting and fund flow, for the project interventions.

HPFD and PMU will enter into a formal arrangement to vest the project management responsibilities to society (PMU), and after project completion, HPFD would own responsibility of assets and institutions created under the Project to further support and maintain under routine HPFD functioning. Later, during the phase-out phase of the Project, phase-out plan would be developed and agreed between the two entities.

2 Details of Proposed High Power Committee and Management Bodies of PMU

2.1 High Power Committee (HPC) of the Project

High Power Committee (HPC) will be established within the HP state government at project initiation, and will act as the highest decision-making body for the Project at the state level. HPC will be outside the autonomous structure to be created as autonomous Society at state level for project implementation.

Since, there would be many stakeholders in management of ecosystems and ecosystem services, it would be appropriate to include some key stakeholders to ensure better coordination and inter-sectoral convergence. In DPR, a 13-member committee (being referred as Steering Committee in DPR) headed by Chief Secretary is proposed as a part of the Society, whereas now 13 members HPC having additional 3 members as special invitee is being proposed outside the society (PMU),

to be created for the purpose of the Project. As per the current responsibilities of the state government secretaries, the proposed composition of HPC is given in **Table 2.1**.

Table 2.1 Proposed Composition of HPC for the Project

No.	Position	Proposed Members	Remarks by JICA Study Team	Remarks by HPFD
1	Chairperson	Chief Secretary	Also responsible for Tribal Development and Disaster Management	Earlier proposed; Now not considered as s/he may not be able to spare adequate time for the meetings and reviews
2	Member	Principal Secretary, Forest	Additional Chief Secretary (Forests, Environment, Science & Technology, Food, Civil Supplies & Consumer Affairs); currently existing; Proposed as Vice-Chairperson	Chairperson; ACS (in-charge Forests)
3	Member	Principal Secretary, Finance	Additional Chief Secretary (Finance, Planning, Economics & Statistics, Twenty Point Programme); Currently existing	
4	Member	Additional Chief Secretary (Agriculture, Fisheries, Training & FA)	Proposed; prospective stakeholder in Ecosystem Management	
5	Member	Principal Secretary, Ayurveda	Additional Chief Secretary (Ayurveda); Currently existing	
6	Member	Principal Secretary, Tribal Development	To be deleted; currently not existing; responsibilities with the Chief Secretary	
7	Member	Principal Secretary, Rural Development and Panchayati Raj	Also responsible for Animal Husbandry	
8	Member	Principal Secretary, Health & Family Welfare	Proposed; prospective stakeholder to address health & gender issues	
9	Member	Principal Secretary (Horticulture, Information Technology)	Proposed; prospective stakeholder in Ecosystem Management	
10	Member	PCCF (HOFF), Forest Department		
11	Member	Chief Wildlife Warden/ PCCF (Wildlife), Forest Department		
12	Member	Representative of MoEF & CC, GoI	Special Invitee	
13	Member	Representative of JICA	Special Invitee	
14	Member	NGOs (2 nos.) to be nominated by State Govt.	One member proposed; Head of Organization of repute to attend the meeting; to be nominated by the state govt. for two years;	
15	Member	Zilla Panchayat President	Proposed; one member by rotation from the project districts; to be nominated by the state govt. for one year	
16	Member	Team Leader (or nominee) of Project Management Consultant	Proposed for providing independent views on project implementation; Special Invitee;	
17	Member-Secretary	Chief Project Director, / Ex-officio CEO Society (PMU)		

Source: JICA Study Team (2017)

(1) Frequency of Meeting and Representation

HPC will meet at least once in six months or more frequently if the situation arises in a year, particularly during preparatory phase of the Project. In case the members are not available on the day of the HPC meeting, they may nominate senior rank officers in the state government/ state department as their representatives to the meetings with authorization for decision making.

(2) Agenda Circulation and Quorum

A minimum of 2/3rd members would form the quorum for the HPC meetings. Agenda of the meeting and proposals should be circulated by the Member-Secretary well in advance to all

members, at least seven days ahead of the meeting date. The proceedings of the HPC meetings will be circulated to all the members/ attendees within reasonable timeframe, after the meeting is concluded.

(3) Roles and Responsibilities

HPC will regularly oversee and review the performance of the project implementation, and will be responsible for giving directions to the PMU for ensuring smooth and efficient project implementation. HPC will pursue the matters relating to policy and annual budget with the state government, and also facilitate inter-departmental coordination and convergence. HPC will also be responsible to facilitate coordination amongst various line departments of the state and other agencies to help achieving the project goals.

The operation manual of the Project, to be developed by PMU during its first year of operation, will be approved by HPC, and will ensure that the approved operation manual is well disseminated and adopted at all levels of project implementation. If need arise, the approved operation manual could be reviewed by HPC at mid-term of the Project (after 4th year), and amended operation manual could be utilized for remaining project period. JICA should be informed for such amendments in the operation manual.

HPC will also approve annual plans and budgets of the Project at the beginning of each financial year, and review the project progress at least every-six months on regular basis.

HPC will accord administrative and financial approvals/ sanctions of all individual schemes, proposals or procurement of goods & services amounting to 50 million INR and above.

2.2.2 Society mode for Project Implementation

For efficient management of a time-bound project, it is very important and essential to have efficient flow of funds, else implementation may suffer delays. As a consequence, desired results may take little longer time or may not be satisfactorily achieved within given time-frame and resources.

To have efficient flow of funds as per the annual plans, and for timely submissions of reimbursement claims, adequate authority has to be entrusted with the project personnels who are made responsible for managing and implementing the project activities. Creation of an autonomous structure while having dedicated project specific administrative set-up is one of the ways to achieve it.

Thus, taking lessons from completed and on-going JICA assisted forestry projects in the country that are being or have been implemented by adopting the society mode approach, institutional arrangements for the Project is being proposed. This delegation of power and authority will ensure the project management to take timely decisions, plan, release funds, execute and facilitate project processes in an effective manner.

(1) Creation of the Society Project Management Unit (PMU)

The project implementation structure will be created through a State Resolution (Government Order/ Notification) and would get registered as autonomous society under Himachal Pradesh Societies Registration Act, 2006, applicable in the state, with its Memorandum of Association and Bye-laws to be framed as stipulated in the Societies Act, 2006 including the following:

- ◆ Name of Society
- ◆ Location and area of operation
- ◆ Aims and objectives of the society
- ◆ List of membership of the society (General Body)
- ◆ List of members of the Governing Body
- ◆ Executive Offices, officers and their functions
- ◆ Operation of Funds and Accounts of the society
- ◆ Audit of accounts
- ◆ Amalgamation/ Dissolution of Society and Asset Transfer after Project closure

To support project implementation at the field level, PMU (an autonomous society) at the state level will directly coordinate with two levels of offices, FCCUs and FTUs, to be created as extended hands for the PMU, and will operate to assist and facilitate project implementation within the jurisdictions of the project divisions and ranges. The circle offices under HPFD will be involved for regular supervision and review of project works within their jurisdiction as per the administrative structure of HPFD.

The bye-laws of the Society shall specify the frequency and the manner in which the meetings of the Governing Body and general body shall be held. The Governing Body shall meet at least once in every three months, and the General Body of the PMU (society) shall meet at least once in a financial year. Provision for convening special general body meetings should also be made.

HPFD being main executing agency will first receive funds from the state government through budgetary provision, and pass on to the PMU. HPFD will also be committed to support project implementation through various established offices located at state, circles, divisions, range etc. as per administrative structure of HPFD.

(2) Highest Decision Making of the Society: Governing Body

GB would be highest decision making body within the society. In the DPR, 17-member committee (being referred as Executive Committee in DPR) is proposed, whereas now 18 members are proposed for GB. The proposed composition of GB is given in **Table 2.2**.

Table 2.2 Proposed Composition of Governing Body

No.	Position	Proposed in DPR	Remark by JICA Study Team
1	Chairperson	PCCF (HOFF), Forest Department	
2	Member	Chief Wildlife Warden/ PCCF (Wildlife), Forest Department	
3	Member	Representative of MoEF&CC, GoI	Proposed for deletion;
4	Member	Representative of JICA	Proposed for deletion;
5	Member	Additional PCCF (Finance & Planning), Forest	PCCF (Finance & Planning), Forest Department;

No.	Position	Proposed in DPR	Remark by JICA Study Team
		Department	currently existing
6	Member	Additional PCCF (M&E), Forest Department	PCCF (M&E), Forest Department; currently existing
7	Member	Additional PCCF (PFM & FDA), Forest Department	PCCF (PFM & FDA), Forest Department; currently existing
8	Member	Additional PCCF (Working Plans), Forest Department	
9	Member	Additional PCCF (Research), Forest Department	
10	Member	Member-Secretary, State Biodiversity Board, HP	Proposed; prospective stakeholder in Ecosystem Management
11	Member	Director (Ayurveda)	
12	Member	CCF (Project Formulation), Forest Department	
13	Member	CCF (IT), Forest Department	
14	Member	CCF in field posting	One member by rotation from the project circles; to be nominated by the state govt. for one year
15	Member	Convener, SLBC or its representative	Proposed for inter-sectoral convergence; senior rank officer
16	Member	Representative from NABARD	Proposed for inter-sectoral convergence; senior rank officer
17	Member	Project Director in PMU	Proposed
18	Member	Representative of Academia (2 nos.) to be nominated by the state govt.	One member proposed; Head of Organization of repute to attend the meeting; to be nominated by the state govt. for two years;
19	Member	NGOs (2 nos.) to be nominated by State Govt.	Proposed for deletion;
20	Members	GP/ FWC Chairperson	Proposed; One member of good performing GP/ FWC by rotation from the project divisions; to be nominated by the Chief Project Director for one year
21	Member-Secretary	Chief Project Director, / Ex-officio CEO Society (PMU)	

Source: JICA Study Team (2017)

The indicative i) frequency of meetings, ii) agenda circulation and quorum, iii) roles and responsibilities of GB is described in the following box.

i) Frequency of Meetings

GB will meet at least once every quarter (starting April) in a year, or more frequently if the situation arises, particularly during preparatory phase of the Project.

ii) Agenda Circulation and Quorum

A minimum of 2/3rd members would form the quorum for the GB meetings. Agenda of the meeting and Proposals should be circulated by the Member-Secretary well in advance to all members, at least seven days ahead of the meeting date. The proceedings of the GB meetings should be circulated to all the members/ attendees within reasonable timeframe, after the meeting is concluded.

iii) Roles and Responsibilities

GB would rigorously review the project progress vis-à-vis annual plans, and would also monitor the disbursement status. It will review the functioning of PMU (society) regularly and guide to prepare proposals for HPC, whenever necessary for the smooth implementation of the Project.

GB will accord administrative and financial sanctions of all individual schemes, proposals or procurement of goods & services amounting to 2 million INR and above, but not exceeding 50 million INR.

(3) Management Decision Making of the Society: General Body

General Body will be a decision-making body of the Society on all matter as required under the HP Societies Registration Act, 2006. The General Body of the Society will comprise of the members of the Governing Body, PMU officers in the rank of DFO and above, Forest Circle Coordination Unit (FCCU) Officers of all the project districts, and Chiefs Conservator of Forests (CCFs) of all the identified Circles where the project activities will be undertaken. The General Body will meet once in a year to conduct the Annual General Meeting (AGM) of the Society. Proceedings of the AGM meetings will be circulated to all the members/ attendees within reasonable timeframe, after the meeting is concluded.

(4) Management of the Project: Executive Committee of PMU

Since the Governing Body of the Society would be meeting on quarterly basis, it would be essential to have some institutional arrangements in place at the operation level for quick decision making, close supervision, guidance and follow-ups. Thus, Governing Body will entrust day-to-day responsibilities with the Executive Committee that will be constituted at the state level within PMU. The composition of the Executive Committee is given in **Table 2.3**.

Table 2.3 Proposed Composition of Executive Committee of PMU

No.	Position	Designated Person
1	Chairperson	Chief Project Director
2	Member	all Additional/ Joint Project Directors of PMU
3	Member-Secretary	Project Director (Administration & Finance)

Source: JICA Study Team (2017)

State programme managers may participate as ‘Special Invitees’ in the EC meetings for providing insights and/or to share views or concerns in the interest of the project implementation.

The indicative i) frequency of meetings, ii) agenda circulation and quorum, iii) roles and responsibilities of the Executive Committee of PMU is described in the following box.

i) Frequency of Meetings

The Executive Committee will meet at least once every month, or more frequently if the situation arises, particularly during preparatory phase of the Project.

ii) Agenda Circulation and Quorum

As far as possible efforts would be made that all of the members participate in EC meetings, however minimum of 2/3rd members would form the quorum of the EC meetings. Agenda of the meeting and proposals should be circulated by the Member-Secretary well in advance to all members, at least three days ahead of the meeting date. Proceedings of the EC meetings should be circulated to all the members/ attendees within reasonable timeframe, after the meeting is concluded.

iii) Roles and Responsibilities

EC will provide environment for sharing proposals on any areas of project functioning, and will encourage the members to provide ideas, views, and concerns. Member-Secretary of EC will keep systematic records and the proceedings of all such meetings.

EC would keep track of the project implementation, and would be responsible to guide, issue instructions, prepare guidelines, execute capacity development plan, establish and operate M&E, GIS/ MIS systems, undertake field visits, disseminate project information and provide-hand holding support in field, in almost all respect to ensure efficient implementation of the Project. The EC will also be responsible for timely submitting reimbursement claims, and institute concurrent audits as well as statutory audits on regular basis.

A designated officer in PMU will systematically maintain records of all meetings (HPC, GB, EC and AGM), and will make it available to reviewing authorities as per requirements. Falling in line with the authorities entrusted by the Governing Body, Executive Committee (EC) may accord administrative and financial sanctions of all individual schemes, proposals or procurement of goods & services not exceeding 2 million INR.

3 Details of Proposed Project Implementation Units

3.1 Proposed Structure of Project Management Units (PMU)

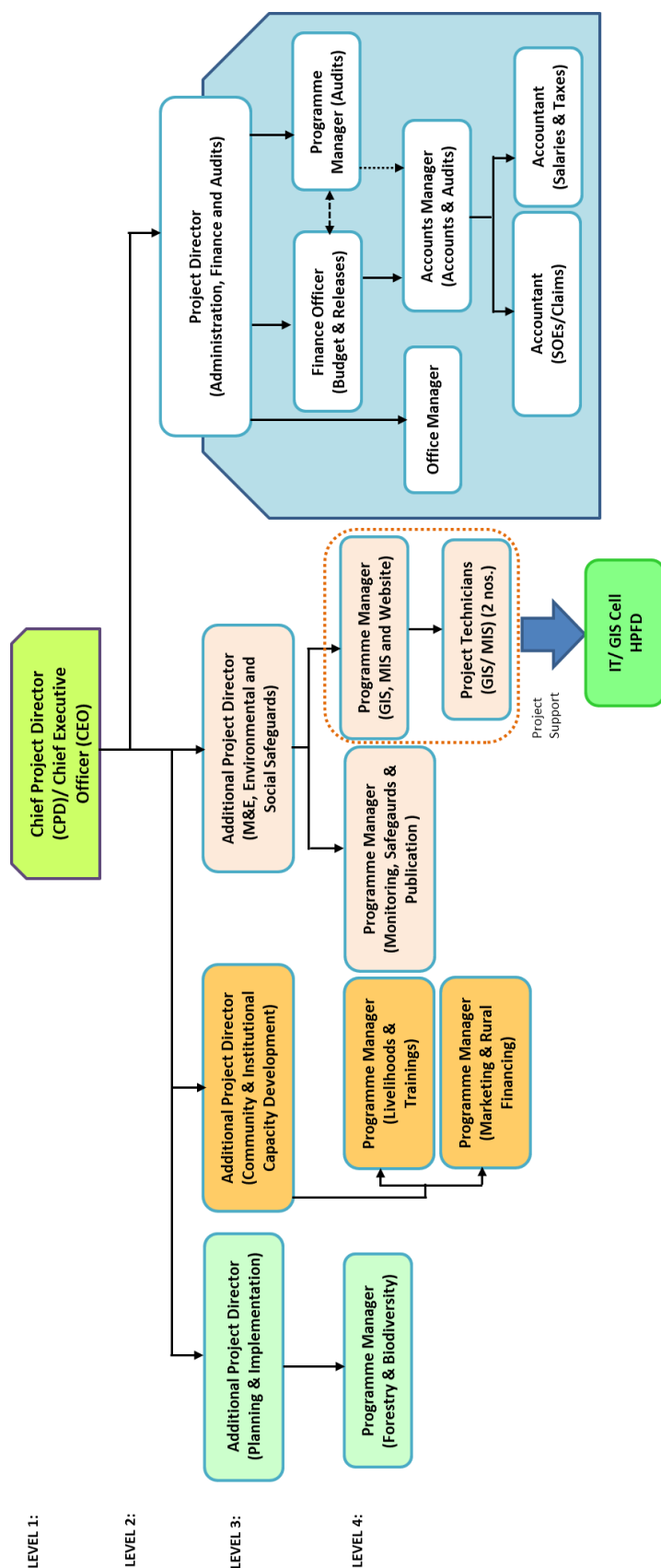
The autonomous society (PMU) would be headed by Chief Project Director (CPD) in the rank of CCF or above. S/he would also act as CEO of the Society and would chair the Executive Committee. S/he would be Member-Secretary to the Governing Body of the Society as well as to HPC constituted for the Project.

At the state level, CPD would be supported by a team officers and professionals that would include Project Director in the rank of DCF, Additional Project Directors (APDs) in the rank of DFO, Finance Officer, Programme Managers (PMs) and other support staff hired from open market including MIS and GIS professionals, accountants and ministerial staff. To augment various skill sets, PMU would further be supported by a team of experts constituting Project Management Consultants (PMC). As a part of the society, PMU would also establish FCCUs and FTUs to work as extended arms and support project implementation and supervision working along with the project divisions and the Gram Panchayats.

PMU will manage the project funds, extend funds to the implementing units – project divisions and Gram Panchayats, guide and supervise project implementation to achieve results within stipulated timeframe adopting the prescribed processes, collate and consolidate the expenditure statements from divisional and field offices, and prepare Statement of Expenditures (SOEs) for getting reimbursement of claims from JICA.

All the officers in PMU would either be on deputation from HPFD/ Finance Department for minimum of three years or as per existing deputation tenure specified in government rules or hired on contract from open market directly or recruited through a qualified and reputed placement/ govt. outsourcing agency. PMU would adopt the existing government orders for outsourcing staff for

hiring ministerial staff (steno/ computer operators, drivers, security/ utility persons etc.). Female candidates would be encouraged by PMU to join at different operational levels of the Project. The proposed structure of PMU is given in **Figure 3.1**.



Source: JICA Study Team (2017)

Figure 3.1 Proposed Structure of PMU

The proposed composition of the PMU will be as follows:

Table 3.1 Proposed PMU Staffing

Level	Rank	Position	Number	Source	Mode	Engagement
Key Staff						
Level 1	APCCF/CCF	Chief Project Director	1	State Forest Department	Deputation	Full Time
Level 2	CF/ DCF	Project Director	1	State Forest Department	Deputation	Full Time
Level 3	Controller (SAS)	Finance Officer	1	State Finance Department	Deputation	Full Time
Level 3	DFO	Additional Project Director	3	State Forest Department	Deputation	Full Time
Level 3		Program Manager/Chartered Accountant	1	Open Market	Contract	Full Time
Level 4		Program Manager	5	Open Market	Contract	Full Time
Level 5		Technicians	2	Open Market	Contract	Full Time
Level 6		Accounts Manager	1	Open Market	Contract	Full Time
Level 6		Office Manager	1	Open Market	Contract	Full Time
Level 7	Clerical Staff	Accountants	2	Open Market	Contract	Full Time
Total Key Staff			18			
Supporting Staff - Outsourcing						
Level 7	Clerical Staff	Personal Secretary	1	Open Market	Outsourcing	Full Time
Level 8	Clerical Staff	Personal Assistant	1	Open Market	Outsourcing	Full Time
Level 9		Stenographers	4	Open Market	Outsourcing	Full Time
Level 10		Computer Operators	8	Open Market	Outsourcing	Full Time
Level 10		Drivers	8	Open Market	Outsourcing	Full Time
Level 11		Security Staff	4	Open Market	Outsourcing	Full Time
Level 12		Peon	10	Open Market	Outsourcing	Full Time
Level 12		Housekeeping	2	Open Market	Outsourcing	Full Time
Total Support Staff			38			
Total PMU Staffing			56			

Source: JICA Study Team (2017)

Tentative responsibilities for the key staff positions in the PMU is given in **Table 3.2**.

Table 3.2 Responsibilities of Key Staff in PMU

No	Position	Rank	Number	Key Responsibilities	Remarks
Key Staff					
1	Chief Project Director	CCF/ APCCF	1	Overall technical, financial and administrative; ensure Time-Bound Action Plan, Overall project Implementation Plan; GB, HPC and Inter-sectoral convergence meetings; annual budgets, releases and Reimbursement Claims	Full Time; From FD on deputation for minimum 3 years
A. Administration, Finance and Audits Unit					
1	Project Director (Administration, Finance and Audits)	DCF/ CF	1	Overall supervision, administration & finance aspects; managing contracts - human resources, outsourcing, procurement of goods & services; annual budget & releases, expenditure; claims and fund disbursement, facilitate statutory and concurrent audits; RTI and Grievance redressal issues	Full Time; From FD on deputation for minimum 3 years

No	Position	Rank	Number	Key Responsibilities	Remarks
2	Finance Officer	Controller (SAS)	1	Supervising Accounts Manager, implement accounting software based double-entry system; monitoring financial progress and expenditures, ensure timely budget/ releases, utilization and SOEs/ claims & tax returns, coordinate with FCCUs/ FTUs; coordinate with other stakeholders; in addition, would assist PD to prepare agenda for EC, GB, HPC, AGM meetings;	Full Time; From FD on deputation for minimum 3 years
3	Programme Manager (Audits)	Sr. Manager	1	Assist in establishing financial control systems, establish financial management and project accounting systems, facilitate statutory audits, conduct/ supervise Internal/ Concurrent audits, capacity development of stakeholders, coordinate with other stakeholders	Full Time Chartered Accountant; Open Market
4	Office Manager	Manager	1	Assist in logistics and protocols; O&M of vehicles, office, equipment, security, store; organizing meetings & events; meeting letters & communications, document and maintain proceedings & all records and contracts,	Full Time; Open Market
5	Accounts Manager (Accounts & Audits)	Manager	1	Assist and maintain project accounts; bank operations, reconciliation of funds, seeking Utilization Certificates and assist audits, supervise Accountants	Full Time; Open Market
6	Accountant (SOEs/ Claims)	Clerical Staff	1	Assist in day-to-day accounting activities; preparation and maintain SOEs; prepare claims for submission to CAAA/ JICA; reconciliation of annual budgets and disbursements; facilitate and assist audits	Full Time; Open Market
7	Accountants (Salaries & Taxes)	Clerical Staff	1	Assist in day-to-day accounting activities; preparation and maintain salary/ remunerations details and payments; computation and deposit of taxes; assist audits	Full Time; Open Market
B. Planning & Implementation Unit					
1	Additional Project Director (Planning & Implementation)	DFO	1	Overall planning & implementation of interventions; annual plan, budget and approvals, technical guidance, biodiversity/ ecosystems conservation; ecosystem health card and supervision and coordinate with DFOs/ circle and FCCUs	Full Time; From FD on deputation for minimum 3 years
2	Programme Manager (Forestry and Biodiversity)	Sr. Manager	1	Assist in annual planning and implementation of PFM and Non-PFM Models and promotion of Forestry models and NTFP interventions in project areas, creation of people's biodiversity register, micro planning, design templates, guidelines and manual, monitoring & reporting and capacity building; coordinate with other stakeholders	Full Time; Open Market
C. Community and Institutional Capacity Development Unit					
1	Additional Project Director (Institutional and Capacity Development)	DFO	1	Overall planning & implementation of interventions; annual plan, technical guidance and supervision, coordinate for inter-sectoral convergence; support to leverage funds; strategize gender mainstreaming and women/ vulnerable group empowerment, develop partnerships & networks; and coordinate with DFOs/ circle and FCCUs	Full Time; From FD on deputation for minimum 3 years

No	Position	Rank	Number	Key Responsibilities	Remarks
2	Programme Manager (Livelihoods & Training)	Sr. Manager	1	Assist in annual planning and implementation of livelihood promotion; design small business/enterprise for community institutions for income generation, cluster promotion; capacity building and trainings, design templates, guidelines and manual, monitoring & reporting and capacity building, coordinate with other stakeholders	Full Time; Open Market
3	Programme Manager (Marketing & Rural Financing)	Sr. Manager	1	Assist in annual planning and implementation of livelihood promotion; value chain and market analysis, facilitate rural financing, design templates, guidelines and manual, monitoring & reporting and capacity building, coordinate with other stakeholders	Full Time; Open Market
D. M&E, Environment and Social Safeguards Unit					
1	Additional Project Director (M&E, Environmental and Social Safeguards)	DFO	1	Overall M&E – GIS/ MIS and research; study contract management, develop and supervise ToRs for studies; Guidelines and capacity building on M&E initiative, progress tracking and reporting on performance indicators; coordinate with DFOs/ circles and supervise & guide FCCUs	Full Time; From FD on deputation for minimum 3 years
2	Programme Manager (Monitoring, Safeguards & Publication)	Sr. Manager	1	Assist in monitoring and safeguards compliances, preparing quarterly and annual reports; preparing guidelines and manuals; project publicity and information dissemination, events/ workshops; develop knowledge material, publish newsletters, reports; coordinate with other stakeholders	Full Time; Open Market
3	Programme Manager (GIS, MIS and Website)	Sr. Manager	1	Assist in GIS based M&E, maintain GIS systems and equipment, software inventory & maintenance, procurement of imageries and spatial analysis, map production for planning & decision making, monitoring & reporting; establish GIS operations at all levels; coordinate with IT Cell of HPFD; coordinate for progress tracking and reporting; coordinate with other stakeholders	Full Time; Open Market/ Deputation
4	Project Technicians (GIS/ MIS)	Profession als	2	Assist in maintaining systems, GIS/ MIS operations at all levels, computer generated analytical GIS maps, MIS reports, website and digital repository, software inventory & maintenance; coordinate with other stakeholders	Full Time; Open Market
	Total Key Staff		18	Deputation/ Direct Hire	Full Time
	Total Support Staff		38	Outsourcing	Full Time
	Total PMU Staff		56		

Source: JICA Study Team (2017)

3.2 Proposed Structure of Forest Circle Coordination Unit (FCCU)

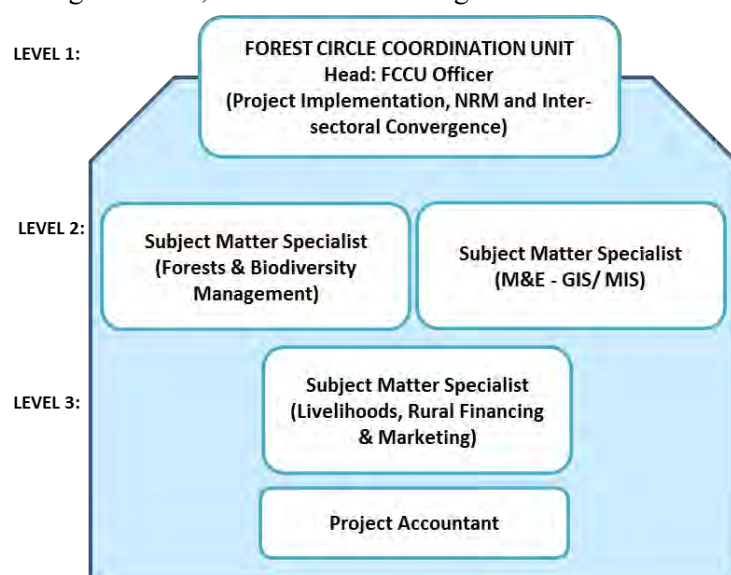
Forest Circle Coordination Unit (FCCU) will be created at district level where the Project would be implemented, and would function as the dedicated and extended wing of the PMU for project implementation and as a subordinate office of the autonomous society. FCCU would be headed by a DFO rank officer and would be designated as FCCU officer. S/he will coordinate and facilitate project implementation at the division level, and would extend all technical inputs and guidance on day-to-day basis both to the forest divisions and FTUs. The FCCU will coordinate with the

project divisions through an officer in the rank of ACF designed as ‘Division Nodal Officer’ who will also act as forestry expert. Officer Order/ Notification to effect this arrangement would be brought out by HPFD during implementation phase.

FCCU will receive funds for regular operation of FCCU as well as FTUs. FCCU will operate and report expenses to PMU, and will act as the controlling and supervising unit for the project implementation. In addition, FCCU would also be involved to channelize funds to GPs/ FWCs through as system of ‘Fund Advice Note’ to be prepared and recommended by FCCU officer to PMU for release of funds to GPs/ FWCs.

FCCU will also coordinate with the district administration for inter-sectoral convergence, participate in meetings at circle and district level, and extend support for planning, preparing estimates, monitoring, supervision and follow-ups, documentation and reporting the physical and financial progress. FCCU team will be guided by the Project Operation Manual as well as PMU.

FCCU officer will be supported by the subject matter specialists (SMSs) for supervising and guiding project implementation as well as the works carried out by NGOs and resource organisations, and facilitate convergence at the district level.



Source: JICA Study Team (2017)

Figure 3.2 Proposed Structure of FCCU

SMS (Forests & Biodiversity Management) would be responsible for extending assistance and guidance and supervision of forestry & biodiversity interventions, whereas SMS (M&E - GIS/ MIS) will be responsible for the data processing, coordination, supervision and guidance, monitoring, and support MIS/ GIS requirements, and SMS (Livelihoods, Rural Financing and Marketing) would be responsible for guiding and supervising livelihoods initiatives, coordinating

with financial institutions, product designing, packaging and marketing, facilitating licensing, etc. Project Accountant will coordinate with divisions and FTUs, and assist in maintaining the project accounts adopting double-entry accounting system using accounting software, and timely prepare SOEs for onward submission. Female candidates would be encouraged to join the Project at various positions. The structure of FCCU is given in **Figure 3.2**.

The proposed composition of FCCU is presented in **Table 3.3**.

Table 3.3 Proposed FCCU Staffing (Deputation/ Direct Hire/ Outsourcing)

Level	Rank	Position	Number	Source	Mode	Engagement
Key Staff						
Level 1	DFO	FCCU Officer	1	State Forest Department	Deputation	Full Time
Level 2		Subject Matter Specialist	3	Open Market	Contract	Full Time
Level 3		Project Accountant	1	Open Market	Contract	Full Time
Total Key Staff			5			
Supporting Staff						
Level 4		Computer Operator	1	Open Market	Outsourcing	Full Time
Level 5		Driver	1	Open Market	Outsourcing	Full Time
Level 6		Peon	1	Open Market	Outsourcing	Full Time
Total Support Staff			3			
Total FCCU Staffing			8			

Source: JICA Study Team (2017)

Tentative responsibilities for the key staff positions in FCCU is given in **Table 3.4**.

Table 3.4 Responsibilities of Key Staff in FCCU

	Position	Rank	Nr	Key Responsibilities	Remarks
	Key staff				
1	FCCU officer	DFO	1	Overall technical, financial and administrative, annual plan, SOEs, project reviews; coordination with the project divisions, facilitate inter-sectoral convergence at district level, monitoring & reporting and capacity building	Full Time; From FD on deputation for minimum 3 years or more
2	Subject Matter Specialist (Forests & Biodiversity Management)		1	Assist in annual plan and implementation; guidance and supervision of forestry and biodiversity interventions, data compilation, reporting and capacity building; coordinate with other stakeholders	Full Time; Open Market
3	Subject Matter Specialist (M&E – GIS/ MIS)		1	Assist in monitoring annual plan; MIS/ GIS data compilation, progress monitoring based on MIS and GIS, reporting and capacity building; coordinate with other stakeholders	Full Time; Open Market
4	Subject Matter Specialist (Livelihoods, Rural Financing and Marketing)		1	Assist in annual plan and implementation; guide on livelihoods; small business/ enterprise plan, inter-sectoral convergence; assist in value chain and market analysis, rural financing, support cluster development, extend support to leverage funds, monitoring & reporting and capacity building; coordinate with other stakeholders	Full Time; Open Market
5	Project accountant		1	Assist in fund management & releases, expenditure tracking, utilization certificates, SOEs, tax filing, audits etc.; coordinate with divisions and FTUs for financial progress reporting	Full Time; Open Market
	Total key staff		5	Deputation/ Direct Hire	Full Time
	Total support staff		3	Outsourcing	Full Time
	Total FCCU staff		8		

Source: JICA Study Team (2017)

3.3 Proposed Structure of Field Technical Unit (FTU)

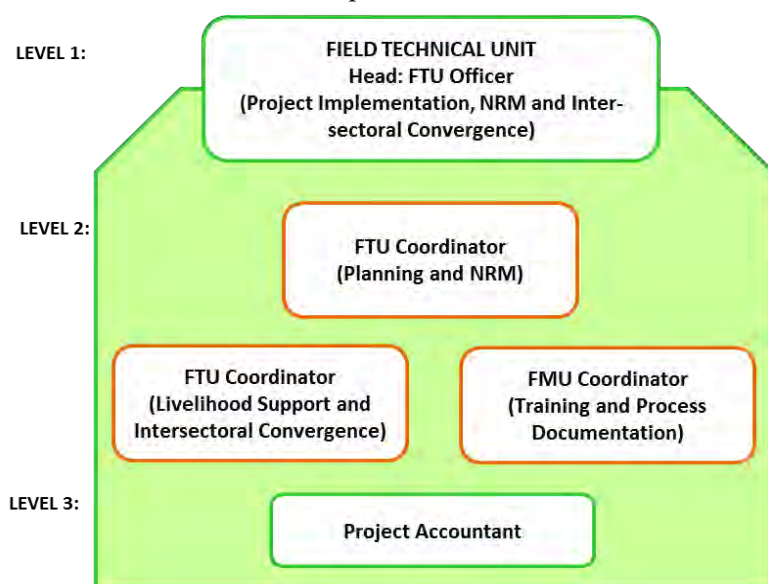
Field Technical Unit (FTU) will be created as an extended arm of PMU and as a part of the autonomous society, and could be housed within the range office. FTU would be headed by a deputy ranger rank officer/ block officer on deputation from the Forest Department, and would be designated as FTU officer. S/he will facilitate project implementation at the range level, and would

extend all technical inputs and guidance at field level on day-to-day basis. FTU will be guided and supported by FCCU, and will coordinate with the project ranges through an officer in the rank of deputy ranger/ ranger designed as ‘Range Nodal Officer’ who will also act as forestry expert. Officer Order/ Notification to the effect this arrangement would be brought out by HPFD during implementation phase.

FTU will operate and report expenses to FCCU that will act as the controlling and supervising unit for the project implementation. FTU would not be involved to channelize funds to GPs/ FWCs, however ‘Fund Advice Note’ for release of funds would be prepared and recommended by FTU officer.

FTU will coordinate and support forest range units involved in the Project as well as guide and facilitate the GPs/ FWCs and community institutions for planning, preparing estimates, monitoring, supervision and follow-ups, documentation and reporting the physical and financial progress. FTU team will be guided by the project operation manual as well as FCCU/ PMU.

FTU officer will be assisted by three FTU coordinators specializing in areas like – Planning and NRM, Livelihood Support and Inter-sectoral Convergence, Training and Process Documentation, and support staff to manage project activities. Female candidates would be encouraged to join the Project at various positions. FTU would be further supported by NGO particularly, for community mobilization and social processes.



Source: JICA Study Team (2017)

Figure 3.3 Proposed Structure of Field Technical Unit (FTU)

Development and Livelihood Improvement Plan (CD&LIP). FTU coordinator (Training and Process Documentation) will act as a resource person for village and community institutions for institutional capacity building as well as facilitate or execute the training activities for the village/ community institutions. S/he would also coordinate with fellow FTU coordinators as well as NGOs to understand specific training needs, and accordingly plan for capacity development initiatives. Project Accountant will coordinate with the forest range offices as well as village institutions to

FTU coordinator (Planning and NRM) will be responsible for facilitating Forest & Ecosystems Management Plan (FEMP), and will also be responsible for progress monitoring and reporting including data compilation and ensuring the Project GIS and survey requirements. FTU coordinator (Livelihood Support and Inter-sectoral Convergence) will guide the NGOs and resource organisations during planning and IGAs initiatives, and facilitate preparation of Community

maintain the project accounts adopting double-entry accounting system using accounting software, and timely prepare SOEs for onward submission as well as look after project MIS requirements. The structure of FTU is given in **Figure 3.3**.

The proposed composition of FTU is described in **Table 3.5**.

Table 3.5 FTU Staffing (Proposed – Deputation/ Direct Hire/ Outsourcing)

Level	Rank	Position	Number	Source	Mode	Engagement
Key staff						
Level 1	Deputy Ranger	FTU officer	1	State Forest Department	Deputation	Full Time
Level 2		FTU coordinator	3	Open Market	Contract	Full Time
Level 3		Project accountant	1	Open Market	Outsourcing	Full Time
Level 4		Computer operator	1	Open Market	Outsourcing	Full Time
Total key staff			6			

Source: JICA Study Team (2017)

Tentative responsibilities for the key staff positions in FTU is given in **Table 3.6**.

Table 3.6 Responsibilities of Key Staff in FTU

	Position	Rank	Nr	Key Responsibilities	Remarks
	Key Staff				
1	FTU officer	Dy. Ranger/ Block Officer	1	Overall technical, financial and administrative, annual plan, SOEs, and project reviews & reporting, facilitate inter-sectoral convergence at block level	Full-Time; From FD on deputation for minimum 3 years or more
2	FTU coordinator (Planning and NRM)		1	Assist in annual planning; supervise and guide implementation, afforestation, pasture and NTFP interventions, GIS and assist in assessment surveys, monitoring & reporting; coordinate with other stakeholders	Full Time; Open Market
3	FTU coordinator (Livelihood Support and Inter-Sectoral Convergence)		1	Assist in annual planning and implementation; guide and facilitate microplanning, livelihood; small business/ enterprise plans, inter-sectoral convergence; cluster promotion; capacity building, monitoring & reporting; coordinate with other stakeholders	Full Time; Open Market
4	FTU coordinator (Training and Process Documentation)		1	Assist in annual planning and implementation; execute capacity building plan, gender mainstreaming; assist to develop partnerships & networks, act as resource for institutional capacity building; monitoring & reporting; coordinate with other stakeholders	Full Time; Open Market
	Total key staff		4	Deputation/ Direct Hire	Full Time
	Total support staff		2	Outsourcing	Full Time
	Total FTU staff		6		

Source: JICA Study Team (2017)

3.4 Other Implementing/ Facilitating Institutions

(1) Circle Offices of HPFD

Circle offices of HPFD having their jurisdiction in the project divisions will supervise and review the project implementation along with their respective regular and designated overseeing responsibilities, and would provide vital link between the Project and regular departmental

activities. The circle offices will also be responsible for cross-checking project works vis-à-vis financial and physical progress reporting, and would participate in project events. Circle offices would also be nodal for Grievance Redressal under the Project as per the project M&E system. PCCF (HoFF) through an office order would instruct these offices to supervise and support project activities in routine manner within their jurisdictions.

(2) Project Management Consultants (PMC)

As a part of the project design and institutional arrangements, PMC team will be deployed at state level to assist PMU in managing the Project and extend required technical guidance for limited number of years. The team composition of PMC would carry skill set and experience to complement and supplement PMU initiatives, provide technical support in preparing guidelines and procedures as well as provide an independent view on project implementation.

(3) Specialized Agencies/ Resource Organisations

Skill training required for SHGs and cluster level enterprises would be undertaken by the specialized and credible organisations having proven history of delivering the technical training programmes to the similar type of community institutions.

The services of the Specialized Agency/ Resource Organisations will be procured by PMU through a local competitive bidding process, conforming to the applicable procurement guidelines. Quality and cost based selection (QCBS) method will be adopted by PMU.

(4) District Planning Committee (DPC)

Inter-sectoral linkages would be ensured through the existing institutions in place at state, district and block level. The 74th Constitutional Amendment Act mandated the establishment of District Planning Committees (DPCs) for consolidating plans prepared by Village Panchayats and Municipalities in the district into the draft district plan.

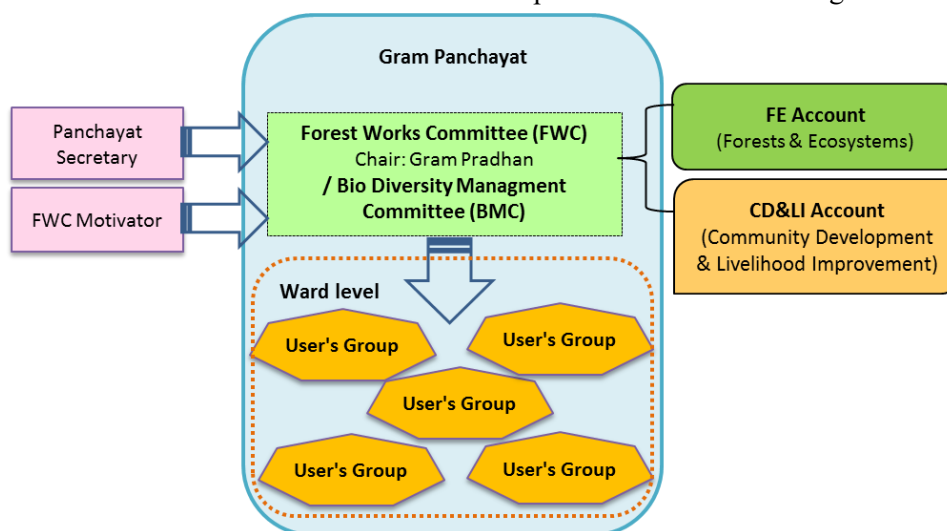
The idea is to strengthen existing institutional mechanism rather creating an additional system at district. DFO in a division is already coordinating with district administration on regular basis for issues related with Forest Conservation Act (FCA), Forest Rights Act (FRA), forests related issues, MGNREGS programme etc.

Adopting the system in place for inter-sectoral linkages, PMU at state level will coordinate with the Planning Department, whereas at the district level FCCU officer will assist and coordinate with the steering committee chaired by district collector. The steering committee is created to assist DPC for preparing draft district plan considering the development plans prepared by each Block Level Planning Committee for all Panchayat Samities within their jurisdictions. Similarly, FTU officer will assist and coordinate with Block Level Planning Committee whose Member-Secretary is block development officer.

4 Proposed Community Implementation Organisation: Gram Panchayat

4.1 Overview

The key institution to be engaged in the Project would be Gram Panchayats (GPs) (**Attachment II.4.1.2**). As the main community level implementing body for the purpose of the Project, Gram Panchayat through its resolution (sample resolution presented in **Annex 1**) would create a sub-committee in name of 'Forest Works Committee (FWC)' comprising 7~9 members having representation from all wards of a Gram Panchayat, and key members elected in a Gram Panchayat. The creation of the sub-committee must be reported to the PRI authorities by Gram Pradhan as per requirement under the Panchayati Raj Act, 1994. At the same time, wherever required and if possible under the Biological Diversity Act, 2002 provisions, the Project will take advantage of Biodiversity Management Committee (BMC), engaging for works in and around protected areas. The FWC would act as executive committee for the beneficiaries who would directly participate in the Project or get benefited in short/ long-term in some way due to project interventions. Ward-wise list of such direct beneficiaries (one adult member from each household) would be created at first place, and will be kept with the Gram Panchayat Secretary as 'Membership Register'. Out of this membership list, User's Groups will be created at ward level for executing the site-specific works for the Project. Furthermore, the user's groups to be targeted in the Project are intended to include similar functions as well as roles of VFDS depicted in the HP PFM Regulations 2001.



Source: JICA Study Team (2017)

Figure 4.1 Proposed Institutional Arrangements at Gram Panchayat

Indicative proposed institutional arrangements for FWC is presented in **Annex II**.

Annex I: Sample Resolution by Gram Panchayat

Constitution of Forest Works Committee (FWC) for HPFEM&LIP

Proposal No.: _____ Date: _____

Name of Gram Panchayat _____

Block: _____ District: _____

Today, _____ (date) at _____ (time) and at _____ (place/ venue) in the meeting chaired by Gram Pradhan of the Gram Panchayat, and with the consent of the members as per the attendance of the meeting, hereby constitutes the Forest Works Committee (FWC) for a period of **two** years following the government notification no. _____ dated _____. This committee shall be reconstituted prior to expiry of tenure.

Details of the members of the Forest Works Committee (FWC)

No.	Member Category	Name	Father's Name	Aadhar No.	Ward No.	Contact No.	Signature
1	Head						
2	Women						
3	Women						
4	SC/ ST						
5	SC/ ST						
6	Ward						
7	Ward						
8	Ward						
9	Ward						
10	Panchayat Secretary						
11	Member Secretary						

Following would be the key functions of the above constitute committee:

- Shall function as envisaged in the guidelines and manual of the project.
- Shall collectively prepare plan of action and execute the same for each financial year with community participation.
- Shall manage the funds efficiently, maintain proper financial records, and timely submit statement of expenditures every month/ quarter.
- Shall facilitate and provide all required records and information to the audit teams.
- Shall follow the instructions issued by the project authorities from time-to-time.

(Signature & Stamp)
Gram Pradhan Name

(Signature)
Member-Secretary Name

(Signature & Stamp)
Panchayat Secretary Name

Annex II: Proposed Institutional Arrangements of FWC

(1) Composition of FWC

Gram Sabha would be organized for constituting the committee. FWC will be headed by Pradhan (or any other eligible Panchayat member) and will have two representing SC/ ST community or weaker section of the society as decided in the Gram Sabha. Women shall constitute 50% or more number of members in a committee. The Pradhan as head of FWC will be assisted by educated and knowledgeable person to be identified from within the village panchayat. The person should be willing to participate and can provide time for guiding and supervising project interventions, as well as also facilitate community action, meetings, events, trainings and other associated activities. This person would be called as 'FWC Motivator', and will act as Member-Secretary to the FWC. The tenure of the committee will be for two years, and need to be reconstituted prior to expiry. The composition would be as follows:

Table 1 Composition of the Forest Works Committee (FWC)

No.	Member Category	Members	Remarks
1	Head of Committee	1	Pradhan or eligible Panchayat member (as decided in Gram Sabha)
3	ST/ SC	2	Literate/ educated; if possible, one from each category; else as applicable
4	Wards	2~4	Representing participating wards
6	Panchayat Secretary	1	Will be member with no voting rights
5	Member Secretary	1	FWC Motivator
Total Members		7~9	

Source: JICA Study Team (2017)

(2) User's Group under FWC

The works would be executed on ground by FWC through User's Groups. Depending on the number of site specific activities User's Group would be formed at Ward-level under FWC out of the Membership Register. User's Group would be represented by one member per family. No other members from the same family could be included in other User's Group. Also, no member of a User's Group could also be a member in other User's Group. The decision of formation of User's Group would be taken in an open meeting called by Gram Pradhan, and attended by no less than 1/5th of adult members in a Gram Sabha.

(3) Bank Accounts for Implementing Project Interventions

Two bank accounts would be opened in nearest service area bank branch or post office, viz., a) Forests & Ecosystem Management (FE account), and b) Community Development & Livelihood Improvement (CD&LI account). These accounts would be operated by joint signatory as per the provision made in the Panchayati Raj Act, 1994.

(4) Office Space

Office space for operation of FWC would be provided by the Gram Pradhan within the Panchayat office space for the project period, and shall notify about the allocation of space to the project authorities. Strengthening of the FWC office would be supported by the Project.

(5) Notification by the Panchayati Raj Department

A Government Order (GO) need to be issued by the Panchayati Raj Department to effect the provisions of creation of sub-committee for the Project, opening of bank accounts to receive project funds, procedure of fund utilization and reporting, providing work space in the Panchayat building, sign MoU with the FD for executing forestry works as per project norms, and for operation and maintenance of asset created under the Project, etc.

(6) Project Planning

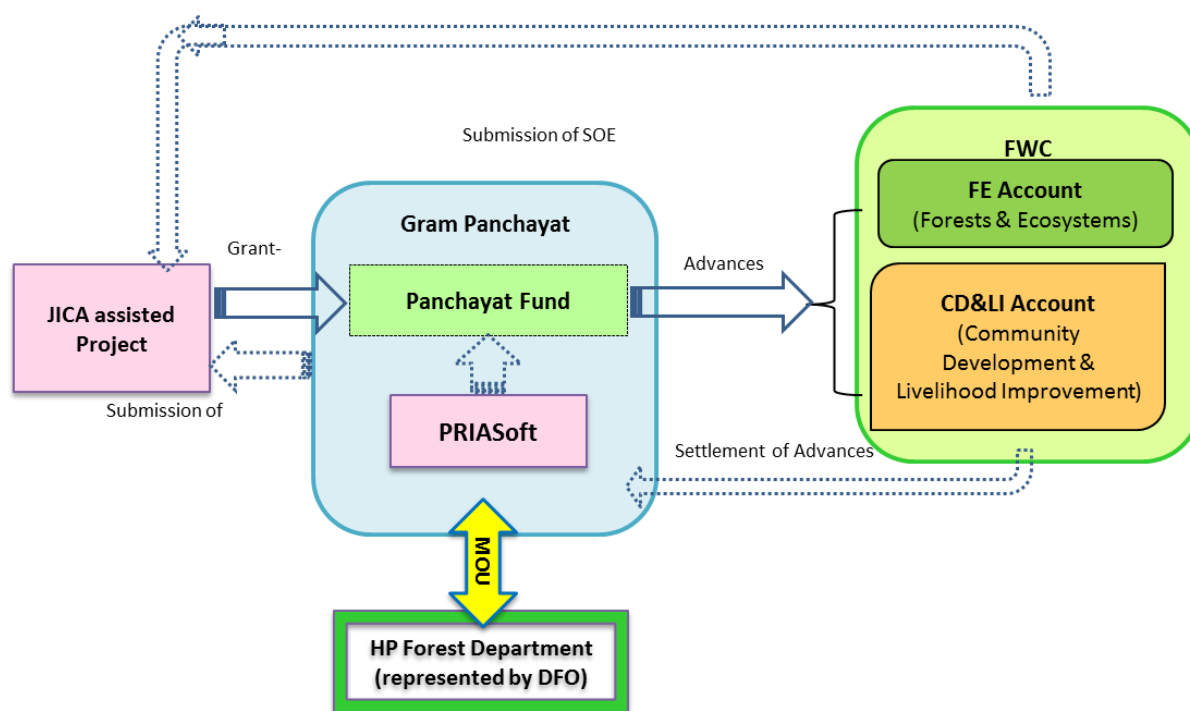
Following the participatory planning processes and with involvement of community as well as the forest department, FWC will prepare two plans, viz., a) Forest Ecosystems Management Plan (FEMP), and b) Community Development and Livelihood Improvement Plan (CD&LIP). These plans would first be approved by the Gram Sabha. The tenure of these plans would be 3 years or more, if required. Annual Implementation Plans (AIPs) would be prepared for every financial year for each of these plans.

The process of preparing these plans afresh will be initiated 6 months prior to the expiry. For the project implementation MoU would be signed between the GP (FWC) and the Forest Department. The activities planned in these plans shall be financed through two separate accounts to keep track of the financial transaction and transparency. The flow of the fund is given in **Figure 1**. The outline of the FEMP and CD&LIP are given in **Part II Chapter 3 (Section 3.8.2)**.

(7) Fund Flow to FWC

The funds would flow to respective village level institutions (FWCs) for executing the plans. The funds from the project would be first received by the Gram Panchayat in the 'Panchayat' fund, and from the 'Panchayat Fund' the requisite funds will be given as advance to FWC in respective bank accounts viz., 'FE account' and 'CD&LI account'. FWC would make expenditures as prescribed in the approved plans following project norms, and will also report the expenditures to the Gram Panchayat to set-off the advances.

These financial transactions would be captured in PRIASoft (an accounting software for PRIs - refer **appendix 1**) as well as in accounting software of the Project. Through its institutional arrangements, the Project would also extent accounting and data-entry support at the Panchayat level.



Source: JICA Study Team (2017)

Figure 1 Fund Flow to the Gram Panchayat under the Project

The funds according to the AIP formulated for each financial year referring the approved FEMP would be received in the 'FE account', whereas the funds for community development & livelihood improvement allocated as per the approved CD&LIP in similar manner would be received in the 'CD&LI account'.

The funds could be given to the village institutions only after beneficiary share in terms of 'membership fee' is collected as per the Membership Register and deposited in the FE account, and reported by the Pradhan as head of FWC.

The membership fee could be collected from all recognized houses falling in a Gram Panchayat as far as possible to build in the stakes of the large set of community as well as to equitably spread the benefits from the project. The fee is basically realization of a minimal cost up-front for receiving the benefits from the target forest areas or ecosystem or in other words it is PES by the first users, and would be utilized to create a Corpus Fund.

Table 2 Funds for Implementation

No.	Items	Share/ Contribution	Remarks
1	Beneficiary Share	Rs.200 per household – one time (or decided by Gram Sabha)	Contribution to Corpus fund
2	Project Fund	Matching Contribution – one time	Contribution to Corpus fund
3	Project fund	As per approved FEMP	For implementation of FEMP
4	Project fund	As per approved LIP	For implementation of LIP

Source: JICA Study Team (2017)

The funds collected as beneficiary share along with the Project contribution to the Corpus would be fix deposited in a nationalized bank or post office as 'Corpus Fund'. This corpus fund would act as security for the village institution in future, and could be utilized for maintenance of forests and ecosystems after cycle of interventions gets over during the project period and/or beyond the Project.

(8) Method of Executing Project Works

The funds through the Project are available for executing works adopting PFM mode and Department mode. These works would be executed directly by the FWC or the department respectively. Some of the activities would also be executed by the FD by engaging FWC members/ User's Groups as per MoU. **Table 3** depicts category of works and method of executing these works.

Table 3 Method of executing Project Works by FWC

No.	Mode	Responsibility	Method of Executing Works	Category of Works
1	PFM	FWC/ GP	Direct through User's Group/ SHGs as per LIP	Planning, small structures, EPA, in-situ training, livelihood improvement works, NTFP Cultivation on private lands/ clusters etc.
2	Department	FD	MOU between GP/ FWC and DFO as per FEMP	Plantations and forestry operations, nurseries, SMC & SWC/ DLT works, pasture management, protection – plantation and forest fire etc.

Source: JICA Study Team (2017)

(9) MoU between FWC/ GP and HPFD

The Memorandum of Understanding (MoU) between FWC/ GP represented by the Gram Pradhan / President FWC on one hand and HPFD represented by DFO on other hand would act as an instrument for executing project works as per the FEMP as well as for joint management of forests and ecosystems. The MoU will spell out the roles, regulations, rights & responsibilities and rewards/ incentives for executing project works as well as sustainably manage forest resources/ ecosystems together with equitable sharing of usufructs. The approved FEMP will be attached and will form part of the signed MoU for records and monitoring purposes.

(10) Maintenance of FWC Records and Accounts

FWC Motivator would be responsible for maintaining membership register, project works register, proceeding register, expenditure bill book, complaint register and community development and livelihood promotion/ community institution loan register, whereas secretary with the Gram Panchayat with maintain cash book and payment register.

(11) Audit of FWC Accounts

PMU would conduct independent annual audits of the FWC accounts. In addition, concurrent audits – quarterly or semi-annually or as per the frequency indicated in the operation manual will also be conducted. Also, the GP would also be liable to the audits as spelt out in the Panchayati Raj Act, 1994.

(12) Mobile App based Updating of Project Progress and Accounting

FWC Motivator would update the project progress and accounting details (as per the cash book entries) on the mobile app to be developed by the Project. Project accountant at FTU level would be responsible to supervise and check the entries every month in a routine manner.

(13) Support to FWC

During project implementation, following support would be extended to the FWC created within Gram Panchayat to facilitate project implementation.

Table 4 Support to FWC under the Project

No.	Support Item	Description/ Provision	Remarks
1.	Office Furniture	One small Almirah, Two Tables with chairs, four visitor's chairs, a Dari (carpet).	One-Time support; say 10,000 INR
2.	Annual Office Operation	Rs.60 per month or 720 INR to be given one-time at the start of the financial year	For meeting stationery, photocopy, hospitality etc.
3.	Mobility and Communication allowance	Pradhan – 1,500 INR per month Secretary – 1,000 INR per month	Towards mobility, communication and other expenses related to works.
4.	Honorarium	FWC Motivator – 4,500 INR per month	To facilitate project works, and for mobility, communication and other expenses related to works.
5.	Project Stationery	Membership Register/ Project Works Register/ Bill Book/ Cash Book/ Payment Register/ Proceeding Register/ Complaint Register/ Livelihood Promotion/ SHG Loan Register	To be printed by the project and provided to Gram Panchayat
6.	Smartphone	One quantity; Smartphone would be used to access mobile apps designed for updating project's physical and financial progress, capturing, geo-tagging and uploading site/ activity photographs, and to communicate with the project authorities using messaging tools like WhatsApp	One time cost; Rs.5000~Rs.6000
7.	Training	Training on computer applications/ office-automation aids, and GIS/ scientific approach based planning for Panchayat Secretary and Gram Pradhan/ other panchayat members	This request has been made by the Director, Panchayati Raj
8.	Social Audit	Project would support to conduct Social Audits by GP/FWC for the project interventions.	This request has been made by the Director, Panchayati Raj;
9.	Financial Audit	In addition to the Financial Audits to be conducted as per the Panchayati Raj Act, the project would also conduct annual financial audit as well as concurrent audits	Supported by the project

Source: JICA Study Team (2017)

Appendix 1 (of Annex 2): Panchayati Raj Institutions Accounting Software (PRIASoft)¹

About PRIASoft

PRIASoft aims to keep track of all the in-flow (Receipts) and out-flow (Expenditure) of the Panchayati Raj Institutions. The Application facilitate better financial management of Panchayati Raj Institutions (PRIs) by bringing about transparency and accountability in the maintenance of accounts thereby leading to better credibility and ultimately strengthening of PRIs. It is a centralized Accounting Software intended for use by all the three levels of Panchayati Raj namely Zilla, Block and Village Panchayat. Apart from making the process of accounting simple and easy (necessarily due to lack of trained manpower at this level), it ensures a better financial management, transparency and accountability at the Panchayat level.

PRIASoft features

- a) Strengthening Transparent Accounting By Panchayat
 - Web Enabled, Open Source Based e-Governance solution.
 - Complies with C&AG prescribed 4-tier accounting classification under Model Accounting Structure
- b) Helping You Get Most From Transactions
 - Follow Double-Entry And Cash-Basis system of Accounting.
 - Scheme Driven approach to record Receipt / Payment / Contra / Journal Vouchers.
 - Facilitates Bank/Treasury/Post Office Reconciliation and Period End Procedures
- c) Communication Made Easy
 - Provide Multilingual Support.
 - Adaptability to variations across states
- d) Providing Value Added Features
 - Facilitates Offline Voucher Entry.
 - Avail Important Reports on Mobile
- e) Download reports in Various Formats
 - Supports reports downloads in .pdf, .exl etc. formats as per user requirement and compatibility
- f) SMS/Email Based Alerts/Notification
 - Provides alerts and notification on email and SMS for any important process completion/failure in PRIASoft, allowing fast updates to users

¹ Source: http://panchayatonline.gov.in/viewappswindow.htm?OWASP_CSRFTOKEN=F1V3-EID8-TJXJ-NG6R-M71J-OCMR-DMYH-F7G7&appname=indexpriasoft

Attachment II.4.2.1 Roles and Responsibilities within Institutional Arrangements

Component	Roles and Responsibility
High Powered Committee (HPC)	<ul style="list-style-type: none"> Highest decision-making authority over the Project Approval of budget and annual plan of operations of the Project; and review the project performance every six-months Approval of the Operation Manual (including Financial Rules/ procedures) for the Project; Framing operational procedures for the Project for smooth and effective implementation; Facilitating inter-departmental coordination for required synergy and convergence, and also to oversee to minimising duplication of efforts; Taking up initiatives to resolve issues with GOI and JICA, if required.
Governing Body (GB)	<ul style="list-style-type: none"> Highest decision-making body of the autonomous society Providing authority to the PMU for day-to-day functioning; Supporting the PMU in approval of budget and annual plan of operation, and other proposals of the project; Rigorously review the project progress vis-à-vis annual plans at least once every quarter; monitor financial and physical progress Facilitate budgets & release and monitor the fund disbursement status Guide the PMU in the preparation of Operation Manual; Prepare proposals for the HPC whenever necessary for the smooth implementation of the Project
Project Management Unit (PMU)	<ul style="list-style-type: none"> Decision making body on day-to-day Project functioning and activities; will utilize autonomy to ensure smooth and timely implementation of the project Will manage the budgets & releases and monitor the project activities Keep track of the project implementation, and responsible to guide, issue instructions, prepare guidelines, execute capacity development plan, establish and operate M&E system, Undertake field visits and provide-hand holding support in field in almost all respect for ensuring efficient implementation of the project Collate and consolidate the expenditure statements from divisional and field offices and prepare Statement of Expenditures (SOEs) for getting reimbursement of claims Organize annual planning and review workshop at state level, and also conduct AGM Undertake statutory and internal/ concurrent audits
Circle Offices	<ul style="list-style-type: none"> Will hold responsibilities for the regular overseeing project activities implemented through DFO offices Conduct reviews and cross-check project works vis-à-vis financial and physical progress reporting Conduct monthly meetings / hearings for Grievance Redressal Chair and participate in Annual Planning and Review Workshop and other events organized at divisional level
Forest Circle Coordination Unit (FCCU)	<ul style="list-style-type: none"> Established within the circle office and headed by CF/CCF rank officer Coordination with project divisions (DMU) for smooth project implementation, and with district administration and line departments for convergence and synergies Coordination with project Ranges (FTU) and Gram Panchayats through FTU. Coordination with other key stakeholders viz. Resource Organizations, NGOs etc. Extend technical guidance and support to the project divisions and ranges Support project divisions in supervision, follow-ups, capacity development and information dissemination Support project divisions in progress compilation, reporting and documentation Facilitate funds flows and preparing project accounts for filing reimbursement claims

Component	Roles and Responsibility
Divisional Management Unit (DMU)	<ul style="list-style-type: none"> Established within forest divisions and headed by a DFO as ex-officio Assist the PMU in planning, fund management, work progress monitoring and documentation at the field level Supervise, monitor, review and guide field functionaries and activities; and conduct monthly review meetings Prepare physical and financial reports, and timely submit SOEs and utilization certificates Maintain separate bank account and records for project funds, and facilitate audits Organize annual planning and review workshop at divisional level, and execute capacity building plan Provide budgets to VFDSs/ EDCs Prepare as per approved micro-plans/ annual implementation plans Conduct monthly review meetings with key stakeholders
Range level: Field Technical Units (FTUs)	<ul style="list-style-type: none"> Established within a range and headed by a range officer as ex-officio Assist the project division (DMU) in planning, fund management, work progress monitoring and documentation at the field level Facilitate micro-planning process, and support its implementation at community level Take active roles at implementation of project related activities within the range Maintain separate bank account and records for project funds, and facilitate audits Prepare physical and financial reports, and timely provide utilization certificates for all annual releases to FTU and village institutions Conduct monthly review meetings with key stakeholders
Community-level	<p>VFDS to be established at Ward Level as per PFM Regulations 2001</p> <ul style="list-style-type: none"> Receive funds from the DMU in project account as per the annual implementation plan, and execute the actual work in the field as per prescribed rules, processes and guidelines; timely provide the utilization certificates Responsible for planning, implementation, monitoring and reporting at the lowest level Maintain separate bank account and records for project funds, and facilitate audits Prepare physical and financial reports Engage Animators, would be an educated person identified by community, to support their functioning <p>BMC established as per National Biodiversity Act 2002 will have the similar roles and responsibilities in respect to the community based biodiversity management of the Project.</p> <p>Sub-committees of BMC are proposed to be the community level implementation bodies at ward level.</p>
Project Management Consultants (PMC)	<ul style="list-style-type: none"> Will provide technical and managerial support to PMU Support PMU by a team of experts to augment various skills required for the project implementation

Source: JICA Study Team (2017)

Attachment II.4.4.1 Indicative TORs for Programme Managers and Technicians at PMU

1. Programme Manager (Audit)

1. Objectives of the Assignment

Assist the Project Management Unit (PMU) – a project apex unit at state level, in establishing financial control systems, financial management and project accounting systems, Taxes (GST/ IT etc.) and Duties compliances, facilitate statutory audits, conduct/ supervise Internal/ Concurrent audits, track claims and disbursement status, capacity development of stakeholders, coordinating with other stakeholders.

2. Key Tasks to be Performed

Following would be the key tasks to be performed/ extending assistance, but not limited to:

- Establish financial management systems and procedures as per the approved operation manual
- Provide guidance for establishing accounting and financial reporting system
- Track compliances regarding Taxes and Duties, and settlement of issues with the respective departments
- Develop and establish system of undertaking internal/ concurrent audits, and supervise the exercise for each financial year
- Develop ToRs for hiring CA Firms for statutory and concurrent audits
- Facilitated statutory audits at PMU level
- Facilitate submission of SOEs vis-à-vis budget releases
- Track status of Reimbursement Claims and Disbursement on monthly basis
- Participate and contribute in review meeting and project events
- Facilitate capacity building initiatives, and act as resource for financial management and audits orientations
- Coordinate with other stakeholders for operationalizing and maintaining financial management system
- Compilation of progress reports and preparing various reports and documents

3. Duration of the Assignment

The engagement would be for the duration of the project, however the contract would be for one year that could be renewed annually based on the performance to the satisfaction of the PMU. Candidate would be eligible for receiving increment at renewal based on satisfactory performance and as decided by the PMU.

4. Outputs/ Deliverables

Monthly Assignment Report highlighting tasks performed during the month vis-à-vis monthly plan to be finalized with Project Director (Administration, Finance and Audits) at start of the month. This report would be submitted to Project Director (Administration, Finance and Audits) and approved by the Chief Project Director (CPD).

5. Desired Qualifications

The person should possess following key qualifications:

- i) Certified CA, ICWA, Master's degree along with Certified Public Accountant (CPA) or Certified Internal Auditor (CIA) credential or equivalent certification from recognized institution;
- ii) Excellent knowledge to work on computers, accounting software and spreadsheets;
- iii) Experience of around 10 years or more in similar work profile;
- iv) Fit to work in Himachal Pradesh conditions, and willing to travel across the state in remote and hilly terrains;
- v) Excellent writing and communication skills in English and Hindi;
- vi) Strong interpersonal skills and the ability to communicate and work well with diverse people.

6. Others

It's a full-time position located at state level. The position to be hired on contract from open market. This is equal opportunity position open to all eligible candidates. Women candidates will be encouraged. Age limit: Less than 50 years.

2. Programme Manager (Forestry and Biodiversity)

1. Objectives of the Assignment

Assist the Project Management Unit (PMU) – a project apex unit at state level, in annual planning and implementation of PFM and Non-PFM models/ interventions and promotion of Forestry models and NTFP interventions in project areas, creation of people's biodiversity register, micro planning, design templates, guidelines and manual, monitoring & reporting and capacity building; coordinating with other stakeholders.

2. Key Tasks to be Performed

Following would be the key tasks to be performed/ extending assistance, but not limited to:

- Contribute to and facilitate for annual planning at PMU by coordinating with the DMUs/ FCCUs
- Contribute in developing and dissemination of guidelines and manuals/ hand books
- Coordinate with Wildlife Wing for project activities
- Guide and facilitate implementation of forestry and biodiversity interventions
- Facilitating NTFP interventions and coordinate with the NTFP Cell and Clusters for implementation
- Guide and facilitate survey and demarcation works, and installation of pillars around PFM areas
- Guide and facilitate micro-planning process for forestry operations both in PFM and non-PFM areas
- Coordinate with Program Manager (GIS, MIS and Website) for updating information on MIS and GIS platform
- Participate and contribute in review meeting and project events
- Undertake field visits and extend guidance, particularly on forestry and biodiversity activities
- Participate and contribute in review meeting and project events
- Facilitate capacity building initiatives, and act as resource for subject related orientations
- Coordinate with other stakeholders for achieving project targets and results
- Compilation of progress reports and preparing various reports, ToRs and documents

3. Duration of the Assignment

The engagement would be for the duration of the project, however the contract would be for one year that could be renewed annually based on the performance to the satisfaction of the PMU. Candidate would be eligible for receiving increment at renewal based on satisfactory performance and as decided by the PMU.

4. Outputs/ Deliverables

Monthly Assignment Report highlighting tasks performed during the month vis-à-vis monthly plan to be finalized with Project Director (Planning & Implementation) at start of the month. This report would be submitted to Project Director (Planning & Implementation) and approved by the Chief Project Director (CPD).

5. Desired Qualifications

The person should possess following key qualifications:

- i) Post Graduate in forestry, forest management, wildlife/ biodiversity management, natural resource management, environmental sciences or related areas from recognized institution;
- ii) Excellent knowledge to work on computers, software and spreadsheets;
- iii) Experience of around 10 years or more in similar work profile;
- iv) Fit to work in Himachal Pradesh conditions, and willing to travel across the state in remote and hilly terrains;
- v) Excellent writing and communication skills in English and Hindi;
- vi) Strong interpersonal skills and the ability to communicate and work well with diverse people.

6. Others

It's a full-time position located at state level. The position to be hired on contract from open market. This is equal opportunity position open to all eligible candidates. Women candidates will be encouraged. Age limit: Less than 50 years.

3. Programme Manager (Livelihoods & Training)

1. Objectives of the Assignment

Assist the Project Management Unit (PMU) – a project apex unit at state level, in annual planning and implementation of community development and livelihood interventions; design small business/enterprise for community institutions for income generation, cluster promotion, design templates, guidelines and manual, monitoring & reporting, capacity building and trainings, coordinating with other stakeholders.

2. Key Tasks to be Performed

Following would be the key tasks to be performed/ extending assistance, but not limited to:

- Contribute to and facilitate for annual planning at PMU by coordinating with the DMUs/ FCCUs
- Contribute in developing and dissemination of guidelines and manuals/ hand books
- Plan, guide and facilitate community mobilization and micro-planning process
- Plan, guide and facilitate implementation of community development and livelihoods initiatives, and initiating income generation activities
- Coordinate at state level to facilitate inter-sectoral convergence and cluster development
- Coordinate with Program Manager (GIS, MIS and Website) for updating information on MIS and GIS platform
- Undertake field visits and extend guidance, particularly on community development and livelihoods activities
- Participate and contribute in review meeting and project events
- Plan, guide and facilitate capacity building initiatives, and act as resource for subject related orientations
- Coordinate with other stakeholders for achieving project targets and results
- Compilation of progress reports and preparing various reports, ToRs and documents

3. Duration of the Assignment

The engagement would be for the duration of the project, however the contract would be for one year that could be renewed annually based on the performance to the satisfaction of the PMU. Candidate would be eligible for receiving increment at renewal based on satisfactory performance and as decided by the PMU.

4. Outputs/ Deliverables

Monthly Assignment Report highlighting tasks performed during the month vis-à-vis monthly plan to be finalized with Project Director (Institutional and Capacity Development) at start of the month. This report would be submitted to Project Director (Institutional and Capacity Development) and approved by the Chief Project Director (CPD).

5. Desired Qualifications

The person should possess following key qualifications:

- i) Post Graduate in social work, sociology, rural management, natural resource management, business administration specializing in rural management or related areas from recognized institution;
- ii) Excellent knowledge to work on computers, software and spreadsheets;
- iii) Experience of around 10 years or more in similar work profile;
- iv) Fit to work in Himachal Pradesh conditions, and willing to travel across the state in remote and hilly terrains;
- v) Excellent writing and communication skills in English and Hindi;
- vi) Strong interpersonal skills and the ability to communicate and work well with diverse people.

6. Others

It's a full-time position located at state level. The position to be hired on contract from open market. This is equal opportunity position open to all eligible candidates. Women candidates will be encouraged. Age limit: Less than 50 years.

4. Programme Manager (Marketing & Rural Financing)

1. Objectives of the Assignment

Assist the Project Management Unit (PMU) – a project apex unit at state level, in annual planning and implementation of livelihood promotion; value chain and market analysis, product development, facilitate rural financing, design templates, guidelines and manual, monitoring & reporting, capacity building and training, coordinating with other stakeholders.

2. Key Tasks to be Performed

Following would be the key tasks to be performed/ extending assistance, but not limited to:

- Contribute to and facilitate for annual planning at PMU by coordinating with the DMUs/ FCCUs
- Contribute in developing and dissemination of guidelines and manuals/ hand books
- Plan, guide and facilitate promotion of livelihoods initiatives and income generation activities
- Plan, guide and facilitate product designing, packaging and marketing by engaging specialized agencies, and seeking licenses/ clearances etc.
- Plan, guide and facilitate linkages with the financial institutions
- Facilitate inter-sectoral convergence and cluster development
- Coordinate with Program Manager (GIS, MIS and Website) for updating information on MIS and GIS platform
- Undertake field visits and extend guidance, particularly on rural marketing and rural financing
- Participate and contribute in review meeting and project events
- Plan and facilitate capacity building initiatives, and act as resource for subject related orientations
- Coordinate with other stakeholders for achieving project targets and results
- Compilation of progress reports and preparing various reports, ToRs and documents

3. Duration of the Assignment

The engagement would be for the duration of the project, however the contract would be for one year that could be renewed annually based on the performance to the satisfaction of the PMU. Candidate would be eligible for receiving increment at renewal based on satisfactory performance and as decided by the PMU.

4. Outputs/ Deliverables

Monthly Assignment Report highlighting tasks performed during the month vis-à-vis monthly plan to be finalized with Project Director (Institutional and Capacity Development) at start of the month. This report would be submitted to Project Director (Institutional and Capacity Development) and approved by the Chief Project Director (CPD).

5. Desired Qualifications

The person should possess following key qualifications:

- i) Post Graduate in social work, sociology, rural management, natural resource management, agribusiness management, business administration specializing in marketing/ rural finance or related areas from recognized institution;
- ii) Excellent knowledge to work on computers, software and spreadsheets;
- iii) Experience of around 10 years or more in similar work profile;
- iv) Fit to work in Himachal Pradesh conditions, and willing to travel across the state in remote and hilly terrains;
- v) Excellent writing and communication skills in English and Hindi;
- vi) Strong interpersonal skills and the ability to communicate and work well with diverse people.

6. Others

It's a full-time position located at state level. The position to be hired on contract from open market. This is equal opportunity position open to all eligible candidates. Women candidates will be encouraged. Age limit: Less than 50 years.

5. Programme Manager (Monitoring, Safeguards & Publication)

1. Objectives of the Assignment

Assist the Project Management Unit (PMU) – a project apex unit at state level, in establishing M&E system, operation & effect indicators, monitoring and safeguards compliances, monitoring annual plans, preparing quarterly and annual reports, preparing guidelines and manuals, project publicity and information dissemination, events/ workshops, develop knowledge material, publish newsletters, reports, coordinating with other stakeholders.

2. Key Tasks to be Performed

Following would be the key tasks to be performed/ extending assistance, but not limited to:

- Establish M&E systems and protocols as per the approved operation manual
- Contribute in developing and dissemination of guidelines and manuals/ hand books
- Plan, guide and facilitate establishing operation & effect indicators, monitoring and safeguards compliances
- Monitor project implementation vis-à-vis annual plans
- Plan, guide and facilitate project publicity and information dissemination
- Plan, guide and facilitate organizing project events/ workshops
- Supervise and track Social Audits and Grievance Redressal
- Coordinate and facilitate development of knowledge material and publish newsletters
- Facilitate in preparation of quarterly and annual reports
- Coordinate with IT/ GIS Cell for updating information on MIS and GIS platform
- Participate and contribute in review meeting and project events
- Undertake field visits and extend guidance, particularly on M&E activities
- Participate and contribute in review meeting and project events
- Plan and facilitate capacity building initiatives, and act as resource for subject related orientations
- Coordinate with other stakeholders for achieving project targets and results
- Compilation of progress reports and preparing various reports, ToRs and documents

3. Duration of the Assignment

The engagement would be for the duration of the project, however the contract would be for one year that could be renewed annually based on the performance to the satisfaction of the PMU. Candidate would be eligible for receiving increment at renewal based on satisfactory performance and as decided by the PMU.

4. Outputs/ Deliverables

Monthly Assignment Report highlighting tasks performed during the month vis-à-vis monthly plan to be finalized with Project Director (M&E, Environmental and Social Safeguards) at start of the month. This report would be submitted to Project Director (M&E, Environmental and Social Safeguards) and approved by the Chief Project Director (CPD).

5. Desired Qualifications

The person should possess following key qualifications:

- i) Post Graduate in statistics, economics, forestry, forest management, natural resource management, environmental sciences, business administration or related areas from recognized institution;
- ii) Excellent knowledge to work on computers, analytical software (SPSS etc.) and spreadsheets;
- iii) Experience of around 10 years or more in similar work profile;
- iv) Fit to work in Himachal Pradesh conditions, and willing to travel across the state in remote and hilly terrains;
- v) Excellent writing and communication skills in English and Hindi;
- vi) Strong interpersonal skills and the ability to communicate and work well with diverse people.

6. Others

It's a full-time position located at state level. The position to be hired on contract from open market. This is equal opportunity position open to all eligible candidates. Women candidates will be encouraged. Age limit: Less than 50 years.

6. Programme Manager (GIS, MIS and Website)

1. Objectives of the Assignment

Assist the Project Management Unit (PMU) – a project apex unit at state level, in GIS based M&E, maintaining GIS systems and equipment, software inventory, procurement of imageries and spatial analysis, map production and analysis for planning & decision making, monitoring & reporting; establish GIS operations at all levels; coordinate with IT/ GIS Cell of HPFD; coordinate for progress tracking and reporting; coordinate with other stakeholders.

2. Key Tasks to be Performed

Following would be the key tasks to be performed/ extending assistance, but not limited to:

- Develop protocols, systems and procedures for GIS based monitoring and spatial analysis;
- Contribute in developing and dissemination of guidelines and manuals/ hand books;
- Plan, guide and facilitate developing GIS database and its linkage with MIS;
- Plan, guide and facilitate updating information on MIS and GIS platform;
- Prepare technical specifications for procurement of equipment, software, imageries, and spatial data etc.;
- Plan, guide and facilitate production of various maps and analysis for planning and monitoring;
- Plan and establish GIS operations at all levels of project implementation;
- Coordinate with IT/ GIS Cell for various project requirements and generation of reports/ maps;
- Development, maintenance and regular updating of project website;
- Participate and contribute in review meeting and project events;
- Undertake field visits and extend guidance, particularly on GIS activities;
- Participate and contribute in review meeting and project events;
- Plan and facilitate capacity building initiatives, and act as resource for subject related orientations;
- Coordinate with other stakeholders for achieving project targets and results;
- Compilation of progress reports and preparing various reports, ToRs and documents;

3. Duration of the Assignment

The engagement would be for the duration of the project, however the contract would be for one year that could be renewed annually based on the performance to the satisfaction of the PMU. Candidate would be eligible for receiving increment at renewal based on satisfactory performance and as decided by the PMU.

4. Outputs/ Deliverables

Monthly Assignment Report highlighting tasks performed during the month vis-à-vis monthly plan to be finalized with Project Director (M&E, Environmental and Social Safeguards) at start of the month. This report would be submitted to Project Director (M&E, Environmental and Social Safeguards) and approved by the Chief Project Director (CPD).

5. Desired Qualifications

The person should possess following key qualifications:

- i) Post Graduate in geography, forestry, forest management, natural resource management, environmental sciences, information technology or related areas from recognized institution;
- ii) Technical qualification/ exposure on GIS related software and application and having excellent Cartographic and Remote Sensing skill, data modelling standards and techniques;
- iii) Efficiency in ARC GIS, ERDAS IMAGINE, Open source database management, web enabled technology
- iv) Experience of around 10 years or more in similar work profile;
- v) Fit to work in Himachal Pradesh conditions, and willing to travel across the state in remote and hilly terrains;
- vi) Excellent writing and communication skills in English and Hindi;
- vii) Strong interpersonal skills and the ability to communicate and work well with diverse people.

6. Others

It's a full-time position located at state level. The position to be hired on contract from open market. This is equal opportunity position open to all eligible candidates. Women candidates will be encouraged. Age limit: Less than 50 years.

7. Project Technicians (GIS/ MIS)

1. Objectives of the Assignment

Assist the Project Management Unit (PMU) – a project apex unit at state level, in maintaining systems, GIS/ MIS operations at all levels, computer generated analytical GIS maps, MIS reports, website and digital repository, software inventory & maintenance, coordinating with other stakeholders.

2. Key Tasks to be Performed

Following would be the key tasks to be performed/ extending assistance, but not limited to:

- Assist Program Manager (GIS, MIS and Website) in day-to-day operations and GIS/ MIS initiatives;
- Facilitate developing GIS database and its linkage with MIS
- Facilitate updating information on MIS and GIS platform, and report generation
- Facilitate production of various maps and analysis for planning and monitoring
- Facilitate and establish MIS/ GIS operations at all levels of project implementation
- Coordinate with IT/ GIS Cell for various project requirements and generation of reports/ maps
- Development, maintenance and regular updating of project website
- Facilitate maintenance of software and equipment
- Coordinate with other stakeholders for GIS/ MIS Operations
- Preparing various reports, maps and documents

3. Duration of the Assignment

The engagement would be for the duration of the project, however the contract would be for one year that could be renewed annually based on the performance to the satisfaction of the PMU. Candidate would be eligible for receiving increment at renewal based on satisfactory performance and as decided by the PMU.

4. Outputs/ Deliverables

Monthly Assignment Report highlighting tasks performed during the month vis-à-vis monthly plan to be finalized with Project Director (M&E, Environmental and Social Safeguards) at start of the month. This report would be submitted to Project Director (M&E, Environmental and Social Safeguards) through Program Manager (GIS, MIS and Website) and approved by the Chief Project Director (CPD).

5. Desired Qualifications

The person should possess following key qualifications:

- i) Graduate in geography, forestry, natural resource management, environmental sciences, information technology or any areas from recognized institution along with certified technical course;
- ii) Technical qualification/ exposure on GIS related software and application; preference would be given having good Cartographic and Remote Sensing skill, data modelling standards and techniques;
- iii) Efficiency in ARC GIS, ERDAS IMAGINE, Open source database management, web enabled technology
- iv) Experience of around 3 years or more in similar work profile;
- v) Fit to work in Himachal Pradesh conditions, and willing to travel across the state in remote and hilly terrains;
- vi) Basic writing and communication skills in English and Hindi;
- vii) Strong interpersonal skills and the ability to communicate and work well with diverse people.

6. Others

It's a full-time position located at state level. The position to be hired on contract from open market. This is equal opportunity position open to all eligible candidates. Women candidates will be encouraged. Age limit: Less than 35 years.

Attachment II.4.4.2. Indicative TOR for FCCU Subject Matter Specialist (M&E - GIS/MIS)

1. Objectives of the Assignment

Assist the Forest Circle Coordination Unit (FCCU) – a project unit at forest Circle level, in monitoring annual plans of the project, MIS/ GIS data compilation, capacity building, progress monitoring based on MIS and GIS and reporting and, contribute in other project related activities including coordinate with other stakeholders.

2. Key Tasks to be Performed

Following would be the key tasks to be performed/ extending assistance, but not limited to:

1. Coordinate with DMUs for annual planning and budget releases;
2. Supervise timely submission of SOEs by DMUs;
3. Coordinate at district level to facilitate inter-sectoral convergence;
4. Participate and contribute in review meeting and project events;
5. Undertake field visits and extend guidance, particularly on M&E activities and reporting/ documentation;
6. Guide and supervise survey and demarcation, and geo-referencing works;
7. Follow-up with DMUs for updating and supplying information on MIS and GIS platform;
8. Follow-up with DMUs on data-entry operations in MIS/ accounting software;
9. Facilitate Capacity Building initiatives, and act as resource for M&E orientations;
10. Compilation of progress reports and preparing various reports and documents;
11. Documentation and record keeping on grievance redressal.

3. Duration of the Assignment

The engagement would be for the duration of the project, however the contract would be for one year that could be renewed annually based on the performance to the satisfaction of the PMU. Candidate would be eligible for receiving increment at renewal based on satisfactory performance and as decided by the PMU.

4. Outputs/ Deliverables

Monthly Assignment Report highlighting tasks performed during the month vis-à-vis monthly plan to be finalized with FCCU Officer at start of the month. This report would be submitted to FCCU Officer and approved by Circle Nodal Officer.

5. Desired Qualifications

The person should possess following key qualifications:

- i. Post Graduate in statistics, economics, forestry, natural resource management or related areas from recognized institution;
- ii. Excellent knowledge to work on computers, analysis software and spreadsheets;
- iii. Experience of around 7 years or more in similar work profile;
- iv. Fit to work in Himachal Pradesh conditions, and willing to travel across the state in remote and hilly terrains;
- v. Excellent writing and communication skills in English and Hindi;
- vi. Strong interpersonal skills and the ability to communicate and work well with diverse people.

6. Others

It's a full-time position located at circle level. The position to be hired on contract from open market. This is equal opportunity position open to all eligible candidates. Women candidates will be encouraged. Age limit: Less than 50 years.

Attachment II.4.4.3. Indicative TORs for DMU Subject Matter Specialists

A. Subject Matter Specialist (Forests & Biodiversity Management)

1. Objectives of the Assignment

Assist the Divisional Management Unit (DMU) – a project unit at forest division level, in microplanning, annual planning and implementation, guidance and supervision of forestry and biodiversity interventions, data compilation, monitoring & reporting and capacity building, coordinating with other stakeholders

2. Key Tasks to be Performed

Following would be the key tasks to be performed or extending assistance, but not limited to:

1. Contribute to and facilitate for annual planning at Range and Division level;
2. Coordinate with Wildlife Wing for project activities;
3. Guide and facilitate implementation of forestry and biodiversity interventions;
4. Guide and facilitate survey and demarcation works, and installation of pillars around PFM areas;
5. Guide and facilitate micro-planning process for forestry operations both in PFM and non-PFM areas;
6. Participate and contribute in review meeting and project events;
7. Facilitate dissemination of guidelines and manuals/ hand books;
8. Undertake field visits and extend guidance, particularly on forestry and biodiversity activities;
9. Update and supply information on MIS and GIS platform;
10. Facilitate Capacity Building initiatives, and act as resource for subject related orientations;
11. Compilation of progress reports and documents as required from time to time.

3. Duration of the Assignment

The engagement would be for the duration of the project, however the contract would be for one year that could be renewed annually based on the performance to the satisfaction of the PMU. Candidate would be eligible for receiving increment at renewal based on satisfactory performance and as decided by the PMU.

4. Outputs/ Deliverables

Monthly Assignment Report highlighting tasks performed during the month vis-à-vis monthly plan to be finalized with Assistant DMU Officer at start of the month. This report would be submitted to Assistant DMU Officer and approved by DMU Officer.

5. Desired Qualifications

The person should possess following key qualifications:

- i. Post Graduate in forestry, forest management, wildlife/ biodiversity management, natural resource management or related areas from recognized institution;
- ii. Experience of around 7 years or more in similar work profile;
- iii. Good knowledge to work on computer, and having exposure to internet, word and spreadsheets etc.;
- iv. Fit to work in Himachal Pradesh conditions, and willing to travel across the state in remote and hilly terrains;
- v. Excellent writing and communication skills in English and Hindi;
- vi. Strong interpersonal skills and the ability to communicate and work well with diverse people.

6. Others

It's a full-time position located at division level. The position to be hired on contract from open market. This is equal opportunity position open to all eligible candidates. Women candidates will be encouraged. Age limit: Less than 45 years.

B. Subject Matter Specialist (Livelihoods, Rural Financing & Marketing)

1. Objectives of the Assignment

Assist the Divisional Management Unit (DMU) – a project unit at forest division level, in microplanning, community mobilization, annual planning and implementation, guide on livelihoods; small business/ enterprise plan, inter-sectoral convergence, assist in value chain and market analysis, rural financing, support cluster development, extend support to leverage funds, monitoring & reporting and capacity building, coordinating with other stakeholders.

2. Key Tasks to be Performed

Following would be the key tasks to be performed/ extending assistance, but not limited to:

1. Contribute to and facilitate for annual planning at Range and Division level;
2. Guide and facilitate community mobilization and micro-planning process;
3. Guide and facilitate implementation of livelihoods initiatives;
4. Guide and facilitate linkages with the financial institutions;
5. Guide and facilitate product designing, packaging and marketing by engaging specialized agencies, and seeking licenses/ clearances etc.;
6. Coordinate at Block level to facilitate inter-sectoral convergence and cluster development;
7. Participate and contribute in review meeting and project events;
8. Facilitate dissemination of guidelines and manuals/ hand books;
9. Undertake field visits and extend guidance, particularly on livelihood/ income generation, rural financing and marketing activities;
10. Update and supply information on MIS and GIS platform;
11. Facilitate Capacity Building initiatives, and act as resource for subject related orientations;
12. Compilation of progress reports and documents as required from time to time.

3. Duration of the Assignment

The engagement would be for the duration of the project, however the contract would be for one year that could be renewed annually based on the performance to the satisfaction of the PMU. Candidate would be eligible for receiving increment at renewal based on satisfactory performance and as decided by the PMU.

4. Outputs/ Deliverables

Monthly Assignment Report highlighting tasks performed during the month vis-à-vis monthly plan to be finalized with Assistant DMU Officer at start of the month. This report would be submitted to Assistant DMU Officer and approved by DMU Officer.

5. Desired Qualifications

The person should possess following key qualifications:

- i. Post Graduate in social work, sociology, rural management, natural resource management or related areas from recognized institution;
- ii. Experience of around 7 years or more in similar work profile;
- iii. Good knowledge to work on computer, and having exposure to internet, word and spreadsheets etc.;
- iv. Fit to work in Himachal Pradesh conditions, and willing to travel across the state in remote and hilly terrains;
- v. Excellent writing and communication skills in English and Hindi;
- vi. Strong interpersonal skills and the ability to communicate and work well with diverse people.

6. Others

It's a full-time position located at division level. The position to be hired on contract from open market. This is equal opportunity position open to all eligible candidates. Women candidates will be encouraged. Age limit: Less than 45 years.

Attachment II.4.4.4 Indicative TOR for FTU Coordinator (Livelihood Support and Inter-sectoral Convergence)

1. Objectives of the Assignment

Assist the Divisional Management Unit (DMU) – a project unit at forest division level, in microplanning, community mobilization, annual planning and implementation, guide on livelihoods; small business/ enterprise plan, inter-sectoral convergence, assist in value chain and market analysis, rural financing, support cluster development, extend support to leverage funds, monitoring & reporting and capacity building, coordinating with other stakeholders.

2. Objectives of the Assignment

Assist the Field Technical Unit (FTU) – a project unit at forest range level, in annual planning and implementation, guide and facilitate microplanning, livelihood initiatives, small business/ enterprise plans, inter-sectoral convergence, cluster promotion, capacity building, monitoring & reporting, and coordinating with other stakeholders.

3. Key Tasks to be Performed

Following would be the key tasks to be performed/ extending assistance, but not limited to:

1. Contribute to and facilitate for annual planning at VFDS/ BMC and Range level;
2. Guide and facilitate community mobilization and micro-planning process;
3. Guide and facilitate implementation of livelihoods initiatives;
4. Guide and facilitate linkages with the financial institutions;
5. Coordinate at Panchayat level to facilitate inter-sectoral convergence and cluster development;
6. Participate and contribute in review meeting and project events;
7. Facilitate dissemination of guidelines and manuals/ hand books;
8. Undertake field visits and extend facilitation, particularly on livelihood/ income generation, rural financing and marketing activities;
9. Update and supply information on MIS and GIS platform;
10. Facilitate Capacity Building initiatives, and act as resource for subject related orientations;
11. Compilation of progress reports and documents as required from time to time.

4. Duration of the Assignment

The engagement would be for the duration of the project, however the contract would be for one year that could be renewed annually based on the performance to the satisfaction of the DMU and PMU. Candidate would be eligible for receiving increment at renewal based on satisfactory performance and as decided by the PMU.

5. Outputs/ Deliverables

Monthly Assignment Report highlighting tasks performed during the month vis-à-vis monthly plan to be finalized with Assistant FTU Officer at start of the month. This report would be submitted to Assistant FTU Officer and approved by FTU Officer.

6. Desired Qualifications

The person should possess following key qualifications:

- i. Graduate in social work, sociology, rural management, natural resource management or related areas from recognized institution;
- ii. Experience of around 5 years or more in similar work profile;
- iii. Functional knowledge to work on computer, word and spreadsheets etc.;
- iv. Fit to work in Himachal Pradesh conditions, and willing to travel across the state in remote and hilly terrains;
- v. Basic writing and communication skills;
- vi. Strong interpersonal skills and the ability to communicate and work well with diverse people.

7. Others

It's a full-time position located at range level. The position to be hired on contract from open market. This is equal opportunity position open to all eligible candidates. Women candidates will be encouraged. Age limit: Less than 35 years.

Attachment II.4.5.1 Proposed Institutional Arrangement of VFDS**(1) Composition of Executive Committee of VFDS**

As per the HP PFM Rules 2001, there shall be a Society for a Gram Panchayat Ward. However, where the Ward is not compact and the hamlets within it do not have common forests, common grazing lands, common rights and concessions more than one Society may be formed for each cluster of hamlets. The Society shall be registered under section 3 of the Societies' Registration Act, 1860. (Act No. 21 of 1860). All voters of a Gram Panchayat Ward shall be entitled to be enrolled as members of the Society. Elected members of the Executive Committee shall hold office for a period of two years from the date of assumption of office. The composition would be as follows:

Table 1 Composition of the Executive Committee of Village Forest Development Society (VFDS)

No.	Member Category	Members	Remarks
1	President	1	To be elected by the Gram Sabha
2	Vice President	1	To be elected by the Gram Sabha
3	Member Secretary	1	To be elected by the Gram Sabha
4	Joint Secretary	1	Woman; To be elected by the Gram Sabha
5	Members	4	To be elected by the Gram Sabha
6	Member	1	Ward Panch; Ex-officio member
7	Member	1	President Mahila Mandal; To be elected by the Gram Sabha
8	Member	1	Representative local women group; To be elected by the Gram Sabha
9	Member	3	To be co-opted from the village level committees constituted by other departments of the Government, societies registered under the Societies Registration Act, 1860, (Act No. 21 of 1860), user groups, self-help group and grazier group;
10 Total Members		14	
11	Treasurer	1	To be nominated by the elected members from amongst the members of the Society

Note: Provided that at least 7 members of the Executive Committee shall be from amongst the women. Joint Secretary shall assist the Member Secretary

Source: HP PFM Rules 2001; Compiled by: JICA Study Team (2017)

The Executive Committee shall exercise the powers of a "Forest Officer" as assigned by the Government under the Indian Forest Act, 1927.

(2) Bank Accounts for Implementing Project Interventions

For the project the VFDS would open separate account. Two bank accounts would be opened in nearest service area bank branch or post office, viz., a) Forests & Ecosystem Management (FE account), and b) Community Development & Livelihood Improvement (CD&LI account). These accounts shall be operated under the signatures of the President, Treasurer and Member-Secretary of the Society.

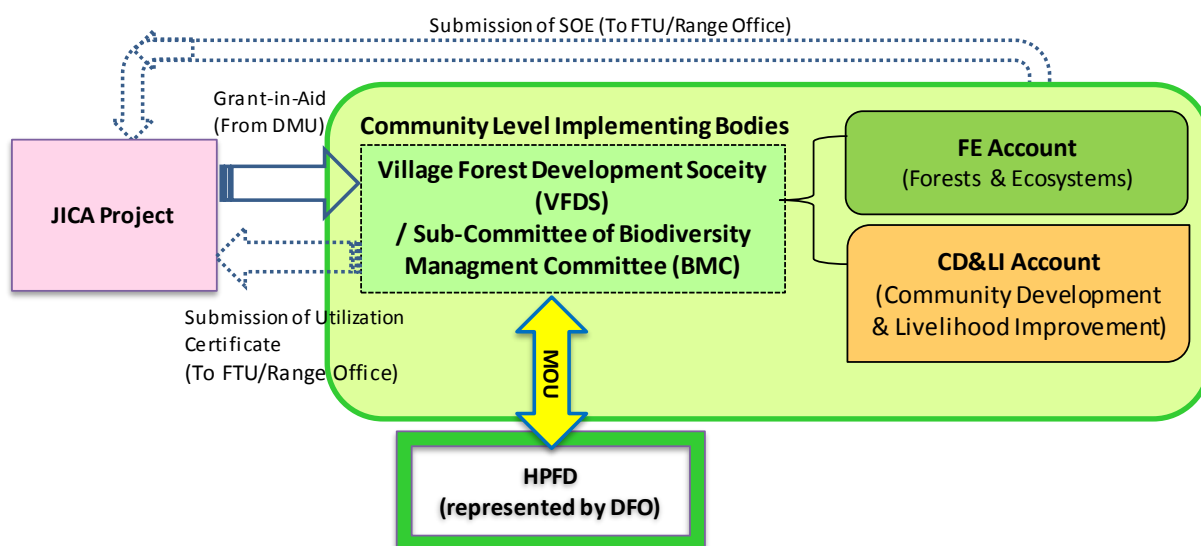
(3) Office Space

The VFDS may arrange its own office space. VFDS may also approach the Gram Panchayat for providing office space for the project period, if possible with Panchayat office or allocating some space in other properties under control of the Gram Panchayat. Strengthening of the VFDS office would be supported by the Project.

(4) Project Planning

Following the participatory planning processes and with involvement of community as well as the HPFD, VFDS will prepare a micro plan constitute of two sub-plans, viz., a) Forest Ecosystems Management Plan (FEMP), and b) Community Development and Livelihood Improvement Plan (CD&LIP). These plans would first be approved by the Ward Sabha. The tenure of these plans would be 5 years or more, if required. Annual Implementation Plans (AIPs) would be prepared for every financial year for each of these plans.

The process of preparing these plans afresh will be initiated 6 months prior to the expiry. For the project implementation MoU would be signed between the VFDS and HPFD. The activities planned in these plans shall be financed through two separate accounts to keep track of the financial transaction and transparency. The flow of the fund is given in **Figure 1**. The outline of the FEMP and CD&LIP are given in **Part II Chapter 3 (Section 3.7.1.1)**.



Source: JICA Study Team (2017)

Figure 1 Fund Flow to the VFDS under the Project

(5) Fund Flow to VFDS

The funds would flow to respective village level institutions for executing the plans. The funds from the project would be first received by VFDS in respective bank accounts viz., ‘FE account’ and ‘CD&LI account’ as per annual implementation plan (AIP). VFDS would make expenditures as prescribed in the approved plans following project norms, and will also report the expenditures to the Gram Panchayat from time to time during social audits for each financial year. Through its institutional arrangements, the Project would also extent accounting and data-entry support at the VFDS level.

The funds according to the AIP formulated for each financial year referring the approved FEMP would be received in the ‘FE account’, whereas the funds for community development & livelihood improvement allocated as per the approved CD&LIP in similar manner would be received in the ‘CD&LI account’.

The funds could be given to the village institutions only after beneficiary share in terms of ‘membership fee’ is collected as per the Ward Voter’s Register and deposited in the FE account, and reported by the President of VFDS. The membership fee could be collected from all recognized houses falling in a Gram Panchayat Wards as far as possible to build in the stakes of the large set of community as well as to equitably spread the benefits from the project. The fee is basically realization of a minimal cost up-front for receiving the benefits from the target forest areas or ecosystem or in other words it is PES by the first users, and would be utilized to create a Corpus Fund.

Table 2 Funds for Implementation

No.	Items	Share/ Contribution	Remarks
1	Beneficiary Share	Rs.200 per household – one time (or decided by VFDS)	Contribution to Corpus fund
2	Project Fund	Matching Contribution – one time	Contribution to Corpus fund
3	Project fund	As per approved FEMP	For implementation of FEMP
4	Project fund	As per approved CD&LIP	For implementation of CD&LIP

Source: JICA Study Team (2017)

The funds collected as beneficiary share along with the Project contribution to the Corpus would be fix deposited in a nationalized bank or post office as ‘Corpus Fund’. This corpus fund would act as security for the village institution in future, and could be utilized for maintenance of forests and ecosystems after cycle of interventions gets over during the project period and/or after project completion.

(6) Method of Executing Project Works

The funds through the Project are available for executing works adopting PFM mode and Department mode. These works would be executed directly by the VFDS or the department respectively. Some of the activities would also be executed by the project by engaging VFDS members as per MoU. **Table 3** depicts category of works and method of executing these works.

Table 3 Method of executing Project Works by VFDS

No.	Mode	Responsibility	Method of Executing Works	Category of Works
1	PFM	VFDS	Direct through User’s Group/ SHGs as per CD&LIP	Planning, small structures, EPA, in-situ training, livelihood improvement works, NTFP Cultivation on private lands/ clusters etc.
2	Department	PMU/ HPFD	MOU between VFDS and DFO (DMU Officer) as per FEMP	Plantations and forestry operations, nurseries, SMC & SWC/ DLT works, pasture management, protection – plantation and forest fire etc.

Source: JICA Study Team (2017)

(7) MoU between VFDS and HPFD

The Memorandum of Understanding (MoU) between VFDS represented by the President VFDS on one hand and HPFD represented by DFO (DMU Officer) on other hand would act as an instrument for executing project works as per the FEMP as well as for joint management of forests and ecosystems. The MoU will spell out the roles, regulations, rights & responsibilities and rewards/ incentives for executing project works as well as sustainably manage forest resources/ ecosystems together with equitable sharing of usufructs. The approved FEMP will be attached and will form part of the signed MoU for records and monitoring purposes.

(8) Maintenance of VFDS Records and Accounts

Treasurer would be responsible for maintaining cash book and payment register whereas Member Secretary with the VFDS will maintain membership register, project works register, proceeding register, expenditure bill book, complaint register and community development and livelihood promotion/ community institution loan register etc.

(9) Audit of VFDS Accounts

PMU would conduct independent annual audits of the VFDS project accounts. In addition, concurrent audits – quarterly or semi-annually or as per the frequency indicated in the operation manual will also be conducted. Also, the VFDS would also be liable to the audits as spelt out in the HP Societies Registration Act, 2006.

(10) Mobile App based Updating of Project Progress and Accounting

GP Motivators would update the project progress and accounting details (as per the cash book entries) on the mobile app to be developed by the Project. Project accountant at FTU level would be responsible to supervise and check the entries every month in a routine manner.

(11) Support to VFDS

During project implementation, following support (indicative) would be extended to the VFDS created within Gram Panchayat Wards to facilitate project implementation.

Table 4 Indicative Support to VFDS under the Project

No.	Support Item	Description/ Provision	Remarks
1.	Office Furniture	One small Almirah, Two Tables with chairs, four visitor's chairs, a Dari (carpet).	One-Time support; say 10,000 INR
2.	Annual Office Operation	Rs.60 per month or 720 INR to be given one-time at the start of the financial year	For meeting stationery, photocopy, hospitality etc.
3.	Project Stationery	Membership Register/ Project Works Register/ Bill Book/ Cash Book/ Payment Register/ Proceeding Register/ Complaint Register/ Livelihood Promotion/ SHG Loan Register	To be printed by the project and provided to Gram Panchayat
4.	Smartphone	One quantity: Smartphone would be used to access mobile apps designed for updating project's physical and financial progress, capturing, geo-tagging and uploading site/ activity photographs, and to communicate with the project authorities using messaging tools.	One time cost; Rs.5000~Rs.6000
5.	Social Audit	Social Audits by VFDS for the project interventions.	Supported by the project
6.	Financial Audit	In addition to the Financial Audits to be conducted as per the HP Societies Registration Act, 2006, the project would also conduct annual financial audit as well as concurrent audits	Supported by the project

Source: JICA Study Team (2017)

Attachment II.5.1.1 Proposed Detailed Project Implementation Schedule



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Work Breakdown	2018				2019				2020				2021				2022				2023				2024				2025				2026				2027			
1.4.2 Improvement of Forest Boundary Management at Project Intervention Areas																																								
1) Consolidation and Demarcation of Forest Boundaries																																								
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1.4.3 Construction /Improvement of Permanent Nurseries																																								
1) Improvement of Range-Level Nursery																																								
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Work Breakdown	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
4.3 Monitoring and Evaluation (M&E)										
4.3.1 Establishing and Operationalising M&E system										
1) Biodiversity Monitoring System										
2) Concurrent Monitoring & Periodic Review										
a) PMU										
b) Project Divisions										
c) Project Circles										
d) Governing Body of PMU/										
e) HPC of PMU										
f) Gram Panchayats										
i) Batch-1										
ii) Batch-2										
iii) Batch-3										
3) Community-self Monitoring										
4) Computerized MIS & GIS staff (in-house development)										
5) Computerized Accounting System										
a) PMU										
b) FCCU										
6) GIS - Satellite images for Monitoring										
Batch-1										
Batch-2										
Batch-3										
7) Annual Strategy Planning & Review Workshops										
a) PMU										
b) Circles										
8) Impact Assessment										
a) Annual Outcome Assessments										
b) Baseline and Impact Surveys										
i) Socio-economic Gender Surveys										
Baseline										
Impact (mid and end-term)										
ii) Physical Surveys										
Baseline										
Impact (mid and end-term)										
9) Thematic and Short Studies										
10) Audits & Transparency										
a) Social Audit										
i) Batch-1										
ii) Batch-2										
iii) Batch-3										
11) Statutory Financial Audits										
a) PMU										
b) Project Divisions										
c) VFDS/BMC										
i) Batch-1										
ii) Batch-2										
iii) Batch-3										
12) Concurrent Audits										
a) PMU										
b) Project Divisions										
13) Grievance Redressal, RTI and Public Disclosure										
4.3.2 Enhancement and Promotion of GIS/ MIS/ ICT										
Implementing Agency										
1) MIS Training-Division/FCCU staff										
2) MIS Training-RO/FG/FTU										
3) GPS Boundary & Assets Survey										
4) GIS										
5) Biomass Assessment										
4.3.3 Communication and Publicity										
1) Publicity										
a) Newsletter										
b) Publicity events (exhibitions/ melas etc.)										
c) Short Films										
d) Website Development										
2) Publication										
a) Annual Report and Plan										
b) Quarterly Reports										
c) Guidelines & Manuals/ Handbooks										
d) Project Registers/ IEC material/ Success Stories										
4.4 Research										
4.4.1 Basic Study for Strengthening of ICT at HPFD										
4.5 PMC										
4.5.1 Procurement of PMC										
4.5.2 Deployment of PMC specialists										

Work Breakdown	2018				2019				2020				2021				2022				2023				2024				2025				2026				2027												
4.6 Phase Out/ Sustainability Mechanism																																																	
4.6.1 Implementing Agency																																																	
4.6.1.1 Preparation of Phase-Out/ Sustainability Mechanims Plan																																																	
4.6.1.2 Transfer of Assets and Resources																																																	
4.6.2 Community Based Organisations																																																	
4.6.2.1 Preparation of Phase-Out/ Sustainability Mechanims Plan																																																	
4.6.2.2 Revisiting of FEMP/ CBMP and CD&LIP																																																	
1) VFDS Batch 1																																																	
2) VFDS Batch 2																																																	
3) VFDS Batch 3																																																	
4) BMC Batch 1																																																	
5) BMC Batch 2																																																	
4.6.2.3 Phase Out Training (VFDS/ BMC and sub committees)																																																	
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Attachment II.6.1.1 Draft Detail Procurement and Implementation Methods**Table 1 1 Draft Project Activity-wise Procurement and Implementation Methods**

Component/ Sub- Component	Activities	Proponent / Owner	Executor/ Contractor	Method
Component 1: Sustainable Forest Ecosystem Management				
1.1	Preparatory Works for Participatory Forest Management			
1.1.1	Identification and Selection of Interventions Areas	PMU	DMU/ FTU	Direct Implementation
1.1.2	Identification of PFM mode or Departmental mode	PMU	DMU/ FTU	Direct Implementation
1.1.3	Surveying and Mapping of Intervention Areas	PMU	- DMU/ FTU - Specialised Agency	- Direct Implementation - Local Competitive Bidding or Direct Contract by Quotation
1.1.4	Identification and Selection of Target Communities	PMU	DMU/ FTU	Direct Implementation
1.1.5	Engagement of Motivators, Ward Level Facilitators	PMU	VFDS/ FTU	Direct Procurement
1.1.6	Community Mobilisation	PMU	VFDS/ Ward Facilitator/ FTU	Direct Implementation
1.1.7	Preparation of FEMP and CD&LIP	PMU	VFDS/ Ward Facilitator/ FTU	Direct Implementation
1.1.8	Annual Planning/ Revisiting of Micro Plan (4th Year)	PMU	VFDS/ Ward Facilitator/ FTU	Direct Implementation
1.2	Participatory Forest Management (PFM) Mode			
1.2.1	Site Specific Planning and Monitoring			
	i) Site Specific Planning	FTU	VFDS/FTU	Direct Implementation
	ii) Site Specific Monitoring	FTU	VFDS/FTU	Direct Implementation
1.2.2	Drainage Line Treatment (ex-situ SWC work)	FTU	VFDS/FTU	Direct Implementation
1.2.3	Improvement/ Densification of Moderately Dense Forest	FTU	VFDS/FTU	Direct Implementation
1.2.4	Afforestation/ Improvement of Open/ Scrub Forest Fuelwood & Fodder Plantation	FTU	VFDS/FTU	Direct Implementation
1.2.5	Improvement of Forest Quality at Key Concerned Forest Areas	FTU	VFDS/FTU	Direct Implementation
1.2.6	Improvement of Pastures/ Grasslands (including in-situ SWC work)	FTU	VFDS/FTU	Direct Implementation
1.2.7	Forest Fire Protection			
	i) Fire Patrol	FTU	VFDS/FTU	Direct Implementation
	ii) Pine Needle Collection and Utilisation	FTU	VFDS/FTU	Direct Implementation
1.2.8	Forestry Intervention at Outside of Forest Areas	FTU	VFDS/FTU	Direct Implementation
1.3	Training for VFDS			
1.3.1	Training of VFDS			
	i) Project Orientation and Forestry/ Biodiversity Nexus	PMU	DMU/ FTU	Direct Implementation
	ii) Planning, Implementation and Organisational Management	PMU	DMU/ FTU	Direct Implementation
1.3.2	Exposure Visits by Community Institutions	FTU	FTU/ VFDS/ BMC	Direct Implementation
1.3.3	Joint Workshops for Community Level Institutions (VFDSs/BMCs and sub-committees)	PMU	DMU/ FTU	Direct Implementation
1.4	Departmental Mode			
1.4.1	Site Specific Planning and Monitoring	DMU	FTU/DMU	Direct Implementation
1.4.2	Improvement of Forest Boundary Management at Project Intervention Areas			
1.4.2.1	Survey for Geo-referencing Forest Boundaries	DMU	FTU/DMU	Direct Implementation
1.4.2.2	Installation of Boundary Pillars	DMU	FTU/DMU	Direct Implementation
1.4.2.3	Maintenance of Boundary Pillars	DMU	FTU/DMU	Direct Implementation

Component/ Sub- Component	Activities	Proponent / Owner	Executer/ Contractor	Method
1.4.3	Improvement of Nurseries			
	i) Upgrading to Modern Nurseries	DMU	Contractor/ FTU	Local Competitive Bidding / Direct Implementation
	ii) Improvement of Range Level Nurseries	DMU	Contractor/ FTU	Local Competitive Bidding / Direct Implementation
	iii) Maintenance of High Tech Nurseries	DMU	FTU/DMU	Direct Implementation
1.4.4	Seedling Production	DMU	FTU/DMU	Direct Implementation
1.4.5	Non-PFM Drainage Line Treatment (ex-situ SWC work: including treatable surface Erosion Control)	DMU	FTU/DMU/ Contractor	Direct Implementation/ Local Competitive Bidding
1.4.6	Secondary Silvicultural (Tending) Operations for Improvement of Existing Forests	DMU	FTU/DMU	Direct Implementation
1.4.7	Improvement/ Densification of Moderately Dense Forest	DMU	FTU/DMU	Direct Implementation
1.4.8	Afforestation/ Improvement of Open/ Scrub Forest	DMU	FTU/DMU	Direct Implementation
1.4.9	Improvement of Forest Quality at Key Concerned Forest Areas	DMU	FTU/DMU	Direct Implementation
1.4.10	Improvement of Pastures/ Grasslands	DMU	FTU/DMU	Direct Implementation
1.4.11	Forest Fire Management			
	i) Creation of Fire Line	DMU	FTU/DMU	Direct Implementation
	ii) Maintenance of Fire Line	DMU	FTU/DMU	Direct Implementation
1.5	Training of Project related staff of HPFD			
1.5.0	Preparation of Guidelines and Manuals	PMU	PMU/ PMC/ Resource Person	Direct Implementation/ Direct Procurement
1.5.1	TOT for DMU Subject Matter Specialist and FTU Coordinators for Field Facilitation	PMU	PMU/ PMC/ Resource Person	Direct Implementation/ Direct Procurement
1.5.2	Training for Ward Facilitators	PMU	DMU/ FTU/ Resource Person	Direct Implementation/ Direct Procurement
1.6	Research			
1.6.1	Monitoring Data Accumulation for Nursing and Planting of Tall Plants	PMU	Specialised Agency	Local Competitive Bidding or Direct Contract by Quotation
1.6.2	Monitoring Data Accumulation for Effective Pasture Management	PMU	Specialised Agency	Local Competitive Bidding or Direct Contract by Quotation
1.6.3	Study for Effective SWC and Land Slide Control Measures	PMU	Specialised Agency	Local Competitive Bidding or Direct Contract by Quotation
Component 2: Biodiversity Conservation				
2.1	Scientific Biodiversity Management			
2.1.1	Preparatory Works	PMU	PMU/ DMU/ FTU/Specialised Agency	Direct Implementation/ Local Competitive Bidding
2.1.2	Protected Area Management Improvement	DMU	DMU/ FTU/Specialised Agency	Direct Implementation/ Local Competitive Bidding
2.1.3	Human-Wildlife Conflict Mitigation/ Management	DMU	DMU/ FTU/Specialised Agency	Direct Implementation/ Local Competitive Bidding
2.1.4	Wildlife Habitat Improvement	DMU	DMU/ FTU/Specialised Agency	Direct Implementation/ Local Competitive Bidding
2.1.5	Recovery Programmes for Endangered Wildlife			
	i) Conservation Breeding for Western Tragopan, Cheer Pheasant and Monal	DMU	DMU/ FTU/Specialised Agency	Direct Implementation/ Local Competitive Bidding
	ii) In-situ Conservation of Critically Endangered Wildlife	DMU	DMU/ FTU/Specialised	Direct Implementation/ Local Competitive

Component/ Sub- Component	Activities	Proponent / Owner	Executor/ Contractor	Method
			Agency	Bidding
	iii) Awareness Raising among Local Communities including Rehabilitation of Education Facilities	DMU	DMU/ FTU/Specialised Agency	Direct Implementation/ Local Competitive Bidding
2.2	Training of Project related Staff of HPFD	PMU	DMU/ FTU	Direct Implementation/ Direct Procurement
2.3	Research			
2.3.1	Pilot Project on Biodiversity Corridor (Baseline Survey for Biodiversity Corridor)	PMU	Specialised Agency	Local Competitive Bidding or Direct Contract by Quotation
2.3.2	Basic Study for Designing Biodiversity Assessment	PMU	Specialised Agency	Local Competitive Bidding or Direct Contract by Quotation
2.4	Community Based Biodiversity Management			
2.4.1	Preparatory Works			
2.4.1.0	Preparation of Guidelines and Manuals	PMU	PMU/ PMC/ Resource Person	Direct Implementation/ Direct Procurement
2.4.1.1	Identification of Potential Intervention Areas	PMU	DMU/ FTU	Direct Implementation
2.4.1.2	Identification of BMCs	PMU	HPSBB/ DMU/ FTU	Direct Implementation
2.4.1.3	Survey and Mapping	PMU	- DMU/ FTU - Specialised Agency	- Direct Implementation - Local Competitive Bidding or Direct Contract by Quotation
2.4.1.4	Engagement of GP Mobiliser and Ward Facilitator	PMU	BMC/ FTU	Direct Procurement
2.4.1.5	Training of GP Mobiliser and Ward Facilitator	PMU	DMU/ FTU/ Resource Person	Direct Implementation/ Direct Procurement
2.4.1.6	Community Mobilisation	PMU	BMC / GP Mobilisers/ Ward Facilitators/ FTU	Direct Implementation
2.4.1.7	Preparation of Community Biodiversity Management Plan	PMU	BMC/ GP Mobiliser/ Ward Facilitator/FTU/ DMU	Direct Implementation
2.4.1.8	Annual Planning/ Revisiting Micro Plan (4th Year)	PMU	BMC/ GP Mobiliser/ Ward Facilitator/FTU/ DMU	Direct Implementation
2.4.2	Community Based Biodiversity Management			Direct Implementation/ Direct Procurement
2.4.2.1	SATOYAMA based Biodiversity Conservation Activities	FTU	BMC/FTU/ HPSBB	Direct Implementation
2.5	Training of DMU/ FTU/ BMC and sub-committee			
2.5.1	Training of DMU/ FTU	PMU	PMU/DMU/ FTU	Direct Implementation
2.5.2	Training of BMC and sub-committee	PMU	FTU/DMU	Direct Implementation
2.5.3	Exposure Visits by the Community Institutions	FTU	VFDS/ BMC/ FTU/ DMU	Direct Implementation
2.5.4	Joint Workshops for Community Level Institutions (VFDSs/ BMCs and sub-committees)	PMU	FTU/DMU/	Direct Implementation
Component 3: Livelihood Improvement Support				
3.1	Community Development			
3.1.1	Preparation of CD&LIP - CD Plan	PMU	VFDS/ BMC/ GP Mobiliser/ Ward Facilitator/ FTU/ DMU/ PMU	Direct Implementation
3.1.2	Transfer of Funds - CD&LIP Fund	PMU	PMC /DMU/ VFDS/ BMC	Direct Implementation
3.1.3	Implementation of CD activities	DMU/ FTU	VFDS/ BMC	Direct Implementation
3.1.4	Preparation of Guidelines Manuals and Training Programmes for Community Development	PMU	PMU/ PMC	Direct Implementation
3.1.5	Research (Pilot Project on Hydro Cultural Fodder Production)	PMU	Specialised Agency	Local Competitive Bidding or Direct

Component/ Sub- Component	Activities	Proponent / Owner	Executer/ Contractor	Method
				Contract by Quotation
3.2	NTFP based Livelihood Improvement			
3.2.1	Preparatory Works			
	i) Establishment of a Jadi-Buti Cell in PMU	PMU	PMU/ PMC/ Resource Persons (as Jadi Buti Cell)	Direct Implementation/ Direct Procurement
	ii) Finalisation of NTFP Clusters	PMU	Jadi Buti Cell	Direct Implementation
	iii) NTFP Assessment	PMU	Specialised Agency	Local Competitive Bidding or Direct Contract by Quotation
3.2.2	NTFP Cluster and Enterprise Development			
	i) Establishment of Cluster Level Him Jadi-Buti Cooperative Society/ Producer Group	PMU	Jadi Buti Cell/ PMC/ DMU	Direct Implementation
	ii) NTFP Enterprise Development	PMU	Jadi-Buti Cell/ DMU/ Cluster Societies/ Producer Groups/ VFDS/ SHGs/ CIGs	Direct Implementation
3.2.3	NTFP Research & Development			
	i) Development of agro-techniques of NTFPs including Medicinal Plants	PMU	Specialised Agency	Local Competitive Bidding or Direct Contract by Quotation
	ii) Impact Assessment of 4-year Extraction Cycle of NTFPs	PMU	Specialised Agency	Local Competitive Bidding or Direct Contract by Quotation
	iii) NTFP Assessment – Follow up Assessment in Target Clusters	PMU	Specialised Agency	Local Competitive Bidding or Direct Contract by Quotation
3.2.4	NTFP Plantation and Cultivation			
	i) NTFP Improvement in Forest Areas	PMU	Jadi-Buti Cell/ FTU/ Cluster Societies/ Producer Groups/ VFDS	Direct Implementation
	ii) NTFP Improvement in Non-Forest Areas	PMU	Jadi-Buti Cell/ FTU/ Cluster Societies/ Producer Groups/ VFDS/ SHGs/ CIGs	Direct Implementation
3.2.5	Market Research and Promotion	PMU	Jadi-Buti Cell/ Cluster Societies/ Producer Groups	Direct Implementation
3.2.6	Training and Extension- Institutional Development for State and Cluster Level Him Jadi-Buti Societies			
	i) Training Programmes to be Organised at the State Level	PMU	Jadi-Buti Cell	Direct Implementation
	ii) Training Programmes to be Organised at the Cluster Level	PMU	Jadi-Buti Cell/ DMU	Direct Implementation
	iii) Production of Publicity and Communication Materials	PMU	Jadi-Buti Cell/ Specialised Agency	Direct Implementation/ Local Competitive Bidding or Direct Contract by Quotation
3.3	Non NTFP based Livelihood Improvement			
3.3.1	Preparation of Non NTFP based Livelihood Improvement Strategy and Plan	PMU	PMU/ PMC	Direct Implementation
3.3.2	Preparation of CD&LIP - Planning of Household/ Community Oriented Livelihood Activities	PMU	PMC/ FTU/ VFDS/ CIG/ SHG	Direct Implementation
3.3.3	Formation/ Reviving CIGs/ SHGs	PMU	DMU/ FTU/ VFDS/ BMC	Direct Implementation
3.3.4	Implementation of Household/	PMU	PMU/ PMC/ DMU/	Direct Implementation

Component/ Sub- Component	Activities	Proponent / Owner	Executer/ Contractor	Method
	Community Oriented Livelihood Activities		FTU/ VFDS/ BMC/ CIG/ SHG	
3.3.5	Promotion of Cluster based Livelihood Activities	PMU	PMU/ DMU/ FTU/	Direct Implementation
3.3.6	Capacity Development for CIGs/ SHGs and Cluster Based Organisation			
3.3.6.0	Preparation of Manuals	PMU	PMU/ PMC	Direct Implementation
3.3.6.1	TOT for DMU/ FTU for Livelihood Interventions	PMU	PMU/ PMC/ Resource Person	Direct Implementation/ Direct Procurement
3.3.6.2	Training for GP Mobilisers and Ward Facilitators	PMU	DMU/ FTU	Direct Implementation
3.3.6.3	Training Programmes for CIGs/ SHGs	PMU	PMC/ DMU/ FTU/ Resource Person	Direct Implementation/ Direct Procurement
3.3.6.4	Exposure Visit	FTU	FTU/ Resource Person	Direct Implementation/ Direct Procurement
3.3.6.5	Training Programmes and Business Development Services for Cooperatives	FTU	FTU/ Resource Person	Direct Implementation/ Direct Procurement
Component 4: Institutional Capacity Strengthening				
4.1	Preparatory Works			
4.1.1	Establishment of PMU and Field Level Units	HPFD	HPFD	Notifications/ Orders
4.1.2	Strengthening of PMU and Field Level Units			
4.1.2.1	Strengthening of PMU Office and IT Cell of HPFD	PMU	PMU	Direct Implementation
4.1.2.2	Strengthening of FCCU Offices at District level	PMU	PMU	Direct Implementation
4.1.2.3	Strengthening of DMUs	PMU	PMU	Direct Implementation
4.1.2.4	Strengthening of FTU Offices at Range Level	PMU	PMU	Direct Implementation
4.1.3	Recruitment of the Personnel/ Subject Matter Specialists/ Resource Organisations	PMU	PMU	Direct Procurement
4.1.4	Preparation of Gender Action Plan	PMU	PMU/ PMC	Direct Implementation
4.1.5	Environmental and Social Consideration	PMU	PMU/ PMC/ Subject Matter Experts	Direct Implementation/ Direct Procurement
4.2	Capacity Development			
4.2.1	Implementing Agency			
	i) Formulating Capacity Development Plan	PMU	PMU/ PMC	Direct Implementation
	ii) Nomination of Trainees	PMU	PMU/ PMC	Direct Implementation
	iii) Annual Training Calendar	PMU	PMU/ PMC	Direct Implementation
	iv) Elements of the Annual Training Calendar	PMU	PMU/ PMC	Direct Implementation
	v) Orientations	PMU	PMU/ PMC	Direct Implementation
	vi) Regular Trainings	PMU	PMU/ PMC/ Specialised Institutions	Direct Implementation/ Direct Procurement
	vii) Refresher Trainings	PMU	PMU/ PMC/ Specialised Institutions	Direct Implementation/ Direct Procurement
	viii) National/ Outside State Exposure	PMU	PMU/ PMC	Direct Implementation
	ix) Overseas Exposure-cum-Training	PMU	PMU/ PMC	Direct Implementation
	x) National Workshop	PMU	PMU/ PMC	Direct Implementation
	xi) Small Workshops / Seminars	PMU	PMU/ PMC	Direct Implementation
4.2.2	Gender Training	PMU	PMU/ PMC/ Subject Matter Experts/ Specialised Agency	Direct Implementation/ Direct Procurement/ Local Competitive Bidding or Direct Contract by Quotation
4.2.3	Environmental and Social Consideration	PMU	PMU/ PMC/ Subject Matter Experts	Direct Implementation/ Direct Procurement
4.3	M&E			
4.3.1	Establishing and Operationalising M&E System	PMU	PMU/ PMC/ Subject Matter Experts	Direct Implementation/ Direct Procurement

Component/ Sub- Component	Activities	Proponent / Owner	Executor/ Contractor	Method
4.3.2	Enhancement and Promotion of GIS/ MIS/ ICT			
	i) MIS	PMU	PMU/ PMC/ Subject Matter Experts	Direct Implementation/ Direct Procurement
	ii) Mobile Applications for M&E and Near Real Time Incident Reporting	PMU	PMU/ PMC/ Subject Matter Experts	Direct Implementation/ Direct Procurement
	iii) Geographical Information System (GIS)/ Mapping	PMU	PMU/ PMC/ Subject Matter Experts	Direct Implementation/ Direct Procurement
	iv) Video Conferencing between HQ and Field Offices	PMU	PMU/ Specialised Agency	Direct Contract
	v) Project Website	PMU	PMU/ Specialised Agency	Direct Contract
	vi) Data Security and Backup	PMU	PMU/ PMC/ Subject Matter Experts	Direct Implementation/ Direct Procurement
	vii) Training	PMU	PMU/ PMC/ Subject Matter Experts	Direct Implementation/ Direct Procurement
4.3.3	Communication and Publicity			
	i) Newsletter	PMU	PMU/ Specialised Agency	Direct Contract
	ii) Short Film	PMU	PMU/ Specialised Agency	Direct Contract
	iii) Publicity Event	PMU	PMU/ PMC/ Subject Matter Experts	Direct Implementation/ Direct Procurement
	iv) Website Development	PMU	PMU/ Specialised Agency	Direct Contract
	v) Publications	PMU	PMU	Direct Implementation
4.4	Research			
4.4.1	Basic Study for Strengthening of ICT at HPFD	PMU	Specialised Agency	Local Competitive Bidding or Direct Contract by Quotation
4.5	PMC	PMU	PMU	Direct Procurement
4.6	Phase Out/ Sustainability Mechanism			
4.6.1	Implementing Agency			
4.6.1.1	Preparation of Phase-Out/ Sustainability Mechanism Plan	PMU	PMU	Direct Implementation
4.6.1.2	Transfer of Assets and Resources	PMU	PMU	Direct Implementation
4.6.2	Community Based Organisations			
4.6.2.1	Preparation of Phase-Out/ Sustainability Mechanism Plan	PMU	PMU	Direct Implementation
4.6.2.2	Revisiting of FEMP/ CBMP and CD&LIP	PMU	VFDS/BMC/ FTU	Direct Implementation
4.6.2.3	Phase Out Training (VFDS/ BMC sub-committees)	PMU	FTU/DMU/ Specialised Institution	Direct Implementation/ Direct Procurement
4.6.3	FEMP/ CBMP Fund			
4.6.3.1	Preparation of Operation Manual of FEMP/ CBMP Fund	PMU	PMU/ Specialised Institution	Direct Implementation
4.6.3.2	Transfer of FEMP/ CBMP Fund	PMU	VFDS/BMC/ DMU	Direct Implementation

Source: Compiled by JICA Study Team (2017)

Attachment II.9.3.1 Draft Environmental and Social Assessment Framework (ESAF)

Table of Contents

	<i>Page</i>
1 Objectives and Scope of ESAF	3
1.1 Objectives of ESAF.....	3
1.2 Overview and Positions of Safeguards Instruments.....	4
1.3 Target Social Groups of ESAF	5
1.4 Structure of ESAF	8
2 Project Summary Description	8
2.1 Project Objectives	8
2.2 Identified Project Area	8
2.3 Proposed Project Components.....	9
2.4 Project Implementation Structure.....	9
2.5 Implementation Schedule of the Proposed Project.....	11
3 Environmental and Social Safeguard Policies of JICA	11
3.1 JICA Principles for Environmental and Social Considerations.....	11
3.2 Key Process Elements as per the requirements of JICA Guideline	12
3.3 Compatibility with International Standards.....	13
3.4 Requirements as per JICA Guidelines.....	13
4 Existing Environmental and Social Management Systems	14
4.1 Existing Systems for Environmental Management	14
4.2 Existing Systems for Social Management.....	18
4.3 Existing Agencies for Environment and Social Management System	20
5 Environmental and Social Considerations, Potential Impacts and Mitigation Measures	20
5.1 Environmental Considerations and its Potential Impacts.....	21
5.2 Social Considerations and Potential Impacts	22
5.3 Gender Aspects.....	28
6 Environmental and Social Management Measures and Monitoring	28
6.1 Screening and Selection of Sub-Projects.....	30
6.2 Environmental and Social Assessments	31
6.3 Preparation of Environmental Management Plan.....	34
6.4 Preparation of Environmental Monitoring Plan	36
6.5 Implementation and Monitoring of Sub-projects	38
7 Institutional Arrangement and Capacity Development for ESAF	38
7.1 Institutional Arrangement.....	38
7.2 Capacity Development Programme.....	41
8 Public Consultation Mechanism.....	42
9 Grievance Redress Mechanism	43
10 Cost Estimation and Budget Allocation	44
10.1 Personnel	45
10.2 Capacity Development Programme.....	45

List of Appendices

Appendix-A:	Laws, Regulations and Policies relevant to Environment/ Forest Sectors in Indian and Himachal Pradesh
Appendix-B:	Relevant Social Policies, Laws and Regulations in Indian and Himachal Pradesh
Appendix-C:	Draft Environmental Checklist
Appendix-D:	Preliminary Results of Scoping for Environmental and Social Impact Assessment
Appendix-E:	Land Acquisition and Resettlement Screening Form
Appendix-F:	Environmental and Social Compliance Monitoring Form to be Submitted to FTU
Appendix-G:	Outline of an Annual Environmental and Social Performance Report to JICA

Draft Environmental and Social Assessment Framework (ESAF)

1 Objectives and Scope of ESAF

In the course of the design and implementation of the Project, two vulnerabilities within the society require to be carefully considered, that is, **Environmental and Social vulnerabilities**. **Environmental vulnerability** is a condition when the integrity of ecosystem is threatened by human activities or interference and/or natural causes, which could occur over spatial or temporal scales. Vulnerability could possibly increase with the intensity and frequency of human interventions and/or natural hazards. **Social vulnerability** is the helplessness or defencelessness of an individual or group of people who are typically socially excluded, underprivileged, often discriminated against and restricted to access benefits of development or opportunities offered through socio-economic enhancement schemes. Their social characteristics such as identity and social status, culture, economic status and practices, and social institutions, often results in their discrimination and segregation from the main stream.

The Environmental and Social Assessment Framework (ESAF) for the “Himachal Pradesh Forest Ecosystems Management and Livelihoods Improvement Project (HPFEMLIP)” has been prepared to act as the primary reference document that outlines the Environmental and Social Considerations (ESC) that will be dealt with the above vulnerabilities in project design and implementation. ESAF works together with the Involuntary Resettlement Plan Framework (IRPF) and the Vulnerable Scheduled Tribes Plan Framework (VSTPF) and also refers to the other safeguards tools which are intended to focus on or elaborate specific aspects (i.e., micro plan, social assessment plan, etc.).

1.1 Objectives of ESAF

The HPFEMLIP in the selected project area are expected to have mostly positive environmental impacts. Further, the Project is anticipated to bring social benefits for locals including vulnerable groups such as the poor, landless/landed poor, Scheduled Tribes (ST), Scheduled Castes (SCs), Other Backward Classes (OBC), etc. in the project area. However, the Project could possibly lead to potential negative environmental and social impacts as well. In this regard, ESAF is prepared to assess the potential negative impacts and ensure that such impacts are safeguarded against in accordance with JICA’s policies on environmental and social considerations in development projects, as well as relevant policies, laws and regulations of the country and the state.

1.2 Overview and Positions of Safeguards Instruments

(1) Draft Environmental and Social Assessment Framework

Unlike a typical infrastructure project, this Project is anticipated to have multi-sectoral interventions and activities, being implemented at several sites with many sub-projects and many of these sub-projects are yet to be defined in detail (site location, size/scope of the activity). In these circumstances, it would be inappropriate at this stage of project preparation to assess the environmental and social impacts and propose detailed management and mitigation measures. However, the Study Team assessed the broad types of activities proposed and outlined procedures to manage and mitigate potential risks associated with the activity during the project implementation. Accordingly, ESAF which provides guidance on the appropriate management and mitigation measures against environmental and social risks was prepared as the main safeguards instrument considering the existing environmental and social management systems in Indian and HP state as well as the JICA requirements.

(2) Draft Vulnerable Scheduled Tribes Planning Framework

In the Indian context, the term “Scheduled Tribe (ST)” is applied to refer “Indigenous Peoples” as used by JICA and other multilateral funding agencies, such as World Bank, Asian Development Banks, etc. And this framework shall be particularly applied to **individuals/communities who could be severely affected their daily lives by project activities among Scheduled Tribes (STs) and Forest Dwellers as defined in The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006**. Among the two social groups, the number of forest dwellers would be quite small considering the progress of the implementation of FRA in the state as mentioned in **Table 9.3.1**, therefore, the name of the framework is replaced as “Vulnerable Scheduled Tribes Planning Framework” (VSTPF).

For the above targeted social groups, guidance for specific measures shall be provided under the framework which may be required in addition to the provisions of ESAF. Other vulnerable groups including poor households, the landless, women as well as deprived classes, such as the Scheduled Castes (SCs) and Other Backward Classes (OBCs) population are considered well in ESAF to ensure the opportunities for effective consultation, participation, receive appropriate benefits and are overall not adversely harmed by the Project.

The main objectives of VSTPF are (i) to ensure the targeted social groups affected by any additional project interventions will receive culturally appropriate social and economic benefits from the Project, (ii) to ensure their participation in the entire process for the preparation, implementation and monitoring of project activities, and (iii) do not suffer any adverse impacts as a result of the Project or sub-projects.

(3) Draft Involuntary Resettlement Plan Framework

The Project will not involve any physical relocation nor involuntary resettlement as long as ESAF is fully applied for the project preparation and its implementation. However, there might be certain sub-projects that might require physical relocation or involuntary resettlement, especially for entry point activities or other project activities which could potentially lead to acquisition of lands for afforestation, soil and moisture conservation structures, creation of combined civil and bio-engineering structures, etc. Therefore, the Involuntary Resettlement Plan Framework (IRPF) has been designed to clarify the required procedures when any acquisition of private lands for construction activities related to the Project and its sub-projects are required which cause (i) loss of assets, (ii) restrictions to the use of or loss of access to places of interest, (iii) loss of existing sources of income and livelihood, and (iv) depreciation of adjacent property value, thus resulting in adverse impacts on the sustenance and livelihoods of the displaced persons.

The processes of consultations, grievance redressal mechanisms as well as the monitoring system are required to be followed as depicted in ESAF.

1.3 Target Social Groups of ESAF

ESAF shall be applicable to all communities and peoples within the project area. The draft framework is designed to ensure their participation in the course of the project implementation and include as beneficiaries as well as to avoid/mitigate any impacts affected by the Project. **Table 1** indicates the key groups identified in ESAF to address environmental and social considerations. It should be noted that an individual or household may be categorised into more than one of the categories below;

Table 1 Key Targeted Social Groups of ESAF

Social Groups	Definition/ Description
Scheduled Tribes (STs)	<p>According to the Article 342 of the Constitution, STs are the tribes or tribal communities or part of or groups within these tribes and tribal communities which have been declared as such by the President through a public notification. As per 2011 Census, tribal population in the country is about 8.6% of the total population, while in HP state, they represent 5.71% of the total population of the state.</p> <p>Eight tribal communities are notified in HP state, namely, i) Bhot, Bodh, ii) Bhot, Bodh, Gaddi, iii) Gujjar, iv) Jad, Lamba, Khampa, v) Kanaura, Kinnaura, vi) Lahaula, vii) Pangwala, and viii) Swangla, and all of these groups reside in the project area, in which the highest concentration is found in districts of Kinnaur, Lahaul and Spiti and blocks of Bharmour and Pangti of Chamba district. Also, three areas are nominated as Scheduled Areas by Constitution Order 102, dated 21st November 1975; 1) Lahaul and Spiti district, 2) Kinnaur district, and 3) Pangti tehsil and Bharmour sub-tehsil in Chamba district.</p>
Scheduled Castes (SCs)	<p>Traditionally, there are four main castes and one category of the society falls outside the caste system, and occupy the lowest rank in the ritual hierarchy of Indian society. These communities were notified as the SCs as per provisions contained in Clause 1 of Articles 341 and 342/ Clause 24 of Article 366 under the Constitution of India which require special consideration for safeguarding their interests and to accelerate their socio-economic development.</p> <p>In HP state, there are 65 notified communities belonging to SCs. Unlike STs who live in isolated regions, major portion of the Schedule Caste population lives in scattered households or concentrated colonies with people of other caste groups, although there exists an invisible social</p>

Social Groups	Definition/ Description
	segregation. The SCs in the project area comprise about 27% of the total population in the project area, and about 8.2% of the total population of the state. Highest distribution of SCs is in districts Sirmour (30.34%), Solan (28.35) and Shimla (26.51%).
Other Backward Classes (OBCs)	Other Backward Class (OBC) is a collective term used by GoI to classify castes which are socially and educationally disadvantaged; the Constitution of India describes OBCs as “socially and educationally backward classes”. All tribal communities and castes deemed under article 341 and 342 of the constitution of India are considered backward classes and there are OBC, which are not scheduled. According to the Department of Social Justice and Empowerment and the Himachal Backward Classes Finance and Development Corporation, 48 communities belong to OBC. Social and educational backwardness has been identified as reasons due to which the OBCs also need special attention. OBC population constitutes about 13.51% of the total population of the state.
Transhumance	<p>Transhumance is a type of controlled nomadism or pastoralism, a seasonal movement/ migration of people along-with their livestock between fixed summer and winter pastures, i.e., higher pastures in summers and lower pastures in winters. In the state, Gaddi and Gujjar are two nomadic communities which account for 69% of the total ST population in the state (Census of India 2011).</p> <ul style="list-style-type: none"> - Gaddi: a semi nomadic tribe and usually have a permanent homestead either in the valleys of Kangra, Kullu or in the foothills of Una. During summer months, May-June to August, these people move to the higher areas in district Lahaul & Spiti. Before the on-set of winter, usually by end-August, the Gaddis along with flock, usually comprising of sheep and goats, travel back to their respective destinations or beyond up to the foot-hills of Una, where they engage in agricultural activities; they own small parcels of land. Gaddi women engage in the weaving of wool. - Gujjar: a pastoral nomadic tribe, who move to high alpine regions during summer in search of good pastures. Their herds comprise of sheep, goats, buffaloes and a few cows. Typically, the Gujjars migrate in groups (known as kafila or convoy) of several households, and carry all essential household items that serve as protection from the elements, utensils, etc., on horseback. By September, the Gujjars start moving towards the plains, where they spend the winters.
Forest Dwellers	<p>The term “forest dweller” refers to the Forest Dwelling Scheduled Tribes (FDST) and the Other Traditional Forest Dwellers (OTFD)” as members or communities who primarily reside in and who depend on the forests or forest lands for bona fide livelihood needs, as per “The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act 2006” known as FRA.</p> <p>As per a FAO Working Paper No: APFSOS/WP/27¹, forest dwellers have been classified into 3 categories:</p> <ul style="list-style-type: none"> - People living inside forests, often as hunter-gatherers or shifting cultivators, and heavily dependent on forests for their livelihood on a subsistence basis - often consisting of scheduled tribe or people from minority ethnic groups - People living near forests, usually engaged in cultivation outside the forest, who regularly use forest products (timber, fuelwood, bush foods, medicinal plants etc) partly for their own subsistence purposes and partly for income generation - People engaged in commercial activities such as trapping, collecting minerals or forest industries such as logging, may be part of a mixed subsistence and cash economy, depend on income from forest-dependent labour <p>If a person is certified as a “Forest Dweller” legally, he/she has all right over the forestland. However, in practical, the progress of the administrative procedures is very slow in HP state. As per the FRA status report of February 2016 of Ministry of Tribal Affairs (MOTA), GOI, 346 titles were distributed including 108 community claims, but objections were raised by the MOTA on the constitution of Forest Rights Committees (FRCs) at the Gram Panchayat level and process of claim settlement, therefore, these titles were not given.</p>
Poor Households	Poor households tend to be more dependent on forest resources and are thus disproportionately impacted by forest protection and development activities. For various reasons, they may also be

¹ “People and Forests in Asia and the Pacific: Situation and Prospects”, Asia-Pacific Forestry Sector Outlook Study Working Paper Series, Regional Community Forestry Training Centre Kasetsart University, Bangkok, Thailand, by R.J. Fisher Somjai, Srimongkontip, Cor Veer assistance of Michael Victor Nitiya Kijtewachakul, December 1997

Social Groups	Definition/ Description
	<p>excluded from decision-making processes.</p> <p>In HP state, 23.87% of the rural population is considered to be below poverty line. The highest incidences of poverty are observed in Chamba district (54.15%), followed by Lahaul-Spiti (43.50%). Followed by Shimla (29.07%). Sirmaur (19.44%), Una (16.92%) and Kullu (16.24%) indicated the lowest figures. “Scaling the Heights (World Bank, 2015)”, mentions successful reduction of the poverty rate regardless of gender and caste, both in the rural and urban areas. The report has highlighted that the poverty level in the rural areas of the state has declined from 36.8 % in 1993 to 8.5 % in 2011. This is better than any other state in the country, but still consideration on poor households are required as one of the marginalized groups in the society.</p>
Landless Households	<p>According to “The Himachal Pradesh Tenancy and Land Reforms Act, 1972” by Revenue Department, Government of HP, “Landless person” means a person who holding no land for agriculture purposes, whether as an owner or a tenant, earns his/her livelihood principally on manual labour on land and intends to take the profession of agriculture and is capable of cultivating the land personally. The landless households are often dependent on forest resources for their daily subsistence needs and as a safety net in times of duress, but neglected from development interventions as targets are often focused on farmers who have land and assets.</p>
Women and Female Headed Households	<p>Women play a specific and differentiated role in terms of agricultural production and forest management (e.g. sowing, tending/weeding, marketing/selling produce, collection of NTFPs, craft production). In HP state, many women collect fodder grasses from the forest areas and feed their cattle and collect fuelwoods to be used for cooking and warming the houses which not having LPG. In the recent past, along with the economic growth, literacy, education access to communication, banking services have improved amongst women. The proportion of women who have gone through ten or more years of education are much higher than the national average. On the other hand, women’s work participation and ownership of a house/land still significantly behind in comparison to rest of India so that females traditionally have not inherited any lands.</p> <p>Female Headed Households should also be a key target group as they are a particularly vulnerable sub-group with typically limited asset/livelihood options.</p>
Affected Persons/ Families	<p>Criteria to be defined as “Affected Persons/ Families” are as follows;</p> <ol style="list-style-type: none"> Whose land or other immovable property has been acquired, Which does not own any land, but family may be agricultural laborers, tenants with any form of tenancy or usufruct rights, share croppers or artisans, residing in the affected area for the last three years before acquisition of land, and who primary source of livelihoods has been affected due to acquisition of land, STs and other traditional forest dwellers who have lost their forest rights recognized by the FRA due to acquisition of land, Whose primary source of livelihood, three years prior to acquisition of land, is dependent of forests or water bodies, including gatherers of forest produce, hunters, fisher folk, boatman, etc., and whose livelihood is affected due to acquisition of land, and Member of family who has been assigned land by the Government (central/ state) under any scheme, and such land has been acquired.
Displaced Families	<p>Displaces Families mean any family, that has to be relocated and resettled from the affected areas to a new resettlement site (<i>* Family will include a person with his/her spouse, minor children, minor brother and sister dependent on him/her</i>)</p>

Source: Prepared by JICA Study Team (2017)

1.4 Structure of ESAF

ESAF of the Project is structured as follows:

- i) **Project Summary Description** will describe the project objectives, proposed Project components and expected outcomes, phasing of Project, etc,
- ii) **Environmental and Social Safeguard Policies of JICA:** briefly describes JICA's environmental and social safeguard policies, and clarifies how the Project shall be categorised and what types of measures will be required,
- iii) **Existing Environmental and Social Management Systems:** Outline the legal and policy context for environmental and social safeguard in India as well as in the HP state,
- iv) **Environmental and Social Considerations and Potential Impacts:** details-out the environmental and social considerations within the Project and assessment of positive and negative impacts,
- v) **Environmental and Social Management Measures and Monitoring:** explains the procedures to be followed to manage and monitor environmental and social aspects, including the procedures for the preparation of environmental management plan and environmental monitoring plan,
- vi) **Institutional Arrangement and Capacity Development for ESAF:** identifies the recommended institutional arrangement and capacity development and training requirements for effective implementation of ESAF,
- vii) **Public Consultation Mechanism:** describes the mechanisms for public consultations including Free, Prior and Informed Consent (FPIC) as one of important principles,
- viii) **Grievance Redress Mechanism:** identifies the available and suggested mechanisms for grievance redress, and
- ix) **Cost Estimation and Budget Allocation:** identifies the required cost to implement ESAF, with the estimation of the necessary human resources and capacity development programme, and its budget allocation.

2 Project Summary Description

2.1 Project Objectives

The objective of the proposed Project is “to enhance current carrying capacities of ecosystems in forest. Ultimately, the proposed Project aims at contributing to the improvement of forest ecosystem in HP state.

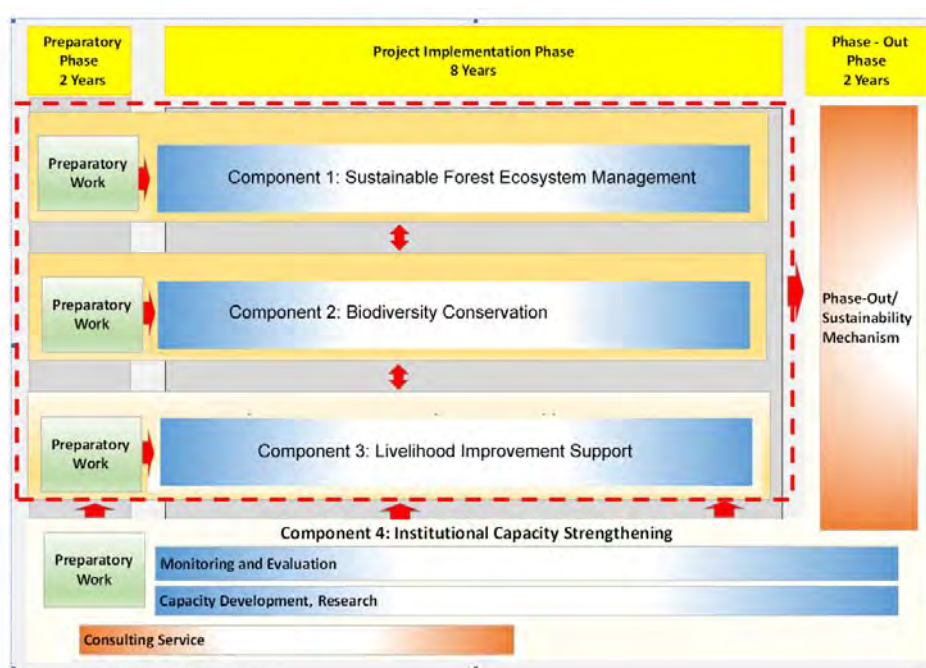
2.2 Identified Project Area

As per the agreement made between JICA and HPFD prior to the commencement of the Study, a total of seven districts (in case of Chamba district, only Bhramour and Pangi sub-divisions are included) within HP state was considered as districts for the proposed project area. In the Study,

14 territorial forest divisions (49 ranges) and two wildlife divisions (four protected areas and two wildlife ranges) are proposed as the project prioritised area.

2.3 Proposed Project Components

Restructured proposed project components are indicated in **Figure 1** as follows. Out of 9 components proposed, the Component 2: Forest Management and the Component 3: Biodiversity Conservation are regarded as the core components of the Project.



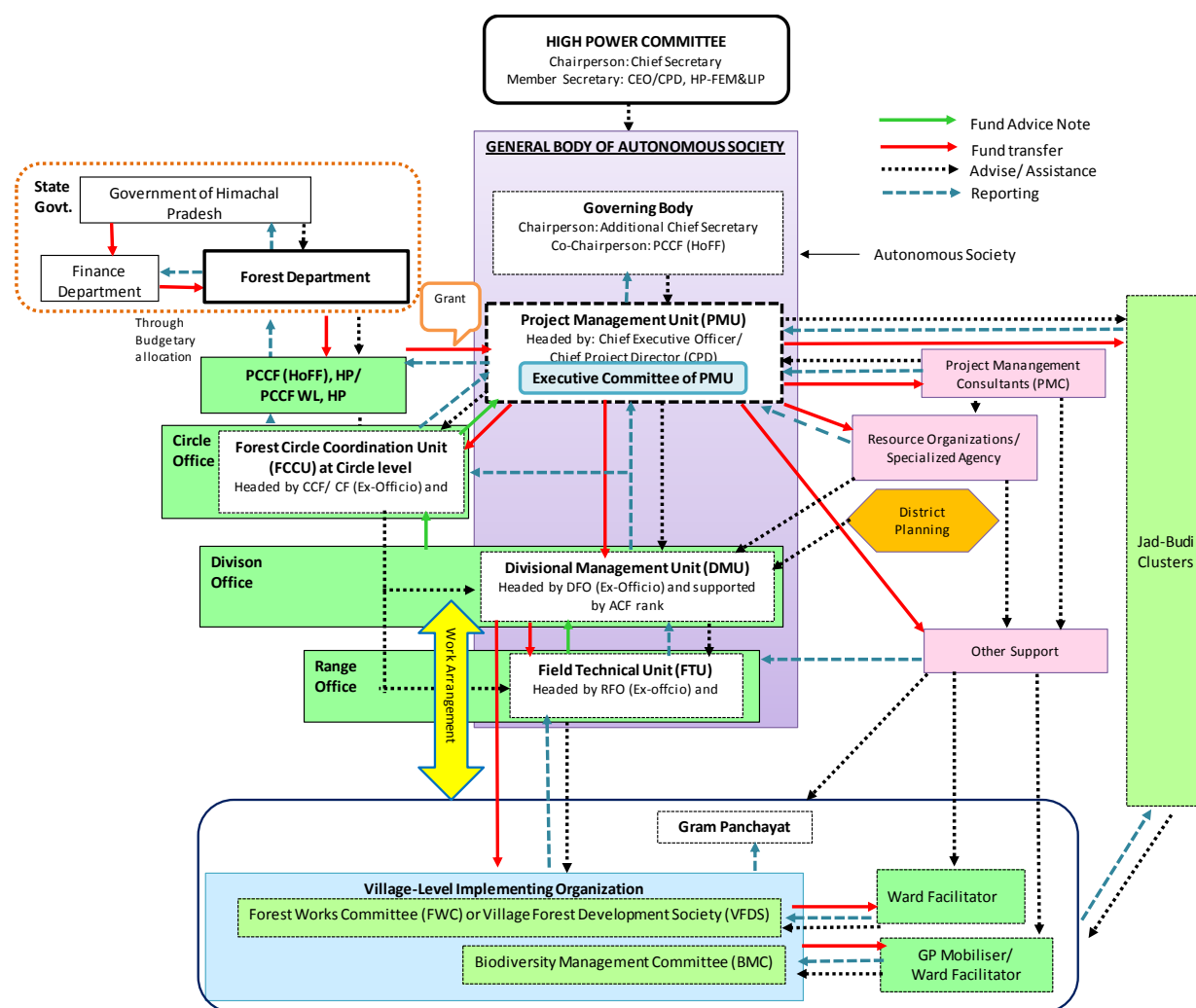
Source: JICA Study Team (2017)

Source: JICA Study Team (2017)

Figure 1 Framework of Project Components and Flow of the Phases

2.4 Project Implementation Structure

The Project is proposed to be implemented through an autonomous society created specifically for this Project, namely Himachal Pradesh Forest Ecosystems Management and Livelihoods Improvement Project Society (HPFEMLIPS). The Society's implementation structure is depicted in **Figure 2**.



Source: JICA Study Team (2017)

Figure 2 Proposed Project Implementation Structure

The Project Management Unit (PMU) of the Project would be established as autonomous registered society, and be made responsible to manage, coordinate, implement and monitor the proposed activities. The High Power Committee (HPC) created for the Project will act as highest decision-making body for the Project at state government level, and will not form part of the autonomous society. To support project implementation at the field level, PMU will create and coordinate with two set of offices viz., Divisional Management Units (DMUs) and Field Technical Units (FTUs). In addition, Forest Circle Management Units (FCCUs) to be created at circle level and outside the society will provide overall guidance and supervise the project works at divisional and field levels. The PMU including DMUs and FTUs will implement the project as well as assist and play facilitative roles, and will source funds for project implementation. Further details of the institutional arrangement are described in **Part II, Chapter 4**. Under the propose project implementation structure, Chief Project Director (CPD) of PMU, and a Director under CPD who would be vested with additional responsibility to ensure implementation and monitoring and compliance of ESAF would be focal points to communicate with JICA on environmental and social safeguard matter.

2.5 Implementation Schedule of the Proposed Project

The followings are indicative description about the overall implementation schedule for the proposed Project based on the discussion with HPFD.

- ◆ The proposed Project to be broadly divided into three phases, namely, i) Preparatory Phase, ii) Implementation Phase, and iii) Phase-out Phase
- ◆ Duration for each phase is i) two years for Preparatory Phase, ii) eight years for Implementation Phase, and iii) two years for Phase-out Phase
- ◆ Three batches are considered, reflecting locations and seedling raising period (less than 1.5, 2 ~2.5 years, and ~3.5 years) of potential major species to be targeted by the respective VFDSs
- ◆ In consideration of overall schedule of required preparatory works, 1st batch VFDSs shall be selected by the first quarter of Year 2 (by June 2019), 2nd batch by the first quarter of Year 3 (by June 2020), and 3rd batch by fourth quarter of year 4 (by January 2021).
- ◆ 75, 175 and 150 VFDSs are tentatively assumed to be selected for 1st batch, 2nd batch and 3rd batch respectively. The actual selection of VFDSs and their batches will be conducted by FTU with thorough consultation/confirmation with concerned VFDSs.

3 Environmental and Social Safeguard Policies of JICA

3.1 JICA Principles for Environmental and Social Considerations

The environmental and social safeguards policies of JICA are covered within the JICA Guidelines for Environmental and Social Considerations (2010), in which it is committed to ensure that human rights are respected and that environmental issues are seriously considered in its investments, projects and programmes, with the following principles:

- ◆ JICA is committed to address environmental and social issues in a prompt/ timely manner,
- ◆ Assess a wide range of environmental and social impacts in all JICA projects/programmes,
- ◆ Issues related to environmental and social must be considered from an early stage, from design and throughout the project cycle,
- ◆ Accountability and transparency is JICA's responsibility,
- ◆ Requirement of stakeholder consultation/participation in consideration of environmental/ social issues,
- ◆ Requirement for Information disclosure, and
- ◆ Implementation of the guidelines should enhance organizational capacity to ensure appropriate consideration, management and monitoring of environmental/ social issues.

3.2 Key Process Elements as per the requirements of JICA Guideline

Key processes in JICA projects related to environmental and social considerations are summarised below;

(1) Categorisation of Projects

Projects are categorised according to the scope/severity of the environmental and social impacts or risks, indicated as follows;

- **Category A:** Significant adverse impacts (e.g. Large-scale development/ infrastructure),
- **Category B:** Generally site-specific impacts, few impacts are irreversible, normal mitigation measures can be designed,
- **Category C:** Minimal/little adverse impact
- **Category FI (Financial intermediary):** Substantial selection and appraisal of sub-projects after JICA approval of funding

The proposed Project is currently categorised as ‘**FI**’ as per the JICA Guidelines (2010), and the classification remains valid for the following reasons:

- a) JICA’s funding of projects will be provided to a financial intermediary or executing agency,
- b) The selection and appraisal of the sub-projects will be substantially undertaken by the executing agency only after JICA’s approval of the funding, so that the sub-projects cannot be specified prior to JICA’s approval of funding,
- c) Sub-projects will be selected in participatory mode by communities and as such cannot be specifically defined at this stage, and
- d) Sub-projects with significant adverse environmental or social impacts requiring environmental clearance will be eliminated through screening procedures. However, certain potential environmental and social impacts are perceived, and the Project may involve depressed groups (SCs, STs, OBCs, forest dwellers, etc.).

The Project is anticipated to have primarily positive impacts on the environment, provided that the main objective of the Project is to enhance sustainable forest and biodiversity management practices and improve livelihoods in the project areas. Although it is not possible to precisely state which sub-projects will be executed in which specific location and scale, the Project will exclude “Category A”, sub-projects with significant environmental impacts or risks.

At the time of selection, finalisation and approval of sub-projects, respective sub-projects will be categorized as either “Category B” or “Category C” according to the scope and severity of the environmental and social impacts or risks.

(2) Potential Impacts Assessment

An array of environmental and social impacts and risks are taken into account with a view towards enhancing positive benefits and at the same time avoiding/mitigating negative impacts.

Table 2 indicates the required items to be assessed as potential environmental and social impacts respectively.

Table 2 Potential Impacts to be Assessed

Type of Impact	Items to be Assessed
Environmental Impact	On the natural environment transmitted through air, water, soils, waste, accidents, water usage, climate change, ecosystems, fauna and flora and trans-boundary/global scale impacts.
Social Impact	On community/people's lands, resettlement, economies, livelihoods, employment, social institutions, vulnerable groups, gender, indigenous peoples, children, health, cultural heritage, utilization of land and local resources, existing social infrastructures and services, equality of benefits and losses, local conflicts, working conditions, etc.

Source: Compiled by JICA Study Team (2017) based on the JICA Guidelines for Environmental and Social Considerations 2010

(3) Information Disclosure and Consultation

Implementing Agency (IA) of the Project shall monitor the sub-projects following the Environmental Monitoring Programme (EMoP) which are the requirement for only Category B sub-projects. Such sub-projects information on the environmental and social impacts is encouraged to disclose to all relevant stakeholders. Also, IA shall prepare annual report of the Project in which ESC relevant report will be incorporated as one chapter/section.

3.3 Compatibility with International Standards

JICA corroborates that projects do not deviate considerably from the World Bank's Safeguard Policies, and refers to it as a benchmark to the standards of international development agencies; to internationally recognized standards, or international standards, treaties, and declarations, etc. and to the good practices, etc. of developed nations as appropriate.

JICA also suggests international policies, procedures and standards such as the World Bank. Of relevance to the Project, Although JICA has particular trepidations with respect to Indigenous Peoples, it does not reflect a detailed policy with clear procedures for such peoples affected by the projects interventions, and refers to the World Bank Operational Policy 4.10 (OP4.10) on Indigenous Peoples. Thus, the contents and format of the safeguards framework elaborated for the Project follows that indicated in the World Bank OP 4.10, as requested by JICA for the preparation of the Project.

3.4 Requirements as per JICA Guidelines

As per the JICA guidelines, the following conditions are examined with respect to the project implementation. Financial intermediary or the executing agencies are mandated to comply with the following requirements:

- Ensure appropriate environmental and social considerations,
- Sufficiency of institutional capacity to confirm environmental and social considerations of the financial intermediary/ executing agency is sufficient; if requires adequate measures be taken to strengthen the capacity,

- c) Financial intermediary or executing agency to assess potential positive and negative environmental impacts of sub-projects, takes appropriate measures to avoid, minimise, mitigate, or compensate for potential negative impacts, and promote positive impacts if any available,
- d) Disclosure of the results of environmental reviews on its website after concluding agreement documents, and
- e) Confirm with project proponents on the results of monitoring items that have significant environmental impacts. Project proponents are undertaking environmental and social considerations for projects that fall under Categories A, B, and FI.

4 Existing Environmental and Social Management Systems

The following section focuses on the existing environmental and social management systems in Indian and HP state and examines the probable manner for implementing the Project. Through the review by the Study Team, the existing legal and regulatory frameworks are confirmed to be in line with the requirement of JICA Guideline as well as the World Bank's Safeguard Policies. An overview of the environmental and social legal frameworks and institutional arrangements processes and procedures for its implementation are presented as follows.

4.1 Existing Systems for Environmental Management

In the Indian context, there are a number of laws, rules, regulations, notifications, and policies for addressing various issues related to control, protection and management of environment. **Appendix A** lists the main environmental policies, laws and regulations, in the Indian as well as in HP state, relevant to the types of activities that have been proposed under the Project.

In the following sections, the processes adopted in India for environmental clearance and the forest clearance is described although the Project is not anticipated any environmental or forest clearances.

(1) Environmental Clearance Procedures

Under the ambit of EIA laws and regulations in India, all projects and activities requiring "Environmental Clearance" (EC) are classified broadly into two categories - **Category A** (hereafter refer to as "Indian EIA Category A") and **Category B** (hereafter refer to as "Indian EIA Category B"), which is based on the spatial extent of potential impacts on natural and man-made resources.

Indian EIA Category 'A' projects or development activities are mandated to conduct EIA studies along with conducting the "Public Consultation" as per the procedure stipulated in the Notification, and the environmental clearance is required from the Central Government or MoEF&CC.

Indian EIA Category 'B' projects fall under the purview of the state authority as mentioned in

EIA notification 2006 and decentralized procedure is done. The Government of India has constituted the State Expert Appraisal Committee (SEAC) and State Environmental Impact Assessment Authority (SEIAA) committee for decentralized procedure of environmental clearance. The category 'B' projects are further divided into **Category 'B1'** (projects that require submitting an EIA report) and **Category 'B2'** project activities which do not require EIA report.² The stages in the environmental clearance procedure as per EIA notification 2006 is described in **Figure 3**. For convenience, stages of EIA have been divided into following six stages in this report; 1) *Screening*, 2) *Scoping*, 3) *EIA Study*, 4) *Public Consultation*, 5) *Appraisal*, and 6) *Monitoring*.

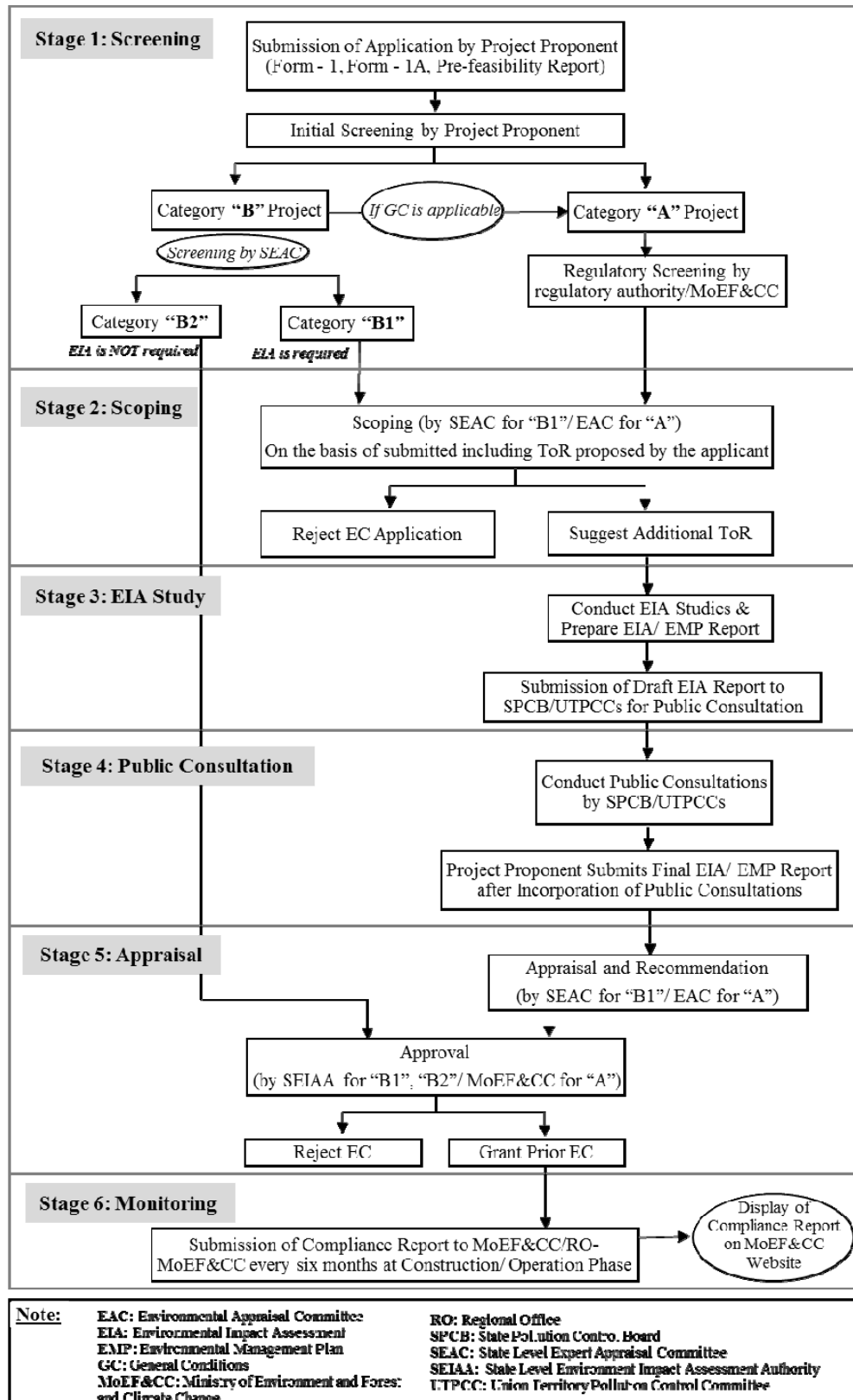
(2) Forest Clearance Procedures

Forest Clearance from the statutory authority will be required if forest area is to be diverted for the Project (including, notified roadside plantations). For this purpose, application is submitted to the state government, which in turn recommends the case to MoEF&CC.

The process of Forest Clearance consists of two stages; **First Stage Clearance** and **Second Stage Clearance**. In the First Stage Clearance, the application could be granted "In Principle Approval", or it could be subject to fulfilment of conditions, if applicable, which could include: deposition of Net Present Value of Forest (@ 438,000 to 1,043,000 INR/ha), money for compensatory afforestation, plantation of at least double the number of trees felled, submission of plan for afforestation, certificate of compliance under FRA, etc. During this phase, no activity will be allowed until final clearance is accorded and the state can stipulate additional conditions³. In the Second Stage Clearance process, it will be ensured if the conditions prescribed have been fulfilled. **Figure 4** describes the process of forest clearance.

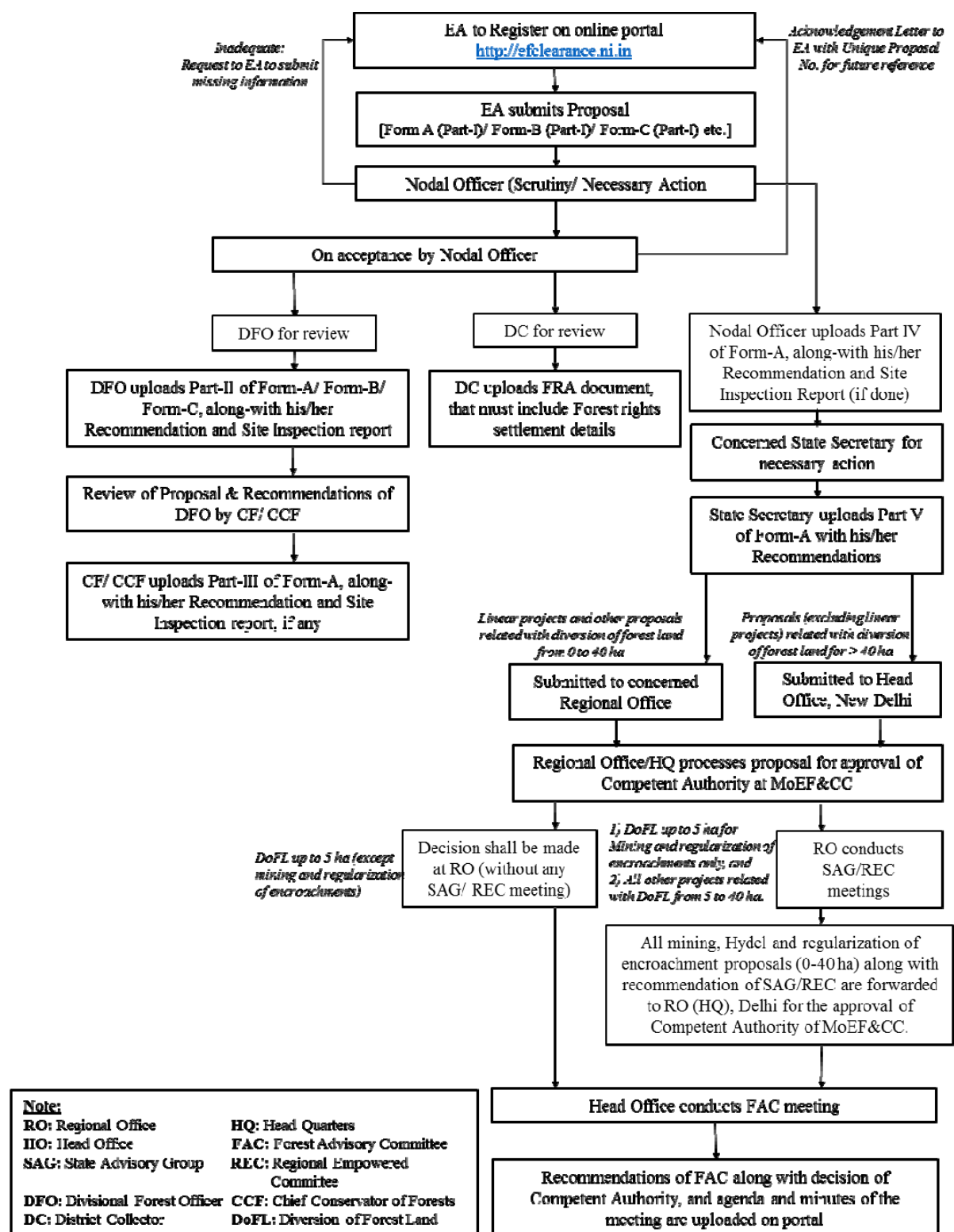
² Source: EIA Notification 2006 and <http://www.sciencebeing.com/2012/10/eia-notification-and-its-implementation-in-india/>

³ Source: http://www.teriuniversity.ac.in/mct/pdf/new/environment/Infrastructure_development_and_environment.pdf



Source: Prepared by JICA Study Team (2017) based on EPA 1984 and Notification 2006 and Amendments, MoEF&CC

Figure 3 Prior Environmental Clearance Process as per Indian EIA Law



Source: Compiled by JICA Study Team (2017) based on information from MoEF&CC
<http://www.moef.gov.in/citizen/specinfo/forflow.html>

Figure 4 Forest Clearance Process as per Relevant Indian Law

4.2 Existing Systems for Social Management

JICA concerns that development projects are implemented with special attention to vulnerable groups such as the poor, landless/landed poor, indigenous peoples (or STs in India) and women. Rights of local communities and STs should be respected in all interventions.

The potential negative social impacts are much lower compared with the large infrastructure projects which involve physical displacement and involuntary resettlement, but still there is a possibility to negatively impacts the local communities on their livelihoods, loss of access, ownership or use rights, and increased conflicts on forest lands by forestry activities which involve restricting practices or change existing land uses. Therefore, **Appendix B** identifies some of the main relevant policies, laws and regulations with respect to addressing social issues and concerns, for the types of activities that have been proposed under the Project. The Project will involve the local communities to work through their respective village level implementation bodies in the designated project areas so that the relevant labour laws are also listed up.

In the following sections, the procedures for land acquisition and involuntary resettlement applied in India are presented. Further detail procedures should be referred to Involuntary Resettlement Planning Framework (IRPF).

(1) Land Acquisition and Involuntary Resettlement

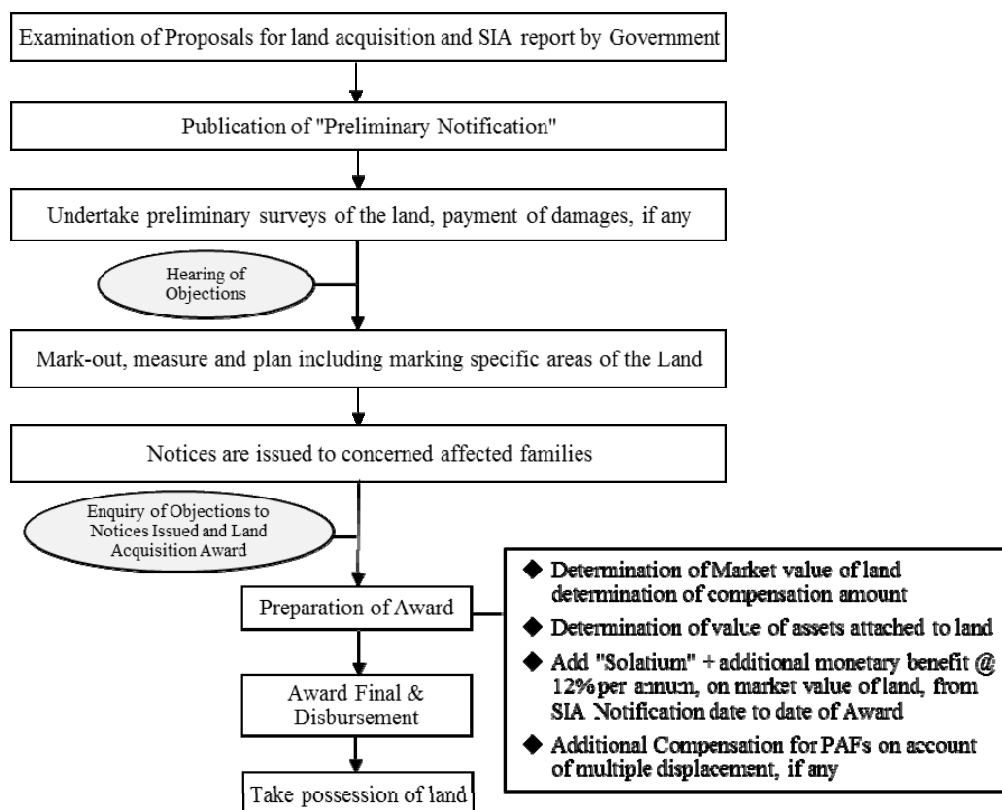
“The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 [No. 30 of 2013] dated 26th September 2013” (RFCTLARR Act 2013), came into force on 01-Jan-2014, is the legal foundation for all matters related to land acquisition and involuntary resettlement in the country.

According to the Act; it ensures “a humane, participative, informed and transparent process for land acquisition for the purpose of industrialisation, development of essential infrastructural facilities and urbanisation, which is in consultation with the local self-government institutions and Gram Sabhas established under the Constitution”.

Also, the Act ensures that the negative impacts on the land owners and other affected families shall be minimised with the provision with a just and fair compensation to the affected families, leading to an improvement in their socio-economic status for their rehabilitation and resettlement.

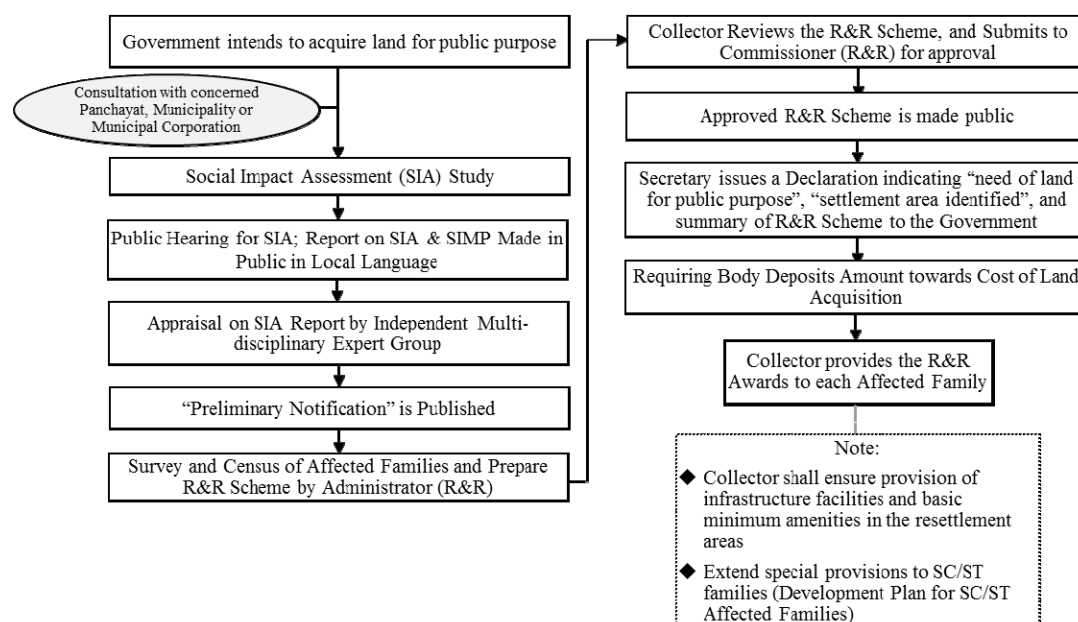
The state government of HP has notified the HP Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement, Rules 2015, dated 27 Jan 2015. As per this Rule, the state government shall (i) identify, establish and build a database of SIA resource partners and practitioners, who will be responsible to ensure that SIAs are commissioned and conducted with project specific terms of reference, (ii) the state government will thereafter recommend an area for acquisition depending on the SIA report with the bearing that minimal adverse impact is suffered by the people, (iii) written consent will be sought from all individuals who are opposing any project; such persons will be asked to record their objections.

The processes involved in land acquisition and involuntary settlement are depicted in **Figure 5** and **Figure 6** respectively.



Source: JICA Study Team (2017) based on information from RFCTLARR Act 2013 and subsequent Rules

Figure 5 Flow Diagram for Land Acquisition Process



Source: Compiled by JICA Study Team (2017) based on information from RFCTLARR Act 2013 and subsequent Rules

Figure 6 Flow diagram for Resettlement and Rehabilitation

4.3 Existing Agencies for Environment and Social Management System

HPFEMILIPS, as the Executing Agency (EA), shall be responsible for the implementation of the entire Project, while the JFMCs and their respective Gram Sabha are PRIs to control and support the project activities in their lands from community perspective. Key gaps and shortfalls identified in each institution in comparison to international standards as indicated in the JICA Guidelines are summarised in **Table 3**.

Table 3 Key Gaps and Shortfalls in Comparison to the Standards in the JICA Guidelines

Executing Agency/ Body	Key Gaps and Shortfalls	Possible Gap Filling Measures
Implementing agency (General body of autonomous society)	<ul style="list-style-type: none"> - Prior consultations with beneficiaries and project-affected communities is limited - Insufficient appraisal of environmental and social considerations prior to implementation (weak baseline for impact evaluation) - Restricted procedures for environmental screening and subsequent management of environmental risks associated with small-scale construction and other activities with potential adverse impacts - Inadequate monitoring of safeguard processes and procedures 	<ul style="list-style-type: none"> - Application of ESAF and VSTPF - Implementation of Capacity Development Plan for Environmental and Social Safeguards - Engagement of Environmental and Social Consideration Expert/ Specialist(s)
PRI: JFMCs/ Gram Sabha	<ul style="list-style-type: none"> - Lack/ limitation in owning project activities within their areas - Irregular community participation in JFMC or Gram Sabha meetings, thus paucity of prior consultation with project-affected communities - Shortcomings in attending to concerns of ST, SC and OBCs - Inadequate awareness of potential adverse environmental impacts - Restrictive comprehension of safeguard processes and procedures 	<ul style="list-style-type: none"> - Application of ESAF and VSTPF - Implementation of Capacity Development Plan for Environmental and Social Safeguards

Source: JICA Study Team (2017)

HPFEMILIPS or HPFD does not have any system for environment and social management, for screening, managing and monitoring environmental and social risks. Thus, it is recommended to incorporate subject matter experts and specialist under PMC in charge of environmental and social safeguards and support PMU for the compliance of the required environmental and social safeguards, that further described in **Section 7** of this document

5 Environmental and Social Considerations, Potential Impacts and Mitigation Measures

As mentioned above, it is impracticable at this study phase to assess the detailed environmental and social impacts and propose management and mitigation measures for each sub-project level which are not yet defined in detail. Therefore, in this section, the potential environmental and social impacts for proposed broad types of activities are assessed and mitigation measures are proposed through ESMS checklist (**Appendix C**), environmental and social scoping matrixes (**Appendix D**), and component-wise potential deleterious environmental and social impacts assessment (**Table 4** and **Table 5**). The purpose of the initial assessment is to summarise the potential (especially negative) impacts which could be referred when Environmental Management Plans (EMPs) as well as Environmental Monitoring Plan (EMoP) are required to

prepare. Also, IA, i.e. PMU/ FCCUs/DMUs/ FTUs, can refer these documents at the screening and selection stage of range level plans as reference documents which indicate major points to be concerned from ESC perspective.

5.1 Environmental Considerations and its Potential Impacts

(1) Environmental Considerations

JICA guidelines indicate a wide range of environmental considerations that are required to be taken into account. Initial scoping identified the following impacts on the natural environment to be assessed;

- ◆ Ecosystems (especially afforestation, densification of forests, sites of importance to biodiversity conservation and protected areas)
- ◆ Biodiversity (fauna and flora)
- ◆ Air, Water, Waste and Soils (resulting from infrastructure activities)
- ◆ Climate Change

Appendix C reflects the initial environmental screening and assessment by making use of the Environmental Checklists provided by the JICA Guideline. A wide range of environmental and social potential impacts have been assessed and considered. Moreover, the extents of the potential environmental and social risks were assessed and evaluated by using the environmental and social scoping matrixes shown in **Appendix D**. The purpose of scoping is to identify the potential environmental and social impacts caused by the Project based on available secondary data and information, and preliminary site reconnaissance.

(2) Assessment of Potential Environmental Impacts

i) Positive Environmental Impacts

The proposed Project primarily focuses on development, protection and restoration of forests and improves livelihoods for the community, therefore the associated activities are expected to present various environmental benefits, including;

- ◆ Increase the overall forest area in the state - proportionate increase in dense & moderately dense forests,
- ◆ Additional plantations resulting in decrease of area under open forests,
- ◆ Climate change mitigation through reduced emissions from deforestation and forest degradation,
- ◆ Improved ecosystem services such as watershed protection, protection of soils, moisture conservation measures, etc,
- ◆ Reduction in unsustainable utilization of forest resources through improvements and support for NTFPs, medicinal herbs and plants, investments in alternative livelihoods and income generating opportunities,

- ◆ Improvements in range and pasture management in the dry temperate region of the Project,
- ◆ Enhancements in protection of protected areas, and significant conservation of species and habitats,
- ◆ Well managed forests and plantations would augment the livelihood resource base of the forest dependent population,
- ◆ Eco-system services would increase due to improvements in natural capital, and
- ◆ Forest Department to be well equipped and strengthened to manage forest resources with active participation of an empowered & organized community.

ii) Negative Environmental Impacts

Table 4 below depicts potential deleterious environmental impacts associated with each project component. The table includes all aspects of implementation components, including project management, monitoring and evaluation components. Specific mitigation measures to the project components and activities are also indicated and these measures will be implemented through ESAF, especially through EMP and EMoP.

5.2 Social Considerations and Potential Impacts

(1) Social Considerations

JICA Guideline specifies a wide range of social aspects to be considered. Initial scoping identified the following social impacts to be assessed:

- ◆ Involuntary resettlement and land acquisition
- ◆ Poverty, vulnerability and loss of livelihoods
- ◆ Specific impacts on Scheduled Castes (SCs), Scheduled Tribes (STs), Transhumance, Other Backward Classes (OBC), etc.
- ◆ Gender

(2) Assessment of Potential Social Impacts

i) Positive Social Impacts

The primary objective of the Project is forest development, protection, restoration, and conservation. It will also focus on livelihoods of the local communities, thus it is anticipated to provide a number of social benefits that would include;

- ◆ Improvement of physical capital for rural communities, including poor, with the help of renovation upgraded community infrastructure,
- ◆ Employment and income opportunities from forest protection activities would result in enhanced financial capital,
- ◆ Well managed forests and plantations would supplement livelihood resource-base of the forest dependent population,

- ◆ Increase in income levels of people,
- ◆ Improvements in range/pasture management would cater to fodder requirements of the rural communities,
- ◆ NTFP-based livelihoods would improve due to Robust scientific management practices, and
- ◆ Improved livelihood opportunities through project support for alternative income generating activities.

ii) Negative Social Impacts

Table 5 details-out the potential deleterious social impacts or risks associated with each project component. Impacts on the social setting often over-weigh the environmental risks associated with the project activities. The project area includes a diverse variety of tribal communities, transhumance (also designated as STs), the SCs and other forest dependent communities, vulnerable groups including women, widows, destitute, poor, landless, etc., on whom a number of potentially significant social safeguard issues could be linked with respect to their lands and forest rights and impacts on their livelihoods.

Table 4 Potential Deleterious Environmental Impacts

Component	Sub-Component	Potential Environmental Concerns	Scoping	Mitigations Measures/ Suggestions
Component 1: Sustainable Forest Ecosystem Management	1.1 Preparatory Works for Participatory Forest Management	- Use of chemical fertilizers, insecticides and pesticides may seep into ground water	Low	- Ensure judicious use of chemical fertilizers, insecticide/ pesticides - Ensure use of bio fertilizers and insecticides/ pesticides
	1.2 Participatory Forest Management (PFM) Mode	- Use of non-native and exotic species may have a negatively impact the bio-diversity	Low	- Ensure use of native species - Ensure propagation of native species
	1.3 Training of VFDS	- Engineering structures for moisture retention may lead to removal of top soils resulting in soil erosion	Low	- Proper drainage to avoid water logging and percolation into ground water - Ensure proper restoration of areas surrounding the civil engineering structures, through compaction of soils, plantation of vegetation, etc.
	1.4 Department Mode	- Civil engineering structures may lead to soil erosion		- Ensure proper restoration of areas surrounding the civil engineering structures, through compaction of soils, plantation of vegetation, etc.
	1.5 Training of Project related Staff of HPFD			
	1.6 Research	- Purchase, storage and disposal of chemicals in the form of fire retardants may pose environmental concerns and contamination of the site	Low	- Proper storage and disposal of chemical as prescribed by vendor and safety aspects
		- Fire roads and paths may encourage illegal transportation of forest produce by un-authorized and bonafide individua	Low	- Ensure proper handling of fire control equipment
		- Digging top soils for installation of boundary pillars may loosen top soils	Low	- Ensure dug-up muck is re-utilized - Ensure construction materials are properly disposed - Re-Vegetation surrounding the boundary pillars
		- Construction works may lead to air and noise pollution - Construction works may lead to smoke and dust from construction sites - Water mixed with concrete, oil from construction equipment may contaminate nearby forest/ private lands, water sources and channels, agricultural fields, plantations, etc. - Construction worker's labour camps may lead to deterioration of environment	Low	- Construction equipment to be serviced regularly and installed with noise mufflers and resonators - Sprinkling of water in the construction sites and nearby areas - Ensure proper storage of and control on spillage of diesel, machine lubricants, and other oils - Judicious use of water and containment of water from construction site from run-off - Proper disposal of solid wastes from labour camps - Proper disposal of waste water from labour camps - Provision of fuel for cooking and heating to avoid cutting from forests - After construction activities, proper disposal or removal of left-out construction materials and equipment

Component	Sub-Component	Potential Environmental Concerns	Scoping	Mitigations Measures/ Suggestions
		<ul style="list-style-type: none"> - Creation of watershed structures may lead to destabilization of top soils leading to soil erosion - Establishment of civil/ mechanical structures may lead to destabilization of top soils leading to soil erosion - Excavated muck from percolation tanks may run-off and contaminate sources of water and lands 	Low	<ul style="list-style-type: none"> - Ensure proper vegetative cover surrounding watershed structures, civil/ mechanical structures, percolation tanks to arrest soil erosion - Ensure excavated muck is either disposed properly or it is spread-out and planted with vegetative cover. - Proper maintenance of percolation tanks
Component 2: Sustainable Biodiversity Management	2.1 Scientific Biodiversity Management 2.2 Training of Project related Staff of HPFD 2.3 Research 2.4 Community Based Biodiversity Management	<ul style="list-style-type: none"> - Wildlife movement in/ around project areas may pose threat to human life and property - Project interventions may impact endangered wildlife 	Low	<ul style="list-style-type: none"> - Avoid project activities in or around known wildlife movement corridors - Ensure wildlife/ endangered wildlife is not hurt/ killed - Construct fencing and other similar arrangements to discourage wildlife, especially monkeys and other wildlife that can potentially affect plantations and agricultural fields
Component 3: Livelihood Enhancement	3.1 Community Development 3.2 NTFP Based Livelihood Improvement 3.3 Non-NTFP Based Livelihood Improvement	<ul style="list-style-type: none"> - Construction activities may lead to air, water, noise, pollution - Dust from construction sites and smoke from construction equipment, if used, may affect vegetation cover/ forests 	Low	<ul style="list-style-type: none"> - Water sprinklers may be used to settle dust and soil - Noise mufflers are advised to be used in equipment - Properly serviced equipment to be used - Ensure water mixed with concrete from mixers does not run-off
		<ul style="list-style-type: none"> - Development of certain NTFPs and medicinal plants could lead to illegal and unsustainable extraction leading to deleterious impacts on forest ground cover - Indiscriminate grazing or cutting for fodder may lead to harmful impacts on forests ground cover 	Low	<ul style="list-style-type: none"> - Ensure appropriateness in selection of livelihood options - Devise livelihood models that are productive, profitable and does not impact the environment to prevent agricultural expansion and deforestation - Provide guidelines for NTFPs/ cash crop cultivation / extraction to ensure environment sustainability and sustained production
		<ul style="list-style-type: none"> - Conflicts within the community institutions may become counter-productive anticipated Project activities 	Low	<ul style="list-style-type: none"> - Ensure cohesion among community institutions, immediate resolution of conflicts and redress of grievances, following ESAF procedures
Component 4: Institutional Capacity Strengthening	4.1 Preparatory Works 4.2 Capacity Development 4.3 M&E 4.4 Research 4.5 PMC 4.6 Phase Out	<ul style="list-style-type: none"> - Lack of awareness/capacity of relevant stakeholders on ESC may possibly lead to negative environmental impacts 	Low	<ul style="list-style-type: none"> - ECS Specialist under PMU and subject matter experts assist PMU/FCCU/DMU/FTU to implement project activities with compliance of ESAF, - Provision of the ESC relevant capacity development trainings to the respective administrative stakeholders

Source: Compiled by JICA Study Team (2017)

Table 5 Potential Deleterious Social Impacts

Component	Sub-Component	Potential Social Concerns	Scoping	Mitigations Measures/ Suggestions
Component 1: Sustainable Forest Ecosystem Management	1.1 Preparatory Works for Participatory Forest Management	- Following activities on private lands may result in formal acquisition of land, involuntary resettlement, loss of agricultural production, reduce income levels, increase vulnerability, loss of access to resources; ✓ Establishment of nurseries ✓ Civil engineering structures ✓ Creation of watershed structures or civil/mechanical structures ✓ Construction of new access roads/ paths	Low	- Ensure that private or lands held by community by virtue of customary traditions, are avoided which may result in (i) formal land acquisition, (ii) resettlement/ physical relocation, and (iii) Involuntary resettlement, loss of livelihoods, loss of access to resources - Ensure active participation of beneficiary and affected community members in the process of the identification of the locations - Avoid and/or mitigate social risks, if any, through the process of consultations and participation
	1.2 Participatory Forest Management (PFM) Mode	- Loss of access to resources through limited access to grazing lands for transhumance	Low	- Ensure active participation of beneficiary and affected community members, especially transhumance for the activities relevant to the pasture management
	1.3 Training of VFDS	- Limited access to customarily held resources	Low	- Ensure informed consultations and sharing of project related information to prepare the community for intended project activities - Ensure participation of community in all aspects of planning, implementation and monitoring of the project activities
	1.4 Department Mode	- Infrastructure development may result in acquisition of private lands, or loss of access to customarily held resources, or loss of incomes or loss of agricultural production	Low	- Ensure all forest infrastructure development activities are restricted within forest areas - Ensure access to customarily held resources is not limited or restricted due to construction of forest infrastructure
	1.5 Training of Project related Staff of HPFD	- Disturbance and inconvenience from air and noise pollution, smoke and dust resulting from construction activities	Low	- All construction equipment to be regularly serviced, installation of noise mufflers and resonators, etc., to control air pollution due to smoke from exhausts, noise and vibrations from construction equipment
	1.6 Research	- Contaminated water from construction sites may pollute water sources, water channels, agricultural fields, plantations, etc., resulting in risk to health and reduction of incomes	Low	- Sprinkling of water in the construction sites and nearby areas to control dust - Judicious use of water to control contaminated water from construction site from run-off into agricultural fields, water sources, etc.
		- Conflicts with construction workers on sharing of resources, such as fuel wood, NTFPs, and others from the forests	Low	- Provision of fuel for cooking and heating to avoid cutting from forests and sharing of natural resources of the community
		- Health risks associated with local domesticated livestock foraging (disposed food items, plastics, blades, etc.) from solid wastes disposed in labour camps	Low	- Proper disposal of solid wastes in the labour camps, fencing of labour camps to ensure stray livestock from foraging
		- Incestuous relationships between local community and construction workers resulting in spread of	Low	- Ensure medical check-up for laborers before commencing work in the construction sites, regular health check-ups

Component	Sub-Component	Potential Social Concerns	Scoping	Mitigations Measures/ Suggestions
		Sexually transmitted diseases, AIDS/ HIV, etc.		thereafter
Component 2: Sustainable Biodiversity Management	2.1 Scientific Biodiversity Management 2.2 Training of Project related Staff of HPFD 2.3 Research 2.4 Community Based Biodiversity Management	- Wildlife movement in/ around project areas may pose threat to human life and property	Low	- Avoid project activities in or around known wildlife movement corridors - Imparting education to community members to drive away wildlife rather than hurt/ killed wildlife - Fencing and other similar arrangements to discourage wildlife, especially monkeys and other wildlife that can potentially destroy plantations and agricultural fields
Component 3: Livelihood Enhancement	3.1 Community Development 3.2 NTFP Based Livelihood Improvement 3.3 Non-NTFP Based Livelihood Improvement	- Disparity in selection of beneficiaries on income generating activities, and livelihood opportunities - Conflicts within the community individuals and institutions may arise on benefit sharing - Exclusion of vulnerable groups from project activities and benefits	Low Low Low	- Appropriate and representative selection of beneficiaries for livelihood options and income generation activities - Ensure cohesion among community institutions, immediate resolution of conflicts and redress of grievances - Identify specific activities for marginalized groups such as landless, poor households, female headed households, women, etc. - Specify minimum quota for selection of women, SCs, STs, and other vulnerable groups such as women, women headed households, landless, poor/ near poor, etc., as beneficiaries for livelihood development activities
		- Small scale infrastructure development may result in acquisition of private lands, or loss of access to customarily held resources, or loss of incomes or agricultural production	Low	- No acquisition of land: ensure up-gradation of existing infrastructure or ensure alignments that do not require additional acquisition of land (If un-avoidable, encourage voluntary land acquisition on community initiatives)
Component 4: Institutional Capacity Strengthening	4.1 Preparatory Works 4.2 Capacity Development 4.3 M&E 4.4 Research 4.5 PMC 4.6 Phase Out	- Lack of awareness/capacity of relevant stakeholders on ESC may possibly lead to negative social impacts such as loss of access to resources or loss of livelihoods, or involuntary resettlements, - Inequitable distribution of benefits based on forest land tenure arrangements. - Local community may get isolated or would merely act as target groups of project activity interventions	Low	- ECS specialist under PMU and subject matter experts assist PMU/FCCU/DMU/FTU to implement project activities with compliance of ESAF - Provision of the ESC relevant capacity development trainings to the respective administrative stakeholders - Ensure active participation of beneficiary and affected community members in baseline surveys and micro-planning activities, for selection of project areas, and reduce conflicts - Beneficiaries should be selected through a transparent process to ensure equitable benefit-sharing - Fully ensure and consider active participation of community in the Project following ESAF

Source: Compiled by JICA Study Team (2017)

5.3 Gender Aspects

Gender plays an important role in development projects related to forest protection and development activities, management and use of forests, akin to any other development initiative; men and women typically have gender based divisions of labour. Generally, women in the remote areas, especially in rural and mountainous parts, are either excluded or not allowed to participate in natural resource planning and decision-making, more-so due to patriarchal land tenure systems, male-dominated society and cultural beliefs; despite the fact that women are typically more attached to forests and more knowledgeable about various aspects of forest management.

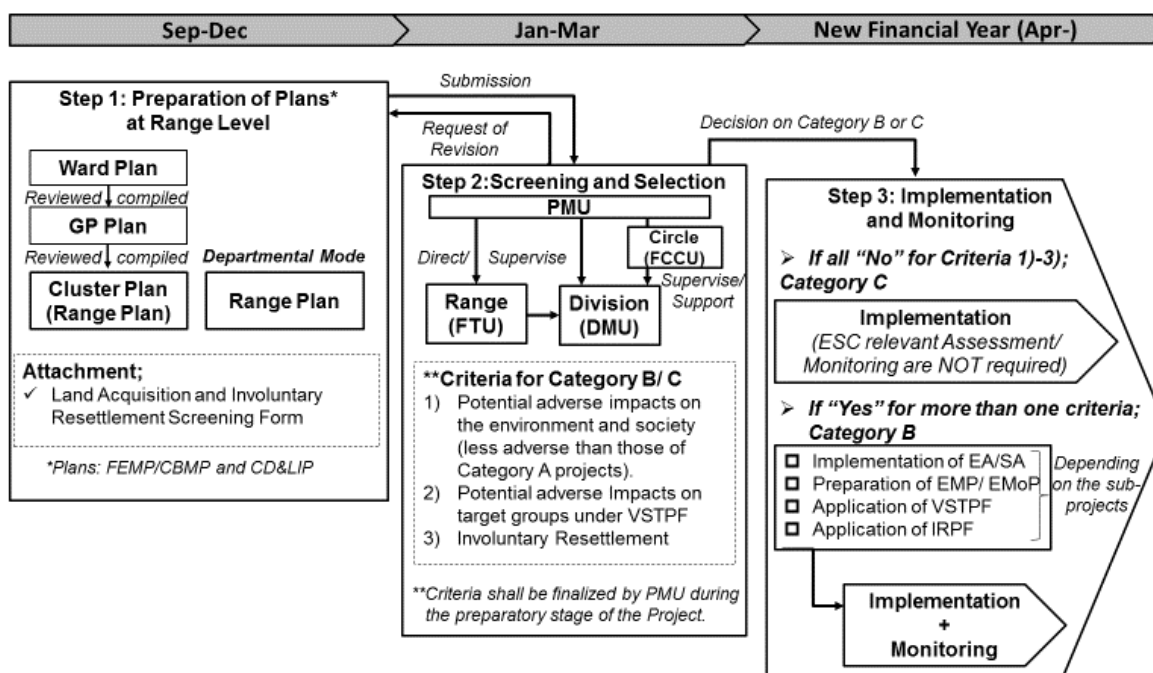
On the other hand, unlike in many parts of the country, women in HP relatively share a more equitable position in society and with the household, are more vocal in sharing their opinions, more educated in comparison, and many have jobs and financially independent; yet they are burdened with domestic chores, tending to the needs of the children and other family members, tending to livestock, collection of fuel-wood, fodder and water, involved in all aspects of agricultural activities, etc. Even during leisure, women folk get together and involved in activities such as knitting and weaving, mending cloths, grinding flour and masalas, plastering floors and walls, etc.

Another factor that is specifically relevant in remote areas is the fact that typically girls spend less time in school and drop out to assist in activities related to tending to siblings, agriculture, and other domestic chores. This combined with other restrictions, vis-à-vis., role of women/ girls within the house, in the community and their exposure to outside world limits their awareness, knowledge and participation; it is therefore imperative to boost active involve and participation of women in forest and livelihood based improvement activities.

6 Environmental and Social Management Measures and Monitoring

ESAF has been prepared to ensure that potential adverse environmental and social impacts associated with the Project are either avoided or minimised in line with the JICA Guideline as well as India and HP's relevant policies, laws and regulations. ESAF targets at managing the potential unfavourable and deleterious impacts, with the help of simple procedures to expedite appropriate environmental and social management.

An EIA study would not be required for the entire Project, however, the Project may need to be evaluated from the environmental and social risk perspective before implementation of sub-projects. Overall procedures which the Project shall be accountable are depicted in **Figure 7**.



Source: JICA Study Team (2017)

Figure 7 Overall Flow Diagram for ESAF Procedures

As depicted above, there are mainly three steps, i.e. 1) Preparation of Plans at Range Level, 2) Screening and Selection of Sub-projects, and 3) Implementation and Monitoring of Sub-projects. Further detail descriptions of each step are given in **Table 6**.

Table 6 Indicative ESAF Procedures

Step	Description	Key Stakeholders
Step 1: Preparation of Plans at Range Level	<ul style="list-style-type: none"> - As described in Part II, Chapter 3, Section 3.7.1.1, The proposed project intends to have a cohesive activity plans among ward, GP and range levels. Firstly, micro plans such as Forest Ecosystems Management Plan (FEMP), Community based Biodiversity Management Plan (CBMP), and Community Development and Livelihood Improvement Plan (CD&LIP) shall be prepared at ward level with assistance from Ward Facilitators. Based on the five years action plan and vision for 10 years, annual planning is to be developed between September and December prior to the next financial year. The ward plans shall be reviewed and compiled at GP level with assistance of GP Motivators then compiled at range level as cluster plan. - For departmental mode, the minimum planning unit is at the range level so that FTU officer shall be in charge of the preparation of the plan. - The Project may conduct scoping for each individual sub-project to exclude land acquisition and involuntary resettlement, which can be carried-out with the help of a "land acquisition and involuntary resettlement screening form" (Refer Appendix E). The form shall be attached to the range level plans. 	FWC/BMC sub-committees, Ward Facilitators, GP Motivators, FTU officers
Step 2: Screening and Selection of Sub-projects	<ul style="list-style-type: none"> - Criteria listed in Figure 7 are indicative and shall be finalised prior to the commencement of the Project or at the early stage of the preparatory work. - Under the guidance/direction from PMU, screening and selection of the sub-projects shall be conducted at range, division levels. - DMU officer, under the guidance/direction of PMU, shall determine whether the sub-projects are classified as Category B or C. - In case of Category B, depending on the potential adverse impacts by the sub-projects, required measures are determined from the following assessment tools/ frameworks; <ul style="list-style-type: none"> ✓ Implementation of Environmental Assessment (EA) and Social Assessment (SA) ✓ Preparation of Environmental Management Plan (EMP) and 	FTU and DMU officers, subject matter experts

Step	Description	Key Stakeholders
	<ul style="list-style-type: none"> ✓ Environmental Monitoring Plan (EMoP) ✓ Compliance of VSTPF (If sub-projects affect vulnerable STs or Forest Dwellers) ✓ Compliance of IRPF (If sub-project entails any land acquisition and involuntary resettlement) 	
Step 3: Implementation and Monitoring of Sub-projects	<ul style="list-style-type: none"> - In case, the sub-projects are classified as Category C, sub-projects can be implemented from new financial year and ESC relevant assessment and monitoring are not required. - In case, the sub-projects are classified as Category B, the requirements following the decisions at step 2 need to be satisfied for implementation of the sub-projects 	FTU and DMU officers, a specialist under PMC, subject matter experts

Source: JICA Study Team (2017)

The following sections indicate the further outline of important procedures/ requirements of ESAF as below;

- ◆ Screening and Selection of Sub-Projects,
- ◆ Environmental and Social Assessments,
- ◆ Preparation of Environmental Management Plan,
- ◆ Preparation of Environmental Monitoring Plan, and
- ◆ Implementation and Monitoring of Sub-projects

6.1 Screening and Selection of Sub-Projects

Generally, the guidelines for selection of sub-project reinforce the key objectives of the Project. Specific sub-projects will be selected based on the preferences of the communities/ needs of HPFD, thus the guidelines should not be too prescriptive in terms of defining what a given community/HPFD can and cannot do. At the same time, exclusion criteria should be clearly shown to eliminate sub-projects that may cause potentially significant adverse environmental impacts, resulting in the requirement of EIA.

The categorisation (Category B or C) of sub-project as per the JICA Guideline and exclusion criteria will be finalised by PMU prior to the commencement of the Project or at the early stage of the preparatory work. In accordance with the JICA Guidelines, various exclusion criteria have also been developed and are summarised in the **Table 7**.

Table 7 Sub-project Exclusion Criteria

Component	Exclusion Criteria for Sub-project
1. Overall	<ul style="list-style-type: none"> - diversion of forest land - acquisition of private land - cannot demonstrate the broad community support - likely to have major adverse impacts on the environment - fall into “Category A⁴” as per the JICA Guideline.
2. Forest and Natural Environment	<ul style="list-style-type: none"> - activities conducted inside protected areas such as national parks/ wildlife sanctuaries and will not contribute to environmental protection/ conservation of the selected protected areas. - likely to cause damage to wildlife and their habitats - planting of non-native or invasive or exotic species of forest trees, shrubs or plants - felling of trees on Reserved Forest or PA unless ancillary to conservation and management of

⁴ Though sub-projects which fall into the “Category A” as per the JICA Guideline are not anticipated in the Project, the following scale of sub-projects are regarded as the “Category A”.

- Conversion or felling of more than 100 ha of forest
- Construction of embankments/dams with water reservoir area of more than 100 ha
- Development of more than 100 ha agricultural area

Component	Exclusion Criteria for Sub-project
	forests and wildlife defined in the working plan (e.g. fire breaks, thinning etc.) - collection, processing and sale of NTFP species listed under CITES, India's Red List of threatened species of fauna and flora or scheduled under the Wildlife Act (1972) - use of fertilizers and pesticides banned by WHO (Classes IA, IB and II)
3.Social Environment	- child labour - could lead to the exploitation of women - acquisition of private land and/or resettlement - cause damage to places of religious importance, historical monuments or cultural properties

Source: JICA Study Team (2017)

6.2 Environmental and Social Assessments

Although, the Project is not anticipated to bring-out deleterious environmental and social impacts, yet it is suggested to conduct Environmental Assessment (EA) and Social Assessment (SA) for specific sub-project classified as Category B, which shall be conducted after the screening and selection procedures. DMU under the guidance/direction of PMU as well as support/ supervise of FCCU shall determine the necessity of the assessments, considering the types of potential adverse impacts of the sub-projects. The assessment results will be utilised for the preparation of EMP/EMoP. The following sections describe the key tasks for the assessments and indicative contents of the reports.

(1) Environmental Assessment

The main purpose of EA is to help understand the issues and risks associated with environmental aspects, and its resultant impacts on the target population. Regular monitoring of environmental parameters such as air and water quality, noise levels, degradation of forests and land, soil erosion, solid waste disposal, disposal of sewage, etc., will enable the Project to understand the temporal changes in environmental conditions. Such monitoring activities would enable the Project to devise short/ long-term, recommendations, strategies and mitigation measures to address the concerns and issues that affect environment.

EA plan will be prepared by IA, assisted by ESCE/ESCFE hired by PMU providing reasonable details outlining the objectives, contents, methods and schedule for its implementation. **Table 8** specifies key tasks for EA.

Table 8 Key Tasks for Environmental Assessment

No.	Tasks	Descriptions
1	Describe Environmental Setting	It will address the existing environmental setting, in terms of physiography and geology, land-use patterns, forest cover and dependence on forests, ambient air quality, noise levels, water quality, areas prone to land slips and avalanches, socio-economics, etc.
2	Legal and Regulatory Environmental Consideration	Provides an account of the existing legal and regulatory milieu, compliance with multilateral funding agencies, such as World Bank, JICA, shortfalls, if any, etc.
3	Impacts Assessment and Mitigation Measures	It will describe all the activities/ sub-projects that have potential to impact the environment in a deleterious manner, assess and analyse in-depth various potential negative impacts related activities/ sub-projects, provide mitigation measures environmental risk and vulnerabilities.
4	Devise Strategies to Manage and Monitor Environmental	Provide strategies to manage and monitor potential environmental concerns and parameters. It will also provide roles and responsibilities of various key positions, institutions, bodies that will manage and monitor the control and protection of

No.	Tasks	Descriptions
	Concerns and Parameters	environmental aspects, conservation of resources, etc. It also examines the opportunities for community involvement in project preparation and implementation, the existing and proposed framework for property rights/ access to resources, and sustainable management and monitoring of environment.
5	Recommendations for Project Design and Implementation Arrangements	It reviews proposals for project design and provide guidance to the implementing agency on participatory alternatives and institutional strengthening measures appropriate to the environmental characteristics of the project area(s). This will provide a basis for integrating the environmental analysis of the core elements into proposals for implementation arrangements.

Source: Compiled by JICA Study Team (2017)

EA report shall include at least following contents.

Table 9 Indicative Contents of Environmental Assessment Report

No.	Chapter	Descriptions
1	Introduction	Define basic purposes for EA, its scope and a brief outline of report organisation.
2	Sub-Project Description	Provide an outline of the proposed sub-project, its rationale, objectives, area, key activities, the proposed implementation schedule, etc.
3	Approach and Methodology	Describe the study approach and methodology adopted for carrying-out the EA, including collation of quantitative data and information, describe tools for monitoring and management of environmental parameters
4	Environmental Baseline	Provide brief profiles of the target area, existing environmental conditions in these areas, that will serve as a reference for future comparison and monitoring
5	Sub-Project Impacts	Describe sub-projects, its objectives and activities of the sub-projects, explains potential positive and negative impacts as a result of establishment of the sub-projects.
6	Public Consultation and Information Disclosure	Describe the results of public consultations, meetings and other interaction events with the communities.
7	Conclusion and Recommendations	Provide overall conclusions and recommendations, describe precise measures to avoid, minimise and/or mitigate adverse impacts on the environment, communities and particularly vulnerable groups due to sub-project activities, environmental management mechanism and implementation arrangements and monitoring activities and implementation arrangements.

Source: JICA Study Team (2017)

(2) Social Assessment (SA)

The main purpose of the Social Assessment (SA) is to help understand basic social issues and risks, and to determine social impacts on the target population of the proposed sub-projects. Analysis of the collected socio-economic information enables the Project to prioritise critical issues and means to address them, in consultation with other stakeholders.

The assessment will (i) establish baseline socio-economic situation of the target communities in the project area that will act as a reference for measuring project impacts in future, (ii) assess the access to and opportunities for getting benefits of basic social and economic services, (iii) stipulates a basis to identify appropriate interventions for community development and livelihoods under the Project, and (iv) determine short/ long-term, direct/ indirect, and positive/ negative impacts of the Project on the socio-cultural and economic status, especially for vulnerable groups, including women, poor/ near poor households, female-headed households, landless, SCs/STs, etc.

SA shall be carried out with assistance/supervise by hired subject matter experts and the results would assist the executing agency in reaching-out to the vulnerable and the poor and thus ensures

that the objectives of the Project are acceptable to the intended beneficiaries. **Table 10** specifies key tasks for SA.

Table 10 Tasks for Social Assessment

No.	Tasks	Descriptions
1	Elucidate Social Setting, Socio-cultural Practices, Institutional, Historical, and Political Contexts	Address the macro-policy context of the Project. Describe the social settings, explain the extent of socio-cultural fragmentation or homogeneity. Address wide-ranging queries on traditional and cultural norms for using resources and how it relates to inter-relationships between stakeholder groups.
2	Legal and Regulatory Environmental Consideration	Provide an account of the existing legal and regulatory milieu of the Project, especially with regards to ownership of and access to arrangements and its implications to different stakeholder groups, specifically the poor and vulnerable.
3	Application of Core Aspects of Social Development to the Project	Describe the potential outcomes of the proposed Project in terms of social opportunities, constraints, impacts, and risks, such as socio-cultural diversity, gender, institutions, rules, stakeholder's interests, social risk and vulnerability.
4	Devise Strategy to Achieve Social Development Outcomes	Examine the opportunities for community involvement in project preparation and implementation, the existing and proposed framework for property rights/ access to resources, and sustainable management alternatives to achieve the desired social development outcomes.
5	Recommendations for Project Design and Implementation Arrangements	Review proposals for project design and provide guidance to the implementing agency on participatory alternatives and institutional strengthening measures appropriate to the socio-cultural characteristics of the project area(s). This will provide a basis for integrating the social analysis of the core elements into a proposal for implementation arrangements.
6	Development of a Monitoring Plan	The monitoring system needs to have local participation in the generation and refinement of indicators over the project cycle in order for the affected communities to be involved in balancing their own interests in the management of resources for conservation and productive purposes.

Source: *Social Analysis Guidelines in Natural Resource Management (2005)*, World Bank

SA report shall include at least following contents.

Table 11 Indicative Contents of Social Assessment Report

No.	Chapter	Descriptions
1	Introduction	Define basic purposes for Social Assessment, its scope and a brief outline of report organisation.
2	Sub-Project Description	Provide brief outline of proposed sub-project, its rationale, objectives, area, key activities, the proposed implementation schedule etc.
3	Approach and Methodology	Describe the study approach and methodology adopted for carrying-out the assessment, including quantitative and qualitative data and information collation
4	Socio-economic Baselines	Provide brief profiles of the study (target) area
5	Sub-Project Impacts	Describe sub-projects, its objectives and activities of the sub-projects, socio-economic and livelihoods assessment, explain potential positive and negative impacts of the sub-project.
6	Vulnerable Groups:	Identify and describe particularly vulnerable groups within the community and how Project may affect them.
7	Public Consultation and Information Disclosure	Describe the results of public consultations, meetings and other interaction events with the communities.
8	Conclusion and Recommendations	Provide overall conclusions and recommendations.
9	Mitigation Measures	Describe precise measures to avoid, minimise and/or compensate for sub-project activities with adverse impacts on communities and particularly vulnerable groups.
10	Monitoring	Provide the developed monitoring plan including monitoring mechanism and monitoring implementation arrangements

Source: JICA Study Team (2017)

6.3 Preparation of Environmental Management Plan

Environmental Management Plan (EMP) shall consist and cover environmental mitigations and consideration measures which shall be taken-up during construction and operation phases, which shall examine description and assessment results of environmental, social, health and safety impacts. As indicated in **Figure 7**, EMP shall be prepared only for “Category B” sub-projects. Though quantifications of impacts as well as concerned mitigation measures of sub-projects are yet to be determined, indicative EMP is described in **Table 12**. Any additional costs for the proposed mitigation measures shall be included in the construction cost.

Table 12 Indicative Environmental Management Plan

Potential Environmental Impact	Proposed Mitigation Measures	Responsibility
Construction Phase		
Air Pollution/ generation of dust and smoke	<ul style="list-style-type: none"> - Ensure that dust and smoke is minimised with the help of dust control measures and equipment - Regular servicing of construction equipment and vehicles - Sprinkling of water on dusty roads and construction sites - Loaded and/or stockpiled construction materials to be covered from being exposed to wind - Prevent soils, sands, materials and dusts from scattering during transportation. - Installation of air quality monitoring equipment for outdoor ambient air at strategic locations in and around the construction site 	IA/ Contractor
Water Pollution	<ul style="list-style-type: none"> - Sewage from the labour camps may undergo a Primary treatment, in which sewage is temporarily held in a quiescent basin where heavy solids settle to the bottom while oil, grease and lighter solids float to the surface; the settled and floating materials are removed and the remaining liquid may be discharged or subjected to secondary treatment. - Mobile lavatories must be provided at each construction site depending on the number of laborers; waste and wastewater from toilets be discharged into holding 	IA/ Contractor

Potential Environmental Impact	Proposed Mitigation Measures	Responsibility
	tanks and thereafter removed from the site - Temporary embankments to be created to restrict water mixed with concrete and other construction materials do not run-off to contaminate sources of water and water channels.	
Solid Waste	- Litter bins, waste collection bins and pits to be judiciously placed within the construction site/ work areas - Contractor shall educate and ensure all laborers to segregate solid waste into bio-degradable, non-bio-degradable and recyclable. - No burning of refuse, or on-site burying or dumping of solid wastes. - Reusable construction materials such as wooden plates for trench works, steel, scaffolding materials, packaging material, etc. to be collected and separated on-site from other waste sources for reuse, for use as fill, or for sale.	IA/ Contractor
Chemical or hazardous wastes (Waste)	- Designated areas to be properly lined, roofed, fenced and appropriately labeled, for storage of oils, lubricants, chemicals, etc. - Used oil, lubricants, cleaning materials shall be collected in holding tanks and removed from site.	IA/ Contractor
Soil Erosion and Restoration of affected areas	- All sites that include excavation, digging, shall ensure proper restoration after concerned activities, such as compaction and re-vegetation of dug-up areas, and proper disposal of dug-up muck. - All excavations to be avoided during rainy season. - All areas allocated and used for disposal of refuse, site facilities, workers' camps, stockpiles areas, working platforms, any temporarily occupied areas during construction of the project works to be restored using landscaping, re-vegetation, with adequate drainage. - Trees and other soil binding shrubs, herbs and grass, such as vetiver could be planted on exposed and sloping land to prevent or reduce land collapse and stabilize the slopes. Vetivers have multipurpose utilities, such as herbal skin care, soil and water conservation, run-off mitigation and water conservation, crop protection and pest (incl. termite) repellent, animal feed, food and flavoring, perfumery and aromatherapy, etc.	IA/ Contractor
Noise and Vibrations	- All construction equipment to be regularly serviced, and installed with noise mufflers to control noise from construction equipment - To be ensured that noise from construction equipment is within permissible limits prescribed by Law - All vehicles must have appropriate "vehicle inspection certificate," and "technical worthiness and safety protection certificate". - Permissions from local authorities should be obtained in case of night time activities, if necessary.	IA/ Contractor
Disruption of vegetative cover and ecological resources (Ecosystems)	- Cutting of any tree shall be prohibited, unless authorized by a competent authority. - Temporary protective fence to be set up to protect preserved trees and forest areas before commencement of any works. - No hunting, trapping, shooting, poisoning of any fauna. - Chemicals shall not be used to clear vegetation.	IA/ Contractor
Communication with local communities (Resettlement)	- IA shall disseminate project information to communities/ groups/ entities likely to be affected by the construction activities - The contractor shall share project information with communities/ groups/ entities likely to be affected by the construction activities through community meetings before construction commencement. - IA or Contractor may depute a Public Relations Officer (PRO) who will provide project related information about on-site activities, status of Project and implementation, construction and work schedules, interruption of services, traffic detour routes, etc. - Information Banners and Boards to be installed at all construction sites providing project related information.	IA/ Contractor
Worker and public Safety (Work environment)	- Training on Environment, Health and Safety (incl. occupational health and safety) and Social Aspects to be mandatory for all on-site construction workers and staff. - It should be mandated that all construction workers are provided and wear safety equipment (helmets, gloves, shoes, goggles, safety harness if working above ground, etc.) and protective clothing. - Pre-construction medical check-up and subsequent regular health check-ups is mandated for all on-site workers and staff. - Installation of boundary fences, barriers and barricades, Danger warning sign boards,	IA/ Contractor

Potential Environmental Impact	Proposed Mitigation Measures	Responsibility
	to be installed in and around the construction area. - Depute flag personnel with lights to regulate traffic, traffic access routes and construction areas to be installed with appropriate signs, directions, safety advice, warnings, etc - Emergency evacuation plan to be prepared and shared with all concerned. Emergency evacuation route, assembly areas, to be marked with appropriate signage. - First-aid stations, safety equipment, and warning signals, for immediate administration, fully equipped Ambulance and Fire Engine to be stationed on-site for untoward eventuality.	
Operation Phase		
Air, Noise and Vibrations	- All construction facilities, forest roads and community/ village roads to be maintained on a regular basis	IA/ Contractor
Water Quality	- All sources of water for drinking purposes and irrigation to be maintained on a regular basis	IA/ Contractor
Accidents	- Emergency evacuation plan to be prepared and shared with all concerned and appropriate training imparted to all concerned. - Emergency evacuation route, assembly areas, to be marked with appropriate signage. - On-site First-aid stations with registered medical practitioner, fire safety equipment, and warning signals, fully equipped Ambulance and Fire Engine on call, for untoward eventuality.	IA/ Contractor

Source: Compiled by JICA Study Team (2017)

6.4 Preparation of Environmental Monitoring Plan

Environmental Monitoring Plan (EMoP) provides monitoring plan to administer and scrutinize the implementation of proposed environmental mitigation measures and considerations and to regularly monitor the quality of surrounding environments during construction, and operation phases. Same as EMP, EMoP shall be prepared only for “Category B” sub-projects.

EMoP ensures that environmental and social safeguards adopted measures are bringing the desired results. Therefore, indicators of environmental and social considerations are utilised to measure the quality environmental parameters and safeguard processes. **Table 13** presents indicative monitoring items, their indicators, means of verification, frequency and responsible parties for measuring safeguards measures that have been implemented. However, these aspects need to be finalised in relation to EMP, in case, EMP are prepared for some specific sub-projects. It shall be the responsibility of the designated DMU officers to implement, monitor, and report safeguards, as an integral part of the project implementation, and for the purpose of site-level planning and implementation, the designated DMU and FTU officers ensure the required monitoring activities are conducted. The compliance of environmental and social safeguards during implementation of sub-project must be also closely observed by FTUs, and relevant local stakeholders such as PRIs, representatives of the FWC/BMC, local NGOs, if any appointed, women’s groups, youth groups, etc. Periodic visits should also be carried out by the designated officers to confirm that mitigation measures for deleterious impacts are being carried out properly by the contractors.

Table 13 Indicative Environmental Monitoring Programme

Aspects	Parameters to be monitored	Locations	Method	Frequency	Responsibility
Construction Phase					
Air pollution	Dust, smoke, ambient air, are SPM, RPM, SO ₂ and NO _x .	Sub-project areas	Site visits, visual checks,	Twice a year	IA, Environment Safe Officer/ Contractor
			High and low volume air sampler	Twice a week for 24 hours for twelve consecutive weeks	IA, Environment Safe Officer
Noise and Vibrations	Noise of equipment, complaints from local residents	Sub-project areas - Major sources of noise	Sound Level Meter	Once in three months	IA, Environment Safe Officer
Ground water quality	pH, Electrical conductivity, Turbidity, TDS, TSS, Total Hardness, Alkalinity, Carbonate, BOD, COD, Nitrates, Phosphates, Fluorides, Chlorides, Sulphates, Sodium, Potassium, Calcium, Magnesium, Oil & Grease, Iron, Manganese, Copper, Zinc, Phenolic Compounds, Colour, Cadmium, Chromium, Cyanides, Lead, Total Coliform	Sub-project areas and nearest villages - 10 location	Collected sample to be analysed from HPSPCB Laboratory	Once in three months	IA, Environment Safe Officer
Surface water quality					
Solid waste (Waste)	Volume and kind of construction wastes,	Sub-project areas	Site visits and visual checks	Once in three months	IA, Environment Safe Officer
	Kitchen and other solid waste generated in labour camp	Sub-project areas	Site visits and visual checks	Once every month	IA, Environment Safe Officer
Chemical or hazardous wastes	Oils, lubricants, cleaning agents, etc	Sub-project areas	Site visits and visual checks	Once in three months	IA, Environment Safe Officer
Drainage and sedimentation		Sub-project areas	Site visits and visual checks	Once in three months	IA, Environment Safe Officer
Soil erosion	Visual inspection of rain water run-off	Sub-project areas	Site visits and visual checks	Twice in a Year	IA, Environment Safe Officer
Disturbance to ecological resources and vegetative cover	Illegal tree felling, wildlife hunting, illegal extraction of forest resources	Sub-project areas	Site visits and visual checks	Twice in a Year	IA, Environment Safe Officer
Interactions with local communities	Complaints and grievances, from local residents	Sub-project areas	Site visits and visual checks	Once in two months	IA, Social Safeguards Officer
Resettlement (loss of income or loss of access)	Economic condition of households, process of selection of project areas	Sub-project areas	Interviews	Twice in a Year	IA, Social Safeguards Officer
Impact of livelihoods	Direct or indirect impacts of livelihoods	Sub-project areas	Interviews	Twice in a Year	IA, Social Safeguards Officer
Health and Safety	Training and health check-ups for workers, fencing, warning	Sub-project areas	Site visits and visual checks	Twice in a Year	IA, Environment Safeguards

Aspects	Parameters to be monitored	Locations	Method	Frequency	Responsibility
	signs, emergency evacuation				Officer
Accidents and traffic management	Signage, regular maintenance	Sub-project areas	Site visits and visual checks, record of accidents and training	Twice in a Year	IA, Environment Safeguards Officer
Operation Phase					
Impact of livelihoods	Direct or indirect impacts of livelihoods	Sub-project areas	Interviews	Twice in a Year	IA, Social Safeguards Officer
Accidents	Direct or indirect impacts of livelihoods	Sub-project areas	Site visits and visual checks, record of accidents and training	Twice in a Year	IA, Environment Safeguards Officer

Source: Compiled by JICA Study Team (2017)

6.5 Implementation and Monitoring of Sub-projects

The institutional arrangement for the implementation and monitoring system for EMP and EMoP is basically same as the project component monitoring system, but again it should be noted that only the sub-projects which are identified as Category B as per JICA Guideline shall be the target of this monitoring. At the ward/GP level, monitoring and reviews will be conducted by respective level implementing organization assisted by Ward Facilitators/ GP Motivators and report to FTU. A sample monitoring format at this level is attached in **Appendix F**. Then, FTU officer shall compile monitoring results and reviews regularly, thereafter, DMU shall compile and report to PMU (CC: FCCU), which analyse the result and share to concerned departments in the state government as well as annual report to JICA. A sample format for the monitoring report from PMU to JICA is described in **Appendix G**. These sample formats shall be revised/updated according to the types of sub-projects and prepared EMoP. A specialist under PMC, and subject matter experts, identified in **Section 7.1** below shall support PMU/ FCCUs/ DMUs/ FTUs for the monitoring related activities which are in line with JICA Guideline.

7 Institutional Arrangement and Capacity Development for ESAF

7.1 Institutional Arrangement

In the proposed Project, most of the environment and social issues and protection are managed through the institutions responsible for forest management i.e. HPFD, is responsible for overall planned intervention in the proposed Project, legal/policy development, ensuring adequate consultation and participation, inclusion of vulnerable groups such as STs, poor/ women headed households, in planning and implementation and the equitable distribution of benefits associated with site-level project interventions. Other agencies would also be involved in different environment and social safeguard aspects or issues. The district administration is the designated agency responsible for land administration, land acquisition and disbursement of compensation and providing Resettlement and Rehabilitation (R&R) benefits to the project-affected families.

ESAF will be implemented through the institutional structure of the Project and a director/

officers at each administrative level shall be appointed as focal persons for ESAF compliance.

Table 14 highlights the institutional structure for ESAF with key environmental and social management roles and responsibilities.

Table 14 Institutional Structure for ESAF Implementation and Monitoring

Institution	Role in the Project	(Additional) Role and/or Responsibility in ESAF
High Power Committee/ Governing Body	<ul style="list-style-type: none"> - Highest decision-making body - Lay-down the broad policy framework for functioning of HPFEMILIP Society - Review the Society's performance - All administrative and financial powers - Monitor utilisation of funds 	<ul style="list-style-type: none"> - Overall supervision on ESAF and its implementation and M&E - Facilitation and coordination with various line departments and other agencies - Provide directions/advice to PMU to ensure smooth/efficient project operation on environment and social consideration - Periodical checks and due diligence on safeguards reports, monitoring data etc.
Project Management Unit (PMU)	<ul style="list-style-type: none"> - Project implementation, supervision and monitoring of all activities. - Documentation and reporting 	<ul style="list-style-type: none"> - Owner and implementation of ESAF - Report to concerned departments in the state government as well as to JICA in relation to environmental and social consideration - Information disclosure through project information brochures and project homepage, etc. - Consultation and guidance to FCCU/DMU/FTU, and field level officers on information disclosure and consultation - Ensure FPIC consultation - Technical guidelines on beneficiary selection, safeguard checks/ guidelines for particular activities (if required) - Development of planning/ monitoring forms, review of monitoring data, reporting, assistance with evaluations - Finalise criteria for categorisation (Category B or C) as per JICA Guidelines as well as exclusion criteria - Review of participatory Environmental and Social Assessments - Performance of due diligence follow-up - Guide, instruct, prepare guidelines, establish and operate M&E, dissemination of project information, hand-holding support in the field for all project activities
Forest Circle Coordination Unit (FCCU)	<ul style="list-style-type: none"> - support and facilitate the PMU for project implementation at circle level, and would extend all technical inputs and guidance to the forest division level at requirement basis and through regular review meetings which frequency to be determined during the preparatory phase of the Project - FCCU would not form the part of the society 	<ul style="list-style-type: none"> - Coordinate, monitor and supervise the ESC relevant activities at circle level, including the screening and selection of sub-projects and determination of the required procedures for specific sub-projects following the guidance/instruction of PMU, - Liaise with other line departments at the appropriate level, for inter-sector convergence - Provided any specific support required for implementation and monitoring of the Project
Division Management Unit (DMU)	<ul style="list-style-type: none"> - function as the dedicated and extended wing of the PMU for project implementation at division level and as a subordinate office of the autonomous society. - facilitate project implementation at division level, and would extend all technical inputs and guidance to the FTUs 	<ul style="list-style-type: none"> - Coordinate, monitor and supervise the ESC relevant activities at division level, - Conduct the screening and selection of sub-projects and determine the required procedures for specific sub-projects following the guidance/instruction of PMU, - Liaise with other line departments at the appropriate level, for inter-sectoral convergence - Provided any specific support required for implementation and monitoring of the Project - Coordinate with subject matter experts
Field Technical Unit (FTU)	<ul style="list-style-type: none"> - facilitate project implementation at the range level, and would extend all technical inputs and guidance at field level on day-to-day basis 	<ul style="list-style-type: none"> - Coordinate with range-level implementing organisation to select sub-projects with screening procedures and to conduct participatory Environmental and Social Assessments - Support range-level implementing organisation with monitoring and reporting, logistical support for independent evaluations. - Regularly undertake site visits at construction areas to ensure compliance of ESAF.

Institution	Role in the Project	(Additional) Role and/or Responsibility in ESAF
Gram Panchayat Level		
Village-Level Implementation Bodies	<ul style="list-style-type: none"> - Assist in selecting target beneficiaries - Clarify local needs and expectations on the Project 	<ul style="list-style-type: none"> - Conceive and raise awareness in the locality on environmental and social considerations. - Provision of support in micro planning activities at ward level to GP level. - Participating in Environmental and Social Assessments - Support HPFEMPLIPS for FPIC consultation, and due diligence checks.

Source: JICA Study Team (2017)

The Project Management Unit (PMU) headed by the CPD shall be responsible for project administration, programme management, procurement, financial management, supervision of field units, project implementation, monitoring and evaluation, and providing direction and support to the Project. Thus, the overall responsibility of the implementation of ESAF shall be vested with PMU. Under PMU, one Director (Position: Additional Project Director (M&E, Environmental and Social Safeguards)) is required to be given a responsibility to ensure implementation and monitoring and compliance of environment and social safeguards, and provide technical advice on environmental and social safeguard during the project implementation. And FCCU/ DMU/ FTU officers shall be responsible for ensuring implementation and monitoring of ESAF at circle level, division level and range level respectively.

However, as mentioned earlier, HPFEMPLIPS or HPFD does not have any dedicated units or personnel for the purpose of ESC. Hence, one specialist in PMC and subject matter experts will support PMU for the compliance of the environmental and social safeguards for its smooth and efficient implementation such as environmental and social assessment, management and monitoring of the environmental and social aspects within the ambit of the Project, which are proposed as follows.

- ◆ (PMC member) Environmental and Social Consideration/ Environmental Economics/ PES Specialist: The specialist is planned to be deployed under the Project Management Consultant (PMC) to assist PMU on ESC issues of the Project. He/she is expected to support PMU to review the project activities with focus on the compliance on ESAF, provide guidance and technical advice to PMU for required environment and social safeguard measures, as well as reporting to JICA to ensure smooth and efficient implementation of environment and social safeguard measures.
- ◆ (Subject Matter Expert) Environmental and Social Consideration Expert (ESCE): ESCE shall/ could be engaged as contract basis with PMU from the initial Preparatory Phase of the Project. This is to assist the PMU in head start with the safeguard related actions while waiting for the PMC specialist to be placed. Once the project implementation begins, ESCE shall fulfil the gaps that may occur, while the PMC specialist is absent from the field. ESCE will report to the Director under PMU who would be vested with additional charge to ensure the compliance of ESC. ESCE will assist PMU for the following aspects;

- a) To facilitate and coordinate with various implementation and line departments,
- b) To update and finalise ESAF/VSTPF,
- c) To develop appropriate training materials on environmental and social safeguards, following the requirements in ESAF,
- d) To provide training courses and capacity enhancement at the different levels of stakeholders who will be designated with the responsibilities to ensure implementation of environment and social safeguards, and
- e) To supervise/ manage the project activities to ensure that the required procedures indicated in ESAF are followed properly. The expert may also be required to follow-up in the field where particular issues are identified and report to the specialist/ PMU.

◆ (Subject Matter Expert) Environmental and Social Consideration Field Expert (ESCFE): ESCFE will also be engaged as contract basis with PMU, and will assist ESCE to provide the relevant trainings at respective administrative level such as preparation of the training materials, record minutes of meeting of the relevant consultation meeting, etc. Therefore, the expert shall be mainly allocated with focused on the training period, which are depicted in ESAF.

7.2 Capacity Development Programme

In order to ensure effective implementation of the proposed ESAF and associated safeguards procedures under the above proposed institutional arrangement, it would be obligatory to enhance capacity of various agencies and stakeholders. In this regard, capacity development programmes, supported by the above proposed specialist/experts will not only help addresses gaps in the existing environmental and social management system, but would also ensure that environmental and social safeguards are effectively operationalised.

The details of the training programme such as venue, time, date, frequency of the proposed trainings sessions should be further developed by hired specialist/experts with comments and clearance of PMU. An indicative capacity development programme has been devised and depicted in **Table 15** as a reference to devise capacity enhancement training programmes.

Table 15 Indicative Capacity Development Programme for Environmental and Social Safeguards

Item	Descriptions
Training 1 Programme for Management/ Administrative Level	
Key Participants	Designated officials of PMU, FCCU
Training Programme	Topic 1: General Orientation on ESAF and VSTPF for the Project <ul style="list-style-type: none"> - Legal framework on environmental and social safeguard of India and JICA - Basic introductory concept of safeguard - Environmental and social impact assessment: overview & regulations - Safeguard issues (vulnerable groups, SCs, STs, transhumance, Gender, etc.) - ESAF: steps and procedures with respect to the Project - FPIC Topic 2: Monitoring and Evaluation for Environmental and Social Safeguard <ul style="list-style-type: none"> - Concept of M&E - M&E and reporting procedures - Use of M&E results and feedback, including Grievance Redress Mechanism (GRM)
Duration	Two days training (once a year in the first four years at each district)
Training 2 Programme for Field/ Operational Level	
Key Participants	<ul style="list-style-type: none"> - Designated officials and staff of DMU and FTU - Designated field level officers such as Ward Facilitators, GP Motivators - (If necessary) representatives of PRI/ GP/ FWC/ BMC
Training Programme	Topic 1: General Orientation on ESAF and VSTPF for the Project <ul style="list-style-type: none"> - Basic introductory concept of safeguard - Environmental and social impact assessment: overview - ESAF: steps and procedures with respect to the Project - Environmental protection, EIA and social safeguard regulations (specific) - Safeguard issues (vulnerable groups, SCs, STs, transhumance, gender etc.) - Process of community consultation and public participation - FPIC - PRA for data collection, analysis and report preparation - Micro-planning Topic 2: Monitoring and Evaluation for Environmental and Social Safeguard <ul style="list-style-type: none"> - Concept of M&E - M&E and reporting procedures - Use of M&E results and feedback, including GRM
Duration	Two days training (once a year in the first four years at each division)
Training 3 Community Facilitation and Environmental and Social Assessment for ESC	
Key Participants	<ul style="list-style-type: none"> - Designated field level officers such as Ward Facilitators, GP Motivators - (If necessary) representatives of PRI/ GP/ FWC/ BMC
Training Programme	<ul style="list-style-type: none"> - ESAF: steps and procedures with respect to the Project - Project activities planning (and micro planning) - Role of Ward, GP, FTU, DMU, FCCU - Participatory ESA procedures - Working with vulnerable groups - Gender issues - Conflict resolution/ grievance procedures
Duration	One session as part of other community related trainings (Once a year in the first four years/ location and timing shall be determined accordingly)
Training 4 Specific Training for Specific Techniques/Tasks to be Required	
Key Participants	To be defined according to the main topics
Training Programme	For example: <ul style="list-style-type: none"> - Appropriate chemical use - Environment health & safety standard for construction - Occupational health & safety - Mitigation planning and implementation
Duration	To be defined when necessary

Source: JICA Study Team (2017)

8 Public Consultation Mechanism

Public consultation and participation is an apt process to provide information to community, project-affected persons and other stakeholders relevant to the proposed Project, so that they (i) are sufficiently educated about the project's objectives, activities, benefits and risks; (ii) have

equal opportunities to participate in the Project; (iii) receive culturally appropriate benefits which are more suited to their interests, capabilities and priorities; these shall be identified during the course prior consultations, and such benefits are shared equitably; (iv) are not adversely affected by the Project or its associated activities; adverse impacts shall be mitigated appropriately; and (v) can raise project related grievances and required mechanism is in place.

Consultation and Participation provides an opportunity and platform for people to express and sharing their views and concerns, contribute to design and implementation of the programme activities, discussions on sensitive social mitigation measures, while at the same time creating a sense of ownership for the Project. In this regard, FPIC is an important process to minimise any negative impacts and for a broad community support. Summary of FPIC relevant activities are described in **Table 16**.

Table 16 Summary of FPIC Activities

Item	Descriptions
Objective	To establishing a broad community support and willingness for implementation of the Project
Topic for Consultation:	<ul style="list-style-type: none"> - Disclosure of basic project related information including area, location, purpose/objectives, key activities, stakeholders involved, target beneficiaries. - Expected role and involvement of communities. - An overview of anticipated environmental and social risks. - Involuntary Resettlement Plan and Vulnerable Scheduled Tribal Plan (if any)
Participants:	<ul style="list-style-type: none"> - Relevant members of FWC/ BMC/ SHG, etc. - Gram Sabha members - Other important key persons (e.g. Gram Panchayat President)
Process:	<ul style="list-style-type: none"> a) Before on-set of sub-project implementation, immediately following formations of beneficiary groups, appropriate community meetings and consultations that are culturally appropriate and in simple and understandable language b) Encourage community's participation in discussions, meetings and consultations, facilitate participation of women, elders and other vulnerable groups c) Field level officers will participate in general community meeting to discuss concerns, visit individuals who express doubt and/or criticism on any aspect of project implementation. d) Participants to be provided adequate time to assimilate information provided/ shared e) Opportunity to decide if they do not wish to participate. f) Presentation and discussion with Gram Sabha
Material Required:	<ul style="list-style-type: none"> - Provision of simple/easy to read project brochures in local language. - Consultation and Participation Monitoring Sheets

Source: JICA Study Team (2017)

The public consultation mechanism shall reduce conflicts between the affected and the management committees. This is particularly focused on ensuring that vulnerable groups, including the poor, landless, STs/SCs and other forest dependent groups, and women, are properly consulted during site-level project planning and that they are given the opportunities and encourage to participate in the Project.

9 Grievance Redress Mechanism

While there are the existing legal frameworks related to the Grievance Redress Mechanism (GRM) in the country⁵, a Project-level GRM which shall be applied all sub-projects is expected

⁵ EIA Notification 2006 states that "Public Consultation and Public Hearing" which refers to "the process through which the concerns of local affected persons and others who have plausible stake in the environmental impacts of a project or activity are ascertained with a view to taking into account all the material concerns in the project or activity design as appropriate. All Category 'A' and Category 'B1' projects or activities shall undertake Public Consultation...". Further, the RFCTLARRA-2013, involves consultations and redress of concerns of affected persons at various stages. Besides,

to be institutionalised, in which project-related grievances such as disputes over locations of forest development and management and community development infrastructure, selection of beneficiaries, distribution of project benefits, behaviour of fellow community members, contractor and his workers, project-related staff or consultants, etc. can be reported directly to HPFEMPLIPS.

In this regard, FTU officer, would be the first level of intervention, as FTU acts as the link for community liaison and forest management in general. Thus, all concerns of the community shall be recorded in a project grievance logbook. Individuals can raise their grievances in name or anonymously, or through traditional institutions according to culture and context, as appropriate, which shall be recorded in written form. A grievance redress format/ template could be devised for this purpose, which would depend on the type and context of the grievance.

FTU officers should resolve all concerns or grievances raised by the communities, beneficiaries, etc. and in case an anonymous grievance has been put-up, it shall be addressed through public consultation through a village meeting, retorting generally to the raised point(s) and minutes of the meeting and outcomes shall be recorded. The grievance redress or compliance response is sent to the applicant in written, after resolving the grievance/ concerns.

However, in case the applicant (individual/ group) is not satisfied, s/he may approach to DMU for further redress, or in case of grievances that are more serious in nature, the FTU officers should forward such grievances to DMU. DMU officers shall be responsible to redress the grievance in consultation with the FTU officer, concerned applicants. All grievances should be addressed, redressed and resolved at this level.

In case of more serious grievances, then they should be dealt with through the project hierarchy as necessary and any complainant should be made aware of their legal rights according to the relevant legal documents.

10 Cost Estimation and Budget Allocation

ESAF is a tool to provide guidance on how the project activities should be carried out following the requirements of the JICA Guideline. And in many instances, the actions or measures mentioned in ESAF do not necessarily entail additional costs as they are often already identified in the project cost estimate. For example, baseline survey for identification and selection of target communities/ intervention areas are already proposed as project activities. Therefore, while there are activities related to ESAF implementation such as SA, Consultation, Information Dissemination, GRM, M&E, etc., these costs are embedded within the budgets of the corresponding project components. However, still some of the items/topics are required the additional budget which are described in the following sections.

Department of Administrative Reforms & Public Grievances under the Ministry of Personnel, Public Grievances & Pensions, GoI, has issued a Compilation of Guidelines for Redress of Public Grievances and also operates a web-based portal (<http://pgportal.gov.in/>).

10.1 Personnel

As proposed above, considering the current capacity of the implementation agencies, external specialist/experts in charge of environmental and social safeguard should be allocated as indicated below. The cost of such personnel has been incorporated into the proposed budget.

- ◆ **Environmental and Social Consideration/ Environmental Economics/ PES Specialist:** It is proposed that xx man-months during Preparatory and Implementation phase for the allocation of the specialist under PMC and he/she would work as a team with relevant experts specified below. The specialist is expected to review the project activities with focus on the compliance on ESAF, and provide directions or advice to PMU to ensure smooth and efficient implementation of environment and social safeguard measures, including the reporting to JICA.
- ◆ **Environmental and Social Consideration Expert (ESCE):** ESCE shall/ could be engaged from the initial Preparatory Phase and following-up the ESAF requirements with close communication with the above specialist/ESCFE as well as PMU when required. In total, 39 man-months are proposed for the tasks described in **Section 7.1** in this document.
- ◆ **Environmental and Social Consideration Field Expert (ESCFE):** ESCFE will be engaged mainly during planned training period to support ESCE. 13 man-months are proposed to be allocated for this position.

1-2 members from respective administration level such as PMU, FCCUs, DMUs, FTUs shall be nominated as responsible positions for environmental and social safeguard and these costs shall be covered by their own organization, i.e. HPFD.

10.2 Capacity Development Programme

The following capacity development trainings are proposed in the **Section 7** in this document and ESCE/ESCFE shall support PMU to ensure such capacity building trainings are delivered at each administrative level adequately.

- ◆ **Training 1: Programme for Management/Administrative Level** (once a year in the first four years at each district, two days training/year/division, PMU only need to attend one training in a division)
- ◆ **Training 2: Programme for Field/ Operational Level** (once a year in the first four years at each division, two days training/year/division)
- ◆ **Training 3: Community Facilitation and ESA for Environmental Special Safeguard** (Conducted as part of other community related trainings at once a year in the first four years/ the location/timing shall be determined accordingly)
- ◆ **Training 4: Specific Training for Specific Techniques/Tasks to be Required** (To be determined)
- ◆

Basically, these trainings are delivered as a lecture style and no special equipment is required so that the cost requirement would be small (i.e. mainly for personnel, material preparation, accommodation or allowance for participants, etc.) Also, at the community level, the trainings are delivered as a part of other trainings considering the several trainings are organized during the course of project implementation.

Attachment II.9.3.1 Appendix-A: Laws, Regulations and Policies relevant to Environment/ Forest Sectors in Indian and Himachal Pradesh

The existing laws, regulations and policies relevant to environment and forest sectors in the country and Himachal Pradesh are compiled in **Tables 1** and **Table 2** respectively.

Table 1 Legal and Policy Framework for Environment/ Forest Sectors in India

Law/ Policy	Description/ Outline	Responsible Ministry/ Agency
Environment Protection and EIA		
Environment (Protection) Act, 1986 and Amendment 1991	An umbrella regulation that concerns all aspects of environmental safeguards, and provides a framework for coordination among various central and state government authorities for protection and improvement of environment and prevention of hazards to human beings, other living creatures and property. It is mandated to prevent environmental pollution in all its forms and to tackle specific environmental problems peculiar to different parts of the country.	MoEF&CC Central and/or State Pollution Control Boards
Environment (Protection) Rules 1986 and Amendments	The Rules provide Standards for Emissions or discharge of environmental pollutants, prohibitions/restrictions on the location of industries and on carrying-out processes and operations in different areas, procedure for taking samples and submission of samples for analysis and the form of laboratory report, providing information to authorities and agencies in certain cases, prohibition and restriction on handling hazardous substances in different areas and submission of environmental statement.	MoEF&CC, Central and/or State Pollution Control Boards
EIA Notification 2006 and Amendments 2007, 2008, 2009, 2011 and 2012	This Notification provides procedures required for environmental clearance (EC), categorization of projects for EC, activities for EC and stages of EC, for the purpose of construction of new projects or activities or the expansion or modernization of existing projects or activities listed in the Schedule	MoEF&CC,
The National Green Tribunal Act 2010	The Act provides for the establishment of a National Green Tribunal to provide specialized medium for effective and prompt clearance of case related to environment protection, conservation of forests and other natural resources. This Act also includes enforcement of any legal right relating to environment and providing relief and compensation for damages caused to people or property due to violation of environmental laws or conditions specified while granting permission.	National Green Tribunal (NGT: under MoEF&CC)
Forest & Wildlife		
Indian Forest Act 1927	This Act was enacted to preserve forest cover and significant wildlife. It defines procedure for declaring Reserved Forest, Protected Forest and Village Forest. Further, describes power to impose duty on timber and other forest-produce and to make rules to regulate transit of forest-produce, and collection of drift and stranded timber. The Act also has provision to impose penalties and procedures thereof.	MoEF&CC State level Environment and Forest departments Implementing Agency
The National Forest Policy 1988	The policy was prepared with a national goal to have a minimum of 1/3 of the total land area of the country under forest or tree cover. Whilst in the hills and mountainous regions, to maintain 2/3 of the area under forests or tree cover to prevent erosion and land degradation and to ensure stability of the fragile eco-system. The policy provides for maintenance of environmental stability through preservation, restoration of ecological balance impacted by serious depletion of forests, preserving natural forests with vast variety of flora and fauna, check erosions/ degradations, and to minimize pressure to existing forests.	MoEF&CC, State level Environment and Forest departments
Forest Conservation Act 1980 and Amendment 1988	The Act provides for conservation of forests and lays emphasis on restriction on de-reservation of forests or use of forest lands for non-forest purposes. It also provides that any reserved forest can be reserved, any forest land may be used for non-forest purposes, any forest land could be assigned by way of lease or otherwise to any private person or to any authority, corporation, agency or any other organisation, any forest land may be cleared of trees, which have grown	MoEF&CC, State level Environment and Forest departments

Law/ Policy	Description/ Outline	Responsible Ministry/ Agency
	naturally, for the purpose of reforestation.	
The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006	The Act, commonly known as 'Forests Right Act'. The Act seeks to recognize and bestow the forest rights and occupation in forest land among the forest dwelling Scheduled Tribes and other traditional forest dwellers who have been residing in such forests for generations. Two enabling Rules namely, Scheduled Tribes and other Traditional forest dwellers (Recognition of Forest Rights.) Rules, 2008 & Scheduled Tribes and other Traditional forest dwellers (Recognition of Forest Rights), (Amended) Rules, 2012 have been formed to facilitate implementation of the provisions of the Act.	Ministry of Tribal Affairs State Government
Wildlife (Protection) Act 1972 and Amendment 1993	This Act provides for protection of wild animals, birds and plants, prohibition on hunting any wild animal specified in Schedule I, II, III and IV, prohibition on picking, uprooting, of specified plants, constitution of Sanctuaries, National Parks and Closed Areas, prohibition on trade or commerce of wild animals, in Trophies, Animal Articles derived from Certain Animals. The Act also empowers certain officials to investigate and impose penalties.	MoEF&CC, Forest Department
Biological Diversity Act 2002	This is umbrella legislation aimed at conservation of biological resources and associated knowledge as well as facilitating access to them in a sustainable manner and through a just process.	National Biodiversity Authority, Chennai State bio-diversity board
Water, Air and Pollution		
Water (Prevention and Control of Pollution) Act 1974 and Amendment 1988	This Act provides for prevention and control of water pollution and the maintaining or restoring of wholesomeness of water. For this purpose, it provides for establishment of Boards, and confers them with powers and functions for the prevention and control of water pollution.	Central and/or State Pollution Control Boards
Air (Prevention and Control of Pollution) Act 1981	This Act provides for prevention, control and reduction of air pollution. The Act further provides for establishment of Boards, and assigning them with powers and functions towards prevention, control and reduction of air pollution.	Central and/or State Pollution Control Boards
Rules and Notifications framed under the Environment (Protection) Act 1986	The Act has given powers to the Central Government to take measures to protect and improve environment while the state government coordinates the actions. The most important functions of Central Govt, under this Act include setting up of: (a) The standards of quality of air, water or soil for various areas and purpose; (b) The maximum permissible limits of concentration of various environmental pollutants (including noise) for different areas; (c) The procedures and safeguards for the handling of hazardous substances in different areas; (d) The prohibition and restriction on the location of industries and to carry on process and operations in different areas; (e) The procedures and safeguards for the prevention of accidents which may cause environmental pollution and provide remedial measures for such accidents.	Central and/or State Pollution Control Boards

Source: Compiled by JICA Study Team (2017)

Table 2 Legal and Policy Framework for Environment/ Forest Sectors in Himachal Pradesh

Law/ Policy	Description/ Outline	Responsible Ministry/ Agency
Environment Protection and EIA		
Environment Policy Guidelines	The policy guidelines encompass a range of important areas such as Land, Water, Air, Mineral Resources, Health, Biodiversity, Agriculture, Horticulture, Energy and Tourism etc. The Policy intends developing approaches compatible with mountain eco-systems and its unique characteristics vis-à-vis fragility, inaccessibility, marginality, diversity, climatic peculiarities, etc.	Department of Environment , Science and Technology (DEST) Himachal Pradesh State Pollution Control Board (HPSPCB)
Environmental Regulations	The Himachal Pradesh has adopted, follows and implements the Union level regulations and laws pertaining to environment protection and control of pollution: (i) The Water (Prevention & Control of Pollution) Act, 1974 and Rules; (ii) The Air (Prevention & Control of Pollution) Act 1981 and Rules; (iii) The Water (Prevention & Control of Pollution) Cess Act, 1977, as amended by Amendment Act, 1991, 2003 and Rules; (iv) Environment (Protection) Act, 1986; (v) Environmental Protection Rules, 1986; (vi) Environmental Impact Assessment Notification, 1994, 1997, 2002, 2004, 2006 as amended. Besides, the State has formulated other Acts, which are described below.	DEST, HPSPCB
Hazardous Waste (Management, Handling, and Trans-boundary Movement) Rules, 2008.	These Rules impose restrictions and prescribe procedures for management, handling, disposal and trans-boundary movement of hazardous wastes, which are specified in the Schedules appended to the Rules. However, this rule shall not be applicable to (a) waste-water and exhaust gases; (b) wastes arising out of the operation form ships beyond five kilometers; (c) radio-active wastes; (d) bio-medical wastes; and (e) municipal solid wastes	DEST, HPSPCB
Manufacture, Storage and Import of Hazardous Chemical Rules, 1989	These Rules apply to any Industry that manufacture, store and import chemicals that are Toxic, Flammable and Explosive; and recommends isolated storage of hazardous chemicals; identification of major accident hazards; prevent such major accidents; prevent their consequences to persons and environment; provide site personnel with information, provide training and equipment necessary to ensure their safety.	DEST, HPSPCB
Plastics Manufacture, Sale and Usage Rules, 1999 and 2003;	This Act has been notified by the central government under the Environment (Protection) Act, 1986 to regulate the manufacture, sale and use and recycling of plastic bags; plastic carry bags should have a minimum thickness of 20 microns; carry bags or containers made of recycled plastic not to be used for packaging of food items and recycling of plastic waste in accordance with BIS specifications. State Pollution Control Boards / Pollution Control Committees have been delegated for taking action for violation of Rules promulgated under the Environment (Protection) Act, 1986	DEST, HPSPCB
Bio-Medical Waste (Management & Handling) Rules, 1998 and Amendment Rules 2000 and 2003;	These rules apply to all persons/ agencies/ institutions that generate, collect, receive, store, transport, treat, dispose, or handle bio-medical waste in any form. Hospital, nursing home, clinic, dispensary, veterinary institution, animal house, pathological laboratory, blood bank, etc., to ensure that bio-medical waste is handled, treated and disposed without any adverse effect to human health and the environment, as specified in the Act.	DEST, HPSPCB
Municipal Solid Wastes (Management & Handling) Rules, 2000;	Every Municipal Authority is responsible for collection, segregation, storage, transportation, processing and disposal of municipal solid wastes. Local bodies are required to ensure that solid waste generated in city/town is managed in accordance with the provisions of the Rule relating to collection, segregation, storage, transportation, processing and disposal.	DEST, HPSPCB
Ozone Depleting Substances	These Rules provide Regulations on production and consumption of ozone depleting substances. The rules provide that No person shall produce or cause to produce, import or	DEST, HPSPCB

Law/ Policy	Description/ Outline	Responsible Ministry/ Agency
(Regulation) Rules, 2000;	cause to import from or export or cause to export to any country any ozone depleting substance.	
Batteries (Management and Handling) Rules, 2001.	These Rules provide that It shall be the responsibility of a manufacturer, importer, assembler and re-conditioner to ensure that used batteries are collected back, file a half-yearly return of their sales and buy-back to the State Board, set-up collection centres either individually or jointly, ensure used batteries are sent to the registered recyclers, ensure safe transportation from collection centres to the premises of registered recyclers, ensure no damage to the environment occurs during transportation, buy recycled lead and bring to the notice of the State Board or the Ministry of Environment and Forests any violation by the dealers.	DEST, HPSPCB
Rules for the Manufacture, Use, Import, Export and Storage of Hazardous Micro Organisms, Genetically Engineered Organisms or Cells Rules, 1989.	These rules shall be applicable in the following specific cases: (a) sale, offers for sale, storage for the purpose of sale, offers and any kind of handling over with or without a consideration; (b) exportation and importation of genetically engineered cells or organisms; (c) production, manufacturing, processing, storage, import, drawing off, packaging and repacking of the Genetically Engineered Products; (d) Production, manufacture etc. of drugs and pharmaceuticals and food stuffs distilleries and tanneries, etc. which make use of micro-organisms genetically engineered micro-organisms one way or the other.	DEST, HPSPCB
Chemical Accident (Emergency Planning, Preparedness and Response) Rules, 1996.	These rules shall be applicable in the following specific cases; (a) sale, offers for sale, storage for the purpose of sale, offers and any kind of handling over with or without a consideration; (b) exportation and importation of genetically engineered cells or organisms; (c) production, manufacturing, processing, storage, import, drawing off, packaging and repacking of the Genetically Engineered Products; and (d) Production, manufacture etc. of drugs and pharmaceuticals and food stuffs distilleries and tanneries, etc. which make use of micro-organisms genetically engineered micro-organisms one way or the other.	DEST, HPSPCB
Public Liability Insurance Act, 1991.	An Act to provide for public liability - insurance for the purpose of providing immediate relief to the persons affected by accident occurring while handling any hazardous substance and for matters connected therewith or incidental thereto.	DEST, HPSPCB, Insurance Company
H.P. Non-Biodegradable Garbage (Control) Act, 1995.	An Act to prevent depositing non-biodegradable garbage in public drains, roads and places open to public view to regulate the use of non-biodegradable material] in the State of Himachal Pradesh	DEST, HPSPCB
Motor Vehicle Act, 1988.	The legislation has been prepared to provide for (a) modification and amplification of certain definitions of new type of vehicles ; (b) simplification of procedure for grant of driving licenses; (c) putting restrictions on the alteration of vehicles; (d) certain exemptions for vehicles running on non-polluting fuels; (e) ceilings on individuals or company holdings removed to curb “benami” holdings; (f) states authorized to appoint one or more State Transport Appellate Tribunals; (g) punitive checks on the use of such components that do not conform to the prescribed standards by manufactures, and also stocking / sale by the traders; (h) increase in the amount of compensation of the victims of hit and run cases; (i) removal of time limit for filling of application by road accident victims for compensation; (j) punishment in case of certain offences is made stringent; (k) a new pre-determined formula for payment of compensation to road accident victims on the basis of age / income, which is more liberal and rational	DEST, HPSPCB Ministry of Surface Transport Police Department Judiciary Insurance Companies
Forest & Wildlife		
Himachal Pradesh Forest Sector Policy and Strategy 2005	The Government of Himachal Pradesh has developed the Forest Sector Policy and Strategy, 2005 has been developed in line with Government of India’s policy guidelines and incorporating amendments to the previous Himachal Pradesh Forest Policy 1980. The Forest Sector Policy endeavors to achieve the vision to harmonize the relations between people and environment. The policy seeks to address the aspirations of the people by making forestry a vibrant sector contributing towards livelihood enhancement of forest dependent communities through the departments working on natural resource management.	HPFD
Forest and Wildlife Act	The State of Himachal Pradesh follows the following National Level Acts, vis-à-vis forest and wildlife protection and conservation: <ul style="list-style-type: none"> ▪ The Indian Forest Act, 1927 	HPFD, DEST,

Law/ Policy	Description/ Outline	Responsible Ministry/ Agency
	<ul style="list-style-type: none"> ▪ The Wildlife Protection Act,1972 ▪ Forest Conservation Act,1980 ▪ Indian Penal Code ▪ Code of Criminal Procedure, 1973 ▪ Forest Right Act,2006 <p>Despite these Himachal Pradesh has promulgated many rules and regulations with respect to different aspects and addressed different issues related to forests. These are being elucidated below:</p>	
Himachal Pradesh Forest Produce Transit (Land Routes) Rules, 2013 and Amendment Rules, 2014, 2017	Prohibition on transportation of forest produce, other than fuel-wood, khair wood, bamboo, charcoal, medicinal plants, grass, other plants including bark, leaves, flowers, fruits, cones and seeds. Registration and Transit pass is mandatory to transport such produce by land routes, which can be obtained from the office of divisional forest officer. Any person felling tree either for domestic, agricultural, commercial or public purposes shall plant 3 trees in lieu of 1 tree felled.	HPFD
Himachal Pradesh Forest (Timber Distribution to the Right Holders) Rules, 2013 and Amendments 2015 and 2016	Timber shall be granted to the Right Holders who have their recorded rights in the concerned Forest Settlement Reports for grant of Timber for construction, repair and additional or alteration of residential house, cow shed for bonafide domestic use.	HPFD
PFM Rules Regulating the Grant in-Aid to the village Forest Development Societies 2002	The purpose of Grant-in-aid is for the furtherance of objectives of PFM and its implementation through the Societies. The assistance in the shape of Grant-in-Aid would be meant for expenditure on plantation & pasture improvement, soil & water conservation, income generation activities, maintenance, fencing, protection etc., subject to the availability of funds, and based on such norms and for such other purposes. The amount of Grant-in-aid shall be sanctioned and released quarterly by the DFO, subject Grant-in-aid has been spent for the purpose for which it has been sanctioned, assets acquired wholly or substantially out of Government grants would not, without the prior sanction of the Govt. be disposed of, encumbered or utilized for purposes other than those for which grants are sanction	HPFD
Himachal Pradesh Participatory Forest Management Regulations 2001	These Rules apply to Government forests and such Government lands including the common land; that will be selected jointly for participatory forest management by the Society and the Forest Department. VFDS will be formed for a Gram Panchayat Ward, and registered under section 3 of the Societies' Registration Act, 1860. (Act No. 21 of 1860).	HPFD and Community Members
The Himachal Pradesh Forest Fire Rules, 1999	The HP Fire Rules Prohibits kindling of Fire: (1) within one hundred meters from a forest without the permission of DFO, or his authorized representative; (2) Any person lighting a fire even beyond on hundred meter from the boundary of a forest shall take precautions, by clearing a fire path, not less than 10 meters in width between such place and such boundary, of by employing watchers or otherwise, to prevent the fire from spreading.	HPFD
Transit Rules- Notifications MFP	With the powers conferred under sub section (2) of section 2 of the Indian Forest Act, 1927, the Governor, Himachal Pradesh appoints Pradhans of the Gram Panchayats in Himachal Pradesh as Forest Officer to carry out the purpose of rule 11 of the Himachal Pradesh Forest Produce Transit (Land Routes) Rules, 1978 for the issuance of pass for transport of minor forest produce collected from the forests in the concerned psychayats under to the conditions that the provisions of the Himachal Pradesh Forest Produce Transit (Land Routes) Rules are adhered to (notified vide Notification No. Fts. (A)/3-1/77 dated 20.11.1978 and published in the Rajpatra, Himachal Pradesh (Extra Ordinary) dated 4th March 1978 as amended from time to time by the Government).	HPFD
State Compensatory Afforestation Fund Management and Planning Authority	In compliance to the instructions contained in Ministry of Environment and Forests, Government of India's letter No.1-58/09-MoS(I/c)-E&F dated 15th July 2009, the Governor of Himachal Pradesh reconstituted "State Compensatory Afforestation Fund Management and Planning Authority (CAMPA), which is intended as an instrument to accelerate activities for Compensatory afforestation, forest resource management preservation of natural forests, management of wildlife, infrastructure development in the sector and allied works.	HPFD
HP Forest FRA Rules,	The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights)	HPFD

Law/ Policy	Description/ Outline	Responsible Ministry/ Agency
2008	Act, 2006 was formulated to protect the marginal and tribal communities of our country to assert their rights over the forestland over which they were traditionally dependent. This Act provides for the restitution of deprived forest rights across India, including both individual rights to cultivated land in forestland and community rights over common property resources. The notification of Rules for the implementation of the Forest Rights Act, 2006 on 1st Jan 2008, has finally paved the way to undo the 'historic injustice' done to the tribals and other forest dwellers. The Act could be a potential tool to (i) empower and strengthen the local self-governance, (ii) address the livelihood security of the people, leading to poverty alleviation and pro poor growth, and (iii) address issues of Conservation and Management of the Natural Resources.	
Rules Governing the felling of the felling of trees in HP	This is a Government Order bearing No. FFE-B-A(3)-4/99-I dated 15-Mar-2017 Indicating that there is lack of clarity amongst most field functionaries of the Forest Department regarding provisions with respect to felling of tree. Felling of trees over private, forest, non-forest lands are governed under various acts and rules. Thus, this Order elucidates purpose for felling, Act/ Rules governing the felling, competent authority for grant of permission, etc	HPFD
The Wildlife Protection Act, 1972	Subject related to wildlife and its conservation in India draws strength from Article 48-A of 'Directive Principles of State Policy under the Constitution of India, which states that "the state shall endeavor to protect and improve the environment and to safeguard the forests and wildlife of the country". The Constitution vide Article 51-A (g), specifying fundamental duties of the citizens of India, states that "it shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers, and wildlife and to have compassion for living creatures. The primary law governing matters related to wildlife in the country is the Wildlife (Protection) Act, 1972. The state of Himachal Pradesh has adopted this Act and its subsequent amendments as the prime legislation to manage and guide wildlife related matters in the state (Source: http://hpforest.nic.in/pages/display/NHNkZmFohjRmNjVz-wildlife-legislation)	HPFD
Letter No. Fts (B)-(7)-16/85-II dated 26th October, 1998:- Loss caused by the wild animals to the Personal properties of the public- relief thereof.	As per this Letter issued by the Commissioner-cum-Secretary (Fts.) to the Govt. of H.P. addressed to The Principal Chief Conservator of Forests, H.P. Shimla-171001 and copy of which endorsed to The Chief Wildlife Warden, H.P. Shimla-2 and DFOs (Wildlife) Shimla, Sarahan, Kullu and Chamba. Refers to the context of granting relief to the public on account of losses caused by the wild animals, especially by monkeys Indicates and draws their attention on Section-11(1) (a) and (b) of Chapter-III of the wildlife (Protection) Act, 1972 "which provides that chief Wildlife Warden or the authorized officer is fully empowered to issue the permit to hunt animals which cause damage to human life or public property (including standing crops or any land)".	HPFD
Himachal Pradesh Forest (Sale Of Timber) Act, 1968 The Himachal Pradesh Forest (Sale Of Timber) Rules, 1960	Any person wishing to establish or maintain a depot shall register the same in the office of the Forest Division. Every person registering a depot shall be and remain responsible for the observance of all rules which may from time to time be notified by the Himachal Pradesh Government under section 3 of the Himachal Pradesh Forest (Sale of Timber) Act, 1968. The Divisional Forest Officer, with the approval of the Conservator, may exempt by order in writing any timber dealer from the operation of such rules as he may consider necessary.	HPFD
Himachal Pradesh Resin and Resin (Products (Regulation of Trade) Act, 1981	An Act in the interest of the general public for the carrying on by the State of the trade of purchase and distribution of resin, and for the regulations of manufacture and preparation of various articles based on resin.	HPFD
The Himachal Pradesh Land Preservation Act, 1978	An Act to provide for the better preservation and protection of certain portions of the territories of Himachal Pradesh. Whenever it appears to the State Government that it is desirable to provide for the conservation of sub-soil water or the prevention of erosion in any area subject to erosion or likely to become subjected to erosion, the State Government may, by notification published in the Official Gazette, make a direction accordingly.	HPFD
Himachal Pradesh Private Forest Act and	An Act to provide for the conservation of Private Forests. The State Government may, by notification and such conditions as may be imposed by the Forest Officer concerned, prohibit	HPFD

Law/ Policy	Description/ Outline	Responsible Ministry/ Agency
Rules 1969	the cutting, felling, gird ling, lopping, burning, stripping off the bark or leaves or otherwise damaging any tree or counterfeiting or defacing marks on trees or timber in such private forest as may be specified. Demarcation of private forests.-In Every private forest shall be demarcated in accordance with the revenue records, and shall erect boundary pillars at the expense of the Government.	
Water and Air		
Himachal Pradesh State Water Policy 2013	The policy recommends optimal utilization of water, with the appreciation that water is a scarce resource and needs to be fostered. A scientific assessment and periodic review of the availability of water resources and its use by various sectors in various basin and states in the country is recommended in the Policy. The policy emphasizes pricing of water, which should ensure its efficient use and reward conservation. It says that the conservation of rivers, river corridors, water bodies and infrastructure should be undertaken in a scientifically planned manner through community participation.	HPSPCB
Water (Prevention and Control of Pollution) Act 1981	The National Water Act is followed in Himachal Pradesh. No Separate Rules have been prepared specifically for Himachal Pradesh	HPSPCB
Air (Prevention and Control of Pollution) Act 1981	The National Air Act is followed in Himachal Pradesh No Separate Air rules have been prepared specifically for Himachal Pradesh	HPSPCB
Land, Resettlement and Tribes		
Himachal Pradesh Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Rules 2015	The rule provides procedures to be applied in the State in accordance with the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 (30 of 2013), and extends all provisions mentioned in the Act-2013 to the affected families.	Government of HP - District Collector(s)
Himachal Pradesh Panchayati Raj Act, 1994	An Act to consolidate, amend and replace the law relating to Panchayats with a view to ensure effective involvement of the Panchayati Raj Institutions in the local administration and developmental activities.	Government of HP

Source: Compiled by JICA Study Team (2017)

Attachment II.9.3.1 Appendix-B: Relevant Social Policies, Laws and Regulations in Indian and Himachal Pradesh

The following tables identify and describe some of the main relevant policies, laws and regulations to address social issues and concerns for the types of activities that have been proposed under the Project.

Table 1 Relevant Indian Laws and Regulations for Social Considerations

Laws & Regulations	Description	Responsible Ministry/ Agency
The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013	<p>This Act provides for a humane, participative, informed and transparent process for land acquisition for the purpose of industrialization, development of essential infrastructural facilities and urbanization with the least disturbance to the owners of the land and other affected families. The Act ensures consultation with institutions of local self-government and Gram Sabhas.</p> <p>This Act regulates land acquisition and lays down the procedure and rules for granting compensation, rehabilitation and resettlement to the affected families. It ensures a just and fair compensation to the affected families whose land has been acquired or proposed to be acquired or are affected by such acquisition and makes adequate provisions for their rehabilitation and resettlement. It ensures cumulative outcome of compulsory acquisition, and that affected persons become partners in development, thereby leading to improvement in their post-acquisition social and economic status.</p>	Ministry of Rural Development Ministry of Tribal Affairs Revenue Authorities Department of Land Resources,
Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act 2006	This Act recognizes and bestows forest rights and occupation in the forest land to the forest dwelling scheduled tribes and other forest dwellers, who have been living in such forests for generations, but their rights could not be recorded. Thus, the recognized rights include responsibilities and authority for sustainable use and conservation of bio-diversity and maintenance of ecological balance, thus strengthening the conservation regimes of the forests while ensuring livelihood and food security to the forest dwelling communities.	Forest Department Ministry of Tribal Affairs
Scheduled Caste and Scheduled Tribes (Prevention of Atrocities) Act 1989	This Act aims to prevent the offences of atrocities against the members of the Scheduled Castes and the Scheduled Tribes. The Act also provides for Special Courts for the trial of such offences and for the relief and rehabilitation of the victims of such offences.	Ministry of Social Justice and Empowerment Ministry of Tribal Affairs
National Policy on Safety, Health and Environment at Work Place	<p>The Government of India is committed to regulate all economic activities for management of safety and health risks at workplaces and to provide measures to ensure safe and healthy working conditions for every working man and woman in the nation. This Policy gives leverage to every Ministry or Department to work-out their own detailed policy relevant to their working environment as per the guidelines on the National Policy.</p> <p>This Policy is devised based on the Directive Principles and international instruments. The Directive Principles described in the Constitution are as follows:</p> <ul style="list-style-type: none"> - Securing the health & strength of employees, men and women - Tender age of children are not abused - Citizens are not forced by economic necessity to enter any vocation unsuited to their age or strength - Just & humane conditions of work and maternity relief are provided - Govt. shall take steps to secure participation of employee in the management 	Ministry of Labour and Employment

Laws & Regulations	Description	Responsible Ministry/ Agency
Land Acquisition Act 1894 and amendment 1985	The Land Acquisition Act, 1894 was put-together by the British Rule in India, which governed the process of land acquisition in India. The Government acquired lands for public purposes after paying the owners of land government-determined compensation to cover losses incurred by landowners. This Act has been replaced by the new Act, “The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013”. However, the stipulations of this law are still effective in some contexts.	Revenue Department, State Government
National Resettlement and Rehabilitation Policy (NRRP) 2007	The government, through this Policy, specified processes through people can be compensated as well as minimum levels of compensation that should be paid to the affected families. This Policy provided for benefits and compensation viz., land, house, monetary compensation, skills training and preference for jobs, and the specified criteria for eligibility, to people displaced by land acquisition, or any other involuntary displacement, and created project-specific, state and national authorities to formulate, implement, and monitor the rehabilitation and resettlement process. This Policy has been replaced by the new Act, “The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013”	Revenue Department, State Government
A People Centred Service Delivery Policy	There is no one single policy or legal regulation at the Centre or States level that can claim to be ‘people centred delivery policy’. On the contrary, there are a number of Ministries, such as Ministry of Rural Development, Ministry of Labour and Employment, Ministry of Social Justice and Empowerment, Ministry of Tribal Affairs, Ministry of Health and Family Welfare, Ministry of Human Resource Development, and their concerned departments at the Centre and State levels, among others, that extend people centred services through their various programs related to health care, socio-economic development, vocations and employment, education, social justices, etc., especially to the poor and under-privileged citizens of India.	Various Ministries
Social Audit Policy	Social audits were made statutory in a 2005 Rural Employment Act and government also issued the Social Audit Rules in 2011 under the MGNREGA Act. The Social audits are normally supervised by autonomous bodies consisting of government and non-government representatives. Gram Sabhas were empowered to conduct Social Audits, after the 73rd Amendment of the Constitution, in addition to their other functions. No central policy or regulation exists that makes accounting audit and social audit mandatory.	Ministry of Rural Development
Guidelines for Redress of Public Grievances 2010	The Department of Administrative Reforms and Public Grievances is the nodal agency to formulate policy guidelines for citizen-centric governance in the country. Redress of citizens' grievances, being one of the most important initiatives of the department, DAR&PG formulates public grievance redress mechanisms for effective and timely settlement of citizens' grievances. The DAR&PG has initiated a Government of India Portal which is aimed at providing citizens with a platform for redress of their grievances, against any Government organization in the country, which will be passed onto the concerned Ministry/ Department/ State Government for immediate redress.	Department of Administrative Reforms and Public Grievances, Government of India Various Ministries

Source: Compiled by JICA Study Team (2017) based on information from respective Acts

Table 2 Labour Relevant Laws

Law/ Policy	Description/ Outline	Responsible Ministry/ Agency
Article 24 of the Constitution of India	Article 24 of the Constitution of India mandates that no child below the age of 14 years will be employed in any factory or mine or any other hazardous working environment.	Executing agency (EA) / Implementation agency (IA), contractors
The Indian Penal Code (IPC), the Juvenile Justice (Care and Protection) of Children Act 2000	The IPC provides a basis in law to identify, prosecute and stop child labour in India	EA/ IA, Contractors, Sub-contractors
Child Labour (Abolition and Regulation) Act 1988	This Act prohibits employment of children below the age of 14/15 years, in certain occupations and processes, and stipulates that no child shall be permitted to work or be employed in any of the occupations set forth in Part A of the Schedule or in any workshop wherein any of the processes set forth in Part B of the Schedule of this Act. Contrarily, in case children are engaged, this Act regulates the working conditions of such children, in terms of number of working hours, period of rest between working hours, no night working, no overtime working, etc.	EA/ IA, Contractors, Sub-contractors
Labour Laws (Exemption from Furnishing Returns and Maintaining Registers by Certain Establishments) Act, 1988.	The Act has been passed to give relief to Small Establishments (10-19 persons) and Very Small Establishments (≤ 9 persons) are employed or were employed during past 12 months [section 2(f)], from furnishing returns and maintaining registers under certain labour laws.	EA/ IA, Contractors, Sub-contractors
The Factories Act, 1948 (Act No. 63 of 1948), as amended by the Factories (Amendment) Act, 1987 (Act 20 of 1987)	This Act deals with various problems concerning safety, health, efficiency and well-being of the persons at work places, and serves to assist in formulating national policies in India with respect to occupational safety and health in factories and docks in India. The Act is applicable to any factory where (i) ≥ 10 workers are working/ were working in the last 12 months, and in a manufacturing process is being carried on ordinarily with the aid of power, (ii) where ≥ 20 workers are working/ were working in the preceding 12 months, and in which a manufacturing process is being ordinarily carried on without the aid of power. This does not include a mine, or a mobile unit belonging to the armed forces of the union, a railway running shed or a hotel, restaurant or eating place. The Act is administered by the	EA/ IA, Contractors, Ministry of Labour and Employment, GoI through its Directorate General Factory Advice Service & Labour Institutes (DGFASLI) State Governments through Factory inspectorates.
Contract Labour (Regulation and Abolition) Act 1970	The act ensures that the employers provide the basic welfare measures are made available to the contract workers engaged by them. The Act provides to prevent exploitation of contract laborers and ensure better working conditions. The Act enjoins Joint and Several responsibilities on the Principal Employer and the Contractor. The Principal Employer should ensure that the Contractor does the following: (a) Pays wages to the contract labour as determined by the Government, or as fixed by the Commissioner of Labour, (b) Maintains various registers and records, displays notices, abstracts of the Acts, Rules etc., (c) Issues employment card to his workmen, etc. (d) Provides the following facilities: (i) Canteen (if employing 100 or more workmen in one place) and if the work is likely to last for 6 months or more, (ii) Rest rooms where the workmen are required to halt at night and the work is likely to last for 3 months or more, (iii) Requisite number of latrines and urinals - separate for men and women, (iv) Drinking water, (v) Washing, (vi) First Aid, and (vii) Crèche	EA/ IA, Contractors
The Building and	This Act was promulgated to ensure the safety of these workers at the construction work	EA/ IA,

Law/ Policy	Description/ Outline	Responsible Ministry/ Agency
other Construction Workers Act 1996	site and other welfare measures to be provided to the construction workers near their work place, such as canteen, first-aid facilities, ambulance, housing accommodation etc	Contractors
Workmen's Compensation Act 1923	This Act provides for payment of compensation to workmen and their dependents, in case of injury and accident (including certain occupational disease) arising out of and in the course of employment and resulting in disablement or death. The Act applies to railway servants, persons employed in factories, mines, plantations, mechanically propelled vehicles, construction works and certain other hazardous occupations. The amount of compensation to be paid depends on the nature of the injury and the average monthly wages and age of workmen. The minimum and maximum rates of compensation payable for death and for disability have been fixed and are subject to revision from time to time.	EA/ IA, Contractors
Maternity Benefit Act of 1961	The Act ensures that any woman employee, who has worked in any establishment for at least 80 days during the 12 months immediately preceding the date of her expected delivery, is entitled to receive maternity benefits under the Act, that gives her the assurance that her rights will be looked after while she is at home to care for her child. The Act mandates, that the woman on her part, (i) should intimate the employer Seven Weeks before her delivery date about the leave period (ii) Ten weeks before the expected delivery date she may ask employer to give her light work, (iii) name the person to whom the payment will be made in case she cannot take herself.	EA/ IA, Contractors
Payment of Wages Act 1936	This Act regulates the payment of wages to certain classes of persons employed in industry and guarantees payment of wages on time and without any deductions except those authorized under the Act. The Act provides for (i) the responsibility for payment of wages, fixation of wage period, time and mode of payment of wages, permissible deduction as also casts upon the employer, a duty to seek the approval of the Government for the acts and permission for which fines may be imposed by him and also sealing of the fines, and (ii) a machinery to hear and decide complaints regarding the deduction from wages or in delay in payment of wages, penalty for malicious and vexatious claims. The Act does not apply to persons whose wage is 10,000 INR or more per month.	EA/ IA, Contractors
Minimum Wages Act 1948	The Minimum Wages Act ensures minimum wages in all enterprises and in some cases, those working at home. Under the law, wage rates in scheduled employments differ across states, sectors, skills, regions and occupations owing to difference in costs of living, regional industries' capacity to pay, consumption patterns, etc. Hence, there is no single uniform minimum wage rate across the country and the structure has become overly complex. Central and State Governments can and do revise minimum wages at their discretion. Minimum wages are further classified by nature of work, location and numerous other factors at the discretion of the government.	EA/ IA, Contractors
Employees Provident Fund and Miscellaneous Provisions Act of 1952	This act seeks to ensure the financial security of the employees in an establishment by providing for a system of compulsory savings. Minimum contribution by the employees shall be 10-12% of the wages, while the employee's share will be equivalent to employer's share. This amount is payable to the employee after retirement and could also be withdrawn partly for certain specified purposes.	EA/ IA, Contractors
Payment of Bonus Act of 1965	This act, applies to an enterprise employing 20 or more persons, wherein the employer is required to pay a bonus to persons on the basis of profits or on the basis of production or productivity. The act was modified to include that a minimum bonus is paid by employer, despite suffering losses during the accounting year, which is currently 8.33% of the salary.	EA/ IA, Contractors
Payment of Gratuity Act of 1972	This act applies to all establishments employing 10 or more workers. Gratuity is payable to the employee if he or she resigns or retires. The Indian government mandates that this payment be at the rate of 15 days salary of the employee for each completed year of service subject to a maximum of 1,000,000 INR. Extends payment of gratuity to employees engaged in factories, mines, oilfields, ports, plantations, shops or other establishments and for matters connected therewith or incidental thereto.	EA/ IA, Contractors

Source: Compiled by JICA Study Team (2017) based on information from respective Acts

Attachment II.9.3.1 Appendix-C: Draft Environmental Checklist

Category	Environmental Item	Main Check Items	Yes: Y No: N Not Clear: NC	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
1 Permits and Explanation	EIA and Environmental Permits	(a) Have EIA reports been already prepared in official process?	N	EIA is not required for the proposed Project according to Indian Law
		(b) Have EIA reports been approved by authorities of the host country's government?	N	ditto
		(c) Have EIA reports been unconditionally approved? If conditions are imposed on the approval of EIA reports, are the conditions satisfied?	N	ditto
		(d) In addition to the above approvals, have other required environmental permits been obtained from the appropriate regulatory authorities of the host country's government?	N	Other environmental permits are also not required for the proposed Project
	Explanation to the Local Stakeholders	(a) Have contents of the project and the potential impacts been adequately explained to the local stakeholders based on appropriate procedures, including information disclosure? Is understanding obtained from the Local stakeholders?	N	<ul style="list-style-type: none"> - Specific stakeholder consultation meetings/workshops are yet to be planned. However, a series of meetings/ workshops are to be held with various stakeholders in relation to project formulation. - Comments of local stakeholders will be integrated into the design of sub-projects and activities prior to their implementation, following the social assessment and consultation processes. - Consultation and information disclosure procedures to be implemented before and during preparatory phase prior to subproject (component) implementation. - EIA is not required for the proposed project according to Indian Law. However, based on necessity, public consultation related to project shall be considered.
		(b) Have the comment from the stakeholders (such as local residents) been reflected to the project design?	N	Since majority of project activities to be implemented through communities, comments of local stakeholders will be integrated into design of sub-projects and activities prior to their implementation following the social assessment and consultation processes.
	Examination of Alternatives	(a) Have alternative plans of the project been examined with social and environmental considerations?	N	The project location and components have not been fully determined yet. However social and environmental considerations to been factored into project design (through exclusion/selection criteria for project activities). For the proposed project sites alternative locations have examined by factors including environmental and social considerations.

Category	Environmental Item	Main Check Items	Yes: Y No: N Not Clear: NC	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
2 Pollution Control	Air Quality	(a) Do air pollutants, such as dust, soot and dust, sulfur oxides (SO _x), nitrogen oxides (NO _x), and organic chemical substances emitted from various sources, such as logging operations, forest products manufacturing processes, and incinerators comply with the country's emission standards and ambient air quality standards? Are any mitigating measures taken?	NC	No significant serious impacts by the Project are predicted. However, if any impact may be predicted by further studies, as required, necessary measures will be carried out. In one of the problem areas, viz., Rohtang Pass, exorbitant numbers of tourists, disproportionate vehicular traffic, disposal of food and other solid wastes from food and refreshment joints, open urination & defecation, etc., lead the NGT to impose ban on all commercial and tourist activities including plying of tourist vehicles on the Pass. At present, the ban has been relaxed, but still there is heavy traffic and high density of tourist population visiting the Pass.
	Water Quality	(a) Is there a possibility that the use of chemicals, such as fertilizers, and agrochemicals will cause water pollution?	Y/NC	There is possibility of water pollution in the surround water due to inappropriate usages of fertilizers /pesticides for certain project activities. Some limited usage of chemicals as fertilizers/ pesticides for certain forest plantation / nursery activities is anticipated. However, no significant serious impacts to water quality by the Project are predicted.
		(b) Where facilities, such as forest products manufacturing facilities are installed, do effluents from the facilities comply with the country's effluent standards and ambient water quality standards?	Y/NC	There will be no large-scale manufacturing facilities of forest products such as pulp, paper or timber operations planned under the Project. Although there may be some small-scale manufacturing facilities, thus associated effluent and effect on water sources/supply will be nil or negligible
	Wastes	(a) Are wastes properly treated and disposed of in accordance with the country's regulations?	Y	It is anticipated that there will be no significant waste generation associated with the project activities since there will be virtually no manufacturing. However, if any impact may be predicted by further studies, as required, necessary measures will be carried out according to national regulations.
	Soil Contamination	(a) Are adequate measures taken to prevent contamination of soil and groundwater by use of chemicals, such as agrochemicals?	N	Use of such chemicals will be minimal under the Project. Thus, no significant serious impacts by the Project are predicted. However, if any impact may be predicted by further studies, necessary measures will be carried out as required.
		(b) Are any agrochemicals management plans prepared? Are any usages or any implementation structures organized for proper use of the plans?	NC	Based on the necessity, existing guidelines will be adopted or guidelines will be prepared if mass use of agro-chemicals is unavoidable by the Project.

Category	Environmental Item	Main Check Items	Yes: Y No: N Not Clear: NC	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
3 Natural Environment	Protected Areas	(a) Is the project site or discharge area located in protected areas designated by the country's laws or international treaties and conventions? Is there a possibility that the project will affect the protected areas?	Y	Certain parts of the Project area include protected areas such national parks and wildlife sanctuaries. Even though national park and sanctuaries are included in the project area, all the proposed project interventions are aimed at promoting sustainable/ scientific management of selected protected areas that would contribute to environmental conservation of the area. Thus, certain positive impacts are anticipated from the project interventions.
	Ecosystem	(a) Does the project site encompass primeval forests, tropical rain forests, ecologically valuable habitats (e.g., coral reefs, mangroves, or tidal flats)?	NC	Coral reefs, mangrove, tidal flats and other valuable habitats do not form part of this Project. However, primeval forest, ecologically valuable habitats may be part of this project. If any adverse impact may be predicted by further studies, required countermeasures will be examined to avoid/mitigate the predicted impacts.
		(b) Does the project site encompass the protected habitats of endangered species designated by the country's laws or international treaties and conventions?	NC	Through project activities, this Project intends to conserve the protected habitats and will not involve any activities which affect them negatively. If any adverse impact may be predicted by further studies, required countermeasures will be examined to avoid/mitigate the predicted impacts.
		(c) Is there a possibility that changes in localized micro-meteorological conditions, such as solar radiation, temperature, and humidity due to a large-scale timber harvesting will affect the surrounding vegetation?	N	No large-scale timber harvesting in the Project is anticipated
		(d) Is there a possibility that a large-scale timber harvesting will result in loss of breeding and feeding grounds for wildlife?	N	No large-scale timber harvesting in the Project is anticipated
		(e) In the case of reforestation projects, is there a possibility that mono-species plantations will adversely affect wildlife habitats? Is there a possibility that mono-species plantations will cause outbreaks of pests?	NC	The Project will involve reforestation in the degraded forest lands. There may be a possibility of mono-species plantations, probably in small scale. Adverse impacts on wildlife habitat or outbreak of pests is not anticipated.
		(f) If significant ecological impacts are anticipated, are adequate protection measures taken to reduce the impacts on the ecosystem?	N	Significant negative ecological impacts are not anticipated. Ecological restoration is a key project goal.
		(g) Isn't an illegal deforestation associated with the project being carried out, or is an acquisition of the forest certification by the project proponent being carried out?	N	The Project will not involve any deforestation. Small-scale removal of trees associated with small-scale infrastructure development may occur and subject to relevant legislation requiring clearance.

Category	Environmental Item	Main Check Items	Yes: Y No: N Not Clear: NC	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
	Hydrology	(a) Is there a possibility that alteration of rainwater runoff and runoff characteristics due to a large-scale timber harvesting and access road construction will cause impacts on the hydrology of the surrounding areas?	NC	There will be no large-scale timber harvesting. The Project should have generally positive impacts on surrounding hydrology due to improvement of degraded forests including activities such as soil and moisture conservation (SMC) measures. Basically, no significant adverse impact is predicted.
		(b) Is there a possibility that decreased water retention capacity due to deforestation will affect the existing drainage patterns of the forest?	N	The Project intends to increase the water retention capacity through improvement of degraded forests. SMC measures such as small-scale check dams and drainage line treatments are designed and implemented to maintain and improve drainage patterns of the forest.
	Topography and Geology	(a) Is there a possibility that loss of forest stability due to timber harvesting will cause slope failures or landslides?	N	There will be no significant timber harvesting in the Project.
	Management of Abandoned Sites	(a) Are adequate restoration and re-vegetation plans considered for the harvested areas? In particular, are adequate measures taken to prevent soil runoff from the harvested areas?	N	There will be no significant or large-scale harvesting of timber in the Project
		(b) Is a sustainable management system for the harvested areas established?	N	There will be no significant or large-scale harvesting of timber in the Project
		(c) Are adequate financial provisions secured to manage the harvested areas?	N	There will be no significant or large-scale harvesting of timber in the Project
4 Social Environment	Resettlement	(a) Is involuntary resettlement caused by project implementation? If involuntary resettlement is caused, are efforts made to minimize the impacts caused by the resettlement?	N	Though settlements exist in the proposed project area, resettlement (either voluntary or involuntary) associated with the Project is not anticipate, but draft ESAF, specifically IRPF also indicate the required procedures for resettlement including monitoring, grievance redress mechanism, consultations to deal with resettlements if any.
		(b) Is adequate explanation on compensation and resettlement assistance given to affected people prior to resettlement?	N	Resettlement (either voluntary or involuntary) associated with the Project is not anticipate.
		(c) Is the resettlement plan, including compensation with full replacement costs, restoration of livelihoods and living standards developed based on socioeconomic studies on resettlement?	N	Resettlement (either voluntary or involuntary) associated with the Project is not anticipate.
		(d) Are the compensations going to be paid prior to the resettlement?	N	Resettlement (either voluntary or involuntary) associated with the Project is not anticipate.

Category	Environmental Item	Main Check Items	Yes: Y No: N Not Clear: NC	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
		(e) Are the compensation policies prepared in document?	N	Resettlement (either voluntary or involuntary) associated with the Project is not anticipate.
		(f) Does the resettlement plan pay particular attention to vulnerable groups or people, including women, children, the elderly, people below the poverty line, ethnic minorities, and indigenous peoples?	N	Resettlement (either voluntary or involuntary) associated with the Project is not anticipate, but particular attention to vulnerable groups are fully considered in Environmental Social Assessment Framework (ESAF) as well as Vulnerable Scheduled Tribes Framework (VSTPF).
		(g) Are agreements with the affected people obtained prior to resettlement?	N	Resettlement (either voluntary or involuntary) associated with the Project is not anticipate.
		(h) Is the organisational framework established to properly implement resettlement? Are the capacity and budget secured to implement the plan?	N	Resettlement (either voluntary or involuntary) associated with the Project is not anticipate.
		(i) Are any plans developed to monitor the impacts of resettlement?	N	Resettlement (either voluntary or involuntary) associated with the Project is not anticipate, but monitoring system shall be fully considered in ESAF as well as VSTPF.
		(j) Is the grievance redress mechanism established?	N	Resettlement (either voluntary or involuntary) associated with the Project is not anticipate, but grievance redress mechanism is fully considered in ESAF as well as VSTPF.
	Living and Livelihood	(a) Is there a possibility that the project will adversely affect the living conditions of inhabitants? Are adequate measures considered to reduce the impacts, if necessary? Is particular attention paid to the inhabitants whose livelihoods are based on primary industries, such as farming, raising livestock, or hunting and gathering in the forests?	NC	The Project intends to have a positive impact in terms of improving local people's livelihoods/ living conditions. However, it is possible that certain forest protection activities could have some negative impact on local people's customary access to natural resources. Such impacts will be addressed through participatory planning and required countermeasures will be examined to avoid/mitigate the predicted impacts.
		(b) Are adequate measures taken to prevent illegal entry into the forestry resource areas from the outside through newly constructed access roads?	NC	The Project will not construct new access roads in the majority of project areas. Road upgrade/reconstruction may be activities. If any adverse impact may be predicted by further studies, required countermeasures will be examined to avoid/mitigate the predicted impacts.

Category	Environmental Item	Main Check Items	Yes: Y No: N Not Clear: NC	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
		(c) Is there a possibility that the forest right of common is obstructed?	NC	A key project objective is to strengthen community-based forest institutions and empower local people to realise their forest management. The Project is however state implemented and there is the possibility that the Forest Department could extend its power over community forests and customary management regimes. The Project is very aware of this risk and is designed in such a way that local peoples forest rights will be respected at all times.
		(d) Are considerations given to life of residents before implementation of project?	Y	A key objective of the Project is to improve local livelihoods. Local people will be consulted prior to any project activities and thus project activities will be defined by the communities themselves. project activities will also be implemented through community institutions by and for the communities
	Heritage	(a) Is there a possibility that the project will damage the local archaeological, historical, cultural, and religious heritage? Are adequate measures considered to protect these sites in accordance with the country's laws?	NC	There may be archaeological, historical, cultural, and religious heritage sites within the project area. However, the Project will have no significant impact on such sites. If any adverse impact may be predicted by further studies, required countermeasures will be examined to avoid/mitigate the predicted impacts.
	Landscape	(a) Is there a possibility that the project will adversely affect the local landscape? Are necessary measures taken?	N	Basically, no significant impact is predicted affecting the landscape since infrastructure under the Project will be on a small scale. Improvement of forest cover and forest resources through the project interventions may increase the natural beauty of the landscape.
	Ethnic Minorities and Indigenous Peoples	(a) Are considerations given to reduce impacts on the culture and lifestyle of ethnic minorities and indigenous peoples?	Y	VSTPF to be prepared for the Project
		(b) Are all of the rights of ethnic minorities and indigenous peoples in relation to land and resources respected?	Y	VSTPF is planned to include measures to ensure that the rights of STs and Forest Dwellers as per FRA are respected in terms of access to land and resources
	Working Conditions	(a) Is the project proponent not violating any laws and ordinances associated with the working conditions of the country which the project proponent should observe in the project?	N	The working conditions will be protected by India's laws and regulations. As required, the Project will prepare internal regulations for occupational health and safety referring to regulations imposed by international organisations and relevant national legislation and standard practices regarding working conditions.

Category	Environmental Item	Main Check Items	Yes: Y No: N Not Clear: NC	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
		(b) Are tangible safety considerations in place for individuals involved in the project, such as the installation of safety equipment which prevents industrial accidents, and management of hazardous materials?	N	As required, proper instruction and guidance on safety consideration will be given to workers and other individuals involved in the Projects.
		(c) Are intangible measures being planned and implemented for individuals involved in the project, such as the establishment of a safety and health program, and safety training (including traffic safety and public health) for workers etc.?	NC	Ditto (Such activities are relevant for large scale construction or commercial forestry but not for this type of Project.)
		(d) Are appropriate measures taken to ensure that security guards involved in the project not to violate safety of other individuals involved, or local residents?	NC	Ditto (Security guard will not be required for most of the proposed project activities)
5. Others	Impacts during Construction	(a) Are adequate measures considered to reduce impacts during construction (e.g., noise, vibrations, turbid water, dust, exhaust gases, and wastes)?	NC	Construction will be of small-scale with limited and temporary environmental impacts. However, if required, following measures will be taken: - Noise & vibration: Low noise and vibration methods and constructional vehicles and equipment. - Turbid water: Sediment basins, etc. - Exhaust gas: Less exhaust gas constructional vehicles and equipment. - Construction dusts: Spraying water, etc. - Wastes: solid wastes, etc. will be properly disposed or reclaimed
		(b) If construction activities adversely affect the natural environment (ecosystem), are adequate measures considered to reduce impacts?	Y	It is considered that the construction activities will not affect the natural environment adversely in the construction sites, but adequate measures will be considered to mitigate impacts as required.
		(c) If construction activities adversely affect the social environment, are adequate measures considered to reduce impacts?	Y	Adverse social impacts of construction are expected to be eliminated through the exclusion/ selection criteria (e.g. resettlement, use of private land, damage to cultural buildings etc). However, if required, adequate measures such as detours, etc. will be taken to mitigate impacts to social environment.
	Monitoring	(a) Does the proponent develop and implement monitoring program for the environmental items that are considered to have potential impacts?	Y	Monitoring should be executed, based on a monitoring system to be developed for the Project which includes the monitoring of environmental and social safeguards measures

Category	Environmental Item	Main Check Items	Yes: Y No: N Not Clear: NC	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
		(b) What are the items, methods and frequencies of the monitoring program?	Y	The items, methods, and frequencies of the monitoring system are covered in ESAF.
		(c) Does the proponent establish an adequate monitoring framework (organisation, personnel, equipment, and adequate budget to sustain the monitoring framework)?	Y	Ditto. (Also, adequate provisions are made in the project proposal to cover monitoring requirements)
		(d) Are any regulatory requirements pertaining to the monitoring report system identified, such as the format and frequency of reports from the proponent to the regulatory authorities?	N	The monitoring requirements will be entirely for the purposes of the Project and additional reporting to regulatory agencies will not be required because the project activities will not require environmental clearance.
6 Note	Reference to Checklist of Other Sectors	(a) Where necessary, pertinent items described in the Agriculture checklist should also be checked.	NC	It is possible that the Project may include some agricultural activities but these will be of a very small scale (home gardens/plots) and no significant impacts are predicted for the Project, However, details needed to be confirmed at further study for the Project.
	Note on Using Environmental Checklist	(a) If necessary, the impacts to trans-boundary or global issues should be confirmed (e.g., the project includes factors that may cause problems, such as trans-boundary waste treatment, acid rain, destruction of the ozone layer, or global warming).	N	The Project will not have any significant global or trans-boundary impact. It will have a slight positive global impact due to forest restoration and carbon sequestration.

Source: JICA Survey Team (Based on JICA Environmental Checklist 17. Forestry)

1) Regarding the term "Country's Standards" mentioned in the above table, in the event that environmental standards in the country where the project is located diverge significantly from international standards, appropriate environmental considerations are required to be made. In cases where local environmental regulations are yet to be established in some areas, considerations should be made based on comparisons with appropriate standards of other countries (including Japan's experience).

2) Environmental checklist provides general environmental items to be checked. It may be necessary to add or delete an item taking into account the characteristics of the project and the particular circumstances of the country and locality in which the project is located.

Attachment II.9.3.1 Appendix-D: Preliminary Results of Scoping for Environmental and Social Impact Assessment

Evaluation: A-: Significant Negative Impact A+: Significant Positive Impact
 B-: Some Negative Impact B+: Some Positive Impact
 C: Impacts are not clear, need more investigation
 D: No Impacts or Impacts are negligible, no further study required

Category	Impact Item	Evaluation			Reasons for Evaluation
		Pre-Constructi on Phase (Pre-CP)	Constructi on Phase (CP)	Operation Phase (OP)	
Pollution	Air Pollution	D	C	C	<p>Pre-CP: During this phase, there is no significant impact to be considered because there is no activity to cause air pollution.</p> <p>CP: Not significant, but emission of exhaust gas from operation of construction equipment, machinery, and vehicles and dust generation from construction/demolition activities such as vehicles movement in/out of the site, loading and unloading of construction materials and excavated soils, and demolition of old structures are anticipated.</p> <p>OP: There is a possibility of air pollution due to increase in vehicular movement during execution of the Project. However, associated effluent and effect on water sources/supply will be negligible</p>
	Water Pollution	D	B-	B-	<p>Pre-CP: During this phase, there is no significant impact to be considered because there is no activity to cause water pollution</p> <p>CP: Soil erosion, construction runoff and drainage, oil spills, sewage effluent and domestic wastewater are potential sources of water pollution.</p> <p>OP: Indiscriminate use of fertilizers and pesticides under certain project activities could potentially be the source of water pollution. However, no significantly serious impacts to water quality by project activities are predicted. There may be some small-scale manufacturing facilities introduced by the Project. However, associated effluent and effect on water sources/supply will be negligible</p>
	Solid Waste	D	B-	B-	<p>Pre-CP: During this phase, no significant impact is anticipated.</p> <p>CP: Both non-hazardous and hazardous solid waste from land excavation, and constructions of building structures is anticipated to rise.</p> <p>OP: Shedding of Pine needles could possibly have deleterious impacts, such as forest fire. Proper management of forest and regular clearing of forest floor and either disposal or use by local community members for animal mulch. Other domestic solid waste does not post any potential impacts.</p>
	Soil Contamination	D	C	C	<p>Pre-CP: During this phase, no significant impact is anticipated.</p> <p>CP & OP: No impacts are foreseen, but there is possibility of soil contamination due to inadequate usages of fertilizers /pesticides for certain project activities. Also there is possibility on soil contamination in case of</p>

Category	Impact Item	Evaluation			Reasons for Evaluation
		Pre-Constructi on Phase (Pre-CP)	Constructi on Phase (CP)	Operation Phase (OP)	
					accidental spillage and oil leakage from machineries or oil storage facility.
	Noise and Vibration	D	B-	D	Pre-CP: During this phase, no significant impact is anticipated. CP: Noise and vibration from operation of construction machinery and on-site vehicles are anticipated. OP: During this phase, no significant impact is anticipated.
	Ground Subsidence	D	D	D	Pre-CP: During this phase, no significant impact is anticipated. CP/ OP: Excavation work and intake of underground water that cause subsidence are not anticipated.
	Offensive Odor	D	D	D	Pre-CP/ CP/ OP: No significant impact is anticipated.
Natural Environm ent	Protected Area	D	B+	B+	Pre-CP: During this phase, no significant impact is anticipated. CP/ OP: Even though national park and sanctuaries are included in the project area, all the proposed interventions are aimed at promoting a sustainable and scientific management within the selected project areas, which will contribute to environmental conservation of the area. Thus certain positive impacts are anticipated from the Project.
	Flora and Fauna Ecosystem	D	B+/B-	B+/B-	Pre-CP: During this phase, no significant impact is anticipated. CP/OP: Interventions are aimed at conservation and sustainable/ scientific management which contribute to improve flora and fauna. Therefore, positive impacts are anticipated. However, there are possibilities of negative impacts in case of inadequate construction activities and operation activities such as over usage of natural resources and damages caused by fires, planting of non-native species, etc.
	Hydrology	D	B+/B-	C	Pre-CP: During this phase, no significant impact is anticipated. CP: The Project has generally positive impacts on surrounding hydrology due to improvement of degraded forests including activities such as soil and moisture conservation (SMC) measures. Significant impacts to damage the hydrological cycle or regimes are not anticipated, except for negative impacts which may arise from inadequate construction activities. OP: No significant impact is anticipated. However, surface water and ground water wherever available will be used for watering purpose at nurseries and plantation sites. Therefore there are possibilities of adverse impacts when inadequate water usages are done
	Topography and Geography	D	D	D	Pre-CP: During this phase, no significant impact is anticipated. CP: Some soil erosion is anticipated during the construction of infrastructure facilities and other installations, preparing for soil conservation measures, plantation works. However, it is anticipated that this would be minimal and would not pose any major concerns.

Category	Impact Item	Evaluation			Reasons for Evaluation
		Pre-Constructi on Phase (Pre-CP)	Constructi on Phase (CP)	Operation Phase (OP)	
					OP: There may be possibilities of erosions at forest treatment areas due to changes of drainage patterns, but anticipated impacts will be minimal.
	Management of Abandoned Sites	D	B+	B+	Pre-CP: During this phase, no significant impact is anticipated. CP/OP: The Project will contribute to improve forest/ tree cover in the project area. Therefore positive impacts are anticipated at degraded forest areas.
Social Environm ent	Involuntary Resettlement and Land Acquisition	C	B-	C	Pre-CP: There may be cases of encroachments within the proposed project area. CP: Project area is basically notified forest areas. Though settlements exist inside the proposed project area, resettlement/ encroachments in project area may be possible. Entry Point Activities may be require private patches of land for its construction. OP: Encroachments cannot be anticipated
	Local Economy (e.g., employment and livelihood)	D	B+	B+/B-	Pre-CP: During this phase, no significant impact is anticipated. CP: Job opportunity for local people will be provided to some extent during construction phase. OP: Positive impacts are anticipated through increase the supply of wood fuel for domestic use, small timber for rural housing, fodder for livestock, and NTFP for local industries. The Project is expected to provide jobs for the unskilled workers and raise the standards of living and improve the quality of life of the rural communities. On the other hand, there may be possibilities for loss of customary/ traditional knowledge as communities are trained in formal forest management approaches, loss of customary land/ resources access and use, increased development induced dependence.
	Poor People	D	B+	B+/B-	Pre-CP: During this phase, no significant impact is anticipated, CP: Job opportunities may be enhanced during the construction phase that would enable the poor to increase their earnings. OP: Similar positive/ negative impacts indicated in the above “local economy” are anticipated.
	Indigenous and Ethnic People	D	B+	B+/B-	Pre-CP: During this phase, no significant impact is anticipated. CP: Job opportunities and sources of livelihoods are anticipated to increase during the construction. About 7.6% of the people/beneficiaries within the proposed project area comprises of ST/ indigenous and ethnic people. The proposed project interventions will improve their sources for livelihoods and increase their earnings. OP: Similar positive/ negative impacts indicated in the above “local economy” are anticipated.
	Land Use and Local Resources	D	D	B+	Pre-CP: During this phase, no significant impact is anticipated. CP: During this phase, no significant impact is anticipated. OP: Land-use in the project area is not likely to change; however, the degraded forest areas and plantation

Category	Impact Item	Evaluation			Reasons for Evaluation
		Pre-Constructi on Phase (Pre-CP)	Constructi on Phase (CP)	Operation Phase (OP)	
					areas and their resources are anticipated to improve. The population that is living in the vicinity of these forest areas depend on the forests for various resources, such as fuel-wood, fodder, NTFP, and other forest produce. The proposed is anticipated to provide for these resources through its various interventions.
	Water Usage	D	C	C	Pre-CP: During this phase, no significant impact is anticipated. CP/OP: It is necessary to confirm water usage conditions especially for forest plantation and nursery activities
	Existing Social Infrastructures and Services	D	C	C	Pre-CP/ CP: During this phase, social infrastructure is not likely to be disturbed or relocated OP: There may be positive impacts by the provision of proper services and infrastructure (e.g., road development). Also, there may be possibilities of disturbance/ relocation of existing social infrastructure due to the Project.
	Uneven Distribution of Benefit and Damage	D	C	C	Pre-CP: During this phase, no significant impact is anticipated. CP/ OP: Though no significant impact is anticipated, it is necessary to confirm uneven distribution of benefits and damages, especially during the construction and operation phase. Some, who join the participatory activities; they will receive benefits from the Project. However, those who do not get associated with the project activities, may not benefit or may get affected negatively.
	Conflict of Interests within the Region	D	D	C	This Project will not induce any significant impact of conflict of interests within the region. However, there are possibilities of conflicts between groups over their rights over their Common Property Resources (CPRs), which may be curtailed and used by another groups from within/outside the community under this Project.
	Cultural Heritage	C	D	D	No significant impact to be anticipated, though there may be archeological, historical, cultural, and religious heritage sites within the Project area. In case sacred groves and other tribal cultural important sites are within the Project area, such sites shall be either avoided from the Project or introducing interventions related to conservation of such sites.
	Landscape	D	D	B+	Pre-CP/CP: During this phase, no significant impact is anticipated. OP: Improvement of forest cover and forest resources through the Project may increase the natural beauty of the landscape.
	Gender Discrimination	D	D	B+	The Project will not induce any significant adverse impact of gender discrimination. Overall in Himachal Pradesh and more-so in the tribal areas, women are accorded equal status, rights, and freedom to participate, voice their opinions and concerns during project meetings and decision making.
	Children's Right	D	D	D	The Project will not induce any significant adverse impact to children's right. Child laborers to be excluded in the Project.

Category	Impact Item	Evaluation			Reasons for Evaluation
		Pre-Constructi on Phase (Pre-CP)	Constructi on Phase (CP)	Operation Phase (OP)	
Health and Safety	Occupational Health and Safety	D	B-	B-	Pre-CP: During this phase, no significant impact is anticipated. CP/ OP: Impacts on occupational health and safety during construction and plantation establishment/ maintenance works may occur if appropriate measures to ensure occupational health and safety are not taken into consideration and adopted.
	Community Health and Safety	D	B-	B+/B-	Pre-CP: During this phase, no significant impact is anticipated. CP: Impact on community health and safety (e.g. traffic safety, pedestrians' accidents by construction activities, carelessness of construction workers, air pollution due to vehicular movement, water contamination due to construction activities, etc.) are anticipated. OP: There may be increases in negative impacts (e.g. traffic hazard, ambient air pollution by vehicles, water pollution, hazardous wastes, health risk, etc.) if efficient mitigation measures and considerations are not applied. Also there may be positive impacts (e.g. easier access to urban areas, health related facilities by the Project), if improved facilities and services by the Project will be available for general public so that it can contribute to community health care. Thus, appropriate mitigation measures need to be put-in place to ensure community health and safety.
	Risks for infectious disease such as AIDS/HIV	D	C	D	Pre-CP/OP: During this phase, no significant impact is anticipated. CP: It could be anticipated, that new strains of viruses, diseases, and infections (communicable/ non-communicable) could be brought into the project area, by the influx of construction workers, other workers, speculative business-persons, and others. There may be risks of infectious diseases by immigrant workers.
	Accident	C	B-	B-	Pre-CP: During this phase, no significant impact is anticipated, but it is necessary to confirm accident risks during this stage. CP: There may be risks in increase of traffic accidents and construction site accidents. OP: There may be risks in increase of traffic accidents due to increase of river/ road traffic.
Emergency Risk	Flood Risk and Other Natural Disaster	C	B-	B-	Pre-CP: During this phase, no significant impact is anticipated. CP: Risks such as heavy rain, cloud bursts, etc., may be anticipated and affect the construction and forest treatment areas. OP: Risks such as heavy rain, cloud bursts, earthquakes, landslides, etc., is anticipated to affect the established of infrastructure or disrupt implementation activities.
	Risk for Fire	D	B-	B-	Pre-CP: During this phase, no significant impact is anticipated. CP: Risk for fire is expected with a fixed probability. OP: Risk for fire is expected with a fixed probability.
Others	Climate	D	D	B+	Pre-CP: During this phase, no significant impact is anticipated.

Category	Impact Item	Evaluation			Reasons for Evaluation
		Pre-Constructi on Phase (Pre-CP)	Constructi on Phase (CP)	Operation Phase (OP)	
	Change				CP: Gas emission will be temporary and limited to the Project area thus significant impact to global climate change in not anticipated. OP: Certain positive impact due to forest restoration and carbon sequestration is anticipated

Source: Compiled by JICA Study Team (2017)

Attachment II.9.3.1 Appendix-E: Land Acquisition and Resettlement Screening Form

Once the individual sub-projects are identified, the following “Scoping Form” could be utilized to exclude land acquisition and involuntary resettlement.

A. Introduction Each core project output is assigned an involuntary resettlement category depending on the likelihood and the significance of the probable involuntary resettlement impacts.

B. Information on Sub-project

Sub-project name	
Location	
Scope of sub-project (description of the nature and scope of works)	

C. Screening Questions for Resettlement Categorization Involuntary

Resettlement Effects	Yes	No	Extent of Impacts And Other Remarks
Does the sub-project include upgrading or rehabilitation of existing physical facilities?			
Does the sub-project include the construction of new physical facilities?			
Will it require permanent land acquisition?			
Is the ownership status and current usage of the land known?			
Are there any non-titled people who live or earn their livelihood on affected land?			
Will there be loss of housing? Will there be loss of agricultural plots?			
Will there be losses of crops, trees and fixed assets?			
Will there be loss of businesses or enterprises?			
Will there be loss of incomes and livelihoods?			
Will people lose access to facilities, services, or natural resources?			
Will any social or economic activities be affected by land use-related changes?			

Attachment II.9.3.1 Appendix-F: Environmental and Social Compliance Monitoring Form to be Submitted to FTU

1. General Information

Items	Descriptions
Project	Himachal Pradesh Forest Ecosystems Management and Livelihoods Improvement Project
Name of Sub-projects	
Location	
Contractor	

2. Information of Monitoring

Items	Descriptions
Name of Monitor	
Date of Monitoring	
Location of Monitoring	
Weather Conditions	

3. Monitoring Environmental Impact and Possible Mitigation Measures (for Silviculture and Small Scale Rural Infrastructure)

Items	Environmental Impact Observed	Mitigation measures applied (Yes/No). If Yes, please specify	Effectiveness of mitigation measures (1-5 Scaling)	Action to be taken for improvement
Dust generation/ Air pollution (Dust and Smoke)				
Water Quality (Change in water quality)				
Drainage and sedimentation				
Solid waste (Waste from construction works (types and volume)				
Chemical or hazardous wastes (oil, lubricants, cleaning materials)				
Disruption of vegetative cover and ecological resources (Illegal tree clearing, wild animal hunting)				

Items	Environmental Impact Observed	Mitigation measures applied (Yes/No). If Yes, please specify	Effectiveness of mitigation measures (1-5 Scaling)	Action to be taken for improvement
Traffic management (Signs)				
Restoration of affected areas				
Soil Erosion (Visible soil erosion and water runoff including rill/gully erosion)				
Worker and public Safety (Training for worker, fences, barriers warning signs)				
Communication with local communities (complaints from local residents about resettlement, loss of livelihoods, etc.)				

4. Monitoring Environmental Impact and Possible Mitigation Measures (for Forest Development Activities)

Items	Environmental Impact Observed	Mitigation measures applied (Yes/No). If Yes, please specify	Effectiveness of mitigation measures (1-5 Scaling)	Action to be taken for improvement
Disruption of vegetative cover and ecological resources (Illegal tree clearing, wild animal hunting)				
Communication with local communities (complaints from local residents about resettlement, loss of livelihoods, etc.)				

Attachment II.9.3.1 Appendix-G: Outline of an Annual Environmental and Social Performance Report to JICA

1. Basic Information

Name of Organization:	
Completed by (Name):	
Position in Organization:	
Reporting Period:	From: To:
Completed in (MM/YY)	

2. Sub-projects using JICA Funds during the Reporting Period

Name of Subproject approved during the reporting period	Industry Sector	Project Scope	Project Cost (JPY)	Approval Date	Environmental Category*	Reason of Categorization	Documents made (e.g. EIA, RAP, IPP)	Any outstanding environmental, IR or IP ¹ issues

* Please refer the Criteria of Categorization finalized by PMU which are in line with JICA Guidelines for Environmental and Social Considerations (April 2010), and in case of **Category B**, please fill out the table below for the specific activities (at ward or GP level).

Location	Scope of the Activities	Specific Reason of Category B	Executor/ Contractor

3. Subprojects using JICA Funds to be Approved in the Next FY

Name of Subproject approved during the reporting period	Industry Sector	Project Scope	Project Cost (JPY)	Approval Date	Environmental Category*	Reason of Categorization	Documents made (e.g. EIA, RAP, IPP)	Any outstanding environmental, IR or IP** issues

* Please refer the Criteria of Categorization finalized by PMU which are in line with JICA Guidelines for Environmental and Social Considerations (April 2010), and in case of **Category B**, please fill out the table below for the specific activities (at ward or GP level).

Location	Scope of the Activities	Specific Reason of Category B	Executor/ Contractor

4. Environmental and Social Management System (ESMS)

Please describe if ESMS of your organization has changed in any way (e.g. establishment of a new division for environmental and social management) since JICA's appraisal.

¹ IR = Involuntary Resettlement, IP = Indigenous People

Attachment II.9.3.2 Draft Vulnerable Scheduled Tribes Planning Framework (VSTPF)

Table of Contents

	<i>Page</i>
1. Overview	2
1.1 Objective of Vulnerable Scheduled Tribes Planning Framework	2
1.2 Structure of VSTPF	2
2 JICA's Requirement on Safeguard Policies	3
3 Target Social Groups under VSTPF	4
3.1 Rationales for Identification of the Targeted Social Groups under VSTPF	4
3.2 Selection of the Target Groups	5
4 Legal and Policy Framework for Scheduled Tribes and Forest Dwellers	6
4.1 Scheduled Tribes	6
4.2 Forest Dwellers	8
5 Environmental and Social Risks and Mitigation Measures	8
6 Framework and Procedures of Vulnerable Scheduled Tribes Plan	10
6.1 Preparation of Vulnerable Scheduled Tribes Plan	10
6.2 Detail Procedures of VSTPF	11
6.3 Institutional Arrangement and Capacity Development	13

Draft Vulnerable Scheduled Tribes Planning Framework

1. Overview

1.1 Objective of Vulnerable Scheduled Tribes Planning Framework

In the Indian context, the term “Scheduled Tribe (ST)” is applied to refer “Indigenous Peoples” as used by JICA and other multilateral funding agencies, such as World Bank, Asian Development Banks, etc. And this framework shall be particularly applied to **individuals/communities who could be severely affected their daily lives by project activities among Scheduled Tribes (STs) and Forest Dwellers as defined in The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006**. Among the two social groups, the number of forest dwellers would be quite small considering the progress of the implementation of FRA in the state as mentioned in **Table 9.3.1**, therefore, the name of the framework is replaced as “Vulnerable Scheduled Tribes Planning Framework” (VSTPF).

The main objectives of VSTPF are (i) to ensure the targeted social groups affected by any additional project interventions will receive culturally appropriate social and economic benefits from the Project, (ii) to ensure their participation in the entire process for the preparation, implementation and monitoring of project activities, and (iii) do not suffer any adverse impacts as a result of the Project or sub-projects.

VSTP has been designed as an additional framework that works together with the Environmental and Social Assessment Framework (ESAF), which is the primary safeguards document for the Project. Other vulnerable groups including poor households, the landless, women as well as deprived classes, such as the Scheduled Castes (SCs) and Other Backward Classes (OBCs) population are considered well in ESAF to ensure the opportunities for effective consultation, participation, receive appropriate benefits and are overall not adversely harmed by the Project.

1.2 Structure of VSTPF

VSTPF is structured in an almost identical way to ESAF for easy usage by simply referring ESAF. The structure of VSTPF is described below.

- i) **JICA’s Requirements on Safeguard:** briefly describes JICA’s requirements on social safeguard, and clarifies the measures which the Project shall be addressed,
- ii) **Definition of the Target Social Groups under VSTPF:** analyses and defines the appropriate target social groups as the scope of VSTPF to ensure particular consideration in the course of the project design and implementation,
- iii) **Legal and Policy Framework for STs and Forest Dwellers:** Outline of the legal and policy context for STs and Forest Dwellers as the target groups under VSTPF,
- iv) **Environmental and Social Risks and Mitigation Measures:** describes the environmental and social risks on the targeted STs and Forest Dwellers and procedures to be followed to manage/mitigate and monitor the social aspects,

- v) **Framework and Procedures of Vulnerable Scheduled Tribes Plan:** describes the required procedures for the VSTP preparation, including Free, Prior and Informed (FPIC) Consultation, Social Assessment (SA), micro planning, selection and screening of sub-project, Monitoring and Evaluation (M&E), and Grievance Redress Mechanism (GRM), and
- vi) **Institutional Arrangement and Capacity Development:** identifies the required institutional arrangement and capacity development programme for preparation and implementation of the VSTP.

2 JICA's Requirement on Safeguard Policies

VSTP aims to ensure that JICA's safeguards policies relating to the protection of indigenous peoples with respect to their lands, territories and livelihood to be an essential part in the project framework, and sub-projects are designed and implemented in a way that fosters full respect for indigenous peoples. The JICA Guidelines for Environmental and Social Considerations, 2010 (JICA Guideline) states that appropriate environmental and social considerations for indigenous people should be undertaken, which highlighted as follows;

- i) Adverse impacts of any nature anticipated on indigenous peoples are to be avoided when feasible, by exploring all possible alternatives. Even after such examination, if avoidance is not possible, then effective measures must be taken to minimize impacts and to compensate indigenous peoples for their losses,
- ii) In case the Project have potentially adverse impacts on indigenous peoples, all their rights with respect to land and resources must be respected in accordance with the spirit of relevant international declarations and treaties, including the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP),
- iii) Free, Prior and Informed Consultations (FPIC) must be carried-out with Indigenous Peoples and their consent must be obtained in the process,
- iv) Measures addressing issues related to affected IP must be prepared as an Indigenous Peoples Plan (IPP) and must be made public in compliance with the relevant laws and ordinances of the host country, and
- v) While devising the IPP, consultations must be carried-out with the affected IPs, in which sufficient and appropriate information must be shared with them in advance. Consultations are required to be conducted desirably in a form, manner, and language that are understandable to the concerned people.

JICA Guideline also states that it is desirable that the IPP include the elements laid out in the World Bank Safeguard Policy, OP 4.10, Annex B.

3 Target Social Groups under VSTPF

3.1 Rationales for Identification of the Targeted Social Groups under VSTPF

This section describes two important rationales which help to identify target social groups under VSTPF, namely 1) World Bank Safeguard Policy (Operational Policy 4.10) and 2) The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act (FRA) 2006.

1) World Bank Safeguard Policy (Operational Policy 4.10)

There is no widely accepted definition of indigenous peoples. World Bank's official position is that "because of the varied and changing contexts in which Indigenous Peoples live and because there is no universally accepted definition of Indigenous Peoples, this policy does not define the term. OP 4.10 describes "Indigenous People" in a generic sense to refer to a distinct, vulnerable, social and cultural group possessing the following characteristics in varying degrees;

- vi) self-identification as members of a distinct indigenous cultural group and recognition of this identity by others,
- vii) collective attachment to geographically distinct habitats or ancestral territories in the project area and to the natural resources in these habitats and territories,
- viii) customary cultural, economic, social, or political institutions that are separate from those of the dominant society and culture, and
- ix) an indigenous language, often different from the official language of the country or region.

OP 4.10 also indicates that Indigenous Peoples may be referred to in different countries by such terms as 'indigenous ethnic minorities,' 'aboriginals,' 'hill tribes,' 'minority nationalities,' 'scheduled tribes,' or 'tribal groups'. And in the Indian context, the term of Scheduled Tribes (STs) appears to be in the line with the "Indigenous Peoples" described in the World Bank's generic definitions. Degrees of social, cultural, ethnical, linguistically, institutional and geographical distinctions fluctuate among STs.

2) The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act (FRA) 2006

The Forest (Recognition of Forest Rights) Act 2006 defines "the Forest Dwelling Scheduled Tribes (FDST) and the Other Traditional Forest Dwellers (OTFD)" as members or communities who primarily reside in and who depend on the forests or forest lands for bona fide livelihood needs (Section 2 Part c of the Act). The criteria and evidence required for a FDST and OTFD to claim rights under FRA are described in **Table 1**.

Table 1 Criteria for FDST and OTFD under the FRA

Types of Forest Dwellers	Criteria to be Given the Certification
FDST	1) Must be a Scheduled Tribe in the area where the right is claimed, 2) Primarily resided in forest or forest land prior to 13-12-2005, and 3) Depend on the forest or forests land for bonafide livelihood needs
OTFD	1) Primarily resided in forest or forests land for three generation (75 years) prior to 13-12-2005, and 2) Depend on the forest or forests land for bonafide livelihood needs

Source: Prepared by JICA Study Team (2017) based on The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act (FRA) 2006

It is noteworthy to mention that the term “Forest Dweller” has a specific meaning in the context of the Indian forest legislation. If a person is certified as a “Forest Dweller” legally, he/she has all right over the forestland, however, in practical, the progress of the administrative procedures is very slow in HP state. As per the FRA status report of February 2016 of Ministry of Tribal Affairs (MOTA), GOI, 346 titles were distributed including 108 community claims, but objections were raised by the MOTA on the constitution of Forest Rights Committees (FRCs) at the Gram Panchayat level and process of claim settlement, therefore, these titles were not given.

3.2 Selection of the Target Groups

Considering the World Bank’s OP 4.10, the FRA 2006 and actual socio-economic conditions in the state, the two social groups, i.e. **Scheduled Tribes (STs) and Forest Dwellers under FRA with only focused on the individuals/communities who could be severely affected their daily lives by project activities** are identified as the target social groups under the framework. The defined targeted social groups shall be identified at the stage of screening and selection of the sub-projects which further explained within ESAF.

In fact, STs in HP state are categorised into relatively “well-off” compared to other states. The number of STs in the state, having completed secondary or higher levels of schooling, in rural and urban areas is higher than other states (World Bank 2015) and Census of India (2011) provides that the literacy rate of STs in the state is 83.2% for male and 64.2% for female while the rate among STs as national average is 68.5% and 49.4% respectively. Also, work participation rate of STs in the state is much higher than average rate at union level and the rate in the state is ranked the third highest (53.5%) in the country. Considering the above situation, all STs as well as Forest Dwellers in project area are not necessarily required to be covered under VSTPF.

In HP state, “transhumance” is also one of the distinct social groups to be defined as “Indigenous People” according to the criteria of WB, and “Gujjar” and “Gaddi” are two nomadic communities in the state. Since, these two groups are declared as STs, and majority of STs, 69% are composed of these two tribes, VSTPF does explicitly refer to the transhumance as they are already a part of STs.

It should be also noted that SCs and OBCs who are often considered within a similar framework together with STs in the Indian constitution and legal framework are not treated as “Indigenous People” (except “Forest Dwellers” within the groups) in the framework since they are seen in all parts of India and throughout Indian society. These groups are more related to social status than a

separate or distinct indigenous cultural group. For SCs and OBCs, appropriate and necessary safeguard measures are already dealt with under ESAF to the above two groups as well as other vulnerable groups, such as landless poor households, women/female headed households.

4 Legal and Policy Framework for Scheduled Tribes and Forest Dwellers

The relevant applicable laws and regulations pertaining to the rights and social welfare of marginalised social groups including STs and Forest Dwellers are provided in ESAF. Therefore, this section briefly summarizes the legal framework and status of STs and Forest Dwellers in HP state. Again, it should be emphasised that VSTPF shall target only “vulnerable” social groups among STs and Forest Dwellers.

4.1 Scheduled Tribes

Since independence, India has been committed to the ideal of “economic growth with social justice” meaning there is considerable onus on the state to protect and develop the weaker sections of the society, especially the STs. However, it should be noted that there are issues related to how tribes are defined, which may be academic in nature but have very real implications in terms of who or which groups are actually safeguarded by the national legal and policy framework as well as their eligibility for various social welfare benefits and programmes. The President of India accordingly issued lists of STs appended to the following orders;

- i) The Constitution (Scheduled Tribes) Order, 1950
- ii) The Constitution (Scheduled Tribes) Order, 1951
- iii) The Scheduled Tribes Lists (Modification) Order, 1956
- iv) The Constitution (Andaman and Nicobar Islands) Scheduled Tribes Order, 1956
- v) The Scheduled Tribes Order (Amendment) Act, 1976

As of now, the Indian Constitution does not prescribe any criteria for distinguishing a tribe or tribal community from other communities. It rather prescribes a method or an agency for designating them. Once promulgated, the list of scheduled lists can only be varied by an Act of the Parliament (HIPA, 1987). Recognizing the historical discrimination and deprivation, list of caste and tribe were identified in government schedule as a target group for reservation policies. Anyone not mentioned in the list of ST (in terms of Article 342 of the Indian Constitution) is considered a non-tribe and vice-versa. **Table 2** and **Table 3** indicate the ST population and the list of STs and their characteristics in the state respectively.

Table 2 Scheduled Tribe Population in India and Himachal Pradesh

Country/ State/ Level		Total Population	Scheduled Tribe	
			Population	Percentage
India	Total	1,210,569,573	104,281,034	8.61
	Rural	833,463,448	93,819,162	11.26
	Urban	377,106,125	10,461,872	2.77
Himachal Pradesh	Total	6,864,602	392,126	5.71

Country/ State/ Level		Total Population	Scheduled Tribe	
			Population	Percentage
	Rural	6,176,050	374,392	6.06
	Urban	688,552	17,734	2.58

Source: Compiled by JICA Study Team (2017) based on Primary Census Abstract, Census of India 2011

Table 3 List of Scheduled Tribes of HP State and their Characteristics

No.	Tribe Name	Distribution	Description
1	Bhot, Bodh	Tehsil Lahaul, district Lahaul & Spiti	The Bodh or Bhot people are an ethnic group of HP state, and concentrated in tehsil Lahaul of district Lahaul & Spiti. Predominantly they live in the Chandra and Bhaga valleys, and to a lesser extent in the Pattani valley, Miyar valley and upper reached of Pangi valley in HP state. These people mainly follow Buddhism.
2	Gaddi	N/A	The Gaddi is a pure Hindu tribe with Aryan features. Compared to other tribes, the Gaddis are the most dominant and populous tribe community living in HP state. The term Gaddi is a generic name and it includes; Brahmins, Rajputs, Khatris, Rathis (belonging to the higher castes) and Kolis, Rihards, Lohars, Badies, Sipis, Halis (belonging to low castes). The language of the Gaddis is Gaddi. The Gaddis lead a semi-nomadic, semi-pastoral and semi-agricultural life; their main occupation is rearing sheep and goats. A few male members of this tribe migrate seasonally together with their herds looking for pastures and fodder for the livestock, halt temporarily and move-on. During the winter months, they are stationed in the relatively plain areas of the state, while during the summer months they travel along-with their herds to higher altitudes in search of pastures. Their occupations include sale of wool, milk products, kids/ lambs, aged livestock for meat; in the plains, they are engaged in agriculture.
3	Gujjar	N/A	Gujjar or Gurjar (other spellings include Gurjara, Gurjjar, Gojar and Gūjar.) tribe in HP state is a pastoral agricultural ethnic group, who lead a nomadic life. However, some of them have settled down at one place. Gujjars have their own language, known as GUJARI. They are known to variously follow Hinduism, Islam and Sikhism. Although they are classified as OBC in some states in India, in parts of HP state, they are classified as ST. The main occupation of the Gujjar, like the Gaddis, is rearing cattle, which includes sheep, goats and buffaloes. These semi-nomadic people are in the habit of migrating to upper parts of Himalayas along with their cattle during the summer season and back to the plains with the onset of chilly winters.
4	Jad, Lamba, Khampa.	Kinnaur, Kullu, Chamba, and Lahaul	Notified as Scheduled Tribe, and are known to have come from Tibet. The dialect spoken is called Khampa and their traditional script is Tibetan. Earlier they lead a nomadic life trading pashmina wool, sheep, goats, yaks from Tibet in return for carpets, moonga, etc from India. Now they have settled themselves as agriculturist and as orchardists, running shops and restaurants, as labourers in road building sites, some own land and work on their own fields.
5	Kanaura, Kinnaura.	District Kinnaur, Lahaul & Spiti, Chauhra to Sangla and north along the Satluj River to Morang and several villages of the upper Ropa River Valley.	The Kanaura, also known as Kinnaura are a community of HP state, classified as Scheduled Tribe, speak Kinnauri language. The Kinnaura are the largest ethnic group in district Kinnaur, and typically, they inhabit villages in high altitudes, between 5,000 and 6,770 meters (16,400 to 22,200 ft.) above sea level, in areas that are described as having "mountainous topography, cold climate, dense forests, low rainfall and heavy snowfall". The Kinnaura territory forms the border between the Buddhist and Hindu worlds, and accordingly the Kinnaura's religious belief is a fusion of the two. These Kinnaura tribes have the tradition of maintaining herds of cattle in their houses. Women of this Kinnaura tribal community are quite hard working. Weaving is practiced mainly by the female groups of this community. This Kinnaura tribal community produces exquisite baskets and other utensils, which have got demand not only on the local markets but also in the entire nation. The women also work in fields.

No.	Tribe Name	Distribution	Description
6	Lahaula.	District Lahaul and Spiti	The Lahaula people have a close affinity with Ladakhis and Tibetans, and are more akin to the Tibetans in physical appearance. They follow both Hindu and Buddhists religion. Their dialect resembles Tibetan language. The main source of livelihood for the Lahaulas is agriculture and allied activities. Occupations include animal husbandry, daily wage earning as laborers in government programs, regular government service, business (mainly shop-keeping), and crafts like weaving.
7	Pangwala.	Snow-bound areas of Chamba District	The Pangwala are a community that are Hindus and have Aryan features, they are healthy and fit and are known for their charming features. They follow the Hindu religion and worship several Gods and Goddesses, such as Shiva, Nag, Devi, etc. The main sources of economy among the Pangwala people include agriculture, animal husbandry and village crafts.
8	Swangla	Pattan region of Lahaul sub-division.	The Swangla are a tribe community residing in the Pattan region of Lahaul sub-division, district Lahaul and Spiti. They are part of the South Himalaya people cluster within the Tibetan/ Himalayan Peoples affinity bloc. Their primary language is Pattani, and practice ethnic religion, which is deeply rooted to their ethnic identity.

Source: Compiled by JICA Study Team (2017) based on:

Encyclopedic Ethnography of the Himalayan Tribes: A-D, edited by Narendra S. Bisht, T. S. Bankoti

4.2 Forest Dwellers

The term “forest dweller” refers to the Forest Dwelling Scheduled Tribes (FDST) and the Other Traditional Forest Dwellers (OTFD)” as members or communities who primarily reside in and who depend on the forests or forest lands for bona fide livelihood needs, as per “The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act 2006” known as FRA.

In the state, Forest Rights Committees (FRCs) were initially constituted at the Gram Panchayat level and the implementation of the act was limited to Schedule V areas only. FRCs received claims and recommended them to their respective SDLCs (Sub-Divisional Level Committees) and subsequently to DLCs (District Level Committees). There are 57 Sub Divisional Level Committees and 12 District Level Committees to implement the FRA. However, as per the FRA status report of February 2016 of Ministry of Tribal Affairs (MOTA), GOI, 346 titles were distributed including 108 community claims.¹ But objections were raised by the MOTA on the constitution of FRCs at the Gram Panchayat level and process of claim settlement due to the inappropriate procedures were taken.

Therefore, as of now, only 60 titles have been given i.e. 7 community rights and 53 individual forest rights in Chamba district. No other districts of the state titles under FRA have been given.

5 Environmental and Social Risks and Mitigation Measures

ESAF discusses the overall environmental and social concerns of the Project. The key impacts of the Project on the vulnerable ST and Forest Dwellers have been described below. Potential positive and negative impact will be assessed at the initial stage of the project implementation by HPFD through consultation with relevant agencies, local governments and stakeholders.

¹ MOTA. FRA Statewise Report Feb 2016 - <http://forestrights.nic.in/report/individualStateWise.jsp#>

(1) Potential Positive and Adverse Impacts

The Project is anticipated to bring-out mainly positive environmental and social impacts, although deleterious impacts by the Project cannot be ruled-out. Based on the proposed Project activities, **Table 4** below indicates some of the key benefits and positive environmental and social impacts on vulnerable STs and Forest Dwellers by the Project.

Table 4 Key Positive Impacts on Vulnerable STs and Forest Dwellers by the Project

Type of Capital Benefit	Positive Impact
a. Forest / Natural and Physical Capital Benefits	<ul style="list-style-type: none"> - Enhanced awareness towards forest protection and conservation, - Increase in forest covered area and density, - Degraded areas to be brought under forest cover, - Improvement in forest quality and quantity, - Human-wildlife conflicts to be reduced, - Increase NTFP production , and - Improved watershed protection, reduction of soil erosion, etc., resulting in improved ecosystem services from forests
b. Social Capital Benefits	<ul style="list-style-type: none"> - Community institutions to be strengthened, and - Prudent utilization of land, water, forest resources, etc. due to the project interventions, thus safeguarding the environment
c. Financial Capital Benefits	<ul style="list-style-type: none"> - Income levels to be increased, - Project activities/ interventions to create direct and indirect employment opportunities, - Diversification of sources of incomes, - Reduced financial risk, and - Value addition and better marketing for their products
d. Human Capital Benefits	<ul style="list-style-type: none"> - Increase technical capacity for sustainable forest management and biodiversity conservation, - Improved entrepreneurial and business management capacity of JFMCs and SHGs, - Active participation towards community development planning and activities to increase, - Improved participation of local people in forest management and biodiversity conservation, and - Cohesion amongst community members, PRIs, JFMCs, SHGs to improve

Source: Prepared by JICA Study Team (2017)

The Project is not anticipated to bring-out significant deleterious impacts on the targeted ST and Forest Dwellers, although the Project could potentially beget adverse impacts of the environmental and social setting. **Table 5** presents potential adverse risks and mitigation measures for them.

Table 5 Adverse Environmental / Social Risks and Possible Mitigation Measures for Vulnerable STs and Forest Dwellers

Activities	Potential Adverse Risks	Possible Mitigation Measures
Planning	<ul style="list-style-type: none"> - Disempowerment of customary village forest management institutions - Conflict among community members - Micro planning could lead to conflicts over natural resources, due to formalization of previously fluid, flexible and informal agreements and practices 	<ul style="list-style-type: none"> - Avoid major impacts through participatory procedures for screening of sub-projects - Ensuring adequate consultations and participation of vulnerable groups for micro-planning - Promote best-practice participatory approaches for forest management planning - Prioritize vulnerable groups as beneficiaries
Community Development	<ul style="list-style-type: none"> - Encroachments - Loss of common property resources - Loss of property, houses and other physical assets - Loss of other customary land/ resource access and use - Disempowerment of customary institutions 	<ul style="list-style-type: none"> - Strict delineation and survey of forest boundaries - Stringent action against encroachment - Increased awareness programs - Participatory procedures for screening of sub-projects and avoidance of major impacts - No use of private land or resettlement for community infrastructures - Ensure members of the community participation in Gram Sabha

Activities	Potential Adverse Risks	Possible Mitigation Measures
	<ul style="list-style-type: none"> - Construction activities related air, water, soil and noise pollution - Possible damage to flora and fauna 	<ul style="list-style-type: none"> - Participatory procedures for screening of sub-projects and avoidance of major impacts - Proper design and planning of infrastructure activities to minimize environmental risks - Community-based/participatory land/resource use planning
Livelihood and Traditional Knowledge	<ul style="list-style-type: none"> - Denial of basic rights - Increased dependency - Loss of traditional livelihood - Loss of traditional knowledge/skill - Inequitable benefit sharing - Resource use conflicts - Gender issues 	<ul style="list-style-type: none"> - Proper implementation and monitoring of ESAF, VSTPF, including Social Assessment - Clear and equitable beneficiary selection and prioritizing vulnerable STs, Forest Dwellers, poor vulnerable households, etc. - Documentation and utilisation of traditional knowledge/ practices - Active bottom-up approach - Community involvement and employment in all aspects of construction, operation and maintenance - Corpus fund to ensure sustainability of investment - Selection of female beneficiaries with deliberate attempts to empower women
Sustainable Forest Management/ Biodiversity Conservation	<ul style="list-style-type: none"> - Impacts from construction activities including air (dust), water (siltation of water bodies), soil (soil contamination, erosion, and loss), local fauna and flora, noise pollution, waste disposal etc. - Possibility of loss of access to customary lands and resources - Potential loss of customary/traditional knowledge as communities are trained in formal management approaches 	<ul style="list-style-type: none"> - Participatory procedures for micro planning, screening of sub-projects and avoidance of major impacts - Proper design and planning of activities to minimize environmental risks - Community-based/participatory land/resource use planning - Prioritization of vulnerable groups as beneficiaries - Documentation and utilization of traditional knowledge/ practices - Preparation of Local regulations

Source: Compiled by JICA Study Team (2017)

6 Framework and Procedures of Vulnerable Scheduled Tribes Plan

6.1 Preparation of Vulnerable Scheduled Tribes Plan

The Vulnerable Scheduled Tribes Plan (VSTP) shall be prepared at the Gram Panchayat or JFMC level when adverse impacts are anticipated due to the Project on the vulnerable STs and Forest Dwellers. It should be ensured that the contents of VSTP should be incorporated in the micro-plan. VSTP should be prepared in a manner that it is led by field officers/ animators and with active participation of the identified vulnerable groups of the village/ habitation. Indicative steps for the preparation of VSTP have been described in **Table 6**.

Table 6 Processes for Preparation of VSTP

No.	Step	Safeguard Activity, Methods, Processes
1	Screening and Basic Information Collection	<ul style="list-style-type: none"> - Consultations leading to the decision whether a plan is required to be prepared - Collection of basic and baseline information and data on the village/ habitation such as socio-economic status of ST and Forest Dwellers, etc.; participation of ST and Forest Dwellers in the Project; potential impacts of the Project on ST and Forest Dwellers.
2	Social Assessment	<ul style="list-style-type: none"> - Needs and Priorities assessment to be carried-out for the identification of vulnerable STs and Forest Dwellers with the help of tools such as Participatory Rural Appraisal (PRA)
3	Consultation with identified vulnerable STs and Forest Dwellers	<ul style="list-style-type: none"> - Workshops and discussions with the vulnerable ST and Forest Dwellers on identification of adverse impacts and devising mitigation measures and other support activities
4	Drafting and Approval of the Plan	<ul style="list-style-type: none"> - Preparation based on outcomes of workshop/discussion conducted - Meeting at Gram Panchayat or/and JFMC level

Source: JICA Study Team (2017)

VSTP shall include at least the following contents as indicated in **Table 7**.

Table 7 Indicative Contents of VSTP

No.	Chapter	Descriptions
1	Introduction	- Define the basic purpose of the plan, its scope and objectives, and outline of the report
2	Sub-projects Description	- Brief description of the sub-projects, rationale, objectives, location/area, key activities, the implementation schedule, etc.
3	Socio-economic Baselines	- Brief profiles of the target area. - Baseline information on the demographic, social, economic and cultural characteristics of all STs and Forest Dwellers - Baseline information on natural resources, viz., land, water, forest, forest products, etc., utilized and managed by ST and Forest Dwellers
4	Summary of the Social Assessment and Free, Prior and Informed Consultation	- Identify and mapping of key project stakeholders - Stakeholder engagements - Consultations with the targeted social groups under VSTP - Assess potential adverse and positive effects of the Project
5	Action Plan	- Define/identify vulnerable STs and Forest Dwellers based on the results of socio-economic baselines and SA - Identify measures to avoiding potential adverse effects of the Project - Identify mitigating measures for potential adverse effects of the Project - Identify activities support the vulnerable ST and Forest Dwellers to participate in the Project (if any)
6	Public Consultation and Information Disclosure	- Document and present results of public consultation with the communities
7	Cost Estimation and Financing Plan	- Provide activities-wise budget and possible sources of finance
8	Monitoring Plan	- Provide details of concurrent and end of project monitoring mechanism for targeted groups under VSTP

Source: JICA Study Team (2017)

6.2 Detail Procedures of VSTPF

(1) Free, Prior and Informed Consultation

Free, Prior and Information Consultations (FPIC) are important to be carried-out with the target beneficiary population, including the vulnerable STs and Forest Dwellers, to consolidate a strong community support at local levels of the Project. At the initial stage, the locations where each of these communities live and derive a livelihood will be mapped. Efforts have to be made to ensure that these communities are adequately represented during the preliminary information disclosure and in subsequent consultation meetings. During these disclosures/ consultations, information in the form of written materials and language of communication should be in the local language/ dialect, which are simple and comprehended by everyone. Furthermore, animators/ field officers should be made responsible to ensure that visualization and visual presentations are used as much as possible; a well-designed program would benefit from well documented consultations with target beneficiaries including vulnerable STs and Forest Dwellers. Also, opportunities and facilities to encourage participation of women, elders and other vulnerable should be considered.

(2) Social Assessment and Micro Planning

The process of Social Assessment (SA) and Micro Planning shall involve specific procedures that ensure the needs and priorities of the vulnerable groups, which will be reflected in sub-projects

under the Project. Thus, SA for VSTP should follow the procedure determined in ESAF. However, in case, there are targets with following issues should be also covered in the SA.

- x) Demography, literacy levels, occupational profiles, religious and cultural practices, kinship and social organization and socio-political characteristics and institutions of affected STs & Forest Dwellers,
- xi) Lands occupied, customarily used or traditionally possessed by affected ST & Forest Dwellers, and
- xii) Natural resources utilized for their social as well as economic bases by the affected ST & Forest Dwellers

It is anticipated that many Gram Panchayats would probably have existing micro plans or similar documents in place; participatory review would be carried-out in such a case. In cases where Gram Panchayats do not have existing micro-plans or similar documents, participatory development of micro-plans will take place. The micro-plan shall focus on proposals concerning Gram Panchayats, and stipulate community development and livelihood needs/priorities expressed by villagers, who reside within and on the fringes of the forest area.

(3) Selection and Screening for Sub-Projects

Selection of sub-projects will be prioritized keeping in mind the target beneficiaries, including the vulnerable ST and Forest Dwellers, so that they face no or minimal deleterious impacts due to project activities. All sub-projects need to be finalised through the participatory consultations process; vulnerable communities will be an integral part of this process. Target beneficiaries will have preferential treatment during the project implementation stage.

(4) Monitoring and Reporting

Monitoring and reporting system for VSTP should be consistent with the regular monitoring and reporting system of the Project, but the identified vulnerable ST and Forest Dwellers should be consulted separately, through a participatory monitoring process that is included by the Project. In this process, it is ensured that they are not isolated and are part of the beneficiary community, and have fair opportunity to provide their feedback on the implementation of the Project.

(5) Grievance Procedures

Grievance redress procedures for the vulnerable ST, Forest Dwellers and other vulnerable groups would be the same as provided in ESAF. However, if required, it may necessitate establishing a grievance redress committee to respond more sensitively, effectively, and in a timely and responsible manner.

6.3 Institutional Arrangement and Capacity Development

In principle, the institutional arrangement for ESAF will be applied for implementation of VSTPF as well. And capacity development for addressing vulnerable ST and Forest Dwellers' relevant issues is generally covered under the proposed training courses for PMU, FCCU, FTU, and Gram Panchayat level identified as institutional arrangement of ESAF. The training program covers safeguards issues, micro-planning process, environmental and social safeguards procedures (including FPIC or process of community consultation and public participation), and monitoring and evaluation for environmental and social safeguard.

Attachment II.9.3.3 Draft Involuntary Resettlement Planning Framework (IRPF)

Table of Contents

	<u>Page</u>
1 Overview.....	2
1.1 Objective of the Involuntary Resettlement Planning Framework	2
1.2 Structure of IRPF	2
2 Legal Framework.....	2
3 JICA's Requirement for RPs Preparation and Implementation.....	3
4 Process of RPs Preparation	3
5 Affected Population and the Eligibility	4
5.1 Estimated Population.....	4
5.2 Eligibility Criteria of Displaced Persons for Compensation	5
6 Evaluation of Affected Properties and Disbursement	9
6.1 Evaluation of Affected Properties	9
6.2 Component of R&R benefits.....	9
6.3 Disbursement of Compensation and Resettlement Benefits.....	11
7 Grievance Redress Mechanisms	11
8 Funding/ Resettlement Budget.....	11
9 Consultation	11
10 Monitoring	11

Draft Involuntary Resettlement Planning Framework

1 Overview

1.1 Objective of the Involuntary Resettlement Planning Framework

The Project will not involve any physical relocation nor involuntary resettlement as long as ESAF is fully applied in the selection of the project area and scope of the sub-projects. On the other hand, unlike a typical infrastructure project, this Project will have multi-sectoral intervention and activities implemented by numerous sites with many sub-projects which are not yet defined in detail at this stage (site location, size/scope of the activities). In this regard, the Involuntary Resettlement Planning Framework (IRPF) has been designed to clarify the required procedures if any acquisition of private lands for construction activities related to the Project and its sub-projects are required which result in (i) loss of assets, (ii) restrictions to the use of or loss of access to places of interest, (iii) loss of existing sources of income and livelihood, and (iv) depreciation of adjacent property value.

1.2 Structure of IRPF

The above-mentioned objectives are expected to be achieved through the following contents:

- i) Principles of Resettlement Plan (RP),
- ii) Legal Framework,
- iii) Process of RPs Preparation,
- iv) Project Affected Population (PAPs) and its Eligibility,
- v) Evaluation of Affected Properties, Disbursement of Compensation and Resettlement Benefits,
- vi) Grievance Redress Mechanisms,
- vii) Funding/ Resettlement Budget,
- viii) Consultation, and
- ix) Monitoring

2 Legal Framework

The “Right to Fair Compensation and Transparency in Land Acquisition and Rehabilitation and Resettlement Act, 2013 (RFCTLARRA-2013)” is the applicable law at the union level stipulates the procedures for land acquisition as well as providing rehabilitation and resettlement benefits to the affected/ displaced persons. The act came into force on 1st January 2014, and superseded the “Land Acquisition Act, 1894” and its Amendment 1984, as well as the “National Rehabilitation and Resettlement Policy 2007”. Based on the Act, HP state enacted “Himachal Pradesh Right to Fair Compensation and Transparency in Land Acquisition. Rehabilitation and Resettlement Rules 2015” which elaborates more specifically on required procedures on Social Impact Assessment (SIA).

3 JICA's Requirement for RPs Preparation and Implementation

The Resettlement Plans (RPs) shall be prepared and implemented in line with the JICA Guideline. Following the Guideline, the following principles need to be applied;

- ◆ Involuntary resettlement and loss of means of livelihood are to be avoided when feasible by exploring all viable alternatives. When avoidance is proved unfeasible, effective measures to minimize impact and affected persons to be compensated for losses,
- ◆ Affected persons who must be resettled involuntarily and people whose means of livelihood hampered or lost must be sufficiently compensated and supported by project proponents in a timely manner,
- ◆ Prior compensation, at full replacement cost, must be provided,
- ◆ Efforts to enable affected people to improve their standard of living, income opportunities, and production levels, or at least to restore these to pre-project levels,
- ◆ Appropriate participation by affected people and their communities must be promoted in the planning, implementation, and monitoring of resettlement action plans and measures to prevent the loss of their means of livelihood,
- ◆ Appropriate and accessible grievance mechanisms must be established for the affected people and their communities, and
- ◆ Consultations to be held in a form, manner, and language that are understandable to the affected people.

4 Process of RPs Preparation

The process of preparing the RPs for the Project is depicted in **Figure 1** which is in-line with the relevant legal system adopted in the country, namely RFCTLARRA-2013.

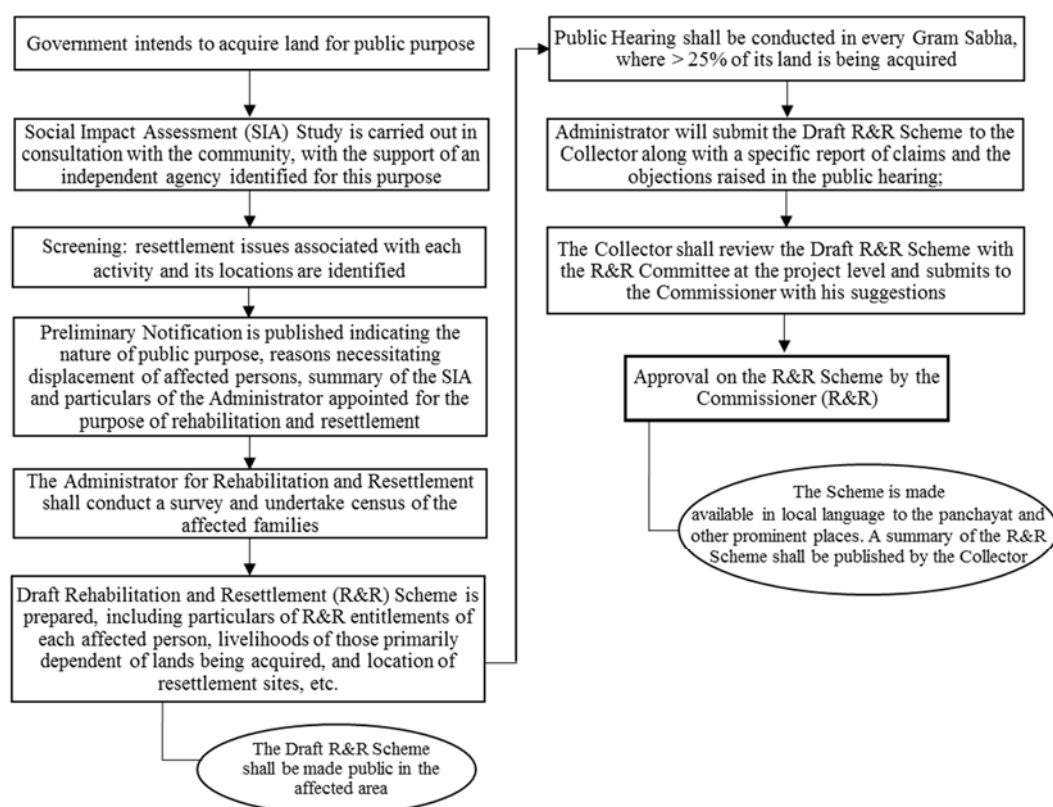


Figure 1 Process of Preparing the Resettlement Plans

SIA shall be conducted which covers; (i) whether proposed Project serves a public purpose or not; (ii) estimate numbers of affected families to be impacted and displaced; (iii) quantify extent of public and private lands, houses, settlements, common properties, etc. to be impacted due to acquisition; (iv) land acquisition at an alternative place has been considered and not found feasible; (v) assess social impacts of the Project; (vi) impacts of livelihoods of affected families; and (vii) impacts on public and community properties, assets and infrastructure.

5 Affected Population and the Eligibility

5.1 Estimated Population

While the Project is anticipated to bring-out positive impacts on both environmental and social aspects to the beneficiaries and any types of involuntary resettlement/ land acquisition are not expected to take place, limited number of persons might possibly be affected by certain activities. However, it should be emphasised again that due to the characteristic of the Project, it is very difficult to provide a reasonable estimation of such persons at the present level of information, in which the sites for respective activities are not known.

5.2 Eligibility Criteria of Displaced Persons for Compensation

RFCTLARRA-2013 shall be the basis to set the eligibility criteria of displaced persons for compensation and assistance of R&R. Eligibility criteria for compensation would be different depending on the nature of impacts and status of land tenure, which can be broadly categorised into formal, semi-formal and informal, resulting in (i) Legal titleholders/ with customary land right/ with Permit from local authority; (ii) Tenants and leaseholders (whether having written tenancy/lease documents or not)/ share cropper; (iii) Leaseholders; (iv) Encroachers; and (v) Squatters. Recommended compensation and R&R assistance for each category are presented in **Table 1**.

Table 1 Compensation and R&R Assistance

No.	Type of Loss	Application	Definition of Entitled Person	Entitlement
1	Loss of private land	Agricultural land, homestead land or vacant plot	Common*	<ul style="list-style-type: none"> All displaced families will receive (i) monthly subsistence allowance of 3,000 INR for one year from the date of award, and (ii) SC/ST households will receive additional one-time payment of 50,000 INR. 60 days advance notice to harvest standing seasonal crops prior to damage. If notice cannot be given, compensation for share of crops will be provided. Additional compensation for vulnerable households. Exemption from fees and taxes related to compensation
			Legal titleholders/ Affected Persons (APs) with customary land right/ APs with Permit from local authority	<ul style="list-style-type: none"> Compensation at replacement value¹ or land-for-land² where feasible. One time resettlement allowance of 50,000 INR per affected family One time assistance option from: (i) Job for at least one member of the displaced family³ in project which has created impact or in similar such other project; or (ii) One-time payment of 500,000 INR per displaced family.
			Tenants and leaseholders (whether having written tenancy/lease documents or not)/ share cropper	<ul style="list-style-type: none"> Compensation for rental deposit or unexpired lease. Share of the crop loss between owners and sharecroppers/ tenants/ lease-holders as per the agreement (50% of crop)
2	Loss of Government land	Vacant plot, Agricultural land and homestead land	Common	<ul style="list-style-type: none"> Additional compensation for vulnerable households.
			Leaseholders	<ul style="list-style-type: none"> Reimbursement of unexpired lease. All displaced families will receive (i) monthly subsistence allowance of 3,000 INR for one year from the date of award, and (ii) SC/ST households will receive additional onetime payment of 50,000 INR. 60 days advance notice to harvest standing seasonal crops prior to damage. If notice cannot be given, compensation for share of crops will be provided. Exemption from fees and taxes related to compensation

1 Compensation at one to two times of the market value of the land, including all assets attached to the land. Market value to be multiplied by factor: "1" for land in urban area, "1" to "2" for land in rural area depending on distance from urban area. An additional "Solatium" equal to the amount of compensation (100%) for land including all attached assets.

2 If land for land is offered, titles will be in the names of original landowners. Joint titles in the name of husband and wife will be offered in case of married APs. Re-titling of the remaining land will be the responsibility of the EA and will occur following land acquisition, within six months of time and in-case of delay, the EA will issue interim certificate/provisional proof of the titling for the delayed period.

3 "displaced family" means any family, who on account of acquisition of land has to be relocated and resettled from the affected area to the resettlement area

No.	Type of Loss	Application	Definition of Entitled Person	Entitlement
3	Loss of residential structure	Residential structure and other assets ⁴	Encroachers	<ul style="list-style-type: none"> 60 days advance notice to shift from encroached land. Notice to harvest standing seasonal crops. If notice cannot be given, compensation for share of crops will be provided.
			Squatters	<ul style="list-style-type: none"> 60 days advance notice to shift from occupied land. 60 days advance notice to harvest standing seasonal crops prior to damage. If notice cannot be given, compensation for share of crops will be provided. All displaced families will receive (i) monthly subsistence allowance of 3,000 INR for one year from the date of award, and (ii) SC/ST households will receive additional onetime payment of 50,000 INR.
			Government land without being used by anybody (not applied "Common")	<ul style="list-style-type: none"> Transfer of land through inter government department Payment of land value by the EA to the concerned government departmental for transfer its ownership.
			Common	<ul style="list-style-type: none"> All physically displaced families will receive both: (i) One time shifting assistance of 50,000 INR towards transport costs etc.; and (ii) monthly subsistence allowance of 3,000 INR for one year from the date of award, and (iii) SC/ST households will receive additional onetime payment of 50,000 INR. Compensation will be at replacement value excluding depreciation Each affected family having cattle shed shall get one time financial assistance of such amount as the appropriate Government may, by notification, specify subject to a minimum of 25,000 INR for construction of cattle shed One time resettlement allowance of 50,000 INR per affected household Additional compensation for vulnerable households.
			Legal titleholders	<ul style="list-style-type: none"> Replacement value of the structure and other assets (or part of the structure and other assets, if remainder is viable). If house lost in rural areas, constructed house as per Indira Awas Yojana specifications. If in urban area, house of minimum 50 sq. m. plinth area. This benefit should be extended irrespective of title if the affected family is residing in affected area for continuously at least for three years prior to issue of notification. In urban area if family is not willing to accept the constructed house then shall get one-time financial assistance of at least 150,000 INR. In rural areas, the actual cost of house construction shall be offered in such cases. Right to salvage materials from structure and other assets with no deductions from replacement value. Exemption from fees and taxes related to compensation
			Tenants and Leaseholders	<ul style="list-style-type: none"> Replacement value of the structure and other assets (or part of the structure and other assets, if remainder is viable) constructed by the AP. Compensation for rental deposit or unexpired lease. Right to salvage materials (of the portion constructed by tenants or leaseholders) from structure and other assets Right to salvage materials from structure and other assets with no deductions from replacement value. Exemption from fees and taxes related to compensation
			Squatters	<ul style="list-style-type: none"> Replacement cost of structure constructed by the squatter Right to salvage materials from structure and other assets
			Encroachers (not	<ul style="list-style-type: none"> 60 days advance notice to shift from encroached

4 Other assets include, but are not limited to walls, fences, sheds, wells, etc.

No.	Type of Loss	Application	Definition of Entitled Person	Entitlement
			applied “Common”)	<ul style="list-style-type: none"> structure. Right to salvage materials from structure and other assets Additional compensation for vulnerable households.
4	Loss of Commercial Structures	Commercial structure and other assets	Common	<ul style="list-style-type: none"> One time Resettlement allowance of 50,000 INR per affected family All displaced families will receive both: (i) One time Shifting assistance of 50,000 INR towards transport costs etc.; and (ii) monthly subsistence allowance of 3,000 INR for one year from the date of award, (iii) SC/ST households will receive additional onetime payment of 50,000 INR. Each affected family having petty shop shall get one time financial assistance of such amount as the appropriate Government may, by notification, specify subject to a minimum of 25,000 INR for construction of petty shop Right to salvage materials from structure and other assets with no deductions from replacement value Additional compensation for vulnerable households. Exemption from fees and taxes related to compensation
			Legal titleholders	<ul style="list-style-type: none"> Reconstruction cost (without depreciation) for lost frontage/structure; affected person shall be allowed to take salvaged material from the demolished structure at no costs.
			Tenants and leaseholders	<ul style="list-style-type: none"> Replacement cost of part/whole of structure constructed by the tenant/leaseholder, and this will be deducted from the compensation amount of the total structure. Compensation will be at replacement value excluding depreciation. Compensation for rental deposit or unexpired lease.
			Squatter	<ul style="list-style-type: none"> Replacement cost of structure constructed by the squatter. Compensation will be at replacement value excluding depreciation
			Encroachers (not applied “Common”)	<ul style="list-style-type: none"> 60 days advance notice to shift from encroached structure. Right to salvage materials from structure and other assets Additional compensation for vulnerable households
5	Loss of livelihood	Livelihood	Legal titleholder/ tenant/ leaseholder/ non-titled/ employee of commercial organization, farmer/ agricultural worker/ artisan/ small trader/ self-employed	<ul style="list-style-type: none"> One time financial assistance of minimum 25,000 INR or as decided by the appropriate government agencies, whichever is higher. Income restoration and training to eligible APs Additional compensation for vulnerable households. Consideration for project employment.
6	Loss of trees and crops	Standing trees and crops	Legal titleholder/ tenant/ leaseholder/ sharecropper/ non-titled AP	<ul style="list-style-type: none"> 60 days advance notice to harvest standing seasonal crops prior to damage, fruits, and timber. Compensation for standing crops based on an annual crop cycle at market value Compensation for trees based on timber value at market price, and compensation for perennial crops and fruit trees at annual net product market value multiplied by remaining productive years; to be determined in consultation with the Forest Department for timber trees and the Horticulture Department for other trees/crops
7	Impacts on	All impacts	Vulnerable APs ⁵	<ul style="list-style-type: none"> One time lump sum assistance of 25,000 INR to

⁵ *Vulnerable groups* include poor households, households headed by women, STc and SCs. Poor households may be identified as per the BPL card issued by the government. In addition, international standard of poverty level will also be taken into consideration for defining poverty level especially the income level. (approximately 2 USD per day per person as a bench mark). All the vulnerable groups will be provided with one time vulnerability allowance.

No.	Type of Loss	Application	Definition of Entitled Person	Entitlement
	vulnerable APs			<ul style="list-style-type: none"> vulnerable households. This will be paid above and over the other assistance. Vulnerable APs will receive preferential income restoration training program under the Project. Consideration for project employment
8	Temporary loss of land	Land temporarily required for sub-project construction	Legal titleholders, non-titled AP	<ul style="list-style-type: none"> Provision of rent for period of occupation for legal titleholders Compensation for assets lost at replacement value. Restoration of land to previous or better quality Additionally, cash compensation will be paid for the temporary damage of crop under the Right of Way (RoW) during the maintenance and repair after the construction. In case there is a need for repair or maintenance of the transmission lines in the future, the project authorities would reach agreement with the land owners for access to the land for maintenance and repairs, when necessary, and that the land owners would continue to use the land for farming activities.
		Temporary Occupation of waste or arable land	Title holder/ government	<ul style="list-style-type: none"> The appropriate government may direct the collector to procure the occupation and use of waste/arable land for such terms it shall think fit, not exceeding three years from commencement of such occupation. Compensation either in gross sum of money or by monthly or other periodical payments, as shall be agreed in writing between collector and the user/ contractor. In case of non-agreement on compensation and difference amount, the collector shall refer such difference to the decision of the authority. On the expiration of the term, the land will be reassessed to see the damage and will either be restored or be compensated further for the dam age. In case of full damage and non-use of the land post the temporary occupation/use period, the land will be permanently acquired as per the standard norm.
9	Loss of common resources	Common resources	Communities	<ul style="list-style-type: none"> Replacement or restoration of the affected community facilities – including public water stand posts, public utility posts, temples, shrines, etc. All community facility and utility replacement is compensated and also re-built.
10	Any other loss not identified	N/A	N/A	<ul style="list-style-type: none"> Unanticipated involuntary impacts will be documented and mitigated based on the principles of the RPs

Note: *Common: Common means common entitlements given to the persons listed on "Definition of Entitled Person".

Source: Compiled by JICA Study Team (2017) based on the RFCTLARRA-2013

In order to determine the eligibility of displaced persons for compensation and resettlement assistance, the cut-off dates can be determined at the time of completion of the SIA, after sub-projects' sites have been identified. Thus, those dates will be fixed by the Project Management Unit, as part of its implementation programme, after consultations with the Collector and APs and other stakeholders. Any person occupying the area thereafter would not be eligible for compensation or resettlement assistance.

6 Evaluation of Affected Properties and Disbursement

6.1 Evaluation of Affected Properties

RFCTLARRA-2013 specifies methods and procedures for valuating and determining the market value of land, house, buildings and other immovable properties or assets attached to the land or building. This Act bestows the Collector with the powers to;

- ◆ determine the market value of land to be acquired, as per the procedure specified in the Act,
- ◆ engaged competent engineer(s) or any other specialists in the relevant field, in determining the market value buildings and other immovable properties or assets attached to the land or buildings, which are to be acquired,
- ◆ use the service of experienced persons in the field of agriculture, forestry, horticulture, sericulture or any other field, in determining value of trees and plants attached the land to be acquired, and
- ◆ use the service of experienced persons in the field of agriculture for assessing the value of standing crops damaged during the process of land acquisition.

The total compensation will be worked-out after considering all the above aspects. Thereafter, the Collector will impose a “Solatium” amounting to 100% of the total compensation amount to arrive at the final award will be paid to each AP.

6.2 Component of R&R benefits

Based on the R&R Scheme prepared by the Administrator, the R&R entitlement package would be worked-out for each displaced/ affected family and extended to them. These R&R facilities and monetary benefits are over and above the compensation for acquired land and/or house and other assets attached to the land. Second Schedule attached to the Act provides the following components for rehabilitation and resettlement benefits, which is highlighted in **Table 2**. As per the Third Schedule attached to the Act provides infrastructure facilities and basic minimum amenities for the displaced families in the relocation sites. The cost shall be borne by the requiring agency.

Table 2 Components for Rehabilitation and Resettlement Benefits

Elements of R&R Entitlements	Non-Monetary Provisions	Monetary Provisions
House in case of Displacement	<ul style="list-style-type: none"> • A constructed house as per the Indira Awas Yojana • A constructed house with 50 sqm plinth area in urban areas 	If, affected family does not opt for constructed house: Equivalent cost of house to be offered in-lieu of constructed house in rural areas Financial assistance of 150,000 INR/- in urban areas for construction of house
Land for Land	<ul style="list-style-type: none"> • In irrigation projects, each family owning agricultural land whose land has been acquired, or family has been reduced to the status of marginal farmer or landless, shall be allotted a minimum of 1 acre in the 	N/A

Elements of R&R Entitlements	Non-Monetary Provisions	Monetary Provisions
	command area, in lieu of compensation <ul style="list-style-type: none"> SC/ ST families losing land will be allotted land equivalent to acquired land or 2.5 acres, whichever is lower 	
Offer of Developed Land	<ul style="list-style-type: none"> In urbanization projects, 25% developed land will be reserved and offered at a price equivalent to the cost of acquisition and development. 	N/A
Choice of Annuity and Employment	<ul style="list-style-type: none"> In case jobs are created through the Project, jobs in the Project or in other project after suitable training and skill development is provided; this will be offered to one person per affected family 	<ul style="list-style-type: none"> One-time payment of 500,000 INR/- per affected family, OR Annuity @ 2,000 INR/month per family for 20 years
Subsistence Allowance	N/A	<ul style="list-style-type: none"> Displaced families to be provided 3,000 INR/month for 12 months from the date of award SC and ST displaced from scheduled areas shall receive 3,000 INR/month for 12 months from the date of award 50,000 INR/-
Transportation Cost for Displaced Families	N/A	<ul style="list-style-type: none"> Each displaced family to get one-time financial assistance of 50,000 INR/- for shifting family, building materials, belongings, cattle, etc.
Cost towards Cattle shed/ Petty Shop	N/A	<ul style="list-style-type: none"> Each affected family to get one-time financial assistance of 25,000 INR/- for construction of shop or petty shop as the case may be.
One-time Grant to Artisans, Small Traders, Self-employed, Owning Non-agricultural Land, or Commercial, Industrial or Institutional Structure in the Affected Area	N/A	<ul style="list-style-type: none"> One-time financial assistance of 25,000 INR/-
Fishing Rights	<ul style="list-style-type: none"> In irrigation/ hydel projects, affected families may be allowed to do fishing as per the prescribed norms of the government 	N/A
One-time Resettlement Allowance	N/A	<ul style="list-style-type: none"> 50,000 INR/ affected family
Stamp Duty and Registration Fee	<ul style="list-style-type: none"> Payable for registration of land or house to be borne by Requiring Body Land for house shall be free from encumbrances Land or house allotted may be in the joint names of wife and husband of the affected family 	N/A
Additional Benefits to SC and ST	<ul style="list-style-type: none"> No acquisition of land in scheduled areas Prior consent is required from concerned Gram Sabha or Panchayat, if acquisition of land in Scheduled areas Development Plan shall be prepared in case of land acquisition involving displacement of SC and ST families, which will include development of alternate fuel, fodder, NTFP for a period of five years ST families to be relocated within the same scheduled areas Resettlement areas predominant with SC and ST families to get land, free of cost, for community and social gatherings Fishing rights to STs, other traditional forest dwellers and SCs in rivers, ponds and dam in the affected area All reservation benefits to continue in resettlement sites for SC and ST families 	<ul style="list-style-type: none"> If SC and ST families are relocated outside the district, 25% additional R&R benefits (in monetary terms) will be extended (one time entitlement of 50,000 INR/-) 1/3 compensation shall be paid initially as first instalment, and remaining after taking possession of land

Source: Compiled by JICA Study Team (2017) based on the RFCTLARRA-2013

6.3 Disbursement of Compensation and Resettlement Benefits

As per Section 37 and 38 of the RFCTLARRA-2013, the Awards shall be filed in the Collector's office and shall be verified the area and market value of land and assets attached to it, then solatium and apportionment of compensation among the interested persons shall be determined. Further, the Collector shall give notices to all interested persons who are not present personally. The Collector shall ensure that the full payment of compensation and the monetary part of the R&R entitlements are paid to the interested persons within a period of three to six months respectively, from the date of award. Subsequently, the Collector will take possession of land. As per Section 77 (1) of the Act, the payment of compensation award would be deposited in the bank accounts of the affected/ displaced families/ persons.

7 Grievance Redress Mechanisms

All matters pertaining to disputes and grievances related to land acquisition and resettlement benefits, among the community members on any matter related to the Project and its sub-projects shall be resolved and redressed through the Grievance Redress Mechanism that has been provided in ESAF. The grievances shall be made in writing as far as possible or recorded at the appropriate levels and to designated officials.

8 Funding/ Resettlement Budget

Although it is impossible to estimate the budget for the involuntary resettlement, the implementing agency will bear all the costs of the resettlement compensation if required. Disbursements based on budgetary requirements will be made through the relevant District Administration as all the activities are under the jurisdiction of the District Collector.

9 Consultation

The process of resettlement and compensation shall participatory and consultative in nature. Public consultation and participation may be conducted through local meetings, workshops and presentations, radio and television programs, and explanations of the project ideas and requirements. The mechanism adopted for public consultations has been elaborated in ESAF, which will be applicable for resettlement and compensation process, in addition to the mechanism provided in the law for compensation and resettlement. Especially, the vulnerable groups, such as women, disables, poor and destitute, etc., shall be considered well to ensure their involvement in the process.

10 Monitoring

The primary objective in this context is to ensure that project-affected persons are not disadvantaged in any ways. Thus, their direct involvement in the process of monitoring and evaluation would be helpful to achieve the objective. Although, the RFCTLARRA-2013 authorises the Collector to ensure that all the processes of compensation and resettlement are

carried-out without any aggrieved parties, yet the Project may incorporate its own monitoring program as clarified in ESAF, which would be responsibility of PMU, assisted by a specialist under PMU, i.e. Environmental and Social Consideration/ Environmental Economics/ PES/ Specialist as well as subject matter experts directly hired by PMU.

Attachment II.10.1.1 Risk Management Framework

Project Name:	Himachal Pradesh Forest Ecosystems Management and Livelihoods Improvement Project		
Country:	The Republic of India		
Sector:	Forestry		
Responsible Agency:	Himachal Pradesh Forest Department (HPFD), Government of Himachal Pradesh		
Officers In-Charge:	Contact: Alok P Nagar	Title: Chief Project Director	
	Mobile: +91-9418007426	Email: apnagar@gmail.com; apccfprojecthp@gmail.com	
Operational Staff			
Engineering Staff			
Country Office Staff			

KEY RISKS AND MITIGATION MEASURES

Potential project risks	Assessment
1. Stakeholder Risk	Probability: H/M/L
(Description of risk) Shortly, the state assembly elections would conclude by mid-November 2017, and the new government will be in place by end of December 2017. With the new government it is likely that there will be change in political situations and governance models as well as priorities. However, commitments and priorities related to the forest sector is expected to maintain more or less the same and no significant changes are assumed. For the project implementation, existing structures and human resources of HPFD to be utilised as much as possible. For the project's community level implementation bodies, instead of engaging Gram Panchayats (GPs) and its sub-committees the village forest development society (VFDS) has been re-targeted as the main community level implementation bodies which will be the organisation to be established based on the Participatory Forest Management Regulations 2001. However, cooperation and coordination from other relevant line departments and Panchayat Raj Institutions is also envisaged.	Impact: H/M/L
	Analysis of probability and impact: Moderate risk is estimated. The field staff may not proactively participate in the project works and view it as a burden in addition to the regular departmental works. A focused time and effort would be required by the field formation to identify potential wards under GPs as per the criteria and continuously handhold and encourage for participatory forest management and community development initiatives. For effective convergence the project field staff has to reach out the line departments and district / block administration.
	Mitigation measures: The mitigation measures to the risks are identified as follows: (a) strengthening the communications to stakeholders to help enhance the understanding of the benefits of the project, and (b) enhancing proactive information disclosure and quick grievance redressal by the state as well as by the HPFD, (c) continuous guidance and supervision, including capacity building initiatives.
	Action during the implementation: Not required
	Contingency plan (if applicable): Not applicable
2. Executing Agency Risk	
2.1. Capacity Risk	Probability: H/M/L
(Description of risk) Given that, the state/ HPFD would get exposed to new approaches, processes and technical know-how particularly for the ecosystem management, biodiversity monitoring, engineering structures, and for these interventions HPFD in general has limited institutional capacity which may affect planning, management, and monitoring of efficient service delivery. Furthermore, due to inadequacy in the allocation of human resources and their capacity, especially in the project management, major risks to project implementation exist.	Impact: H/M/L
	Analysis of probability and impact: Moderate risk is estimated. It may be difficult for the project stakeholders to operate and implement the project in the initial years as they have less experience in implementation of a JICA loan project. However, once they learn how to operate and manage the project in accordance with the project implementation guidelines, it is expected that there would be less difficulties that they would face in the project operation.

Potential project risks	Assessment
	Mitigation measures:
	The proposed mitigation measures to the risks are identified as follows: (a) the project will focus on strengthening the institutional capacity through capacity building of existing human resources and hiring the necessary skills contracted from the market; (b) required capacities identified during project preparation will be closely monitored; (c) the project design prioritizes addressing human resource constraints for required skill-sets, and program management cadres, and (d) Operation Manual and Accounting Rules/ guidelines would be developed and adopted, and training will be provided on project processes and mechanisms and contract management.
	Action during the implementation:
	PMU with technical assistance from the project consultant shall i) prepare the project implementation guidelines, ii) hold orientation and guidance workshops/ seminars on the guidelines for the project officers, and iii) provide periodic handholding and training to the project staff to enable them to operate and manage the project as envisaged.
	Contingency plan (if applicable):
	Not applicable
2.2. Governance Risk	Probability: H/M/L
<p>(Description of risk)</p> <p>High Powered Committee, governing body and PMU are planned to be established for overall decision makings, coordination, and implementation of the project. Timely organising and decision makings of relevant meetings will be crucial for the project implementation.</p> <p>District level convergence with other line departments may not be fully attained due to i) difference in administrative boundaries between HPFD and other departments, and ii) there is no specific project implementation unit to cover district level convergence.</p>	Impact: H/M/L
	Analysis of probability and impact:
	Moderate risk is estimated. As long as the HPC and PMU are established at the state level as proposed and functioned as in the project plan, the prospect of any difficulty or delay caused by insufficient coordination would be less.
	Mitigation measures:
	The HPC led by Chief Secretary, and PMU led by full-time cadre officer on deputation to manage the project should be established at the respective levels.
	For the convergence, more linkages between community development blocks (under the district) and range level offices (FTUs) are envisaged for the project.
	Action during the implementation:
	Same as above.
	Contingency plan (if applicable):
	Not applicable
2.3. Fraud & Corruption Risk	Probability: H/M/L
<p>(Description of risk)</p> <p>Due to lack of experience and less capacities currently with the HPFD, it is likely that procurement processes as envisaged for goods & services may get diluted or perhaps are not well understood and executed. This would require that project management consultants are in place in early stage of the project, and support the PMU on various procurements and contracts.</p> <p>The international bidding has well laid out procedures and prior concurrence is required from JICA at each stage of selection, whereas for local bidding procedures need to be developed and</p>	Impact: H/M/L
	Analysis of probability and impact:
	Low risk is estimate. There is less probability that any fraud, misappropriation, or issues on financial management would take place. There is a possibility that some inappropriate sub-projects, which may not necessarily benefit local people who participate in the project activities, might be selected and implemented.
	Mitigation measures:

Potential project risks	Assessment
<p>adopted by the PMU at initial stage. The key staff also need to be trained on procurement processes.</p> <p>Also, by way of constitutional provisions system of right to information act (RTI) is in place, thus in a democratic set-up it is unlikely that the fraud and corruption will happen undetected.</p>	<p>Under the managerial features of the Institutional Arrangements provisions have been made for conducting independent audits by the CAG and well as system of undertaking concurrent audits is proposed. Under the Monitoring & Evaluation proposal, system of Grievance Redressal as well as RTI has been made to bring in transparency as well as accountability. For procurement of Goods & Services well defined procurement guidelines are in place at state level and the key staff would be sufficiently trained. Also, prior concurrence would be required from JICA on implementation of key sub-projects and services.</p> <p>Action during the implementation:</p> <p>At the start of the project implementation financial management and accounting rules and regulations for the project will be developed and would form the part of the Operation Manual to be approved by the HPC. PMU with technical assistance from the project consultant will monitor and supervise the project financial management and provide guidance and advice for proper and transparent management on a regular basis over the course of the project.</p> <p>Contingency plan (if applicable):</p> <p>Not applicable</p>
3. Project Risk	
3.1. Design Risk	Probability: H/M/L
(Description of risk)	Impact: H/M/L
Several of the activities planned under the project, such as ecosystem management, recovery programme of endangered species, PA corridors network strengthening and management, raising quality planting material and plantation works particularly in alpine zone, community based biodiversity management, pasture / grassland management vis-s-vis traditional grazing, working with / communities for participatory forest management and community development, NTFP based livelihood models, NTFP cultivation on private lands and marketing etc., are innovative and unprecedented so far for the HPFD. Furthermore, the topography of the state might make it difficult to achieve high implementation efficiency and to reach the scattered population that lives in deep hill and forest areas.	<p>Analysis of probability and impact:</p> <p>Moderate risk is estimated. It might be difficult for PMU to find out contractors/facilitators capable to implement process at the field level. In case there is no competent organization at the provincial level, PMU shall procure a contractor at the national or regional level and provide necessary guidance to the contractor with assistance from the project consultant. The project divisions and ranges will need managerial and technical support from PMU and the project consultant for smooth operations of the project, especially in the supervision and technical guidance to contractors, monitoring and data management, and reporting. In case the project officials are not properly guided by provision of orientation and project implementation guidelines in the beginning of the project, the project implementation might be affected.</p> <p>Mitigation measures:</p>

Potential project risks	Assessment
	<p>The proposed mitigation measures to the risks are identified as follows: (a) the provision of technical support to the HPFD during design and implementation of new/innovative activities by way of PMC and other resource organisations; (b) the lessons learned for the state from the innovative activities which have been already initiated in a limited way in the state; (c) phase out of activities in a systematic manner in light of the innovative nature of the project activities and the state's limited capacity; and (d) collaboration between the GPs and local human resources from these communities for better outreach to the underserved population.</p> <p>Action during the implementation: Same as above.</p> <p>Contingency plan (if applicable): Not applicable</p>
3.2. Program & Donor Risk	Probability: H/M/L
(Description of risk) The project has been designed aligning with the state's sector strategies and policies, as well as considering priorities with HPFD. It is assumed that the policies may remain unchanged during the implementation period, and project would help to achieve the sector policies aims and objectives, which emphasize on linkage of biodiversity conservation to livelihoods, traditional knowledge systems, equitable benefit sharing and recognizing the unique role of women.	<p>Impact: H/M/L</p> <p>Analysis of probability and impact: Low risk is estimated. HP is recognized as biodiversity hotspot and most impacted with the climate change vulnerability that adversely impact human lives and livelihoods, forestry sector is one of the priorities with the government. The state also recognizes that a large population is dependent on forest resources and ecosystem services directly or indirectly.</p> <p>Mitigation measures: Not required</p> <p>Action during the implementation: Not required</p> <p>Contingency plan (if applicable): Not applicable</p>
3.3. Delivery Quality Risk	Probability: H/M/L
(Description of risk) It would not be difficult for PMU to collect necessary data and information for the operation and effect indicators. All the information and data could be collected through regular monitoring by PMU or reviews of outputs. It is, however, also necessary to develop and introduce a mechanism for collaborative management of the project areas for sustainable forest management in the post project period. The state is conflict free state but prone to natural disasters. There is little possibility that natural disasters or social turmoil which would adversely affect the progress and effect of the project will happen during the project period. It is expected that the project beneficiaries or local communities who participate in the project could be properly selected without exclusion of socially vulnerable groups as long as consultations are	<p>Impact: H/M/L</p> <p>Analysis of probability and impact: Moderate risk is estimated. There is some probability that PMU would face difficulties in gathering/collecting necessary data and information for monitoring of the operation and effect indicators, particularly for biodiversity and climate related data. In case that a collaborative management system is not well developed or introduced during the project implementation, sustainable forest management in the project areas, may impact the project results. Inequitable distribution of benefits might happen in case the selection of beneficiaries and identification of potential livelihood options are not carried out properly.</p> <p>Mitigation measures:</p>

Potential project risks	Assessment
properly conducted as planned and described in the guidelines/project report.	<p>The proposed mitigation measures to the risks are identified as follows: (a) the project will focus on strengthening the institutional capacity through capacity building of existing human resources and hiring the necessary skills contracted from the market; (b) required capacities identified during project preparation will be closely monitored; (c) the project design prioritizes addressing human resource constraints for required skill-sets, and program management cadres, and (d) Operation Manual and Accounting Rules/ guidelines would be developed and adopted, and training will be provided on project processes and mechanisms and contract management.</p> <p>Action during the implementation:</p> <p>Same as above.</p> <p>Contingency plan (if applicable):</p> <p>Not applicable.</p>
4. Other Risk – Financial Capacity and Arrangements	Probability: H/M/L
(Description of risk)	Impact: H/M/L
The Himachal Pradesh continue to enjoy the status of special state where the GoI extends 90% financial support (as Grant) for any initiatives between the GoI-State. This also indicates that still the state has to depend a lot on the external financial support to drive its economy as well as to undertake priority developmental initiatives, irrespective of the fact that per capita income of the people is higher in comparison to other states in India. For JICA Loan projects, the process followed for loan disbursement is through reimbursement of claims. Meaning thereby, the state has to spend first from its own budget and later get reimbursements from the JICA on regular basis. Under the assumption that HP state government would be able to extend annual budgets or may provide upfront revolving fund of around Rs.300 million (say or more), and the project is able to efficiently revolve this fund minimum 2.5 times in a year i.e. spending Rs.750 million per year or more, it may be concluded that with the assumed pace of expenditures the project could spend around Rs.7,500 million (Rs.750 Cr.) in 10 years.	<p>Analysis of probability and impact:</p> <p>Moderate risk is estimated.</p> <p>Mitigation measures:</p> <p>Annual budgetary flows for the project to be ensured by the state government under the Loan Agreement. In adverse case, if annual budget releases are not possible the government may think to provide upfront revolving fund to the project.</p> <p>Action during the implementation:</p> <p>The PMU/ HPFD proactively approach the state government for release of budgets on time every year, and must timely get approved the annual budgets from HPC prior to release of budgets.</p> <p>Contingency plan (if applicable):</p> <p>Not applicable.</p>
5. Overall Risk Rating	Probability: H/M/L
(Overall comments)	Impact: H/M/L
The overall risk is estimated as Moderate. The project faces significant risks in (a) institutional capacity for implementation and sustainability, (b) technical design of the project, (c) Delivery quality, (d) financial capacities and arrangements, and (e) stakeholders. The key risks, which may impair the effective implementation of the project, are related to the highly innovative nature of the activities being undertaken, to the limited institutional capacity and ongoing human resource constraints faced by the state, and to possible resistance from service providers in the sector as the project involves changes which may affect their status quo.	

Source: Compiled by JICA Study Team (2017) based on existing data/information