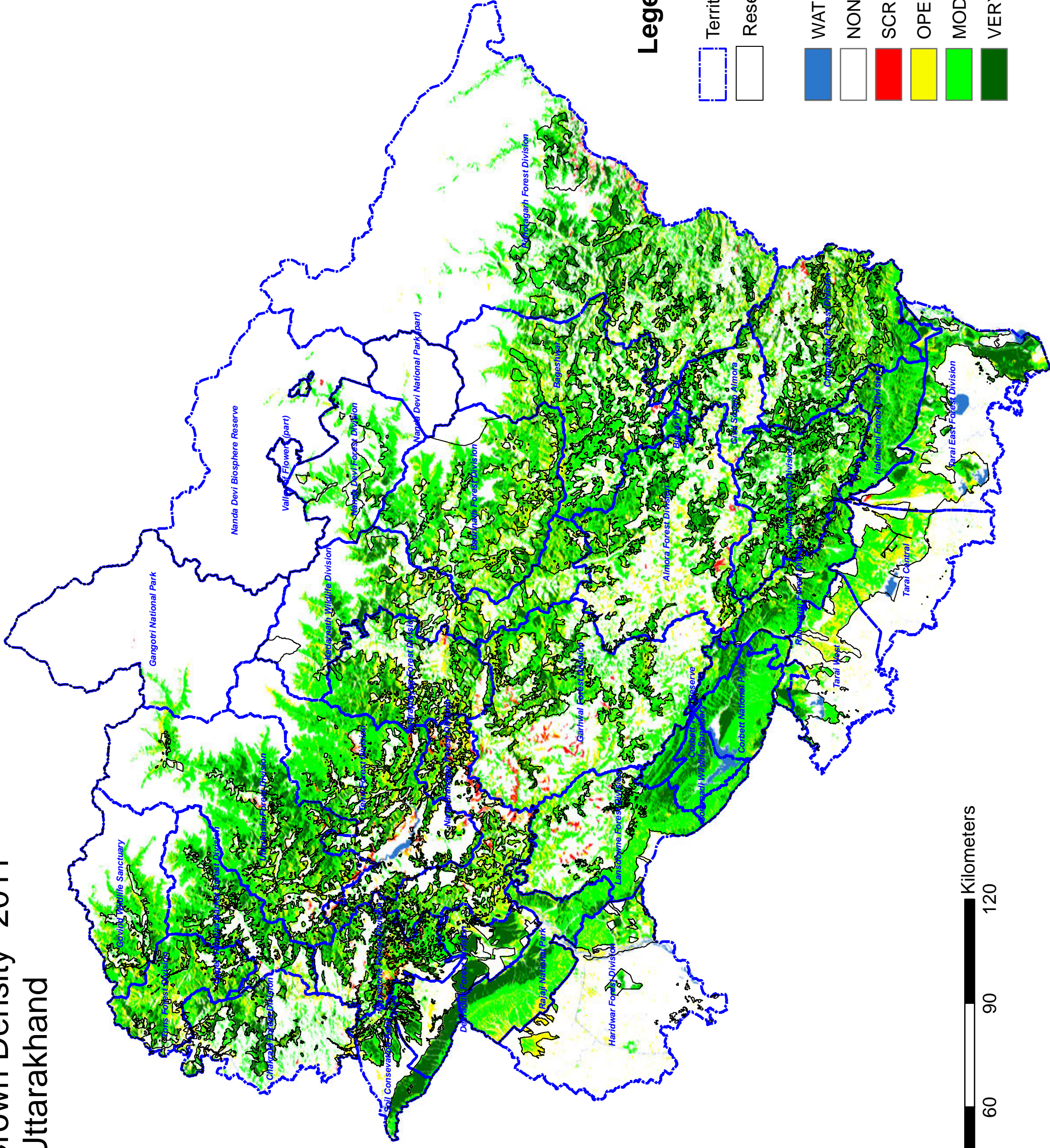
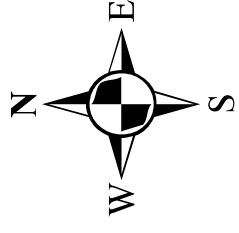


Forest Crown Density -2011 Uttarakhand



Legend

- Territorial Forest Divisions
- Reserve Forest
- WATER
- NON-FOREST
- SCRUB
- OPEN FOREST
- MOD-DENSE FOREST
- VERY DENSE FOREST

Attachment 3.2.2 Division-Wise Forest Cover**(1) Territorial Forest Divisions**

Territorial Forest Division	Area under Reserve Forest (ha)	Forest Cover Map (Density based) in ha					
		Water	Non-Forest	Scrub	Open Forest	Mod Dense Forest	Very Dense Forest
Almora	58954.58	2.84	2728.58	8.87	8054.98	35737.13	12422.77
Badrinath 1	38523.16	40.39	28542.47	0.00	23282.21	68566.07	18091.31
Bageshwar 6	8809.90	3.92	5458.41	61.97	8855.44	44631.45	9801.65
Binsar WLS	5782.93	0.00	1013.45	0.00	290.12	3296.95	1182.85
Chakrata 3	6295.66	67.68	7213.86	31.21	6096.69	11868.37	10967.27
Champawat 6	8478.08	56.36	3431.79	2.14	10840.07	32817.11	21105.38
Corbett N. Park	50696.80	2188.44	3152.66	0.00	2299.52	31845.33	11178.83
Corbett Tiger Res.	45544.14	59.60	2024.19	0.00	4274.10	26893.42	12188.86
Dehradun	49648.38	38.70	7097.85	56.50	5560.16	14848.27	21998.21
Gangotri N.Park	238289.98	0.00	227240.64	26.35	994.39	4034.52	0.00
Garhwal 6	8597.68	0.00	4606.52	17.21	15453.65	35110.35	3407.44
Govind Wildlife Sanctuary	102697.25	0.03	63486.34	0.00	7999.61	26004.15	5111.80
Haldwani	55592.98	2.03	3305.41	1.85	5749.40	31733.19	14793.91
Haridwar 3	3986.79	668.90	8527.39	0.00	9221.56	12798.45	1792.01
Kedarnath Wildlife Division	137725.82	5.48	55488.02	60.53	20677.59	43293.71	18172.98
Lansdowne	41835.65	0.00	1728.77	0.00	3989.54	30196.71	5883.12
Mussoorie	37821.22	21.51	5068.04	1393.94	6863.38	17867.68	607.49
Mussoorie Wildlife Division	1109.92	0.00	145.22	0.00	157.61	500.49	306.65
Nainital	57246.57	0.90	3637.22	42.91	5425.72	35459.69	12678.71
Nanda Devi	88221.80	38.25	57610.24	13.21	3968.91	24469.22	2122.07
Nanda Devi N. Park (part)	53099.18	0.00	52724.81	0.00	177.86	195.68	0.00
Narendranagar 6	1706.58	291.31	7256.39	1703.05	22849.43	24036.39	569.67
Pithoragarh 7	4237.95	18.16	10447.67	106.43	8080.07	31352.87	24230.21
Rajaji N. Park	83710.51	378.88	7131.65	0.00	15011.21	43706.27	17391.74
Ramnagar 4	6890.63	30.96	2579.47	0.00	4286.52	28504.64	11486.68
Rudraprayag 5	9689.42	40.21	4888.94	58.66	12705.41	25921.55	6071.84
Soil Conservation Kalsi	23085.99	7.51	2990.39	28.31	2518.04	9276.73	8183.61
Sonanadi Wildlife Sanctuary	29125.32	752.29	1326.04	0.00	551.50	17040.22	7455.24
Terai Central	37514.20	1144.94	7006.48	0.00	11319.55	18043.25	0.00
Terai East	78538.13	1758.62	18607.12	190.87	11944.10	27890.71	8097.72
Terai West	35099.33	885.62	10109.14	0.00	10038.92	12420.52	1574.60

Territorial Forest Division	Area under Reserve Forest (ha)	Forest Cover Map (Density based) in ha					
		Water	Non-Forest	Scrub	Open Forest	Mod Dense Forest	Very Dense Forest
Tehri	140512.63	178.52	36308.16	1703.72	19685.23	66908.18	5726.98
Tons	61098.55	23.56	7453.85	11.95	15150.78	27605.43	10785.31
Upper Yamuna Barkot	73533.23	.17	19428.19	53.37	6813.77	35781.46	11451.76
Uttarkashi 2	16873.26	6.32	95478.03	760.34	18782.89	76303.04	25485.68
Valley of Flowers (part)	7354.82	.00	7274.59	0.00	7.67	72.09	0.00
TOTAL	2467929.02	10777.1	782517.99	6333.39	309977.6	977031.29	373324.35

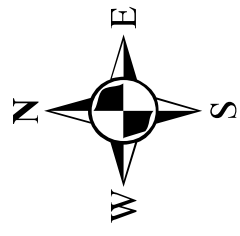
Source: JICA Preparatory Survey Team

(2) Non-territorial Forest Divisions

Non-Territorial Forest Division	Forest Cover Map (Density based) in Hectare					
	Water	Non-Forest	Scrub	Open Forest	Mod Dense Forest	Very Dense Forest
Alaknanda SC Division	99.31	73613.5	20.3	37628.3	109945.1	30566.0
Civil Soyam Almora	1.6	1574.4	7.6	3286.1	23991.8	7843.1
CS Pauri	7.7	3380.6	16.9	12364.5	27121.3	12898.1
SC Kalsi Forest Division	29.72	408.1	22.6	1619.9	1905.82	297.4
SC Lansdowne	6.1	1612.3	0.3	3021.6	13703.0	319.3
SC Nainital	0.9	3637.2	42.9	5425.7	35459.7	12678.7
SC Ramnagar	4973.8	4837.7	0.0	4033.3	40200.7	25101.2
SC Ranikhet	3.72	099.5	54.7	9275.2	24854.58	214.0
SC Uttarkashi	19.69	0899.9	1084.3	12599.1	55501.02	2276.9
Tehri Dam - 1	150.8	35282.0	1385.8	16812.2	60693.6	11472.8
Tehri Dam Forest Division Second	29.43	064.1	151.0	8492.8	17205.96	570.6
TOTAL	5322.6	322409.3	2786.4	114558.7	410582.4	140238.1

Source: JICA Preparatory Survey Team

Forest Type - 2011 Uttarakhand

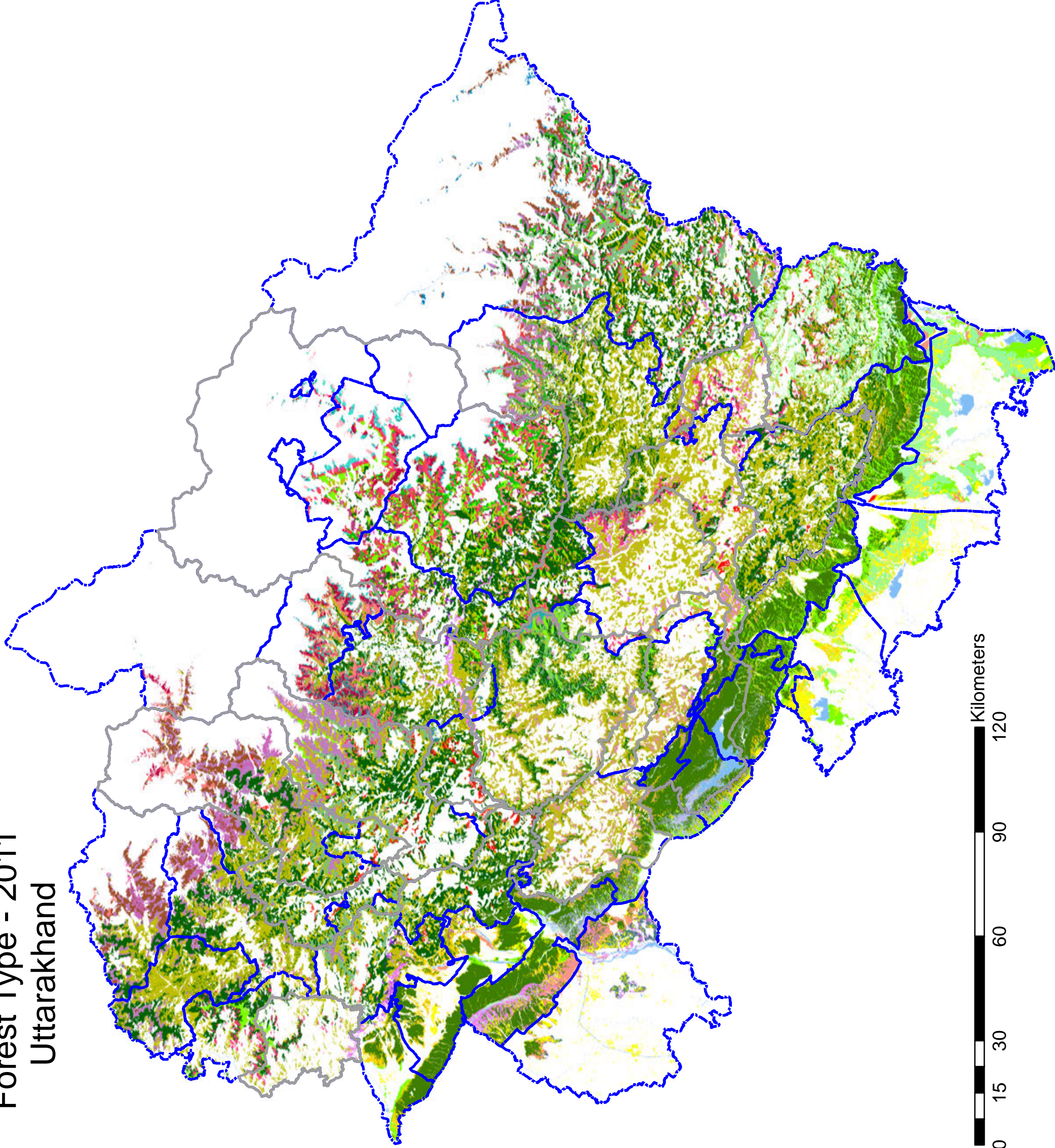


Legend

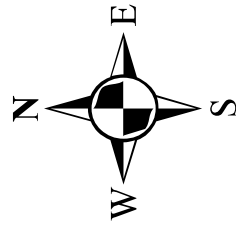
- RESERVE FOREST
- FOREST TERRITORIAL DIVISION

FOREST TYPE (FSI-2011)

- Eastern tarai sal forest (3C/C1c)
- Moist Siwalik sal forest (3C/C2a)
- Moist tarai sal forest (3C/C2c)
- West Gangetic moist mixed deciduous forest (3C/C3a)
- Dry Siwalik sal forest (5B/C1a)
- Dry Plains sal forest (5B/C1b)
- Northern dry mixed deciduous forest (5B/C2)
- Khair-sissu forest (5/1S2)
- Dry deciduous scrub (5/DS1)
- Lower or Siwalik chir pine forest (9/C1a)
- Upper or Himalayan chir pine forest (9/C1b)
- Himalayan subtropical scrub (9/C1/DS1)
- Subtropical Euphorbia scrub (9/C1/DS2)
- Ban oak forest (12/C1a)
- Moru oak forest (12/C1b)
- Moist deodar forest (12/C1c)
- Western mixed coniferous forest (spruce, blue pine, silver fir) (12/C1d)
- Moist temperate deciduous forest (12/C1e)
- Low-level blue pine forest (12/C1f)
- Oak scrub (12/C1/DS1)
- Himalayan temperate secondary scrub (12/C1/DS2)
- Kharsu oak forest (q. semecarpifolia) (12/C2a)
- West Himalayan upper oak /fir forest (12/C2b)
- Moist temperate deciduous forest (12/C2c)
- Alder forest (12/1S1)
- Dry temperate coniferous forest 2b Dry deodar forst (Cedrus) (13/C2b)
- Hippophae / Myricaria scrub (13/1S1)
- West Himalayan sub-alpine fir forest (14/C1a)
- West Himalayan sub-alpine birch / fir forest (14/C1b)
- Hippophae / Myricaria scrub (14/1S1)
- Deciduous sub-alpine crub (14/1S2)
- Birch / Rhododendron scrub forest (15/C1)
- Dwarf Rhododendron scrub (15/C2/E1)
- Dry alpine scrub (16/C1)
- Dwarf juniper scrub (16/E1)
- Water
- Non Forest
- Plantation
- TOF
- Low level blue pine forest (12/2S1)



Elevation and Forest Admin Boundary Map Uttarakhand



Legend



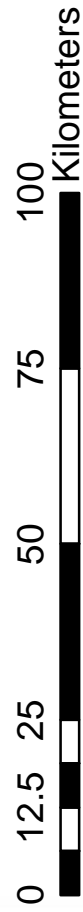
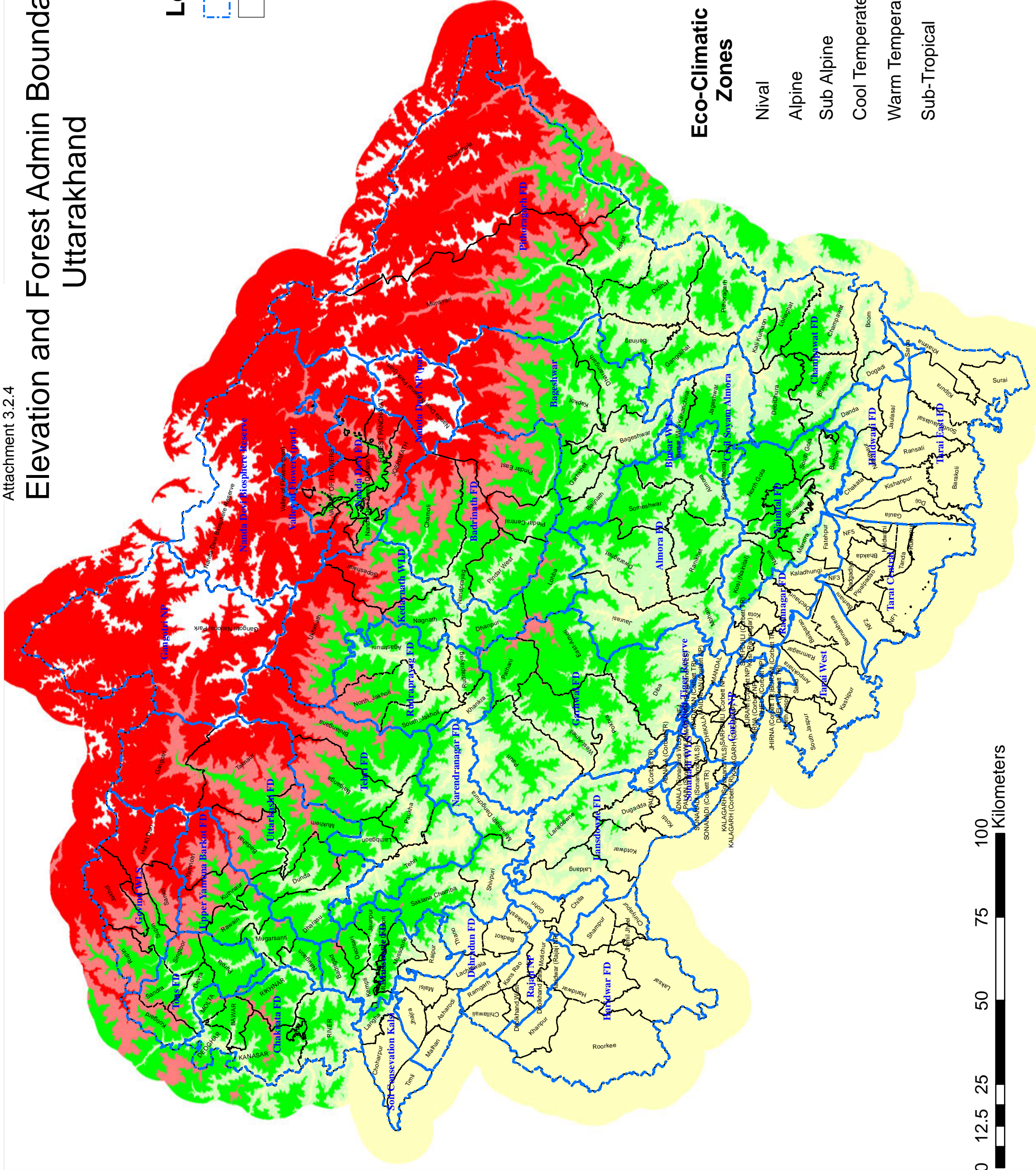
Territorial Division Boundary
Territorial Range Boundary

Eco-Climatic Zones

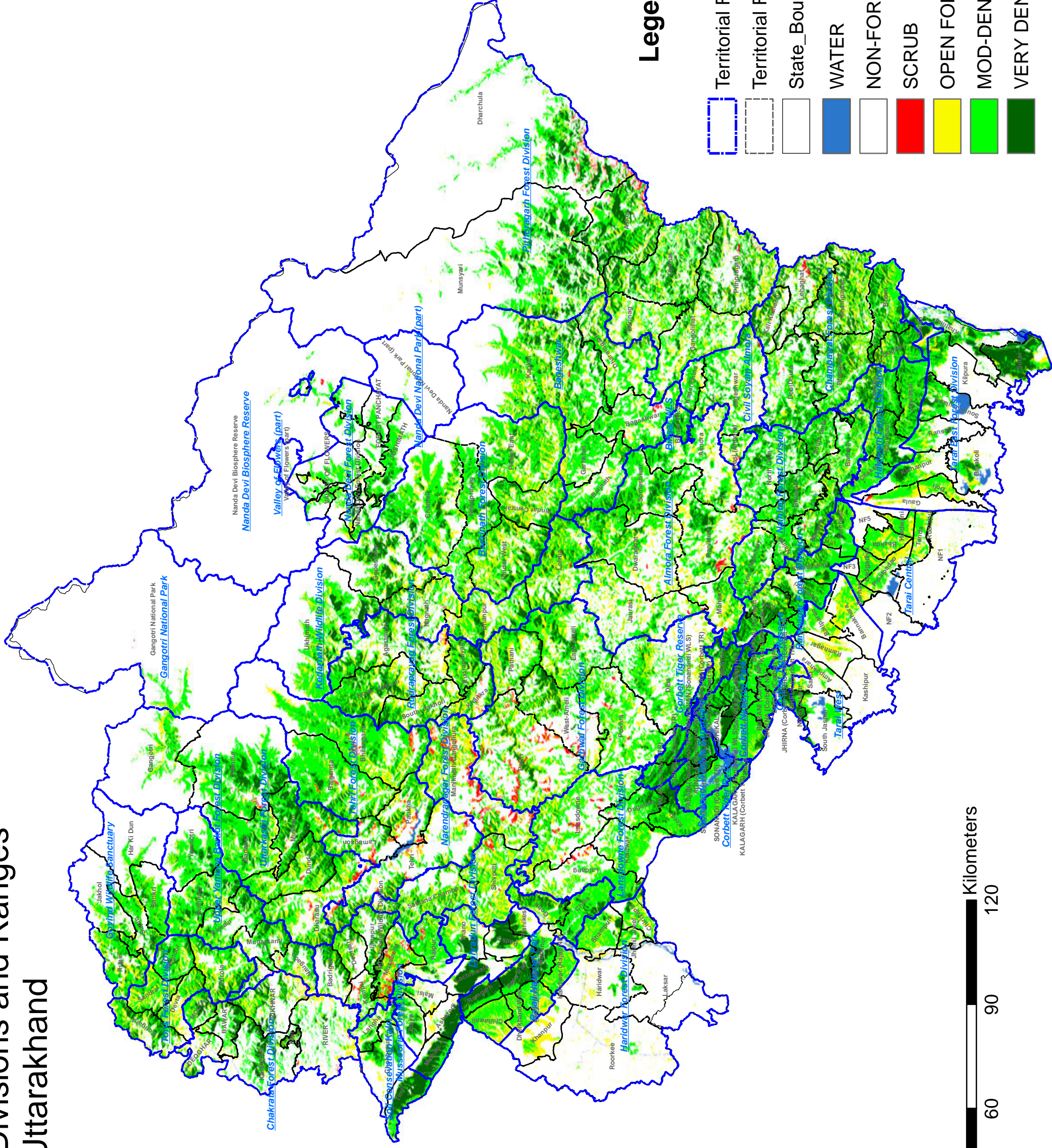
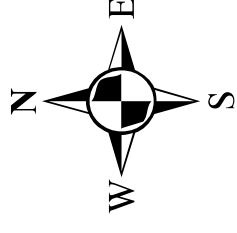
Nival	5,501 - 7,785
Alpine	3,501 - 5,500
Sub Alpine	2,501 - 3,500
Cool Temperate	1,501 - 2,500
Warm Temperate	1,001 - 1,500
Sub-Tropical	74 - 1,000

Elevation (Mean Sea Level)

5,501 - 7,785
3,501 - 5,500
2,501 - 3,500
1,501 - 2,500
1,001 - 1,500
74 - 1,000



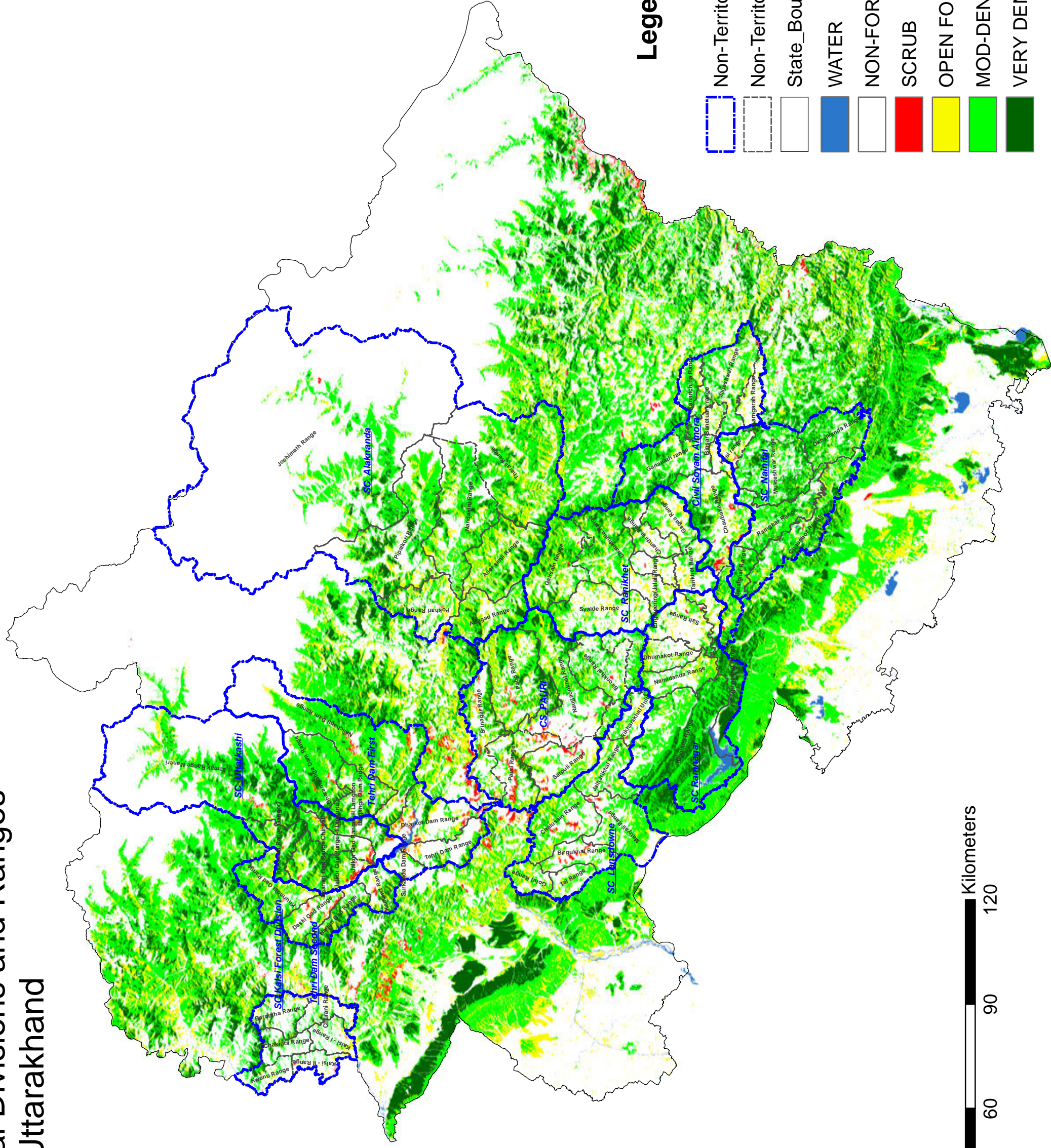
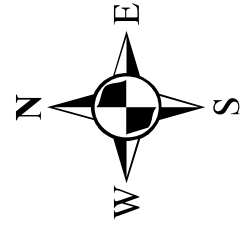
Territorial Divisions and Ranges Uttarakhand












Legend

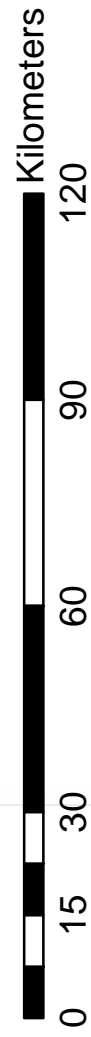
- Territorial Forest Division
- Territorial Forest Ranges
- State_Boundary
- WATER
- NON-FOREST
- SCRUB
- OPEN FOREST
- MOD-DENSE FOREST
- VERY DENSE FOREST

Non-Territorial Divisions and Ranges Uttarakhand



Legend

-  Non-Territorial Forest Division
-  Non-Territorial Forest Ranges
-  State_Boundary
-  WATER
-  NON-FOREST
-  SCRUB
-  OPEN FOREST
-  MOD-DENSE FOREST
-  VERY DENSE FOREST



Attachment 3.3.3 The Number of Sanctioned Posts and in Position under Different Cadre

Group	Name of Post	Sanctioned Position (nos.)	Posts in position in FD (nos.)	Posts in State deputation (nos.)	Posts in GOI deputation/ leave (nos.)	Total posts in position (nos.)
	Indian Forest Service					
Group-A	PCCF	3	4	0	0	4
	APCCF	4	6	3	0	9
	CCF	14	11	3	1	15
	CF	12	11	9	4	24
	DCF	33	24	1	1	26
	Sub-Total 1	66	56	16	6	78
	State Forest Service					
Group-A	Deputy Director	32	15	0	0	15
Group-B	ACF	93	94	0	0	94
	Sub-Total 2	125	109	0	0	109
	Subordinate Forest Service					
Group-B	Forest Range officer	308	91	0	0	91
Group-C	Deputy Range officer	408	388	0	0	388
	Forester	1729	1159	0	0	1159
	Sub-Total 3	2445	1638	0	0	1638
	Lower Subordinate Forest Service					
Forest	Guard	3650	2856	0	0	2856
	Sub-Total 4	3650	2856	0	0	2856
	Statistical Service					
Group-A	Joint Director (Statistics)	1	0	0	0	0
	Deputy Director (Statistics)	2	0	0	0	0
Group-B	Statistical Officer	16	12	0	0	12
Group-C	Additional Statistical Officer	18	6	0	0	6
	Assistant Statistical Officer	34	0	0	0	0
	Sub-Total 5	71	18	0	0	18
	Ministerial Services					
Group-C	Senior Administrative Officer	63	51	0	0	51
	Administrative Officer (Grade-1,2)	93	91	0	0	91
	Mukhya Sahayak	140	105	0	0	105
	Pravara Sahayak	234	170	0	0	170
	Kanistha Sahayak	250	142	0	0	142
	Sub-Total 6	780	559	0	0	559
	Stenographer Cadre					
	Personal Assistant Grade-1	12	11	0	0	11
	Personal Assistant Grade-2	28	18	0	0	18
	Stenographer Grade-1	39	11	0	0	11
	Stenographer Grade-2	0	0	0	0	0
	Sub-Total 7	79	40	0	0	40
	Account Cadre					
Group-A	Finance Controller	1	1	0	0	1
	Senior Finance Officer	1	0	0	0	0
Group-B	Assistant Account Officer	2	0	0	0	0
Group-C	Accountant	34	26	0	0	26
	Assistant Accountant	68	12	0	0	12
	Senior Auditor	2	0	0	0	0
	Auditor	6	2	0	0	2

Group	Name of Post	Sanctioned Position (nos.)	Posts in position in FD (nos.)	Posts in State deputation (nos.)	Posts in GOI deputation/ leave (nos.)	Total posts in position (nos.)
	Sub-Total 8	114	41	0	0	41
	Draftsman Cadre					
Group-C Head	Draftsman	14	12	0	0	12
	Draftsman	41	32	0	0	32
	Sub-Total 9	55	44	0	0	44
	Surveyor Cadre					
Group-C Survey	or	51	43	0	0	43
	Sub-Total 10	51	43	0	0	43
	Driver Cadre					
Group-C Driver-1		12	12	0	0	12
	Driver-2	75	41	0	0	41
	Driver-3	75	20	0	0	20
	Driver-4	88	29	0	0	29
	Sub-Total 11	250	102	0	0	102
	Class-IV Cadre					
Group-D Daftari		2	7	0	0	7
Jamadar	Orderly	75	41	0	0	41
	Orderly	230	216	0	0	216
	Dakia	188	169	0	0	169
	Mali	300	210	0	0	210
	Chaukidar / Peon	489	358	0	0	358
	Sweeper	64	44	0	0	44
	Sub-Total 12	1348	1045	0	0	1045
	Other Posts					
Group-D Veterin	ary Doctor	2	0	0	0	0
Chara	Cutter	18	2	0	0	2
Mahawat		60	30	0	0	30
Lab	Assistant	2	2	0	0	2
P.T.I		4	0	0	0	0
Guide		4	4	0	0	4
Tracer		2	0	0	0	0
	Sub-Total 12	92	38	0	0	38
	Surplus/ Discontinued Posts					
Group-C Junior	Account Clerk	8	2	0	0	2
Tongia	Teacher	4	1	0	0	1
Nayab	Tehsildar	5	0	0	0	0
Pharmacist		1	0	0	0	0
Compounder		1	0	0	0	0
Tractor	Mechanic	2	0	0	0	0
Generator	Operator	1	0	0	0	0
Sawmill	Operator	1	0	0	0	0
Crane	Operator	1	0	0	0	0
Bandobast	Lipik	1	0	0	0	0
Assistant	Foreman	1	0	0	0	0
Group-D Mule	Driver	3	0	0	0	0
Telephone	Lineman	11	0	0	0	0
Telephone	Mistri	7	0	0	0	0
Khalasi		5	0	0	0	0
Survey	Assistant	1	0	0	0	0
Field	Attendant	23	0	0	0	0

Group	Name of Post	Sanctioned Position (nos.)	Posts in position in FD (nos.)	Posts in State deputation (nos.)	Posts in GOI deputation/ leave (nos.)	Total posts in position (nos.)
Survey	Ameen	4	0	0	0	0
Binder		3	0	0	0	0
Clean	er	20	0	0	0	0
	Sub-Total 14	103	3	0	0	3
	External Source Services					
Forest	Genetist	0	0	0	0	0
Forest	Ecologist	0	0	0	0	0
Forest	Economist	0	0	0	0	0
Research	Officer	0	0	0	0	0
Research	Assistant	0	0	0	0	0
Soil	Surveyer	0	0	0	0	0
Soil	Analyst	0	0	0	0	0
Sediment	Analyst	0	0	0	0	0
S	ystem Manager	0	0	0	0	0
Database	Administrator	0	0	0	0	0
GIS	Analyst	0	0	0	0	0
Data	entry Operator	0	0	0	0	0
	Sub-Total 15	0	0	0	0	0
	Total (1 thru 15)	9229	6592	16	6	6614

Source: Uttarakhand Forest Statistics, 2011-12, Forest Department

Attachment 3.4.1 Status of Working Plans in Uttarakhand

	Name of Division	Status	Working Plan Period	Remarks
1	Narendranagar	Approved	2003-04 to 2012-13	Preparation /Revision work for the period 2013-14 to 2022-24 is in the final stage
2	Tehri	Approved	2003-04 to 2012-13	Preparation /Revision work for the period 2013-14 to 2022-24 is in progress
3	Badrinath	Approved	2003-04 to 2012-13	Preparation /Revision work for the period 2013-14 to 2022-24 is in progress
4	Rudraprayag (earlier Upper Ganga)	Approved	2003-04 to 2012-13	Preparation /Revision work for the period 2013-14 to 2022-23 is in progress
5	Kedarnath W.L.	Approved	2004-05 to 2013-14	Preparation /Revision work for the period 2014-15 to 2023-24 is in progress
6	Lansdowne	Approved	2004-05 to 2013-14	Preparation /Revision work for the period 2014-15 to 2023-24 is in progress
7	Tons	Approved	2005-06 to 2014-15	Preparation /Revision work for the period 2015-16 to 2024-25 is in progress
8	Tarai West	Approved	2005-06 to 2014-15	Preparation /Revision work for the period 2015-16 to 2024-25 is in progress
9	Tarai Central	Approved	2005-06 to 2014-15	Preparation /Revision work for the period 2015-16 to 2024-25 is in progress
10	Uttarkashi	Approved	2006-07 to 2015-16	Preparation /Revision work for the period 2016-17 to 2025-26 is proposed to be started from July 2013.
11	Haldwani	Approved	2006-07 to 2015-16	Preparation /Revision work for the period 2016-17 to 2025-26 is proposed to be started from July 2013.
12	Tarai East	Approved	2006-07 to 2015-16	Preparation /Revision work for the period 2016-17 to 2025-26 is proposed to be started from July 2013.
13	Almora	Approved	2006-07 to 2015-16	Preparation /Revision work for the period 2016-17 to 2025-26 is proposed to be started from July 2013.
14	Chakrata	Approved	2007-08 to 2016-17	-
15	Nainital	Approved	2008-09 to 2017-18	-
16	Ramnagar	Approved	2008-09 to 2017-18	-
17	Dehradun	Approved	2009-10 to 2018-19	-
18	Kalsi Soil Conservation	Approved	2009-10 to 2018-19	-
19	Bageshwar	Approved	2009-10 to 2018-19	-
20	Civil & Soyam Almora	Approved	2009-10 to 2018-19	-
21	Mussoorie	Approved	2011-12 to 2020-21	-

	Name of Division	Status	Working Plan Period	Remarks
22	Upper Yamuna	Approved 20	11-12 to 2020-21	-
23	Pithoragarh	Approved 20	11-12 to 2020-21	-
24	Champawat	Yet to be approved	2011-12 to 2020-21	Submitted to GoI for approval
25	Garhwal	Yet to be approved	2011-12 to 2020-21	Submitted to GoI for approval
26	Haridwar	Approved 20	12-13 to 2021-22.	-

Source: Uttarakhand Forest Department

Attachment 3.5.1 Important Forest and NTFP Species of Uttarakhand

a) Major tree species in Uttarakhand

Sl. No.	Trade/ Local Name	Botanical Name
1	Fi r	<i>Abies pindrow</i>
2	Hal du	<i>Adina cordifolia</i>
3	Dh aura	<i>Anogeissus latifolia</i>
4	Bh oj patra	<i>Betula utilis</i>
5	D eodar	<i>Cedrus deodara</i>
6	Juni per	<i>Juniperus spp.</i>
7	Chir pine	<i>Pinus roxburghii</i>
8	Kai l	<i>Pinus wallichiana</i>
9	Sp ruce	<i>Picea smithiana</i>
10	Banj	<i>Quercus leucotrichophora</i>
11	K hirsu	<i>Quercus semicarpifolia</i>
12	Moru	<i>Quercus floribunda</i>
13	Burans	<i>Rhododendron campanulatum</i>
14	Sal	<i>Shorea Robusta</i>
15	Harra	<i>Terminalia chebula</i>
16	Saja	<i>Terminalia tomentosa</i>
17	Tun	<i>Toona Ciliata</i>

b) Medicinal and Aromatic Plants Restricted for Collection from wild in Uttarakhand

Sl. No.	Trade/ Local Name	Botanical Name	Family	Type*
1.	Hattajari/Salam panja	<i>Dactylorhiza hatagirea</i> Orchida	ceae	H
2.	Riddhi	<i>Habenaria intermedia</i> Orchida	ceae	H
3.	Vriddhi	<i>Habenaria edgeworthii</i> Orchida	ceae	H
4.	Kakoli	<i>Fritillaria roylei</i> Lili	aceae	H
5.	Chhirkakoli	<i>Lilium polyphyllum</i> Lili	aceae	H
6.	Jivak	<i>Malaxis muscifera</i> Orchida	ceae	H
7.	Rishibhak	<i>Melaxis cylindrostachya</i> Orchida	ceae	H
8.	Salam Mishri	<i>Eulophia dabai</i> Orchida	ceae	H
9.	Jatamansi	<i>Nardostachys jatamansi</i> Vallerin	aceae	H
10.	Karvi	<i>Gentiana kurroo</i> G	entianaceae	H
11.	Satuva	<i>Paris polyphylla</i> Lili	aceae	H
12.	Chirayita	<i>Swertiachirayita</i> G	entianaceae	H
13.	Atis	<i>Aconitum heterophyllum</i> Ran	unculaceae	H

Sl. No.	Trade/ Local Name	Botanical Name	Family	Type*
14.	Mithabish	<i>Aconitum balfourii</i> Ran	unculaceae	H
15.	Kutki	<i>Picrorhizakurrooa</i> Scroph	ulariaceae	H
16.	Genthi	<i>Dioscoreadeltoidea</i> Dioscore	aceae	CL
17.	Salparni	<i>Desmodiumgangeticum</i> Fabace	ae	H
18.	Prishnaparni	<i>Urariapicta</i> Fabace	ae	H
19.	Bach	<i>Acoruscalamus</i> Araceae		H
20.	Giloy	<i>Tinosporacordifolia</i> Menisperm	aceae	CL
21.	Maida	<i>Polygonatumverticillatum</i> Lili	aceae	H
22.	Maha Maida	<i>Polygonatumcirrhifolium</i> Lili	aceae	H
23.	DoluArcha	<i>Rheum emodi</i> Poly	gonaceae	H
24.	Sarpgandha	<i>Rauwolfiaserpentina</i> Ap	ocynaceae	H
25.	Kalihari	<i>Gloriosasuperba</i> Lili	aceae	CL
26.	Timru	<i>Zanthoxylumarmatum</i> R	utaceae	S
27.	Van pyaj	<i>Urgineaindica</i> Lili	aceae	H
28.	Sankhapushpi	<i>Canscora decussate</i> G	entianaceae	H
29.	Manjith	<i>Rubiaccordifolia</i> Rubiac	eae	CL
30.	Balchhari	<i>Arnebiabenthami</i> Boraginace	ae	H
31.	Thuner/ Talispatra	<i>Taxus baccata</i> Pinac	eae	T
32.	Dhup	<i>Jurineadolomiaea</i> Asteraceae		H
33.	Tagar	<i>Vallerianawallichii</i>	Vallerinaceae	H
34.	Choru	<i>Angelica glauca</i> Apiace	ae	H

*T: Tree, S: Shrub, H: Herb, CL: Climber

c) Medicinal and Aromatic Plants Open for collection from wild in Uttarakhand

Sl. No.	Trade/ Local Name	Botanical Name	Family	Type*
1.	Atibala	<i>Abutilon indicum</i> Mal	vaceae	S
2.	Apamarg/ Latjira	<i>Achyranthesaspera</i> Am	aranthaceae	H
3.	Neem	<i>Azadirachtaindica</i> Meli	aceae	T
4.	Punarnawa	<i>Boerhaviadiffusa</i> Nyctagi	naceae	H
5.	Aank	<i>Calatropisprocera</i> Asclepi	adaceae	S
6.	Dhatura	<i>Daturametel</i> Solanace	ae	H
7.	Bhringraj	<i>Eclipta alba</i> Asteraceae		H
8.	Shahatara	<i>Fumaria indica</i> Fu	mariaceae	H
9.	Gurhalphul	<i>Hibiscus rosasinensis</i> Mal	vaceae	S
10.	Pudina	<i>Menthaarnensis</i> La	miaceae	H

Sl. No.	Trade/ Local Name	Botanical Name	Family	Type*
11.	Kamal phul	<i>Nelumbiumspiciosum</i> Nelum	bonaceae	H
12.	Tulsi	<i>Ocimum sanctum</i> La	miaceae	H
13.	Mungparni	<i>Phaseolus trilobus</i> Fabace	ae	Cl
14.	Bhumiamla	<i>Phyllanthusurinaria</i> Euphorbiac	eae	H
15.	Arandi	<i>Ricinuscommunis</i> Euphorbiac	eae	S
16.	Gulabphul	<i>Rosa damascena</i> Rosac	eae	S
17.	Bala	<i>Sidacordifolia</i> Mal	vaceae	H
18.	Makoi	<i>Solanumnigrum</i> Solanace	ae	H
19.	Mansparni	<i>Teramnuslabialis</i> Fabace	ae	CL
20.	Gokharu	<i>Tribulus terrestris</i> Zy	gophyllaceae	H

*Note: T: Tree, H: Herb, S: Shrub, CL: Climber

d) Medicinal and Aromatic Plants for which sustainable collection can be done from wild in Uttarakhand

Sl. No.	Trade/ Local Name	Botanical Name	Family	Type*
1.	Ratti	<i>Abrusprecatorius</i> Fabace	ae	Cl
2.	BansaVasa	<i>Adhatodazeylanica</i> (=A. <i>vasica</i>)	Acanthaceae H	
3.	Bael	<i>Aeglemarmelos</i> R	utaceae	T
4.	Satawar	<i>Asparagus racemosus</i> Lila	ceae	H
5.	Pashanbhed	<i>Bergeniaciliata</i>	Saxifragaceae	H
6.	Priyangu	<i>Callicarpamacrophylla</i> Verbena	ceae	T
7.	Amaltas	<i>Cassia fistula</i> Caesa	lpiniaceae	T
8.	Malkanjani	<i>Celastruspaniculatus</i> Celas	traceae	Cl
9.	Tejpat	<i>Cinnamomum tamala</i> Laurac	eae	T
10.	Patha	<i>Cissampelospareira</i> Menisperm	aceae	Cl
11.	Amla	<i>Embllica officinalis</i> Euphorbiac	eae	T
12.	Kapurkachri	<i>Hedychium spicatum</i> Zingiberace	ae	H
13.	Marorphal	<i>Helicteresisora</i> Stercul	iaceae	S
14.	Lajwanti	<i>Mimosa pudica</i> Mim	osaceae	H
15.	Karipatta	<i>Murrayakoengii</i> R	utaceae	S
16.	Gandhpasarni	<i>Paederiafoetida</i> Rubiac	eae	Cl
17.	Jhula	<i>Parmeliaperlata</i> Parm	eliaceae	Lichen
18.	Chitrakmool	<i>Plumbagozeylanica</i> Plu	mbaginaceae	S
19.	Bidarikand	<i>Puerariatuberosa</i>	Fabaceae	Cl

Sl. No.	Trade/ Local Name	Botanical Name	Family	Type*
20.	Bhutkesh	<i>Selinum tenuifolium</i> Apiace	ae	H
21.	Kedarpati	<i>Skimmialaureola</i> R	utaceae	S
22.	Ginjaru	<i>Stephaniaglabra</i> Menisperm	aceae	CL
23.	Gugule	<i>Tanacetum dolichophyllum</i> Asteraceae		H
24.	Sarpunkha	<i>Tephrosia purpurea</i> Fabace	ae	
25.	Baheda	<i>Terminalia bellirica</i> Com	bretaceae	T
26.	Harad	<i>Terminalia chebula</i> Com	bretaceae	T
27.	Indrayan	<i>Trichosanthes</i> spp. Cuc	urbitaceae	Cl
28.	Nirgundi	<i>Vitex negundo</i> Verbena	ceae	S

*T: Tree, S: Shrub, H: Herb, CL: Climber

e) Major Bamboo and fiber species in Uttarakhand

Sl. No.	Trade/ Local Name	Botanical Name
1	Lathi bans	<i>Dendrocalamus strictus</i>
2	Kako	<i>D. hamiltoni</i>
3	Kata bans	<i>Bambusa bambos</i>
4	Gol ringa	<i>Arundinaria falcata</i>
5	Sarura ringal	<i>A. jaunsarensis</i>
6	Tham ringal	<i>Thamnocalamus spathiflorus</i>
7	Dev ringal	<i>T. falconeri</i>
8	Himalayan Nettle	<i>Urtica dioica</i>
9	Himalayan Nettle	<i>Gerardiana heterophylla</i>
10	Bhimal	<i>Grewia optiva</i>
11	Hemp	<i>Cannabis sativa</i>

f) Major dye species in Uttarakhand

Sl. No.	Trade/ Local Name	Botanical Name
1	Eupatorium	<i>Eupatorium</i> spp.
2	Lantana	<i>Lantana camara</i>
3	Kamila	<i>Mallotus philippinensis</i>
4	Ratanjot	<i>Onosma hispidum</i>
5	Manjistha	<i>Rubia cordifolia</i>
6	Marigold	<i>Tagetes minuta</i>

g) Medicinal and Aromatic Plants/ NTFP restricted for collection from wild in Uttarakhand

Sl.	Trade/ Local Name	Botanical Name	Family	Remark
1.	Hattajari/Salam panja	<i>Dactylorhiza hatagirea</i>	Orchidaceae	
2.	Riddhi	<i>Habenaria intermedia</i>	Orchidaceae	
3.	Vridhhi	<i>Habenaria edgeworthii</i>	Orchidaceae	
4.	Kakoli	<i>Fritillaria roylei</i>	Liliaceae	
5.	Chhirkakoli	<i>Lilium polyphyllum</i>	Liliaceae	
6.	Jivak	<i>Malaxis muscifera</i>	Orchidaceae	
7.	Rishibhak	<i>Melaxis cylindrostachya</i>	Orchidaceae	
8.	Salam Mishri	<i>Eulophia dabai</i>	Orchidaceae	
9.	Jatamansi	<i>Nardostachys jatamansi</i>	Vallerianaceae	<i>Nardostachys grandiflora</i> is listed in CITES
10.	Karvi	<i>Gentiana kurroo</i>	Gentianaceae	
11.	Satvra	<i>Paris polyphylla</i>	Liliaceae	
12.	Chirayita	<i>Swertia chirayita</i>	Gentianaceae	
13.	Astis	<i>Aconitum heterophyllum</i>	Ranunculaceae	
14.	Mit habish	<i>Aconitum balfourii</i>	Ranunculaceae	
15.	Kutki	<i>Picrorhiza kurroo</i>	Scrophulariaceae	Listed in CITES
16.	Genthi	<i>Dioscorea deltoidea</i>	Dioscoreaceae	Listed in CITES
17.	Salparni	<i>Desmodium gangeticum</i>	Fabaceae	
18.	Prishnaparni	<i>Uraria picta</i>	Fabaceae	
19.	Bach	<i>Acorus calamus</i>	Araceae	
20.	Giloy	<i>Tinospora cordifolia</i>	Menispermaceae	
21.	Maida	<i>Polygonatum verticillatum</i>	Liliaceae	
22.	Maha Maida	<i>Polygonatum cirrhifolium</i>	Liliaceae	
23.	Dolu Archa	<i>Rheum emodi</i>	Polygonaceae	
24.	Sarpgantha	<i>Rauvolfia serpentina</i>	Apocynaceae	Listed in CITES
25.	Kalihar	<i>Gloriosa superba</i>	Liliaceae	
26.	Timru	<i>Zanthoxylum armatum</i>	Rutaceae	
27.	Vanpyaj	<i>Urginea indica</i>	Liliaceae	
28.	Sankhapushpi	<i>Canscora decussate</i>	Gentianaceae	
29.	Manjith	<i>Rubia cordifolia</i>	Rubiaceae	
30.	Balchhari	<i>Arnebia benthamii</i>	Boraginaceae	
31.	Thuner/ Talispatra	<i>Taxus baccata</i>	Pinaceae	<i>Taxus walliachiana</i> is listed in CITES
32.	Dhup	<i>Jurinea dolomiaea</i>	Asteraceae	
33.	Tagar	<i>Valleriana wallichii</i>	Vallerianaceae	
34.	Choru	<i>Angelica glauca</i>	Apiaceae	

Attachment 3.5.2 Market survey report for nettle fiber, natural dyes and Lichens

1. Background

Uttarakhand has over 100 potential fiber and dye yielding plant and tree species. Fiber yielding plants such as Kandali (*Urtica*) and natural dye yielding species such as *Eupatorium* are naturally occurring in the wild.

Presently, Uttarakhand based organizations such as Uttarakhand Bamboo and Fiber Development Board (UBFDB) and Himotthan Society (an NGO) are working with natural fibers (specifically nettle fiber) while Avani, Appropriate Technology India (ATI) and Himlayan Weavers are some of the organizations working with natural dyes.

A rapid survey conducted within the state by the study team during the month of August, 2013 revealed that extraction of natural fibers and dyes, particularly from weeds occurring in the wild like Kandali and *Eupatorium*, can be a promising livelihood option for the local communities. However, detailed discussions with agencies presently working with Nettle fiber and *Eupatorium* dyes revealed that currently these products do not have a well-established market. The FD also has a focus on utilizing the unutilized biomass in the forests and natural fibers have been mentioned as one of the priority in the DPR.

In Uttarakhand, Lichens and Moss grass are the important NTFP traded in the state in terms of volume and money involved. Lichens and mosses account for nearly 99% of the total traded quantity of NTFPs in the three *Mandis* of Uttarakhand Forest Development Corporation. The total traded quantity of lichens and mosses in 2012 was 2898 MT which amounted to Rs. 232 million. Procurement of Lichens and Moss are done by 5 Agencies – Forest Development Corporation, KMVN, GMVN, District Beshaj Sahakari Sangh and Van Panchayats. All the Lichens procured by these agencies are brought to the NTFP Mandis in Bibiwala, Ramnagar and Tanakpur for open auction. There are 5-6 traders in Ramnagar who take the major share of the trade in Uttarakhand. They process the Lichens into different grades and send them to different markets/ trade centres in the country.

Preliminary market survey was therefore conducted with an aim to identify the potential markets of natural fibers (particularly Nettle fiber), natural dyes (particularly *Eupatorium* dye) and Lichens.

1.1 Study area

Based on the findings of the rapid survey potential organizations (government, NGOs as well as private institutions) dealing in natural fibers, handlooms and handicrafts were identified for the market survey. These included a number of organizations from New Delhi as well as a few organizations from Uttarakhand. Few organizations based in Chennai, Hyderabad were contacted telephonically while online survey was done with a Swiss company.

For Lichens Nagpur was chosen to carry out further market study as it is considered to be an important trade centre for spices.

1.2 Limitations of the survey

The time available for the market survey for natural fibers and dyes was very short (3 days) and in such a short time only limited number of organizations and that too within New Delhi could be visited. However, there is a need for visiting other organizations in other parts of the country.

The duration of this survey did not coincide with the buyer-seller meets being organized by EPCH – which provide an opportunity to interact with a number of foreign buyers.

Several organizations expressed the need to see nettle fiber and its products in order to more accurately assess the potential market demand which was not possible during this preliminary survey.

For Lichens the time available for the survey including the travel time was 5 days.

2. Market potential of nettle fiber

Based on discussions with representatives from various organizations the present market survey assessed the market potential of fibers from wild plant with a specific focus on Himalayan nettle fiber.

2.1 Demand for fibers from wild plants

An increasing demand for fibers from wild plants was reported in the export markets. During discussions at Handicrafts and Handlooms Export Corporation of India (HHEC) it was reported that in the export markets the demand for hand woven fabric from such fibers had increased in the past few years. Demand for organic fibers was also increasing in the export markets.

According to Handloom Export Promotion Council (HEPC) officials, the annual export of handlooms from India amounted to US \$ 520 million. However, currently fibers from wild plants formed a negligible proportion of these exports and it was not possible to get disaggregated data for export of handlooms made from wild plant fibers. However, it was reported that the market for fibers from wild plants was growing and that during fairs and exhibitions and buyer-seller meets organized by HEPC demand for other fibers was picking up.

As far as the demand for fibers from wild plants in national markets is concerned, discussions with several organizations operating at the national/local level were held to assess the market potential of natural fibers. Discussions with Fab India indicated that the organization was getting significant demand for products made from such fibers at their outlets in the country. Similarly discussions with representatives of Dakkar (an NGO engaged in promotion and marketing of rural handicrafts) and also with private entrepreneurs engaged in marketing fabrics made from wild fibers revealed that the consumer demand for garments and fabrics made from fibers from wild plants was increasing.

It was also reported that there was a growing market demand for hemp fiber products in the international markets but no statistics were available relating to this.



2.2 Current market awareness relating to nettle fiber

One of the important findings of this preliminary market survey was that there is very little market awareness about nettle fiber amongst organizations in New Delhi and other areas located outside Uttarakhand. Although a number of organizations that were contacted during this survey were aware about hemp fiber but most of them had no knowledge of nettle fiber. This seems to be the biggest challenge for marketing nettle fiber products as first and foremost there is a need for market awareness for these products.

2.3 Potential export markets for nettle fiber

It has been found that European markets could be the most potential export markets for nettle fiber products. This is because of the fact that nettle fiber was used in the European countries – particularly in Germany and Austria – as a substitute for cotton during the First and Second World wars and hence there is awareness and acceptability to nettle fiber.

Discussions with EPCH officials revealed that the export markets for natural fibers were growing significantly. In fact according to HHEC and HEPC there is significant demand for fibers from wild plants in Germany, Italy and Netherlands. Moreover, according to these agencies, the demand for fibers from wild plants and organic fiber was reported to be increasing in markets in USA, Australia and also Japan.

2.4 Potential for nettle yarn and carded fiber

As far as the nature of product from nettle is concerned, market survey revealed significant potential for selling nettle yarn and even just carded nettle fiber.

According to Mr. Arun Ambatipadi of Chetna Organic (an NGO dealing in organic cotton) there were promising potentials for blended fabrics comprising of organic cotton blended with other natural fibers. In fact, Hansa Export Corporation has a currently unfulfilled demand for 250 kg of carded fiber per month from just one buyer in USA (who is blending natural fibers with wool to make stolls) and the

Corporation officials told that if regular supply is available then the demand can increase significantly. Similarly, Kraftloom bought around 400 meters of nettle fabric in 2012 and in 2013-14 its demand is expected to grow up to 1500 meters.

Some private companies in South Korea and in Switzerland are reportedly procuring large quantities of nettle yarn from Nepal and blending it with other fibers to produce fabric.

In fact, the market survey reveals that many export houses prefer to get yarn woven and blended as per the requirements of their clients and consequently this further enhances the potential for marketing nettle yarn.

2.5 Nettle products and prices

Currently a variety of products made from nettle fiber are being marketed, particularly from Nepal and also by some organizations based in Europe. Apart from nettle yarn and nettle fabric, stoles, shawls, scarfs and even jackets made from nettle fiber are being marketed.



Nettle yarn

Nettle yarn is being sold in International markets from Nepal at US \$ 15 to 17 per kg while currently UBFDB is marketing nettle yarn at US \$ 11 to 12 per kg which is being sold in the international markets at US \$ 14 to 15 per kg.

Kraftloom is marketing nettle fabric produced in Uttarakhand at US \$ 11-12 per meter. However prices for nettle fabric may vary based on the design of the product and also based upon its blending with wool or cotton.

In Uttarakhand (UBFDB and

Himotthan) and in Nepal scarfs, shawls and stoles are being made from nettle fiber. While Swicofil, a Swedish company, is also manufacturing jackets from nettle fiber.

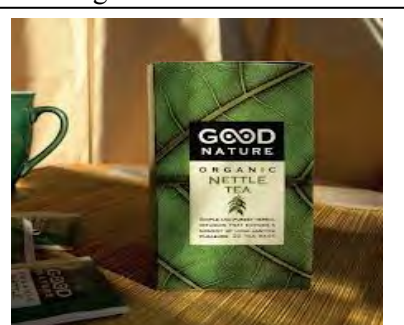
UBFDB is marketing nettle stole (blended with cotton) around US \$ 20. In Nepal stolls made purely from nettle are being sold at prices ranging from US \$ 22 to 38 while scarfs between US \$ 13 to 20.

There is also potential for using nettle for making scrubbers, scrub towels and also room curtains. In fact Kraftloom is presently marketing foot scrubbers and bath scrubbers to European markets.

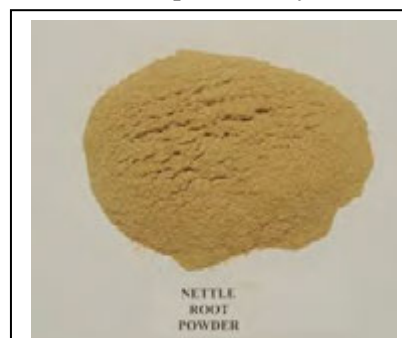
Nettle stem powder, nettle leaves and nettle root powder are being sold as herbal products by Chinese companies. Nettle is believed to prevent graying of hair, protect prostate health, enhance blood circulation and having anti-inflammatory properties.

Nettle leaf powder is priced around US \$ 2 to 5 per kg, root powder around US \$ 18-25 per kg and stem powder around Rs 10 – 15 per kg.

Nettle leaf tea is also being marketed in the international markets and is generally priced between US \$ 10 to US \$ 30 per kg.



Nettle leaf tea



Nettle root powder

2.6 Current market size

Although it was difficult to estimate the current market size for nettle yarn, carded fiber and fiber based products but estimates indicate that currently there is significant demand for Himalayan nettle fibers in the international markets. According to representatives of Hansa Export Corporation, Nepal markets produce up to 10000 kgs of nettle yarn (including yarn, fabric as well as nettle fiber based products) per year.

The above figure indicates that there is significant market potential for Uttarakhand where currently only about 800 to 1000 kg of nettle yarn is being produced each year (as per available figures with UBFDB). Particularly since at present production of nettle fiber in India is not being reported from any other state apart from Uttarakhand.

Table: Potential of nettle and hemp fiber in India

Present Production Potential	Current trade	Economic Potential	Estimated achievement in 5 years (Per year)
5000 ha acreage 1 ha realization: Rs. 4.80 lakh (export value of fabric)	Negligible	Rs. 2,400 million	Rs. 240 million (10% realization)

Source: Ministry of Textiles, GOI

2.7 Issues

- Findings indicated that currently the supply chain of most natural fiber products was weak and this was invariably hindering the market development of such products. Representatives from Fab India told that their organization was procuring Sisal fiber products from Orissa but as soon as the market demand for the products increased the rural artisans were unable to provide timely and adequate supply of products. Similar is the experience of HHEC, the organization was able to obtain export orders based upon the samples of Sisal products that it had received but the producer groups were unable to meet the export orders. Moreover, even in case of nettle fiber, UBFDB has market demand which remains unfulfilled as the current production levels are low.
- Feedback obtained from current buyers of nettle fiber revealed certain weaknesses in the fiber extraction process in Uttarakhand which was adversely impacting the quality of fiber. It was reported that post retting (during the fiber separation process), when the nettle stems are beaten in order to separate the fiber, excessive beating of nettle stems was resulting in breaking the fiber and consequently the length of the fiber was being adversely impacted. Moreover, it was also reported that excessive beating of stems was also resulting in making the fiber uneven.
- Buyers from Hansa Export Corporation and Kraftloom also told that the current carding machine with UBFDB need to be further modified and developed in order to improve the quality of the carded fiber. It was reported that the current machine was breaking the fiber during the carding process which was leading to the production of lower quality of nettle yarn.
- Although nettle yarn produced in Uttarakhand is currently being sold at lower rates than that produced from Nepal but still the cost of nettle yarn is very high which means that these products can target a very small niche market – particularly in the national context. However, in order to increase the potential markets there is a need to reduce the costs of nettle yarn such that the nettle based products (even those made by blending cotton with nettle) are available at lower prices.

2.8 Recommendations

- There is a need for R&D to explore the potential for reducing cost of manufacturing nettle yarn – particularly to exploring the potential of reducing fuel costs involved in

degumming process as currently around 4 kg wood is required for degumming 1 kg of nettle.

- Currently the carding unit is located at UBFDB office at Dehradun and the raw fiber has to be transported to Dehradun for carding and then carded fiber is taken back to the village for spinning. This greatly increases the cost of manufacturing nettle yarn. Costs can be significantly reduced if the carding unit is located near to the villages.
- Apart from price, another major factor for low marketability of fibers obtained from the wild plants seems to be the lack of adequate and timely supply of products – whether it is carded fiber, yarn, fabric or even finished products. The prospective buyers, while mentioning that there is significant demand for fibers obtained from the wild plants, are concerned that if they make efforts to market such products then whether they would get uninterrupted supply of these products. It is recommended that there is not only a need to scale up the production but also to create an efficient supply chain which can ensure adequate and timely supply of nettle fiber in the future.
- There is a need for capacity building of primary processors of nettle fiber in the fiber extraction process – including retting, peeling, degumming, cleaning and softening process. A adequate capacity building of primary processors would significantly contribute in improving the quality of nettle fiber being produced.
- In order to create market demand, especially in export markets, there is a need to encash the uniqueness of Himalayan nettle fiber – similar to what Nepal has been doing. The fact that Himalayan nettle fiber is unique to the Himalayas and also that this fiber is hollow and this creates natural insulation are some of the features of this fiber which can be highlighted during the marketing process.
- It is recommended that efforts may be made for obtaining Wildcraft certification for nettle fiber which would significantly help in increasing market potential, particularly in export markets.
- The findings of the market survey indicate that there is a potential market for export nettle yarn and carded fiber to overseas buyers who generally blend this fiber with cotton or wool. Moreover, even organizations such as HH EC told that they would prefer to develop the finished product based on specific requirements for overseas buyers and for this they can either purchase yarn and get it weaved by their weavers (based in Madhya Pradesh, West Bengal or Haryana) or give order to weavers in Uttarakhand to develop specific product designs. Consequently, for targeting the export markets the marketing of nettle yarn or even carded fiber could be explored. However, products such as table mats or just fabric could be manufactured on a smaller scale for sale in national markets.
- HEPC provides periodic color forecasts for handloom products based on its assessment of international markets. For manufacturing nettle fiber products for export markets, particularly finished products, it is important to establish linkages to obtain the color forecasts of HEPC.
- R&D for exploring the possibilities of selling extracts of nettle as herbal products may be taken up.

3. Market potentials of natural dyes

3.1 Current production of natural dyes in Uttarakhand

Traditionally the Bhotiya communities in Uttarakhand have been using natural dyes for coloring the wool and woolen products being manufactured by them. Currently several local NGOs are also engaged in organizing rural artisans to manufacture local natural dyes from locally available plants. In fact NGOs like AVANI, ATI, Kilmora and Himlayan Weavers are primarily using the natural dyes for use in their own production of hand woven shawls, scarves and stole's. Recently AVANI has also started marketing water colours and crayons for students and children made from natural colours.

The natural dyes being made in Uttarakhand include dyes made from pomegranate, Indigo, Ratanjot, Kapila, Khair, Manjistha (*Rubia cordifolia*), Dolu (*Rheum austral/ emodi*), walnut (*Juglans regia*), onion and also from Kin god (Berberis spp.) and Eupatorium. However, there is no authentic data available regarding the current production of natural dyes in the state.

3.2 Market potential of natural dyes

Currently several companies are involved in manufacture and sale of natural dyes in the country. During the market survey the team visited Alps Industries, Ghaziabad but found that they had already stopped the production of natural dyes owing to limited market demand. However, during telephonic discussions representative of Sam Vegetable Colours Pvt. Ltd., Moradabad told that roughly they were able to sell around 8 to 10 MT of natural dyes each year. Representative of Ama Herbal Laboratories, Lucknow told that they were selling between 15 to 20 MT of natural dyes annually although the market demand varied from year to year.

It was reported that the demand for natural dyes had increased subsequent to the ban on azo dyes and although the market for natural dyes was increasing but the growth in market size was limited.

TABLE: Major natural dyes currently marketed by the surveyed companies

Plant from which dye obtained	Color	Market price in Rs.
<i>Rubia cordifolia</i> (Manjisth)	Orange, Red	450
Pomegranate	Yellow	250
<i>Rhum emodi</i> (Dolu)	Yellow	N.A
<i>Onosma hispidum</i> (Ratanjot)	Red	500
<i>Acacia catechu</i> (Khair)	Brown	400
Indigo	Blue	1250

Manjisth, Dolu and Ratanjot are some of the species occurring in Uttarakhand which are being used for manufacturing natural dyes by the private companies. However, there was no market awareness regarding the use of Eupatorium for natural dyes.

It was also reported that majority of raw materials for manufacturing the dyes were procured from New Delhi or sourced from Nepal.

3.3 Issues and concerns

During the market survey agencies involved in marketing of products made from natural dyes told that the color fastness was a cause of concern in products dyed using natural dyes – particularly in Indian markets. It was reported that although natural dyes do fade over time, but currently a majority of dyes

being manufactured in Uttarakhand were losing their color fastness within a short span of time. It was opined that perhaps proper mordants were not being used in the manufacture of these dyes.

The major industries supplying natural dyes in India are generally purchasing raw materials and manufacturing natural dyes in their own factories. Consequently in such industries there is no demand for purchase of natural dyes produced by rural artisans. Apart from cost issues, another reason for in-house manufacture of dyes reported by them was that through a standardized process they were able to obtain similar shades in each batch of dyes produced by them.

Representatives of AT India, who are manufacturing natural dyes in Uttarakhand, told that currently natural dyes were being produced in small quantities and therefore it was difficult to market them widely – especially in export markets where larger quantities of natural dyes were sought.

It was also reported that currently in Uttarakhand production was being done by small decentralized artisan groups having no standardized production process therefore there were slight variations in colours of dye extracted from the same plants by different artisan group or even in different batches by the same artisan group. However, at times the buyers demanded standardized colours and which created problems in marketing.

3.4 Recommendations

- Although Eupatorium comprises unutilized biomass and could be potentially used as a natural dye. However, there is a need for a detailed market analysis to explore the potentials of marketing natural dyes from Eupatorium.
- There is a need for R&D on selection of appropriate mordants for various natural dyes being produced in Uttarakhand. The selection of mordants would not only help in increasing the color fastness but also in manufacturing different color shades from the same raw material.

4. Lichens

4.1 Production and current market

Lichens (Jhula/ Chhadila/Pathar Phool) are used commercially as spices, dyes, foods, medicines, animal feed, architect models, wreath and floral decorations, perfumes, and as test organisms for atmospheric pollution. These are the sources of the tan powder known as Lichenan (Lichinin), a glucose polysaccharide extracted from *Usnea* spp., and orcinol ferric chloride, the spray known as Bial's reagent, used for detection of sugar glycosides and sulfolipids in chromatography. Lichen collections, for the manufacture of perfume, made primarily in Morocco, Yugoslavia, and France, are estimated at 7800 and 9200 metric tons worldwide each year. China has recently started producing a lichen concrete from indigenous lichens, Oak moss, and *Evernia mesomorpha* for use in perfumery (Lichens of commercial importance in India by NC Shah – www.herbaltechindustry.com).



From the preliminary market survey in Uttarakhand it was understood that the traders from Uttarakhand are sending the materials to Maharashtra and Gujarat. Efforts were made to discuss with wholesalers, processing industries and traders in an area around Nagpur. Most of the Lichens from Uttarakhand go to Jalgaon, Nagpur and Akola markets. These are further graded based on the quality

and in the wholesale market it is available in 10 kg packets. Rates vary from Rs. 1,000 to Rs. 3,000 per 10 kg pack based on the quality. The Vidharva region is the major consumer of Lichens as people traditionally use it part of their spices. In the old city of Nagpur there is a spice mandi named as Maskasath, which is also a trading centre of Lichens. Three spice and food product industries in Nagpur (Haldiram, Suruchi and Waghmare) use approximately 300 to 600 tonnes every year.

Nagpur has excellent potential for marketing of Lichens as well as Tejpat. In fact it is the biggest trade centre in the country for these produces. At present they are getting the supply from Ramnagar, Uttarakhand. The traders expressed that quality that they are getting from Ramnagar is not good. Thereby they have to spend lot of their labor in improving the quality. Mr. Piyush Kataria, who is the major vendor for supplying bay leaves and lichens to three major masala making industries in Nagpur, expressed that, if the quality is improved it can fetch better price. At present in the wholesale market rate for lichen is Rs. 220/- to Rs. 300/- per Kg and bay leaf is marketed @ Rs. 100/- to Rs. 200/- per Kg depending on the quality. Considering the market available at Nagpur which consumes more than 50% of the total production of lichen and bay leaf of the country, it is suggested that the traders may be invited to sign MoU with UFD or Forest Development Corporation or NCE (after its establishment).

Discussions were held with some traders in Kharibawli market, Delhi to understand the current market trends on lichen, bay leaf, satabar and other Himalayan medicinal plants like Atis, Jatamansi, Kuth etc. It has been observed that Kharibawli market mostly gets the supply of any high altitude medicinal plants from Nepal and Amritsar. There is appreciably good market for satabar, bay leaf and lichen. The major supply and bay leaf is coming from Ramnagar, Uttarakhand. But the traders and industries are not interested in buying the produce from Government agencies as they find difficulty in maintaining their manufacturing schedule and maintaining quality of raw materials.

4.2 Issues

- The prime issue in marketing of Lichens is to ensure the quality of the produce. It has to be sustainably harvested, cleaned, sorted, graded, properly packed and stored.
- The trade in Uttarakhand is reported to be controlled by 5-6 traders from Ramnagar. They hardly allow outsiders to come and participate in the auctions. Although there is the system of open auctions in the NTFP *mandis*, the local traders somehow continue to dominate the procurement, auction etc.

4.2 Recommendations

- It is suggested that the Project can facilitate a participatory process to ensure sustainable harvesting of Lichens.
- The local communities through Van Panchayats and SHGs need to be trained to follow good harvesting and primary processing protocols to ensure the quality of Lichens.
- The State Government may fix the minimum/ floor price of Lichens for three or four grades.
- The State Government may allow the Forest Development Corporation to conduct floating mandis in the rural areas (selected places where Lichens are being collected).
- The State Government may also explore the possibility of inviting spice industries from Nagpur and other places for negotiations and create a mechanism for direct sale to these industries.

TABLE: List of organizations contacted during market survey

Name	Designation	Organization	Address
Mr. Sanjeev Srivastava	Marketing Manager	Handlooms and Handicrafts Export Corporation of India	"Noida Complex" A- 2 , Sector -2 Udyog Marg , Noida - 201301 Gautam Budha Nagar , (U.P) India Mobile: 9711995950
Mr. K. Pandey	Assistant Marketing Manager	Handlooms and Handicrafts Export Corporation of India	"Noida Complex" A- 2 , Sector -2 Udyog Marg , Noida - 201301 Gautam Budha Nagar , (U.P) India Mobile: 9871973029
Ms. Anita	Secretary	Dastkar	Nature Bazaar, Andheria Mod, Near Chattarpur Metro Station, New Delhi Mob: 9971263218
Mr. V. S. Rajavat	Proprietor	Manjari	Mob: 9810397345
Mr. R. P. Rajalingam	Export Promotion Officer	Handloom Export Promotion Council	10th Floor, 1004, Padma Tower –I 5, Rajendra Place, New Delhi – 110 008 www.hepcindia.ocm Tel: 91-11-25826966
Mr. Naveen Gaur		Export Promotion Council for Handicrafts	EPCH house, Pocket 6&7, Sector C, LSC, Vasant Kunj, New Delhi Tel: 91-11-26135256
Mr. Sunil Pandey		Fab India Overseas Pvt. Ltd.	B-26 Okhla Industrial Area, Phase I, New Delhi – 110020 Tel: 91-11-26811047
Mr. Arun Ambatipudi	Executive Director	Chetna Organic	H. No. 12-13-677/66, Plot No. 187, Room No. 2 Sri Sai Durga Niwas, Kimtee Colony Street No. 1, Tarnaka, Secunderabad www.chetnaorganic.org.in Mob:9959300330
Mr. Anirban Ghosh	Kraftloo	m Overseas Pvt. Ltd.	1st Floor, Utsav Vihar Vasant Vihar Road Near Balliwala Chowk Dehradun – 248 001 Mob: 8126227787
Dr. O. P. Yadav		Fair Trade Forum	Fair Trade Forum – India A 179, Sukhdev Market Kotla Mubarakpur New Delhi – 110 003 Mob: 09818485019
Ms. Deepa Sharma	Proprietor	Alankari	C-423, Greater Kailash II New Delhi Tel: 91-11-29225199
Mr Yasin Mir	Director	Trans Asian Ind. Expo Ltd.	M 1 Hauz Khas New Delhi Tel:91-11-26865692
Mr. Rajeev Rawat	Hansa	Export Corporation	B-124 Okhla Industrial Estate Delhi – 110020

Name	Designation	Organization	Address
Mr. Vaibhav Kumar		Alps Industries	57/2 Site IV Industrial Area, Sahibabad Ghaziabad Mob: 9871607352
Mr. Rachit Jain		Sam Vegetable Colours Pvt. Ltd	B- 129, Galaxy Apartment, Civil Lines, Moradabad Mob: 9927069990
Mr. Mohammad Sadat Khan	Manager Technical	AMA Herbal Laboratories Pvt. Ltd.	352-116-G, Talkatora Road, P.O. Rajajipuram, Lucknow-226017, Mob: 9919996222
Mr. Rambilash Ghanshyam Das			Gopinath Market, Kharibawli
Staffs		Chaturbhuj and Sons	New Gadodia market, Kedia Building, Kharibawli, (011-23968392, mob.: 0-9213601404)
Mr. Yati Goyal			Kedia Building, Kharibawli (9810398367)
Mr. U. P. Singh	Vice President	Surya Amba cotton mills	Parseoni road, Tahsil – Ramtek, Dist. Nagpur
Manager		Suryalata Cotton mills	Mouda road, Tahsil – Ramtek, Dist. Nagpur
Mr. Sunil Puri	Business Consultant	Haldirams Nagpur	
Mr. Kamal Agarwal	MD Haldirams		Nagpur
Manager		Waghmare Food Products Pvt. Ltd.	Nagpur
Mr. Piyush Kataria		Piyush Traders	Maskasath, Itwari, Nagpur
Mr. Sudhir Pargaonkar	Director	Centre of Science for Villages	Duttapur, Wardha. (0-9423119397)

ATTACHMENT 3.5.3 NTFP Promotion and marketing in Uttarakhand

The state of Uttarakhand is well-endowed with forests and its diverse forests act as the storehouses of diverse and unique Non Timber Forest Products (NTFPs). The state has 701 species of medicinal plants, 560 species of lichens, 95 species of fiber yielding plants, 8 species of bamboo (including 5 ringal species) and several species of natural dye yielding plants.

This section examines the major NTFPs of Uttarakhand – including their current status, legal regimes governing the harvest and/or cultivation of the various NTFPs, existing markets and marketing potential and major issues and challenges in promotion and marketing of these NTFPs.

1 Major rules relating to forest produce, their transit and marketing in Uttarakhand

Chir pine resin is a nationalized forest produce in Uttarakhand and its harvest and marketing is controlled by the forest department. Apart from pine resin, the state has also regulated the harvest and marketing of other important forest produce including lichens and mosses while restricting the harvesting of 34 medicinal plant species from the forest. Cultivation of Medicinal and Aromatic Plants (MAPs) on private lands it being promoted in the state and transit pass for produce from private lands is being provided by Herbal Research and Development Institute (HRDI), Gopeshwar.

The following table summarizes the major rules relating to harvest, transit and marketing of forest produce in Uttarakhand.

TABLE: Major rules concerning forest produce, its transit and marketing in Uttarakhand

Act/Order	Main features
U.P. Forest Corporation Act, 1974	<ul style="list-style-type: none"> ▪ Establishment of a Forest Corporation for better preservation and development of forests and better exploitation of forest produce. ▪ Corporation empowered for removal and disposal of forest resources, including NTFPs and also for setting up processing units. ▪ In the hills (now Uttarakhand) the Bheshaj Sangh entrusted with collection and marketing of medicinal plants.
Auction of Ringal: GO No. 3274/14-02-109/74 Dt. 28-06-1974	<ul style="list-style-type: none"> ▪ Auction of ringal to be stopped in hills of Uttar Pradesh (now Uttarakhand). ▪ Local residents to be allowed to extract ringal from the forests for making baskets, mats and other products. ▪ Ensuring that extraction does not result in damage to ringal forests and regulating extraction if necessary
U.P. Protection of trees in rural and hill areas act, 1976	<ul style="list-style-type: none"> ▪ Regulation on felling of timber and fruit trees ▪ 16 tree species exempted from the provisions of this act.
U.P. Transit of timber and other forest produce Rules, 1978	<ul style="list-style-type: none"> ▪ No forest produce shall be transported from or into the state without a transit pass. ▪ No such pass required for bona-fide consumption by a person in exercise of any privilege granted by the government.
Authorization to KMVN for collection and sale of MAPs: GO No. 541/28-1-86 (6)/83 Dt. 17-03-86	<ul style="list-style-type: none"> ▪ KMVN authorized to engage in collection and marketing of medicinal plants in Kumaon region of Uttarakhand (formerly UP).
Policy for marketing of resin: GO No. 756/1(2)	<ul style="list-style-type: none"> ▪ 25% of total resin to be sold through national auction. ▪ 50% to be sold to registered units within Uttarakhand through open

Act/Order	Main features
F.R.D/2003-9(2)/2001 Dt. 30-04-2003	<p>auction.</p> <ul style="list-style-type: none"> ▪ 25% to be sold to Khadi industries and Co-operatives within Uttarakhand or to resin processing units of KMVN and GMVN through open auction. ▪ In case resin remains unsold within the state units then that can be sold through national auction. ▪ Not mandatory for resin processing units to be registered with FD. ▪ Simplification of resin extraction procedures and issuance of resin extraction permits at the Range level. ▪ Cancellation of permits for export of resin products outside the state.
Conservation, Development and Harvesting (CDH) of MAPs and joint harvesting plan: Letter No. 914/F.R.D/2003. Dt. 23-08-2003	<ul style="list-style-type: none"> ▪ Preparing an inventory of endemic MAPs at each range level. ▪ Rapid Mapping Exercise for identifying naturally occurring MAP species within each range and delineating that area as MAP conservation area. ▪ Identification of specific forest areas for establishment of MAP nurseries (Development Compartment) near each MAP conservation area. ▪ Harvest of MAPs (except 29 prohibited species¹) outside MAP conservation areas and Development Compartments to be entrusted to Uttarakhand Forest Development Corporation (UFDC). ▪ UFDC to open a research wing for MAPs and train officials in identifying MAPs and their marketing and development. ▪ Joint Harvest Team to be constituted for each forest division comprising of range officer and representatives of UFDC and Bheshaj Sangh or HRDI. ▪ Harvest to be taken up only in areas identified under CDH plan.
Establishment of Medicinal plant markets: Memo No. 105/F.R.D/2004 Dt. 21-06-2004	<ul style="list-style-type: none"> ▪ Establishment of MAP markets (mandis) at three depots of UFDC i.e. Bibiwala (Rishikesh), Ram Danda (Ramnagar) and Tanakpur. ▪ UFDC to be responsible for establishing infrastructure at each Mandi. ▪ Harvest/produce from Reserve forests, Civil forests, Van Panchayats or from agricultural lands to be taken to a particular mandi – to which the concerned forest chowki is linked. ▪ Each forest chowki to be linked to a particular Mandi so that harvest/produce from Reserve forests, Civil forests, Van Panchayats or from agricultural lands under that chowki is taken to a specific mandi. ▪ A Jadi Buti Committee to manage the three mandis. ▪ Harvested/cultivated MAPs to be auctioned at mandis – auction to be held at least once a week. ▪ Traders allowed participating in auctions only after registration. ▪ Farmers to be given up to 70% of price of their produce (as per pre-determined rates) by the marketing agency i.e. KMVN, GMVN, Bheshaj Sangh or UFDC. ▪ Freight and other expenses for transporting the MAPs to the mandis to be borne by the marketing agencies. ▪ Final payment to the farmers to be made after deducting the sales commission by the marketing agency.
Policy for sustainable harvest of MAPs in the state Memo No. 761/F.R.D/2004 Dt. 15/12/2004	<ul style="list-style-type: none"> ▪ Prohibition on harvest of 34 MAP species from the forests. However, regulated harvest for the purpose of developing nurseries allowed after permission from DFO. ▪ 20 MAP species declared as free species on which no permission required for harvest and transport. ▪ 30 species identified for sustainable harvest on following conditions:

¹Government of India, GO No. 24 (RE-98)/1997-2002.

Act/Order	Main features
	<ul style="list-style-type: none"> ○ Identification of ranges, within each division, from which MAPs to be harvested in a particular year. ○ Each forest division to identify the agency to be entrusted for harvest.
<p>Registration of MAP farmers and transit of cultivated MAPs: Memo No. 633/XVI/05/5(89)/05 Dt. 10-05-2005</p>	<ul style="list-style-type: none"> ▪ HRDI entrusted with the registration of MAP cultivators ▪ Registration of Kuth cultivators to be done by Chief Wildlife Warden or by an officer nominated by the state government. ▪ For harvest of MAPs naturally occurring on farm lands farmers need to register with HRDI. ▪ Farmers produce to be certified after one month of cultivation and before 1 month of harvest by HRDI or its associated agencies. ▪ In case of MAPs that also occur naturally in the forests, certification to be done by HRDI as well as by FD. ▪ For cultivation of prohibited species, transit permit shall be issued up to the <i>mandis</i> ▪ For cultivation of species permitted for sustainable harvest transit permit shall be issued up to the place where it is to be marketed. ▪ For cultivation of free species and for species not naturally occurring in Uttarakhand transit permit will not be required. ▪ FD will not charge royalty from registered farmers but for restricted species and species permitted for sustainable harvest the farmer shall have to pay transit fee and other applicable taxes.
<p>Authorization to Director, HRDI to register Kuth cultivators by Chief Wildlife Warden: Letter No. 747/22-1 Dt. 09-09-2005</p>	<ul style="list-style-type: none"> ▪ Director, HRDI authorized by Chief Wildlife Warden to register Kuth cultivators and issue the necessary licenses and permissions.
<p>Simplification of process of registration of MAP cultivators and transit of MAPs: Memo No. 236/F.R.D/Horticulture (Medicinal Plants)/2006 Dt. 13-11-13</p>	<ul style="list-style-type: none"> ▪ Transit Of Cultivated Maps Entrusted To HRDI. ▪ Transit And Trade Of Maps Collected From The Reserve Forests To Be Done By The FD As Before. ▪ Transit permit for Natural Varnish, Bark, Mahua Flowers, Mahua seeds, Harra, Bahera and Aonla to be given by FD only even if collected from outside reserve forests. ▪ MAP cultivators authorized to take their produce even outside the state. ▪ At the demand of the cultivator, transit permit can be issued in advance by HRDI.
<p>Minimum support price for natural fibers: Letter No 1492/2A-4 Dt 09-02-2010</p>	<ul style="list-style-type: none"> ▪ Fixing price for purchase of natural fibers by Uttarakhand Khadi and Village Industry Board. ▪ Nettle fiber (Rs 35/kg), Industrial hemp (Rs 35/kg), Bhimal (Rs 6/kg) and Rambans (Rs 50/kg).

Source: Compiled by JICA Preparatory Survey Team

2 Important NTFPs of Uttarakhand

2.1 Lichens and Mosses

Lichens are a symbiotic association between fungus (mycobiont) and algae (photobiont). They generally occur on trees and at times on rocks. In the Himalayan region, Uttarakhand records maximum of 560 species under 212 genera and 42 families. The lichens in Uttarakhand are dominated by foliose lichens (305 species) followed by crustose (193 spp.) and fruticose (83 spp.)². *Parmotrema*, *Everniastrum*, *Leptogium*, *Usnea* and *Ramalina*.

Moss is a representative of Bryophyta kingdom which thrives in damp forests and flourishes in Oak forests. Moss on bark of *Quercus* spp. not only conserves moisture but also provides adequate substrate for the growth of lichen and other epiphytes.

Availability

Lichens are mostly collected from temperate regions in Uttarakhand. Major tree species on which Lichens and mosses occur in Uttarakhand are Kharsu (*Quercus seme carpifolia*), Moru (*Quercus floribunda*) and Banj (*Quercus leucotricophala*) while they also occur on Burans (*Rhododendron* spp.), Raga, Surai (*Cupressus turolosa*), Kafal (*Myrica nagi*) and Kail (*Pinus Wallichiana*).

Uses

- Lichens are used for manufacture of indigenous perfumes known as “Ittra” or “Attar.” In fact, in the perfumery industries in Kannauj, Uttar Pradesh, lichens are used for making a special perfume called *Otto* or *Hina Attar*.
- It is an important ingredient in the spice industry and used as a flavor enhancer
- It also forms an ingredient in the traditional system of medicines (Ayurveda and Unani) for making various formulations.
- When mixed with other aromatic herbs, lichens are also used for making the “Havan Samagri” for performing the vedic rituals.

Harvest practices

Although lichens and mosses are available throughout the year but the lichens leaves are crisp and brittle during summers and get crushed during collection, transportation and packaging. Consequently the collection period of lichens and mosses is from October to March. Lichens are handpicked from tree trunks or branches or at times are scraped using small axes. They are also collected from fallen branches and twigs.

Collection and Marketing

The collection of lichens is done primarily from reserve forests as well as Van Panchayats. The agencies authorized for extraction of lichens and mosses are Van Panchayats, Bhashaj Sangh, GMVN, KMVN and UFDC. FD opens forest ranges for extraction of Lichens on a rotational basis and assigns specific ranges to these agencies.

Contractors interested in extraction of lichens register themselves with the concerned agency (in case of Bhashaj Sangh they have to deposit membership fee). There can be more than one contractor assigned within a range and in such a case each contractor is assigned a specific area for extraction within the range. Each contractor collects lichens through primary collectors (villagers) and also through hired labor. For hired labor, the contractor has to take permits from the FD.

² Nayaka, S., D.K. Upreti and Himanshu Rai (2011) *An outline of Lichen diversity in Uttarakhand, India*. Poster presented at 6th Uttarakhand State Science and Technology Congress, Uttarakhand State Council for Science and Technology, Dehradun.

The contractors purchase lichens from the collectors at rates ranging between Rs 30 to Rs 80 per kg – depending on the quality. Mosses are purchased for about Rs. 15 to Rs. 30 per kg.

Once lichens and mosses are collected in sufficient quantities the contractors approach the concerned agency (i.e. Bhashaj Sangh, GMVN etc.) and provide them details regarding the quantity collected which is then forwarded to the FD and the FD, after charging royalty issues a transit permit (*ravanna*) to the collector. In the transit permit the mandi to which the produce is to be transported is specified – based on the preference of the collector.

The produce is then transported to the respective mandi of UFDC where it is stored before being auctioned. At each mandi, public auction of the produce is done twice a month and the dates of auction are fixed for each mandi.

Although the UFDC has prescribed the floor price of lichens between Rs 40 to Rs 50 per kg but generally the collectors – who are present at the auction - specify the minimum price for their produce which is significantly higher than the floor price.

Subsequent to the auction the UFDC makes the payment to the concerned agency after deducting 1% of the total sales proceeds as marketing and handling charges, 2.6% as income tax and 4.5% as sales tax.

Production

In 2012 more than 2350 metric tonnes of Lichens and 544 tonnes of moss were harvested from Uttarakhand.

Table: Traded quantity of Lichens and Moss in past three years (in Qtls)

NTFPs	Year		
	2012	2011	2010
Lichens	23,539.97	13,855.01	12,688.00
Moss	5,440.48	1,935.82	2,394.00

Source: Uttarakhand Forest Development Corporation

The total traded quantity of Lichens has increased significantly between 2010 (12,688 quintals) and 2012 (23,594 quintals) and similarly the traded quantity of mosses has also increased during this period (from 2,394 quintals and 2010 to 5,440 quintals in 2012).

Table: Year-wise volume of trade of Lichens and Moss (Million Rs.)

NTFP	Year		
	2012	2011	2010
Jhula	216.697	152.041	114.217
Moss	15.435	4.028	4.984

Source: Uttarakhand Forest Development Corporation

Issues

- One of the major issues is that a few traders operating in the *mandis* of UFDC have formed cartels in a bid to keep the auction prices low. These traders also create unfavorable situations for buyers coming from outside the state.
- The annual harvest of lichens and mosses has increased significantly during the past few years. The sharp spurt in harvest of lichens and mosses seems to indicate that lichens and mosses are also being harvested from outside the permitted ranges.

- The primary collectors involved in collecting lichens and mosses from the forests are getting very low prices while the middlemen, especially the large buyers located at Ramnagar, are able to get significant profits.
- The storage facilities at the godowns of UFDC at Rishikesh, Ramnagar and Tanakpur *mandis* are inadequate and inefficient. Owing the poor storage there is significant decline in quality of stored lichens and mosses.
- Presently there is absence of grading of lichens and mosses and it has been noticed that lack of grading significantly reduces the market prices of lichens and mosses.

2.2 Chir Pine Resin

Uttarakhand has a total of 394384 ha³ under Chir Pine (*Pinus roxburghii*) forests which accounts for over 16% of the total forest area of the state. Pine resin forms an important NTFP from Chir pine forests in Uttarakhand and revenue for pine resin has increased from Rs. 1.85 million in 1951 to 597.45 million in 2011-12.

Extraction and sale of Chir pine resin

Resin extraction was started on experimental basis in 1890 and by the year 1920 it was made a regular practice. Cup and lip method was used for pine resin extraction till 1993. Since 1994 resin extraction is being done through the Rill method through which the damage to the tree is regarded to be limited. Extraction of pine resin is done from the month of October to March. Resin is harvested and sold by the Forest Department. The Working Plan of each Forest Division has clear prescriptions for working of Resin.

Tenders are issued at the Divisional level for hiring of contractors for harvesting of resin. The harvested resin is brought to special depots established by FD at Rishikesh, Kotdwar and Haldwani. From these depots resin is auctioned by the DFOs of Narendranagar, Haldwani/Nainital and Champawat Forest Divisions.

The Government has elaborate policy to deal with pine resin (2003). The policy of the Government prescribes for auction of resin (25% to all India industries, 50% for Uttarakhand industries and 25% for the cooperative, khadi sector). The production of Chir Pine has increased from 54,536 quintals in 1950-51 to 161,417 quintals in 2011-12.

Table: Quantum and value of resin extraction from Uttaranchal

Year	Production (quintals)	Price (in thousands)
1950-51	54,536	1,855
1960-61	140,816	5,565
1970-71	250,773	32,331
1980-81	169,656	66,926
1990-91	93,747	124,684
2000-2001	111,520	192,372
2001-2002	141,217	271,701
2002-2003	158,730	320,317

³Uttarakhand Forest Statistics, 2011-12

2003-2004	171,459	267,183
2004-2005	179,834	320,154
2005-2006	183,493	453,786
2006-2007	198,190	463,287
2007-2008	192,983	299,725
2008-2009	187,518	308,060
2009-2010	196,075	545,702
2010-2011	176,408	649,306
2011-2012	161,417	597,451

Source: Uttaranchal Forest Statistics: 2011-12, UKFD

A large number of people find employment in the extraction of pine resin in Uttarakhand while there are 98 functioning pine based industries (76 non-functioning industries) in the state which also provide employment of local people.

Table: Circle –wise number of resin units in Uttarakhand

S. No	Name of circle	No. of resin units	
		Functioning	Not Functioning
1.	North Kumaon	46	65
2.	South Kumaon	7	5
3.	Western	32	0
4..	Garhwal	1	3
5.	Bhagirathi	12	3
6.	Yamuna	-	-
7.	Shiwalik	-	-
8.	Nanda Devi Biosphere Reserve	-	-
9.	Rajaji National Park	-	-
	Total	98	76

Source: Uttarakhand Forest Statistics 2011-12, UKFD

Issues and concerns

Discussions with some FD officials and industries have indicated that the quality of resin has been deteriorating. It was reported that rusting of tin containers (in which resin is collected and/or stored) and impurities during the resin tapping were resulting in deteriorating the quality of extracted resin. Rusting of tin containers was also attributed to the use of caustic soda for cleaning the containers. Concerns have also been raised regarding the inappropriate use of acids during the tapping of resin. It was reported that during the harvest of resin the contractors were spraying certain acids on the tree in order to increase resin flow from the tree. In the long run this practice is believed to cause damage to the tree while at the same time the quality of resin is also adversely impacted due to the use of such acids.

Since the past few years deterioration in quality of resin as well as competition from international markets has meant that the prices of resin have more or less stagnated. The maximum auction price of resin is around Rs. 6,100 per quintal but during discussions the buyers were expressing that even this

price was very high considering the low quality of resin. Buyers told that better quality resin was available through export from other countries at similar prices and therefore they were reluctant to buy resin from Uttarakhand.

2.3 Medicinal and Aromatic Plants (MAPs)

Himalayas are a treasure house of medicinal plants. The Indian Himalayan region alone supports about 18,440 species of plants (Angiosperms: 8,000 spp., Gymnosperm: 44 spp., Pteridophytes: 600 spp., Bryophytes: 1,736 spp., Lichens: 1,159 spp. and Fungi: 6,900 spp.) of which about 45% are having medicinal properties⁴.

The state of Uttarakhand is endowed with a large number of medicinal plant species. 701 species of medicinal plants occur naturally in the state including 135 tree species, 138 shrub species and 421 herb species. Major medicinal plants occurring in the state include Atis (*Aconitumheterophyllum*), Kuth (*Saussureacostus*), Kutki (*Picrorhizakurrooa*), Jatamansi (*Nordostachysjatamansi*), Chirayata (*Swertiachirayta*), Sarpghandha (*Rauvolfiasepentina*), Satawar (*Asparagus racemosus*), Majisth (*Rubiaccordifolia*), Chamomile (*Matricariachamomilla*), Tejpat (*Cinnamomumtamala*).

Table: Elevational Distribution of medicinal plants of Uttarakhand

Elevation	No. of species	Endemic species
<900 masl	278	
900 – 1,800 m	230	44 (9%)
1,800-2,800 m	299	57 (19%)
2,800 – 3,800 m	202	69 (34%)
>3,800 m	114	

Source: Samant et. al (1998)⁵

Collection and marketing of MAPs

Commercial exploitation of NTFPs/MAPs started in 1921 in Uttaranchal region and marketing was done through auctions. Later In 1950, marketing rights were assigned to the Department of Cooperation and this department continued to have marketing rights for MAPs till 1962. Thereafter private contractors were appointed by the Forest Department to collect and market different forest produces although in 1979 again the marketing rights were awarded to the Department of Cooperation.

Bhesaj Sanghs (Medicinal Plants Cooperative Unions) came into being in 1949 as district level cooperatives to deal with different medicinal plants. Later Bhesaj Vikas Ekai were formed in each district for promotion cultivation and marketing of MAPs.

Collection from the wild

At present FD is responsible for regulating the collection of species from the wild that are not considered endangered. An elaborate policy of conservation, development and harvesting of medicinal plants was formulated in 2003 while in 2004 restrictions were imposed on harvesting of different NTFPs/ MAPs. Presently, 34 NTFPs/ MAPs cannot be collected from the wild (GO no. 761/FRD / 15 Dec 2004) although they can be cultivated on private land. There is no permission required for harvesting of 20 NTFP/MAPs from the forest while in case of 28 species sustainable harvest from the forest is allowed.

⁴Uttarakhand Forest, Government of Uttarakhand.http://forest.uk.gov.in/files/MEDICINAL_PLANTS.doc accessed on 24th October, 2013.

⁵Samant, S.S., Dhar, U. and Palni, L.M.S, (1998) Medicinal Plants of Indian Himalaya: Diversity, Distribution, Potential Values. HIMVIKAS Publication No. 13, Gyanodaya Prakashan, Nainital.

FD determines the areas from which plants can be collected, fixes the volumes to be collected and is also required to monitor collection activities in order to prevent illegal and excessive collection. Forest Department issues permits to the Bheshaj Sanghs, Kumaon Mandal Vikas Nigam (KMVN), Garhwal Mandal Vikas Nigam (GMVN) and Van Panchayats who employ contractors to organize collection of MAPs from the forests. These contractors in turn employ collectors - usually farmers with small landholdings and/or landless laborers – for collection of MAPs from the forests. After collection of MAPs, the contractors can sell the collected material either to the cooperatives or directly to independent traders after paying royalties to the cooperative.

Cultivation of MAPs

- Uttarakhand has prioritized 38 species for cultivation out of which 26 are covered for giving subsidy. Since many of these species are restricted for collection from the wild, the government has initiated the process of MAP farmer registration and 20,518 farmers have been registered. The state has simplified transit mechanisms to market cultivated species.
- Herbal Research and Development Institute (HRDI) has been identified as a nodal agency for development of MAP sector in the state and provides. The state government through HRDI is providing subsidy up to 50 per cent of the cultivation cost for 28 priority species and each farmer can get subsidy maximum up to Rs. 100,000. HRDI is also promoting cultivation of 8 tree species but subsidy on these species is not given. HRDI is also providing free planting materials to farmers for up to 0.1 ha area and 95% assistance for farmer clusters for setting up field distillation units.
- Centre for Aromatic Plants (CAP) has established 27 field distillation units for extracting oil from aromatic plants and also established buy back guarantee for oil of aromatic plants. Recently a revolving fund of 20 million has also been established for procurement of selected medicinal plant material.
- Since 2006, the Director of HRDI has been given the right to issue transit pass to farmers for cultivated MAPs.

Table: Subsidy distribution to MAP cultivators in Uttarakhand

Year	Total Farmers	Total subsidy(in Rs.)
2006-07	271	1,457,393
2007-08	128	682,039
2008-09	275	1,627,850
2009-10	188	1,027,000
2010-11	18	106,000

Source: HRDI, Uttarakhand

Over Rs. 1.45 million were provided as subsidy to 271 MAP cultivators in 2006-07 which further increased to Rs. 1.63 million (275 farmers) in 2008-09. However, only 18 farmers were provided subsidy in 2010-11 and which may be an indication that many farmers who may be cultivating MAPs are not taking subsidy.

According to available statistics 2471 farmers were engaged in MAP cultivation in 2010-11 and the total production of MAPs was 747 MT but the number of farmers has reportedly declined to 845 in 2012-13 although the total production of MAPs has increased to 961.45 MT.

Table: Cultivation of Medicinal Plants in Uttarakhand

Year	No. of Farmers	Production in MT	Amount (in Million Rs.)
2010-11	2,471	747.02	24.96
2011-12	2,205	965.95	29.46
2012-13	845	961.45	29.99
Total 3 years	5,521	2,674.42	84.41

Source: Bhesaj Development Unit, Dehradun

Ongoing programmes for promotion of medicinal plant cultivation

Establishment of MPCA

The State Medicinal Plants Board (SMPB) has been involved in the establishment of 7 MPCAs (Medicinal Plants Conservation Areas) in 7 forest divisions in Uttarakhand. The purpose of establishment of these MPCAs is to mainstream conservation and sustainable use of medicinal plants in Uttarakhand by capacity building of officials of concerned department as well as of local communities. The aim of MPCAs is also to revise working plans to conserve medicinal plant species in their wild habit and also help in documentation of traditional knowledge.

Table: MPCAs established by SMPB in Uttarakhand

Name of MPCA	Forest divisions	District	Agro-climatic zone	Altitude (masl)
Kandara	Uttarkashi	Uttarkashi	Alpine	4000
Khalia	Pithoragarh	Pithoragarh	Sub-alpine	3000
Jhuni	Bageshwar	Bageshwar	Temperate	2500
Gangi	Tehri	Tehri Garhwal	Temperate	2200
Mandal	Kedarnath WLS	Chamoli	Temperate	1800
Purnagiri	Champawat	Champawat	Sub-tropical	1200
Mohan	Almora	Almora	Sub-tropical	600

Source: SMPB, Uttarakhand

CM Jari Buti Vikas Yojna

Being implemented in all 13 districts of Uttarakhand this programme aims to cover an area of 6,500 ha and involve about 48,000 farmers. This programme aims at integrated development of medicinal plant sector by bringing together all relevant agencies involved with promotion and marketing of MAPs in Uttarakhand viz. HRDI, Bhesaj Vikas Ekai and Bhesaj Sanghs.

National mission on medicinal plants

Being implemented with the support of National Medicinal Plants Board (NMPB), this programme aims to establish model and small nurseries in public/private sector for ensured supply of quality planting materials, promote mass cultivation of selected species in identified clusters, set up quality

testing labs, strengthen market infrastructure, establish rural collection centres and capacity building of farmers.

Amla awareness and value link development programme

With the support of NMPB this project has been initiated to initiate strategies for sustainable harvesting of wild Amla and also for introduction of newer cultivars of commercial varieties of Amla. Large scale plantation of Amla has also been planned under this programme.

Issues and challenges

60 Herbal Plant Collection centres were established at the Nyaya Panchayat level throughout the state for promoting open auction of NTFPs/MAPs. However, these centres are in limited use and there is a need to improve the functional efficiency of these centres.

The primary collectors and cultivators of MAPs and even local contractors are in a vulnerable position as they cannot sell the produce directly to large traders. The primary collectors, cultivators and local contractors are dependent upon local traders who also extend credit to them and pay them prices much lower than the prevalent market prices.

Yarsa Gambu (*Cordyceps sinensis*) is a high value medicinal plant naturally occurring in Uttarakhand. Presently, despite concerned efforts by the FD, large quantities of Yarsa Gambu are being traded illegally and only a negligible proportion is coming to the markets of UFDC. Moreover, there is a need for scientific exploration and research on biological screening of this plant (a fungus), assess status in natural habitats and develop cultivation protocols to meet large scale demands. The Defence Research Institute, Haldwani, DRDO has succeeded in culturing the mycelium of Yarsa Gambu while the Forest Research Institute, Dehradun is studying molecular variability in Yarsa Gambu. Such efforts need to be further promoted and strengthened.

2.4 Natural Fibers

Natural fibers especially plant fibers are integral to the culture and day-to-day lives of mountain communities. There are 70 known plants producing fibers in Uttarakhand and out of which nine shortlisted fibers have enormous income generating potential and ecological importance (Lepcha et al., 2009⁶). Natural fibers grown have the potential to provide additional incomes and employment source for mountain communities. It plays an important role in contributing to food security, clothing, contribute in poverty eradication and in improving the quality of life. Recognizing the importance of natural fibers, the United Nations had declared Year 2009 as the International Year of Natural Fibers in order to increase awareness, provide thrust of natural fibers sector.

Raw material, basic skill sets and community acceptance relating to natural fibers exist in Uttarakhand. The biggest advantage for Uttarakhand is that some of its tribal communities have been traditionally engaged in fiber craft. The Pabila community in Garhwal and Kuthliya Bora in Kumaon of Uttarakhand use hemp fiber for making blankets, quilts and ropes. The Kuthliya Bora in particular manufacture a number of items from natural fibers including kuthla (sack for storing grains), budla (mattresses), theli (small bag), jeora (rope for fastening wood) and galliya (rope for tethering cattle). Bhimal fibers are widely used for making ropes and other traditional products and were also traded. Boksa and Tharu tribals groups of Uttarakhand have been involved in utilizing natural fibers for their household use as well as for cash incomes.

Himalayan Nettle

⁶ Lepcha S.T.S, Bahti, S. and Kumar, A. (2009) *Common Fiber Yielding Plants of North West Himalayas*. Dehradun: Bishen Singh Mahendra Pal Singh.

In the European countries people have traditionally used various natural fibers including nettle fiber. The use of bast fiber of wild nettle was first documented in the 12th century (Hegi, 1981⁷) while people started cultivating nettle in the 19th century (Brademann, 1959⁸). During the first and second world wars nettle fiber was used as a substitute for cotton (Ibid).

Himalayan Nettle (*Girardinia diversifolia* & *Urtica dioica*) – locally referred to as *Bicchhu* or *Kandali* is a perennial plant grows up to 3000 mtr. It occurs abundantly in Uttarakhand and has been traditionally used as a fiber species by local communities.

National Policy environment

A 'Focus Fibre Focus State' approach has been recommended by Ministry of Textile, GOI under its National Fiber Policy 2010. The ministry has identified Uttarakhand as a focus state for the promotion of nettle and industrial hemp (GOI, 2010).

In this focus states cluster approach is proposed to be taken up and interventions would including capacity building, training, creation of necessary infrastructure, aggressive international marketing, brand building and brand promotion.

Table: Fiscal measures for promotion of natural fibers under National Fiber Policy, 2010

100% exemption on custom & excise duties on the import of plant & machinery, consumables, embellishments on natural fibers for enhancing the quality.
50% capital subsidy for entrepreneurs promoting Other Natural Fiber based industries.
Tax holidays for manufacturing and exporting units for 10 years
Interest subsidy for establishments

Source: National Fiber Policy, 2010

Nettle fiber processing in Uttarakhand

The state government of Uttarakhand has established a separate nodal agency “Uttarakhand Bamboo and Fiber Development Board” with the mandate of promoting bamboo and natural fibers (plant fibers) in Uttarakhand. UBFDB is working in 3 clusters on natural fiber craft (Mori in Uttarkashi, Mangroli and Deval in Chamoli). UBFDB Uttarakhand Bamboo and Fiber Development Board (UBFDB) has standardized the processing technique for Himalayan Nettle and has also established a carding centre at Dehradun.

Himmothan Society, Dehradun has initiated a project on fiber processing in 2010 in 29 villages in Chamoli district. Fiber User Groups have been formed with about 800 users and are engaged in production of yarn and some finished products such as scarves, stole etc. from the nettle yarn. In 15

⁷ Hegi, G. (1981), *Ilustrierte Flora von Mitteleuropa*, III, part I. 3rd ed. Paul Parey, Hamburg: Germany c.f. Hartl, A. and Vogl, C. R. (2002) *Dry matter and fiber yields, and the fiber characteristics of five nettle clones organically grown in Austria for potential textile use*. American Journal of Alternative Agriculture, Volume 17, Number 4, 2002.

⁸ Brademan, G. (1959) *Die große Brennesel Urtica dioica L. Forschung über ihren Anbau zur Fasergewinnung* Akademie-Verlag, Berlin: Germany c.f. Hartl, A. and Vogl, C. R. (2002) *Dry matter and fiber yields, and the fiber characteristics of five nettle clones organically grown in Austria for potential textile use*. American Journal of Alternative Agriculture, Volume 17, Number 4, 2002.

village the user groups have collected seeds and sown them in 208 ha areas. These groups have produced nearly 8,000 kg of nettle and about 2,000 kg of yarn during the piloting phase.

2.5 Natural dyes

Dye yielding plants in Uttarakhand number 106 species belonging to 63 families⁹. Natural dyes are produced from various parts of the plants including stem, root, bark, leaf, flower, fruit, seed or even in few cases from resin or gum.

Current status

Although natural dyes have significant market potential but findings indicate that rural communities, like the Bhotiya tribals, have reduced the use of natural dyes owing to the easy availability synthetic dyes and also due to the labor consuming process of extracting natural dyes and also difficulties involved in harvest of dye yielding plants from the wild (Akhtar et. al. 2012¹⁰).

However, in the past few years a number of NGOs are promoting the manufacture of natural dyes. These organisations include: Devbhumi Natural Products Produces Company Pvt. Ltd and their promoter organization AT, India; Kumaon Earthcraft Cooperative; Avani, Pithoragarh; Himalayan Weavers, Mussoorie; and, Kumaon Grameen Udhog, Nainital

However, most of these organizations are utilizing the natural dyes in their own product chains which include shawls, stoles, scarfs and other similar products manufactured from oak tasar, natural fibers, wool or other fibers and marketing of natural dyes is rather limited. AVANI is making efforts to marketing natural dyes, painting colours made from natural dyes and also crayons for children but the scale of operation of AVANI is also small.

Table. Common natural dyes produced in Uttarakhand

Common Name	Latin Name	Color
Marigold flowers	<i>Calendula officinalis</i>	Yellow
Pomegranate	<i>Punica granatum</i>	Yellow
Turmeric	<i>Curcuma longa</i>	Yellow
Myrobolan	<i>Terminalia bellerica</i>	Black & Grey
Eupatorium	<i>Euaptorium odorata</i>	Green, Mustard
Walnut Hulls	<i>Juglans regia</i>	Brown
Manjisth/Madder	<i>Rubia cardifolia</i>	Orange, Red
Dolu	<i>Rhum emodium</i>	Yellow
Ratanjot	<i>Onosma hispidum</i>	Red

Issues and challenges

- Currently natural dyes are being marketed in a limited quantity and as market channels have not been established for natural dyes.

⁹⁹Gaur, R.D. (2008), *Traditional Dye yielding plants of Uttarakhand, India*. Natural Product Radiance, Vol 7(2), 2008, pp 154-165.

¹⁰Akhtar R., J.S. Negi and R. Naithani (2012), Determination of dyeing property of some medicinally important plant species of Uttarakhand Himalayas. Indian Journal of Traditional Knowledge Vol. 11 (3), July 2012, pp 528-531.

- Except for a few natural dyes like Walnut, Madder, Pomegranate etc. most other natural dyes are feeble in nature. The use of efficient mordants and standardized process to improve the fastness of natural dyes has not been explored in detail.

3 UNUTILIZED BIOMASS

3.1 Chir Pine needles

Chir Pine (*Pinus roxburghii*) is the predominant tree species in the mid altitudes (1,000 masl to 2,000 masl) in Uttarakhand. Uttarakhand has a total of 394,384 ha¹¹ under Chir Pine forests which accounts for over 16% of the total forest area of the state.

Chir pine has needle shaped leaves which are shed by the tree during autumn. The total amount of needle fall in the pine forests ranges from 1,000 to 8,000 kg/ha per year (Pandey, 1996¹²). Large quantities of pine needles accumulate on the forest floor in Chir Pine forests.

Issues and Challenges

One of the major issues relating to Chir pine needles is the risk of forest fire posed by the accumulation of large quantities of pine needles on the forest floor. Chir Pine has a high resin content therefore its needles are highly inflammable and are a major cause of forest fires in Chir pine forests. Since pine needles carpet the forest floor therefore local communities traditionally set fires to the pine needles in order to clear the slippery forest floor and also to augment growth of grasses for fodder and this practice, at times, results in major forest fires in Chir pine forests.

The accumulation of pine needles on the forest floor is also believed to prevent ground water recharge, increasing PH value of soil and also hindering the growth of other plant species in Chir Pine Forests. The removal of pine needles is expected to help in increasing the growth of grasses in Chir pine forests.

Although local communities use small quantities of pine needles for spreading them on the floor of the cattle sheds but large quantities of Chir pine needles remain unutilized. A major challenge is to find suitably utilize the pine needles in a manner that it not only promotes ecological sustainability but also results in enhancing the incomes of local communities.

Ongoing initiatives to utilize pine needles

Pine needle check dams

The utilization of pine needles for making vegetative check dams and for gully plugging has been experimented in by the FD in Uttarakhand¹³. Under this initiative pine needles are spread on meshed coir nets and the nets are rolled to form cylindrical logs. These cylindrical logs are placed across small water bodies and gullies in the forests and are secured tightly.

While maintaining the flow of water, pine needle check dams are reported to be preventing the washing away of seeds and silt. While perul gets decomposed after a span of few years but the seeds stuck inside the check dams germinate into saplings.

The FD has already experimented such check dams at Lohaghat in Champawat forest division, Munishiyari in Pithoragarh forest division, Gaja, Sariyatal and Khurpatal in Nainital forest division

¹¹Uttarakhand Forest Statistics, 2011-12

¹² Pandey, P.K. (1996), Litter nutrient dynamics in mixed old grown *Pinus Roxburghii* Sargent. Plantation of Doon valley, FRI Dehradun.

¹³ Uttarakhand Forest Research Institute, Haldwani. Annual Report 2009-10.

and Kalika in Pithoragarh forest division. However, large scale adoption of such check dams has not been taken up by the FD.

Pine needle bailing and briquetting

Commercial use of pine needle briquettes has also been taken up by a few private industries in Uttarakhand. Suyash Industries has been working in Almora Forest Division and is engaged in making pine briquettes for use as fuel in industries.

The process involved collecting pine needles from local communities which are then compacted using a compacting machine for transporting them to the briquette manufacturing unit. The compacted blocks are crushed and mixed with molasses and bio-waste and then made into small briquettes which are then sold to industries.

However, discussions with FD officials and officials of Suyas Industry reveal that several difficulties were being faced in pine needle briquetting. It was found that there was high content of mud (up to 20%) in the pine briquettes and this was reducing the calorific value of the briquettes. Moreover, it was also reported that the profit margin for the company were very low and therefore large volumes of briquettes were required to be sold in order to earn small profits. Moreover, problems in burning pine needles in furnaces less than 1500⁰ Celsius were also reported – it was told that in low temperature furnaces the resin condensed and settled on the chimney of the furnace thus blocking the exhaust. Findings also indicate that it may not be viable to set up such an enterprise in the hills due to limited availability of local biomass for mixing with the pine needles.

In fact, a company called Power Gen had also started pine briquette enterprise in Dwarahat in Pithoragarh district but they have stopped production owing to difficulties in production, marketing and also low profitability of this enterprise. Even the officials of Suyas Industries told that they were not finding this enterprise viable and might even be forced to shut down this enterprise.

Pine needle gasifier

The utilization of pine needles, in biomass based gasifiers, for electricity generation has also been explored in Uttarakhand. AVANI, an NGO based in Pithoragarh district of Uttarakhand, has been operating a 9 kw biomass gasifier since the past 3-4 years.

The pine needles for the gasifier are collected by local communities. According to estimates by Avani, a family can collect between 100 to 200 kgs of pine needles in a day and currently they are paid at the rate of Rs 1 per kg. Hence, a family engaged in pine needle collection can earn somewhere between Rs 100 to Rs 200 per day. The electricity produced through this plant is used for rural cottage industry or can be pumped in the grid. In the process, 10% pine needles come out as residue, which is high quality powdery bio-char and which is being made into high quality fuel briquettes for cooking. 700 grams of these fuel briquettes can cook one meal for a family of 5 people.

AVANI has recently set up a 120 kw gasifier which they plan to connect with the grid and sell electricity at the rate of Rs. 4.76 per unit. Moreover, the briquettes made from the residue of the gasifier are expected to fulfill the cooking needs of 100 households.

Experience of AVANI shows that there is a good potential for setting up pine needles gasifiers. Apart from generating employment for local communities these gasifiers can also fulfill the demand of fuel for local communities while also contributing the electricity generation.

3.2 Eupatorium

Eupatorium (locally called Kala-bansa) is weed species which is rapidly growing in Uttarakhand. It is an invasive species that cannot be utilized for fodder or other such purposes. Its dominance in the forest undergrowth is resulting in significant decline in biodiversity. While due to its high seed germination rate and its tenacious nature it is becoming increasingly difficult for the farmers to eliminate this weed from their farms – such efforts required intensive labor.

Efforts have been made to clear the weed from forest areas by cutting, uprooting and burning but these have met with limited success as the plant quickly reinvades owing to its naturally preserved seeds in the soil.

Potentials for utilizing Eupatorium

It has been found that natural dyes can be made from dry leaves of Eupatorium and several organizations including AT, India, AVANI and



Women uprooting Eupatorium



SHG members separating Eupatorium leaves

Kilmora are already involved in this work. Based on the experience of these organizations it has been found that Eupatorium leaves have proved to be a good source of dye material for dyeing not only oak tasar silk yarns but also other varieties of the yarns. The dye powder with the moderants gives color shades ranging from light green to golden yellow. The color fatness of Eupatorium dyes is also reported to be satisfactory.

According to AT, India, the SHG members uproot Eupatorium from the forests or from community lands and separate the leaves. The leaves are brought to a processing centre where the leaves are dried using both solar and bio-mass based dryers. The dried leaves are then grinded and the dry powder is mixed with water and boiled for 45 minutes to extract the colors. Different shades are made by adding different mordants with the solution.

Attachment 3.7.1 List of existing facilities and CFCs promoted by various projects

Name of Facility	Promoting Program	Description	No
Common Facility Center (Bamboo based)	UBFDB	<ul style="list-style-type: none"> Machines-Small tools like cutter, planers, stitching machine, saw, hammer, bamboo treatment unit Products- Bamboo furniture, Grass baskets, coaster, Hill bamboo baskets, raw bamboo culms, grass bunches are stored in the CFC. About 5 are functioning. The degree of functioning varies some are regularly working but some of them are seasonal depending on the availability of time with members. Interpersonal conflict and lack of regular monitoring support resulted in to poor function. All of the CFCs are a cluster level Self Reliant Cooperative with a share based membership from 5-10 artisan SHGs from adjoining villages. The federations are being headed by a elected Chairperson and its Board of Directors (7-11 members). 	8
Multi Utility Center	UDWDP (Gramaya)	<ul style="list-style-type: none"> Processing Mango pickle, Gooseberry, Potato chips, Tomato sauce, Machines: Fruit juice extraction (Sweet orange/ Rhododendron flower, Hill lemon), Generator, spice powdering Grinder (Turmeric, Coriander and red chilly), storage containers, peelers and small equipments like bucket, boiling pan, tub, knife, fork, sealing machine. Gramya's presence is continuing in the area therefore most of these units are functional. However, fruit processing is seasonal and market based activity which is not in every center. 27 Cluster level Federations have been promoted as Self Reliant Cooperatives. On average each FIG has 12 members and one federation has 25 FIGs. 	42
Cooperative Office buildings	CECI India	<ul style="list-style-type: none"> Used to store seasonal vegetables (Potato, tomato, Chilly, Garlic, Onion) and fruits (Hill lemon, Sweet orange, apple) and farm tools like sprayer, sickle fertilizer and seed. Also used for retailing of vegetables and daily use products. Most of them are in use but 20 are in functional condition. Conflict among members and no monitoring support from any agency/ promoter is the reason for malfunctioning. All are self reliant cooperative institutions managed by a board of director (7-9 elected representatives). SHG members (100 to 500) are share holder of these cooperative. Each cooperative is cluster based covering 10-30 SHGs of cluster. 	40
Ajivika Vatica	UBFDB	<ul style="list-style-type: none"> Nursery of Bamboo and Hill bamboo. Bamboo plantations. Demonstration centers for Bamboo and Hill bamboo plantations. Functional due to control and presence of UBFDB. 	4
Central Processing Units (fruit processing/ Grinding units/ soya Milk units)	ULIPH	<ul style="list-style-type: none"> Soya milk Unit in Chamoli is functional; others are not in use due to raw material unavailability and lack of community interest in common enterprise management. Fruit processing units are seasonally operated by SHGs and cooperatives. Mostly enterprises are in rented premises. Spice Grinding units are functional as per the demand because continuous presence of ULIPH in the field area. 	

Name of Facility	Promoting Program	Description	No
		<ul style="list-style-type: none"> • All these processing enterprises are controlled by the Self Reliant Cooperatives formed in cluster basis. SHG members are Share holder of these cooperatives. Each SHG comprises of 5-20 members and each cooperative has 15-40 SHGs of the cluster. 	
Saras marketing Centers	DRDA, Rural Development Department	<ul style="list-style-type: none"> • SHG members of the District and Block can request for use of the structure as retailing outlet from Block Development Officer at Block level and from Chief Development Officer at District level. • Most of the Saras centers are functional depending on locality. 	52

Source: Compiled from various sources, JICA Preparatory Survey Team

Attachment 3.7.2 List of existing key industries and entrepreneurs in Uttarakhand

Name of the Industry/ Entrepreneur	Location	Enterprise	Remark
Government Bee Keeping Center	Julikot, Nainital.	• Bee rearing	Government Bee Keeping Center, Julikot, Nainital. Horticulture Department, UK.
HARC Alaknanda Krishi Vyawasaya Bahudesiya Swayatta Sahkarita	Kaleshwar, Chamoli.	• Fruit, pulses, spices and basic tea processing	HARC Alaknanda Krishi Vyawasaya Bahudesiya Swayatta Sahkarita, Kaleshwar, Chamoli. Mob:9410525423,
Kisan Trading Corporation	Rudrapur, US Nagar.	• Farm inputs, agriculture tools, Bio fertilizers and insecticides, Nursery establishment material	Mr Rahul Singhal, Rudrapur, Udhm Singh Nagar.05944-243505,244133 09719015500
Patanjali Yogpeeth	Haridwar	• Herbal and farm produce procurement • Technology for quality control	Patanjali Yogpeeth, Haridwar. www.divyayoga.com email: divyayoga@rediffmail.com 01334-240008
Uttarakhand Seed & Terai Development Corporation	Haldwani, Nainital.	• Seed production technology • Buyback arrangement • Marketing support • Foundation seed • Quality control in seed production	Chief Seed Production Officer, 05944-230222,233595 tdc@uaseedsandtdc.com www.pantnagarseeds.com
Nidhi Enterprises, Saharanpur Road, Dehradun.	Dehradun	• Farm inputs, Nursery material, Bio agents, Farm tools	Mr Anshul Garg Mobile:91-9412972132
Appropriate Technology India/ DevBhumi	Ukhimath, Chamoli	• Bee Keeping service and training • DevBhumi-registered company established by AT India especially for marketing of the products from the communities.	Mr. Kamal Badoni Executive Director, 1364-264221, 267355 www.atindia.org
Plantice Agrotech	Niglat, Nainital.	• Poly house, shade net, nursery material, Bio-fertiliser, seed/plants	Managing Director, Plantice Agrotech, Niglat . Nainital. Mobile: 91-9410514491
Uttarakhand Bamboo and Fiber Development Board	Dehradun	• Bamboo and hill bamboo planting material and technology, entrepreneurial skill/training	Chief Executive Officer, UBFDB, Indiranagar. Dehradun. 0135-260897 www.ubfdb.org e mail: info@ubfdb.org
M/S S P Solvent Ltd.	Rudrapur, US Nagar.	• Cattle/poultry/ fish feed and raw material purchase	Sri Pradip Das, 05944-243730, 243545

Name of the Industry/ Entrepreneur	Location	Enterprise	Remark
Uttarakhand Rural Poultry Development Project	Nagla, Udham Singh Nagar.	<ul style="list-style-type: none"> Training and exposure, poultry feeder, drinker, vaccination, Chicks, technology. 	Uttarakhand Rural Poultry Development Project, Nagla. Pantnagar. Tel: 05944-234252, 234070
Center for Aromatic Plants	HRDI, Selakui, Dehradun.	<ul style="list-style-type: none"> Technology and planting material for Aromatic plants and marketing support. Lantana Oil extraction. 	Director, CAP. Selakui, Dehradun. Tel: 0135-2698305.
The Institute of Himalayan Environmental Research and Education (INHERE)	Masi, Ranikhet.	<ul style="list-style-type: none"> NTFP cultivation and value addition. Fruit processing. 	Masi, P.O. Masi, District Almora. 05966 257374 05966-257217 inhere.masi@rediffmail.com
Paryavaran Sanrakshan Samiti, Champawat	Pati, Champawat.	<ul style="list-style-type: none"> Bee keeping and cold water fisheries. 	Village Toli, P.O. Pati, Champawat. www.pssngo.co.org Phone:91-9758008043 www.pssngo.in
Avani, Pithoragarh	Tripuradevi, Pithoragarh.	<ul style="list-style-type: none"> Solar Energy services and sales, natural fiber, Pine needle Gasifire and briquette 	Village Tripuradevi, P.O. Berinag. Pithoragarh. 05964 2 44943 avani@sancharnet.in w:avani-kumaon.org
Studio Alaya (Richa Ghansiyal & Joshua Hishey)	Rajpur, Dehradun	<ul style="list-style-type: none"> Furniture, Lighting, and Home accessories made of natural and renewable materials (bamboo, natural fibres, non endangered wood, recycled materials) 	
Due North	Due North- Saur Villages, Niranjanpur, Dehradun	<ul style="list-style-type: none"> Community based eco tourism, handicrafts and marketing 	http://www.duenorth.in
Kilmora	Kumaun Gram Udyog, PO Kasiyalekh, District Nainital, Uttarakhand	<ul style="list-style-type: none"> Established by Chirag (Central Himalayan Rural Action Group, an NGO) All profit for the communities Hand woven and knitted textiles, apricot skin care products, organically grown culinary herbs, cereals and spices, processed foods 	http://www.kilmora.in/
Tantuk (Yojana Khanduri and Prathik Choudhary)	Dehradun	<ul style="list-style-type: none"> Textile - 	

Name of the Industry/ Entrepreneur	Location	Enterprise	Remark
Neeta Panwar	Bhawali, Nainital	<ul style="list-style-type: none"> ▪ Knitting and weaving using the traditional technique of Bhawoli, Nainital 	-
Maharana Bans Evam Resha Hath shilp Utpadh Sahakarita	Khatima, US Nagar, Uttarakhand	<ul style="list-style-type: none"> ▪ Cooperatives formed by UBFDB ▪ Grass and bamboo based activities ▪ They have an office in Khatima, where they keep records and it also act as a collection and dispatch center. 	UBFDB
Rana Tharu Bans Evam Resha Hasthshilp Utpadh Sahakarita	Sitarganj, US Nagar, Uttarakhand	<ul style="list-style-type: none"> ▪ They developed their own mechanism of – receiving the orders from clients, circulated amongst the SHG members, quality control, collection of the finished products and delivery at the stipulated time frame. ▪ Since the promoting agency had withdrawn, they with the help of other governmental schemes try to participate at various national and state level exhibition and fairs to generate the revolving fund. ▪ Various CFC's (also established and promoted by UBFDB) are linked with them and they are well equipped with hand and machine operated tools and equipment, infrastructure. 	

Source: JICA Preparatory Survey Team

Attachment 3.7.3 Note on SHGs/ JLGs and Micro Finance in Uttarakhand and implication to the Project

1. Introduction

The Project shall provide Rs. 100,000 to each Van Panchayat (VP) – the basic unit of project implementation at the village level consisting of forest dependents, as a revolving fund to be used for promotion of income generation activities by SHGs. The SHGs shall have to borrow funds from the revolving fund of VP to setting up IGAs. The Project shall also support the NTFP Centre of Excellence with Rs. 50 million for promotion of enterprises on NTFP. The fund shall be used to assist SHG Federations/ producer groups to set up new enterprises on NTFP and/ or expansion of existing enterprises. The funds shall be used in such cases, where financing an enterprise from the banks becomes difficult.

The need for creation of such fund is quite evident from the current out-reach of the banks in the hills. The SHGs can initiate small business activities borrowing money from the Van Panchayats and pay it back as per an agreed schedule between SHGs and VPs. The financial literacy among women seems to be low in the hills in comparison to that of the plains. Till the capacities of SHGs are built they can make use of the funds available with VPs without getting involved in much complex procedures. The potential for productive use of revolving fund and enterprise challenge fund is enormous. Very limited enterprises on NTFPs have been supported by the Banks and existing programmes/ schemes of the Government. The initiatives of the Project shall address the issue of higher cost of borrowings by the poor people.

Detailed guidelines for management of the revolving fund and enterprise challenge fund shall be prepared after establishment of PMU as well as NCE.

Some efforts have been made here to review the status of SHG-Bank linkages and operation of different microfinance institutions.

2. Status of microfinance in Uttarakhand

National Bank for Agriculture and Rural Development (NABARD) is the key bank to provide financial support to SHGs for SHG – Bank Linkage Program (SHG-BLP). It refines banks and MFIs for financing SHGs. Grants are provided to Non Government Organizations (NGO), Regional Rural Banks (RRBs), District Central Cooperative Banks (DCCBs), Urban Cooperative Banks (UCBs), Farmers Clubs, Individual Rural Volunteers (IRVs) for promoting Self Help Groups (SHGs) and also JLGs (Joint Liability Groups). The quantum of grant assistance being provided to these SHG promoting agencies has been indicated below:

Operations of banks in Uttarakhand

- 24 public sector commercial banks
- 1 cooperative sector bank
- 2 regional rural banks
- 13 private sector banks
- A total of 1798 branches all over the state (900 rural area branches)
- Hilly districts – more than 20 villages per branch
- More than 13 MFIs operating in the state

Table: Support to SHG Promotion Institutions (NABARD schemes)

Agency	Quantum of grant assistance /SHG (Rs.)
NGOs	7000
RRB/DCCB/UCB 3500	
Farmers' Clubs/ Village Watershed Committees/ Village Wadi Committees	1600
Individual Rural Volunteers	1200

Source: NABARD

SHG-bank linkage program was started in India after NABARD provided financial support to MYRADA (NGO) in South India to finance SHGs in 1987. Based on the experience NABARD provide similar support to other NGOs in 1989 to finance SHGs as part of an action research project. Based on the findings of action research NABARD intended to issue guidelines for SHG financing. During 1990 RBI accepted SHG strategy as an alternate model of credit. During 1992 NABARD issued guidelines for SHG-Bank linkage. In 1994, RBI constituted a working group on SHG and based on the recommendations of the working group priority in lending was given to SHGs – registered or unregistered and through this arrangement the banks can provide financial support to the weaker sections of population in the society. RBI issues guidelines to Banks to mainstream financing of SHGs as a priority sector lending portfolio banks in 1996.

Currently there are more than 8 million SHGs in the country linked with the banks for savings and as well as for credits. The savings of SHGs with the banks has reached to Rs. 270 billions and credit outstanding of SHGs has reached to Rs. 393 billions. The disbursement of credit to SHGs during 2012-13 was Rs. 200 billions. Average credit outstanding per SHG at the national level is Rs. 88,500 (NABARD, 2013). SHG-BLP has already led to an aggressive target. Various Government Departments are now prioritizing SHGs to implement their programmes and schemes. Financing of SHG has already been established as an alternative model of credit delivery to poor and deserving people in the rural areas.

The predominant models of financing of SHGs are given below:

1. SHGs directly obtaining loans from the banks.
2. SHGs directly obtaining loans from the banks but support services/ credit plus services are being provided by an NGO.
3. SHGs are promoted by NGOs and NGOs obtain finances from the Banks and provide loans to the SHGs. NGOs also provide different support services – institution development, skill development, business development services including bank linkages.
4. Cooperatives/ Federations of SHGs obtain loan from banks and carry out lending to SHGs.

NABARD provides grants SHG promoting institutions for training, capacity building, skill upgradation, and exposure visits etc. of the SHG members and other stakeholders. Currently a scheme for promotion and financing of Women Self Help Groups (WSHG) is being implemented by NABARD in backward districts of the country. The scheme aims at saturating the districts with viable and self sustainable WSHGs by involving NGOs/support agencies who shall promote and facilitate credit linkage of these groups with banks, provide continuous handholding support for livelihoods.

In Uttarakhand, currently there are more than 50,000 SHGs operating throughout the state and as on March 2013, 35,001 SHGs have been linked up with the banks for financial support. Women SHG Project (special project supported by NABARD) is being implemented in Tehri Garhwal and Chamoli districts. Some key highlights of the Project have been given below:

- Target for the Formation/Saving linkage of WSHGs for FY 2012-13: **2,050 WSHGs**
- No. of WSHGs Promoted during FY 2012-13: **2025 WSHGs**
- No. of WSHGs Saving Linked during FY 2012-13: **1931 WSHGs**
- No. of WSHGs Credit Linked during FY 2012-13: **399 WSHGs**

Table: Some information on SHGs and bank linkages in Uttarakhand

Description	2011-12	2012-13	Remark
Total SHGs (Cumulative) promoted and savings linked to Banks	48141	57955	
Savings amount in million Rs.	591.327	476.357	2012-13 – savings information is for 40316 SHGs
Loans issued No. of SHGs during the financial year	5125	7866	
Loans issued in million Rs.	759.296	405.022	
Cumulative no. of SHGs linked to banks for loans	25430	24480	
Loans outstanding in million Rs.	1,318.444	1,616.232	
Gross Non Performing Assets in million Rs. as against the total outstanding loan	93.40 (7.08%)	117.139 (7.25%)	
SHGs supported under SGSY		22,811	
SHGs – loan outstanding under SGSY in million Rs.		1,029.831	The loan outstanding is for 15334 SHGs
No of JLGs financed	1,541	2,001	As on March 2013, 3,778 JLGs have been financed by Financial Institutions
Amount financed in million Rs.	236.59	337.852	As on March 2013, a total of Rs. 580.161 million has been financed to JLGs

Source: Compiled from various sources by JICA Preparatory Survey Team

Swarnajayanti Gram Swarozgar Yojana is a flagship program of the Union Government to promote self-employment program through SHGs in rural areas. The programme has been restructured now as National Rural Livelihood Mission. In Uttarakhand more than 15,000 SHGs have been supported under SGSY. The following table presents the total number of SHGs formed and supported under SGSY in different districts till March 2011.

Table: SHGs supported under SGSY (as on March 2011)

Districts	BPL families (Nos. as per 2002 BPL census)	Number of SHGs formed	SHGs supported under SGSY	Remark
Almora	60,659	3,794	1,326	Still there is a lot of scope for organizing people living below the poverty line through SHGs and target them through SGSY/ NRLM in the target areas of the Project (highlighted districts). Average membership in SHG is 10-12.
Bageshwar	26,156	1,839	575	
Chamoli	32,384	2,537	1,162	
Champawat	19,896	882	406	
Dehradun	55,199	2,539	1,009	
Haridwar	91,927	1,742	803	
Nainital	42,984	2,521	750	
Pauri	60,909	3,145	1,706	
Pithoragarh	44,129	3,064	1,095	
Rudrapur	25,295	1,814	669	
Tehri	62,308	4,649	1,992	
U.S.Nagar	70,516	3,153	1,177	
Uttarkashi	28,375	2,322	1,290	
Total	620,737	34,001	13,960	

Source: Uttarakhand Statistical diary, 2010-11

NABARD has already supported number of SHG Promoting Institutions for organizing capacity building programmes. There is also a potential for the SHG Federations to access the support of NABARD.

IFAD assisted Ajeevika Project was started in 2004, which targeted 959 villages from 17 blocks and 5 districts in Uttarakhand. The Project has promoted 3,560 SHGs and 95 per cent of them are women SHGs. The savings available with these SHGs is Rs. 90.30 million (up to 2012-13). The Project could effectively facilitate linkages of SHGs and SHG Federations with the financial institutions for carrying out different livelihood improvement activities. 2,175 SHGs have been linked with different banks to raise Rs. 79.40 million. The Project has promoted formation of 71 SHG Federations in 5 districts and 69 of them have been registered under Uttarakhand State Self Reliant Cooperative Act, 2003. These Federations have been provided with Rs. 25.20 million as seed capital by the Project, which is being used for supporting various activities of SHGs and SHG Federations.

MFIs

There are about 13 MFIs operating in the state in addition to 26 banks providing microfinance services.

NGO supported microfinance institutions are making some good impact because of their add-on services to the credit delivered. The information from Ushamath Mahila Mahasangh (UMM) has been presented here for further understanding of the work on the ground. Ushamath Mahila Self Reliant Cooperative Mahasangh Ltd. has been registered under the Uttarakhand State Self Reliant Cooperative Act 2003 in 2005. This MFI is being promoted by Appropriate Technology India. UMM has been able to promote 895 SHGs having 8,347 women members with cumulative saving of Rs. 10.04 million. The outreach of UMM is 464 villages of 5 districts i.e. Rudraprayag, Chamoli, Tehri,

Uttarkashi and Pauri Garhwal. Since the beginning of its operation UMM has disbursed an amount of Rs. 14.66 million among 1,965 clients including repeat loan clients of 696 during 2012-13. The repayment rate is 95 per cent. The loan size is between Rs. 5,000 to Rs. 40,000 and the repayment period is maximum 18 months. AT India has facilitated linkages between the UMM and NABARD and State Bank of India for financing the activities.

MFIs in Uttarakhand

1. Total no. of MFIs operating in the state = 13
2. No. of MFIs having HQ in the state = 4
3. Banks providing microfinance services = 26 (Public Banks=13, Private Banks=0, Regional Rural Bank (RRBs) = 2, District Credit Cooperative Bank (DCCBs) =11)
4. Total no. of SHGs under SHG Bank Linkage Program (SBLP) in the state = 48,141
5. Total savings - client outreach= 673,974
6. Total SHG - savings with banks (in million Rs.) = 591.327
7. Total credit - client outreach = 483,207 (MFIs = 127,187, Banks= 356,020)
8. Total portfolio outstanding (in million Rs.) = 2,072.27 (MFIs = 753.826, SHG = 1,318.44)
9. No. of districts served by MFI = 7 (No. of poorest districts = 3)

NB: Sa-Dhan – Association of Community Development Finance Institutions

3. Steps to be taken by the Project for financing the SHGs

The Project shall take all necessary steps for promotion and strengthening of SHGs and link them to the financial institutions and other opportunities available in the market. During the initial period of the Project, SHGs shall be financed through the Van Panchayats to ensure smooth functioning of SHGs and the microfinance activities. It shall help SHGs to establish a strong platform to attract bigger investments from formal financial institutions.

Adequate emphasis shall be given on capacity building of SHGs, enhancing their understanding on micro financing, institution development, bank linkages, management of IGAs and enterprises etc.

The revolving fund including enterprise challenge fund shall be used to finance following enterprises:

- Commercially viable projects/IGAs.
- Project with short gestation period.
- Existing projects having opportunities for expansion.
- Projects with low capital investments.
- Innovative projects in the field of natural resource managements.

The Project shall ensure that SHGs meet the basic minimum requirements to access the revolving fund from the VP. In case of financing from the enterprise challenge fund SHG Federations registered under Uttarakhand State Self Reliant Cooperative Act 2003 shall be given priority.

Amount to be financed shall be determined based on the credit worthiness of the IGA/ enterprise and the institution to set up the enterprise. In general, financing up to 50 per cent of the total cost of the enterprise shall be permitted by NCE from the enterprise challenge fund. In exceptional cases it may go beyond 50 per cent. In case of small IGAs, financing up to 80 per cent shall be considered. In case of SHG the minimum amount to be financed is Rs. 20,000 and maximum is Rs. 100,000. In case of NTFP enterprises run by SHG Federation/ Cooperative/ Producer Company, the minimum size of finance would be Rs. 500,000 and the maximum would be Rs. 5 million.

Risk management - The Project shall emphasize:

- ✓ Detailed screening and assessment of the requests/ business plans before financing and efforts shall be made to review these proposals by technical experts.
- ✓ Finance for enterprises to be set up at the cluster level shall be given to SHG Federations registered under Uttarakhand Self Reliant Cooperative Act, 2003.
- ✓ Efforts shall be made to insure the enterprise against potential damages/ losses beyond control of the Federation and the Project.

Credit plus services - The Project shall emphasize credit and credit plus services to the SHGs, SHG Federations and other producer organisations. The following services shall be provided to these organisations based on the requirement.

- ✓ Formulation of business plans
- ✓ Technical assistance in setting up the enterprise/ IGA
- ✓ Training and other capacity building activities
- ✓ Market support
- ✓ Assistance in risk assessment and guidance for risk management
- ✓ Linkages for insurance coverage of the IGA/ enterprise.

The Project staff shall periodically visit the enterprise for monitoring of work of the enterprise and repayment schedule. The Project shall take the advice of DMU and FNGO before financing the enterprise. The DMU and FNGO shall also periodically monitor the progress of work. NCE shall also provide necessary technical and market support to the SHG Federations/ borrower to ensure proper management of the enterprise.

The Project shall ensure periodical financial audit of the SHG Federations financed/ supported by the Project and accordingly take necessary action for strengthening the Federation.

NABARD's Strategic Focus on SHG-BLP (2013-17)

1. All eligible poor rural households in the country to be covered through SHG-BLP by March 2017.
2. Resource poor states of Uttar Pradesh, Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Rajasthan, Maharashtra, Odisha, Assam and West Bengal to be the focus areas for promotional interventions under SHG-BLP during the next four years. Emphasis would be in 127 districts from these resource poor States where less than fifty percent of the potential for promotion of SHGs have been exploited, of which 33 districts are already covered under Women SHG Development Scheme.
3. Promotion of Women SHGs in 150 Left Wing Extremism affected and backward districts of the country to be speeded up to cover every rural household in the identified districts within the next two years.
4. In all, it is expected that about 20 lakh new SHGs are to be promoted and linked to the banks during this period.
5. Convergence with Government Programmes like National Rural Livelihood Mission (NRLM) to maximize benefits to the SHG members.
6. Strategic shift from State / District-based planning for SHG-BLP to Block-based planning, to address the issue of intra-district imbalances in promotion of SHGs.
7. Special schemes to revive dormant SHGs through effective capacity building and hand holding support.
8. Initiate additional financial literacy drive at the SHG level to eliminate over indebtedness at the member-level, especially in high SHG density States.
9. Focus on convergence of SHG-BLP and Financial Inclusion (FI) initiatives.
10. Priority to shift from promotion of SHGs to provide livelihood opportunities to the SHG members in a calibrated manner through skill building, production optimization, value chain facilitation and market linkage.
11. Community based organizations to be encouraged as the nodal points for promoting livelihood activities of members of SHGs.
12. ICT based interventions at primary level (SHGs), promoting institutional level (SHPIs) and at National level.

Attachment 3.9.1 Major NGOs in Uttarakhand

Organization	Operational area	Area of expertise	No of regular staff	Program involved in	Amount of turnover of last year (million Rs)	Contact Person	Office address and Phone
Appropriate Technology India	Rudraprayag Tehri Uttarkashi Pauri Chamoli	Bee keeping	53	UBFDB ULIPH	23.5 (2012-13)	Mr. K Badoni Executive Director	Mandir Marg P.O. Guptkashi Rudraprayag Uttarakhand. Phone: 0136 4- 264221, 267355 ATI, Mohabbewala Industrial Area, Dehradun -248110 Phone: 013 5- 2641504/ 2643980 Email: contact@atindia.org ; sales@atindia.org www.atindia.org
Himalayan Action Research Center, Dehradun.	Uttarkashi Dehradun Chamoli	Value addition OSV Community mobilization	30	ULIPH UWDP	15 (2012-13)	Mr. Mahendra Kunwar, CEO	Harc, 74 4, Indiranagar, Phase II Dehradun. Phone: 0135-2762534 Mobile:+91-9412 075996 www.harcindia.org
Sri Bhuwaneshwari Mahila Ashram	Tehri Chamoli Uttarkashi Dehradun US Nagar Champawat Tehri	Community mobilization Health and sanitation Training	442	ULIPH, EDI FF, ICIMOD ULIPH, NABARD PLAN INDIA RGF, SRTT SWAJAL UNDP UNESCO WMD, WB GTZ, NRHM	110 (2011-12)	Mr. G yan Singh Rawat, Secretary.	Head Qu arter, Anjanisain, Tehri Garhwal, Uttarakhand. Phone-01376-247448 247581 E mail- sbma@sbmahimalaya.org www.sbmahimalaya.org SBMA, Annual Report, 2011-12.
Garhwal Vikas Kendra, Tehri	Tehri Uttarkashi Dehradun	Community Mobilisation Soil Water conservation Livestock	130	ULIPH SRTT, DST Room to Read, GOUK, NABARD, UNDP	Not available	Mr Parendra Saklani, Chief Executive	Suman Kiy ari, Nainbag. Tehri Garhwal. Tel:01376228420 E mail: gvkindia@g

Organization	Operational area	Area of expertise	No of regular staff	Program involved in	Amount of turnover of last year (million Rs)	Contact Person	Office address and Phone
							mail.com www.gvkindia.org/annual report 2011-12
Himalayan Study Circle, Pithoragarh	Pithoragarh Champawat Almora Bageshwar Nainital	Community mobilization , Livelihood Institutionalization Policy feedback NTFP OSV, Sanitation, Drinking water	55	UDWDP ULIPH NRHM CIDA Swajal NABARD Action Aid	25 (2011-12)	Dr Dinesh Joshi, CEO	HSC, Pandey Gaon, Pithoragarh. Phone: 05964-224522,224521 Mobile-+91-9412095808 Email-hsecpith@rediffmail.com www.hscvo.com
Center for Business and Entrepreneurial Development Society, Dehradun	Pithoragrh Champawat Rudraprayag	Institutionalization Marketing Education	15	UWDP FF JELF UBFDB ULIPH	4.7 (2010-11)	Dr T S Papola, Executive President	16 Indira Nagar, Dehradun. Mobile-+91-9810857850, +91-9968426545 E mail-cbedce@gmail.com www.cbed.org
Central Himalayan Research Action Group , Nainital.	Almora Nainital Bageashwar	Forestry Nursery Drinking water Livelihood Animal husbandry Health, Drinking water, Education	154	ULIPH Berkley Afforestation Trust, Nikete Foundation, Canada India Village Aid, NABARD, SRTT The Ford Foundation	35 (2011-12)	Secretary Chirag,	Chirag, Mukteshwar, Nainital. Phone-05942-288246,288032 E mail-centralhimalayan@sancharnet.in www.chirag.org
The institute of Himalayan Environmental Research and Education	Almora, Nainital	Food processing Dairy NTFP Livelihood Training Community mobilization	40	UDWDP ULIPH	25 (2011-12)	Mr Bharat Bist, C Pant. President.	Masi, P. O. Masi, District Almora. Phone-05966-257374, 257217 E mail-inhere.masi

Organization	Operational area	Area of expertise	No of regular staff	Program involved in	Amount of turnover of last year (million Rs)	Contact Person	Office address and Phone
							@rediffmail.com www.inhereindia.org INHERE Annual Report 212-13.
Mount Valley Development Association	Tehri, Uttarkashi, Dehradun	NRM, livelihood promotion, capacity building, health and hygiene	45	ULIPH SRTT, NABARD OXFAM INDIA	10.3 (2011-12)	Mr Avatar Singh Negi, Director	Mount Valley Development Association (MVDA) Village -Doni Po-Megadhar Tehri Garhwal – 249155 Phone-01379-214 094 Mobile-+91-9412 079206 E mail-mvda_tehri@yahoo.com, e mail-mvda_tehri@rediffmail.com
Paryavaran Sanrakshan Samiti, Champawat	Champawat Almora	Bee Keeping Fisheries/ OSV Environment protection Livelihood Anganbadi	10	CIDA Swajal NABARD DRDA DST	0.75 (2011-12)	Mr Pitamber, Secretary	Village To li, P. O. Pati, Champawat. Phone:+91-97580 08043 www.pssngo.in
Central Himalayan Environment Association (CHEA)	Nainital	Bee Keeping OSV Nettle fiber Traditional craft Livelihood	UD	WDP	21.2	Dr Puskin Fartyal, Executive Director	9, Waldr of Compound, Mallital, Nainital, UK. Phone-05942-223 099 Mobile+91-94121 07905 E mail-office@chea india.org www.cheaindia.org
Avani, Pithoragarh	Pithoragarh Bageshwar	Pine needle gasifire/ briquetting Solar energy Silk yarn and handicraft, Textile Rain water	42	Forest Department, NABARD, UREDA National Institute of Fashion Designing	44.9 Mr.	Rajnish Jain	Village Tripuradevi, P. O. Berinag. Pithoragarh. Phone-05964 244943 E

Organization	Operational area	Area of expertise	No of regular staff	Program involved in	Amount of turnover of last year (million Rs)	Contact Person	Office address and Phone
		harvesting Sericulture		m			ail- avani@sancarnet.in w:avani-kumaon.org Mobile :+91-94 11 105252
Association for Rural Planning and Action Society, Pithoragarh	Pithoragarh Champawat Bageshwar	Policy Women issues Tribal development Food processing Fiber handicraft	15 CECI	Plan NABARD GOI	0.5 Ms	Renu. Secretary	Arpan Society , Askot, Pithoragarh. Mobile+91-97566 05817 www.arpanaskot.org
Himalayan Environmental Studies & Conservation Organisation	Dehradun	Environmental conservation Rural technologies	25 UREDA	NABARD	na Dr	Anil Joshi	HESCO, Village Shuklapur, P.O. Ambiwala via Premnagar. Dehradun. Mobile +91-9411112402
Indian Farm Forestry Development Cooperative. Dehradun.	Uttarkashi, Tehri, Dehradun.	Forestry Watershed development NTFP Livelihood Enterprise promotion Seed production	125 ULIPH	GOUK	140 (2010-11)	Dr K G Wankhede , CEO	Coordinator, IFFDC, c/o IFFCO Lane no 2 , house no 10, Kalimandir Enclave, G MS Marg Dehradun. Mobile:+91-9412 178668 www.iffdc.org e mail-iffdc@iffco.nic.in -iffdchodelhi@rediffmail.com

Organization	Operational area	Area of expertise	No of regular staff	Program involved in	Amount of turnover of last year (million Rs)	Contact Person	Office address and Phone
Uttarakhand Bamboo and Fiber Development Board	Uttarkashi Chamoli Pauri Bageshwar Champawat Pithoragarh U S Nagar	Bamboo and hill Bamboo craft Natural fiber craft/ Textile Bamboo housing Bamboo furniture	35	Department of Social Welfare, ULIPH, Forest Department Sir Ratan Tata Trust. Bamboo mission	10	CEO, UBFD.	UBFD, Indiranagar, Watershed Management Directorate. Dehradun. Email- info@ubfd.org Phone +91-135-2760897, 27611 55 www.ubfdb.org
Himalayan Organisation for Protecting Environment (HOPE)	Almora Bageshwar	Natural fiber craft/ Textile	UBFD	ULIPH	Mr	Prakash Joshi, Secretary	Himalayan Organisation for Protection Environment (HOPE) Pilkholi, Ranikhet District Almora Phone-05966-261228 Email- hoperaniket@indiatime.com
ManavBharati De	Dehradun, Rudrapriyag, Tehri Uttarkashi	Training, skill development on handicraft Micro-enterprises	40	WD Forest Department GOI	10	Secretary	D Block , Neh ru Colony, Har idwar Road, Dehradun. Phone-0135-2669306
Society for Uttarakhand Development and Himalayan Action (SUDHA) Almora	Pithoragarh Almora Bageshwar	Monitoring and Evaluation, Community mobilization, Watershed development Livelihood development	18	WD IWDP Monitoring and Evaluation Rajeev Gandhi PanchayatSahaktikaran plan MNREGS Planning	10	Sri Bhuwan Bora, Vice President	ApnaGhar, The Mall, Almora, Uttarakhand, INDIA Phone: +91-5962-237710 Mobile: +91-9412451278 e-mail- sudha.almora@gmail.com www. Sudha4livelihood.org.
Asian Society for Entrepreneurship Education and Development. New Delhi	Pauri	Community mobilization, Watershed development Livelihood development	na	WD DC, UNDP, ILO, EU, Govt. of India, DFID, NABARD, World Bank	na		No more presence in Uttarakhand
Kumaon Agriculture and	Pithoragarh Bageshwar	Monitoring and	15	ULIPH NABARD	7.2	Dr Ravish Joshi,	PriyaSadan,

Organization	Operational area	Area of expertise	No of regular staff	Program involved in	Amount of turnover of last year (million Rs)	Contact Person	Office address and Phone
Greenery Advancement Society	Almora Champawat US Nagar	Evaluation Community mobilization, Watershed development Livelihood development		CIDA SBMA Plan International		Director P	ithoragarh. Mobile +91-9412095693 e-mail- kagas_in@yahoo.com www.kagas.org/annual report
Jan Vikas Sansthan	Tehri Rudraprayag Uttarkashi	Livelihood Water and sanitation Agriculture tools	16 ULIPH	Swajal OXFAM DOA	4.5 Mr. Baisak	hilal, President	Ghansali, Chirbatia. Tehri. Post- Chirbatiyavai Tilwara. Phone:01379-217560 Mobile +91-9412076948
Rural Area Development Society	Tehri Hridwar US Nagar Uttarkashi Pauri Dehradun Chamoli	Livelihood Community mobilization Minorities upliftment	35 ULIPH	GOI	10.0 Mr.	Shusil Bahguna, Executive Director	Post office-Ranichauri, Tehri. Uttarakhand. Phone-01376-252229,252206 Mobile-+91-9412027043 E mail-radsgramin@yahoo.co.in
Himalayan Ecology and Treatment of Natural Agriculture	Tehri Uttarkashi	Livelihood Water and sanitation Women empowerment Reproductive health	16 ULIPH	Swajal UNDP GOI	2	Mr R S Rana, CEO	Nim Road, Near VikasBhawan, Ladari. Uttarkashi. Phone-01374-222721 Mobile-+91-9412077721 Email-hetonauki@rediffmail.com
Gramin Mahila Vikas Samiti	Uttarkashi -		-	ULIPH	-	Ms Aruna Gairola, CEO	01375-223765 9412409565 gmvspurola@rediffmail.com
Society for Rural Awareness and Development in Himalayas.	Uttarkashi Dehradun Tehri	Livelihood, Community mobilization, Rural Health	35 ULIPH		7.5	Mr Vipin Chauhan, CEO	Sradha office, Mandirmarg, Purola. Uttarkashi. Phone-01375-223

Organization	Operational area	Area of expertise	No of regular staff	Program involved in	Amount of turnover of last year (million Rs)	Contact Person	Office address and Phone
							222 Mobile:+91-9411 140864 E mail-shradhamori@rediffmail.com
Om Jan VikasSansthan, Lohaghat	Champawat	Livelihood, Community mobilization, Rural Health OSV	38	UCB CIDA NABARD MNREGS	04 Mr	Navin Murari, President	Om Jan VikasSansthan, Pithoragrh Road, Lohaghat, Champawat. Mobile:+91-9412929908
Dharohar Vikas Sansthan	Nainital, Almora	Water supply, watershed development Community mobilisation	36	FDA Swajal	4 (2011-12)	Mr. Dev Chandra Pandey, President	Vill Raitakhan, Post office.-Gagar, District- Nainital. Phone-05962-296443 Mobile:+91-9411 119828 E mail-dharohar.org@gmail.com
Himalayan Man and Nature Institute (HIMANI)	Nainital, Almora	Drinking water Livelihood Community mobilization Training/capacity building	5	DASP ULIPH UNDP IGSS SWAJAL	0.2 (20011-12)	Dr Suresh Mathpal, Secretary	HIMANI, Khutani, Post Box 14, P.O. Bhimtal, Nainital. Mobile:+91-9411 107651
Himmothan Society, Dehradun.	Almora, Pithoragarh, Chamoli, Bageshwar, Pauri	Dairy Handicraft	22	SRIT UBFDB	100 (2011-12)	Dr Malvika, Director	Himmothan Society, Phone- 65-Vasant Vihar, Phase - 2 Dehradun - 248006 Email : himmothan@gmail.com info@himmotthan.in Phone : +91 135 - 2760728 Fax : +91 0135 - 2761796
Himalayan Gram VikasSamiti	Almora, Pithoragarh Bageshwar	Rain water Harvesting NTFP, MAP Livelihood	-	NABARD CIDA IFAD Swajal	-	Ms. R S Bisht, President	Awalaghat Road Dasaital (Gangolihat) Dist. Pithoragarh, UK. Phone-05964-213

Organization	Operational area	Area of expertise	No of regular staff	Program involved in	Amount of turnover of last year (million Rs)	Contact Person	Office address and Phone
							271 hgvsgan@yahoo.co.in info@hgvs.co.in
Jaksheshwer Shikshan Sansthan	Chamoli Livelihood,	Community Mobilisation, Drinking water and sanitation	45 ULIPH	NABARD SRTT Bio Fuel Board GOI	5 (2011-12)	Mr. Nandan Singh Bisht, Secretary	Jaksheshwer Shikshan Sansthan (JSS) Near Petrol Pump, Gopeshwer Distt. Chamoli Phone-01372-253512 e mail: jss_gpr@yahoo.co.in

Source: Compiled by JICA Preparatory Survey Team

Attachment 4.1.1: Minutes of meeting of the Stakeholder Consultation Workshop

**Minutes of Meeting of the
Stakeholder Consultation Workshop
held on 9th October 2013 to discuss JICA preparatory survey
and project design of the project titled
Uttarakhand Forest Resources Management Project (UFRMP)**



Meeting Date and Time: 9th October 2013; 10.00 A.M.

Meeting Location: Manthan Hall, Uttarakhand Forest Department HQ, 85 Rajpur Road, Dehradun.

A meeting was held under the chairmanship of Dr. R.S. Tolia. Chairman (Central Himalayan Environmental Association); Former Chief Secretary / Chief Information Commissioner, Government of Uttarakhand. The workshop was intended to introduce the project's key features, goals, objectives and component activities; approaches adopted for areas selection and proposed project design to the civil society and other stakeholders; and to receive feedback from participants on the overall project design, proposed activities and institutional arrangements. List of participants and schedule of workshop are enclosed in the **Annexure I** and **Annexure II** respectively.

Call to Order: Chairman, Dr. R.S Tolia called the meeting to order on 10.00 AM.

Following that, Dr. Sanjay Verma, Institution/Monitoring Specialist, Nippon Koei Ltd. initiated the proceedings of the meeting, while giving a welcome address stated the purpose of the meeting and agenda; and thanked all the participants from varied background for sharing their valuable time and contributions.

In continuation, Mr. Shinichiro Tsuji, Team leader, Nippon Koei Ltd., gave brief introduction on the lined up four key presentations; first on broad overall view of the project; second on the key benefits of the project to the community; third on the proposed institutional structure, transparency & monitoring mechanism, and the last presentation on the Environment and Social consideration adopted in project design. He explained that the area selection, activities proposed and project design is not final, needs further improvements based on field realities and to have better results. He requested all the participants to actively participate in the workshop and provide their feedback and comments for further improvements.

Subsequently, four detailed presentations were done by the subject matter specialists, and each presentation was followed with an interactive question and answer sessions.

Last but not the least the recommendations and suggestion from stakeholders were collated and orally presented by Dr. R.S. Tolia, Mr. S.T.S Lepcha and Mr. A.R. Sinha.

Details of the presentation are as follows:

1. The first presentation titled "Overview of JICA Preparatory Survey for Uttarakhand Forest Resource Management Project" was presented by Dr. Manoj Pattanaik, Consultant, Nippon Koei Ltd. He highlighted that JICA is the largest bilateral donor agency for the forestry sector programs in India, which spans across India, and support diverse developmental programs in 22 states of India. Subsequently, the presentation described the process adopted in project preparatory survey and review of earlier version of project proposals prepared by Uttarakhand forest department. Increase in wage rates was also discussed that has implicated in increase in project cost to around INR 855 crore from the proposed cost estimates of INR 655 Cr. JICA will fund 85 percent of the project cost as soft loan to Government of India (GOI). The GOI will in-turn fund 90 percent of the project cost (considering Uttarakhand as a special category state) and the remaining 10 percent of the project will be co-funded by Government of Uttarakhand.

The presentation delved on the proposed project components categorized under four major segments such as (a) Eco restoration, (b) Livelihood improvement and community development, (c) Other support services and (d) Soil Erosion control. He emphasized that the project would primarily focus on strengthening community institutions, inter-sectoral linkages, convergence of expertise from various other organization, capacity building of existing system, marketing, promoting forest and non-forest based livelihood generating activities, and above all ensuring environmental and social safeguard.

Later in this presentation, he illustrated the selection criteria adopted in short listing the proposed 37 forest ranges and its target villages, key project targets and expected outcome. (Presentation attached in **Annexure III**). He informed to the stakeholders that the final proposal will be submitted to JICA by end of January 2014.

After the presentation, discussions were held and suggestions that emerged are as below:

- (a) Representative from Uttarkashi Mr. R.S. Rana, HETONA explained that Bhagirathi Ghati region has huge tracts of degraded forest land and with recent flood disaster it needs enormous eco-restoration activities. He also added that Chinayalisaur (Uttarkashi) is also an eco-fragile zone. He suggested that these neglected areas should also be included in the project. Other participants supported his view and added that the project should identify and include more degraded forest land for the project interventions.

Mr. Tsuji, Team Leader, explained that only part of Tehri (Tehri Dam-I), which overlaps with the suggested location is included in the proposed JICA project. He opined that JICA project will not be able to cover the entire degraded forest in Uttarakhand considering the budget and implementation reality. Other projects such as GRAMYA II (World Bank), 12th Five Year plan of GOI and Uttarakhand Forest Department action plan has identified Tehri Dam and Uttarkashi as high priority areas for eco-restoration. In order to avoid duplication of interventions, JICA has not included the suggested areas.

- (b) Representative from United Nations Development Program (UNDP) opined that the land holdings with Van Panchayat (VP) are generally small and largely degraded. Since the project intends to work with Van Panchayat (VP), the impact of the project will not be in large scale as projected. It is suggested to add more VP should be added and focus should be provided for capacity building; and the project should handhold them in implementation and management.

Mr. Manoj, clarified that the activities will be implemented with a proper micro planning targeting VP in batches rather than taking all of them at once for the project intervention. So that the local needs and capacity building activities are addressed.

- (c) Another participant asked a question that since the project is also working in eco-tourism, what are the identified areas and what is the mechanism for implementing eco-tourism intervention?

Team leader, JICA survey team, answered that Eco-tourism activity will be only focused in a selected potential area - which will evolve out of micro-panning. Under Van Panchayats, specific committees such as Eco-development Committees (EDC) and Biodiversity Management

Committee (BMC) will be created and/or strengthened. Since there is no validated model, the project would adopt a flexible approach in area selection and support and it would evolve based on learning.

- (d) A women participant **Ms. Anita Lingwal, Nav Chetna Yuva Shakti** suggested that the project should focus on gender aspects and involve more and more women participation giving emphasis to ST/SC/BPL families. She also added that in Uttarakhand large number of SHG's are created by different agencies, but lacks handholding and promotion support, the project should focus on capacity building of the existing SHG rather than forming new SHG's.

All participants agreed to her view points.

- (e) Representative from CHIRAG informed that under various projects, huge amount of plantation had already been done, but the success and economic returns are limited. As the project is considerably long term (8 years), focus should be provided on the outcomes (success and economic returns) rather than on the dry outputs (Figures – No of hectare planted / no of SHG formed, etc.).

Team leader answered that under plantation component, the target is very low. The aim of the project is to rehabilitate and eco-restore the degraded land and the project would focus on success of plantation and long run sustainability.

2. Presentation titled “Benefits to Community” was presented by Mr. Anmol Jain, Consultant, Nippon Koei Ltd. The presentation highlighted details of proposed Income generation activity (IGA) and its projected benefits based on data collected and assumed business model. (Presentation attached in **Annexure IV**).

The presentation outlined the proposed NTFP based Income Generation activity (moss, lichens, honey, tejpatta) and Non NTFP based Income generation activity (diary, poultry, off season vegetables, spices), numbers of cluster, interventions and expected economic benefits of the interventions. He later illustrate tangible and intangible benefits of the project such as (1) upgraded forest resource, (b) reducing women's drudgery, (c) capacity building and empowerment of the VP, SHG and community, (e) asset creation for VP and disaster response center for effective disaster management, and (f) provision of funds for basic human need (BHN) and disaster risk reduction interventions. All the interventions will converge with existing government and non-governmental schemes, programs and projects.

Summary of the discussions and action points which emerged during the question and answer session after this presentation are as below:

- a) Representative from ATI opined that the interventions proposed (such as formation of SHG, federation, market feasibility and access to micro-credit, etc.) are not new to Uttarakhand, there are many completed as well as ongoing programs in Uttarakhand with the same mandate. But, once the project is complete all the intervention as well as enterprises become non-functional. So, what is the mechanism to ensure long run sustainability of the project?

The consultant answered that the project will adopt an inclusive approach and will address all aspects needed for successful enterprise – participatory micro planning, awareness and sensitization, study tours, enterprise infrastructure, skill development, market linkages, technology transfer, working capital needs as well as raw material resource development. He illustrated this with few examples; in the case of lichen and moss that the primary collectors get Rs. 60-70 per kg whereas the market price is Rs. 200-250 per kg. The project aims to introduce value addition, linking buyers or auction at the village level minimizing the benefit of the middleman. In case of bee keeping, a small low cost processing unit will be established at the cluster level, with constant skill up gradation along with organic certification for branding of their produce. In the case of natural fiber, market feasible study does not give a clear picture. During the course of project, if there is market for yarn or fabric, etc. the focus will be provided to that.

As far as mechanism for long run sustainability is concerned, the NTFP Center of Excellence (NCE) is proposed under the project which will act a marketing hub focusing mainly on marketing of produce by Uttarakhand. The NCE will be managed/ run in a professional way with expertise from professionals with defined roles and responsibilities.

- b) Another representative from ATI opined that looking at the larger scale or bigger picture, the problem lie in creation of proper infrastructure, policy guidelines, and need for constant advocacy to create a proper business environment. The project should also work towards addressing and creation of enabling policy environment and provide guidelines for upscaling of interventions during and after the project phase.
- c) A participants opined that last mile accessibility and connectivity is an bottleneck in interior hill area and proposed that sub-clusters and cluster formed should be linked to federations and collectively addressing the problem/ issue of the villages associated with it. A mechanism for disseminating market information and linkages and disaster information should be developed and validated with the use of modern communication tools such as mobile phones, etc.
- d) Mr. Negi, representative of Beti Bachao Andolan (“save a girl child” campaign) explained that higher value addition and incremental income to women should be given priority. With reference to pine needles and

pine cone, he opined that in addition to conversion of pine needle to energy (a very low value addition), there is a larger window of opportunity exist to convert the pine needle and cone to larger value added handicrafts products and souvenirs. This will be an opportunity for women to be at home addressing household chores and earning additional income for addressing homes food security, children education and health needs.

- e) Representative from SUDHA suggested that the project should incorporate the following interventions (a) generating database of all the traditional healer in Uttarakhand; work on their capacity building, strengthening them so they can earn their livelihood from the activity; (b) promote traditional and organic food (millet etc.), (c) Village level shelter for addressing disaster issue and (d) solar energy should be promoted which has huge potential in lights, cooking etc.
- f) Adding to this and in response to the suggestion, representative from UREDA highlighted the potential and possibilities of solar and renewable energy for fiber extraction, cooking, household / commercial lights etc. He highlighted that the possible application of renewable energy in enterprise development are as follows:
- With the use of solar heating system, water can be heated upto 60°C, which can be used in fiber primary processing units.
 - Street lights are being provided under Atal Adarsh Gram Yojana.
 - For household sector: providing fuel efficient chulhas (stoves- ½ sq. mts), dish cooker which is more successful as compared to earlier models.
 - For food processing unit: solar drying can be done which is more efficient and less time consuming.
 - 3 units of pine gasifier are planned in Pithoragarh by which VP will get the employment.

In addition, he mentioned that UREDA can also provide training to the local youth and mechanics for repairing solar equipments, a source of income.

- g) A farmer, who is also a craftsperson present in the workshop, opined that the livelihood issue is extensively dealt in the project whereas Man-Animal conflict is neglected. He also requested to incorporate ringal handicrafts as the livelihood generation activity because it is been practiced by artisans since generations as their traditional craft and it has a larger potential.
- h) Representative from UNDP opined that we should first understand the requirement of the village and communities prior to the interventions. It is generally observed that what is required is not delivered to them. With reference to the medicinal plants, the market is not an issue. Quality of the

produce and linking the producer groups to market is the major areas which need to be addressed. We need to strengthen the in-house capacity as there are 193 registered pharmacies which require produce on a regular basis. Another drawback is the strategic positioning of the sufficient produce which is very crucial to generate regular income for the communities associated, linking them to indigenous brand like HIMADRI (for promotion of Uttarakhand products). He suggested that the enterprises should run as "For Profit enterprise" or in business mode and not in traditional beneficiary model adopted by most development agencies.

- i) Another representative opined that VP cannot work in isolation and it needs enormous handholding and technical support. The history and development of VP shows that it is only limited to the plantation activities. It is necessary for the project to building technical and management capacities of the VP and handhold those over a long time frame. In addition, provisions for working capital/ seed money/revolving fund should be provided to make them financially capable and independent to take up various IGA proposed under the project.

Dr. Michiko Ebato, Additional team leader, Nippon Koei Ltd., appreciated the suggestions and feedback provided by the members. She assured that the feedback and suggestions will be incorporated in the final design framework. She added that the missing link (produce and market) and to create a critical mass: SHG/producer group-cooperative-federation model will be adopted. The financial capacity of the VP will definitely be upgraded for its long term sustainability but right now it is in preparatory phrase.

3. Third presentation titled "Recommended mechanism for ensuring transparency and M&E arrangements" "was presented by Dr. Sanjay Verma. The detailed presentation is attached in **Annexure V**.

The presentation elaborated on the proposed institutional and M&E arrangement in detail. The broad themes of the presentation were : (a) Institutional framework (high powdered steering committee, Project management unit, district management unit, partner grass root implementing NGO's and Boards; their roles and responsibilities); (b) rigorous monitoring and reporting by multi-stakeholders; (c) Social Audits and Self-monitoring by community/ target group; (d) Statutory Annual Financial Audits; (e) Grievance redressal mechanism; (f) Annual disclosure and strategy planning during review workshops; (g) surveys by qualified and reputed independent agencies (baseline and impact); (h) Web-enabled MIS and Computerized accounting system (FMAS) till range-level for real-time reporting and (i) creation and use of Geographical information system (GIS) for spatial analysis, planning, monitoring and evaluation.

In addition, the projects progress will be shared through project website and publications (annual plan, progress reports and success stories) including audio-visual documentation, IEC material etc.

Team Leader, Nippon Koei Ltd. added to the presentation that local NGO and boards, with varied expertise in capacity building, community mobilization, technical support and transfer, marketing and holding will be made partners of project and the implementation of projects at the grass root level will mostly happen through them. The Project management unit (PMU) being the executing agency (EA); the role of NGO's is to coordinate between EA- VP and government agencies and implement the intervention in ground, will this model work / sustain on a longer basis?

- a) Many participants from NGO's opined that the role of non-governmental organization (NGO) is vaguely defined and they opined that NGO's should not be used only as human resources service providers and grass root community mobilization, but they are looking for a larger role in project implementation.

Team leader, Nippon Koei Ltd clarified that the role of a NGO depends on the expertise, capacity and prior track record on implementation. Considering these factors, NGO partnership and involvement will be both - service providers as well as deliverable based assignments. For example: If a NGO is provided assignment for cluster formation /federation, the entire process such as micro planning, beneficiary identification, capacity building, cluster development, SHG formation, enterprise development, federating them as primary cooperatives and secondary cooperatives, etc. will be assigned to a NGO. It is not like a piece meal, but the activities will cover entire gamut related to a particular deliverable.

- b) Representative from UNDP opined that it is necessary to establish and follow an effective and transparent system at all levels of the proposed institutional mechanism for the smooth implementation of the project. However, he observed that if the indicator or parameters for M&E are not clear to the implementation agencies at the preliminary phase, it would have an impact on the output of the project. The main areas would be fund flow and information dissemination. He also added that the forest department, being a government department is involved in bureaucracy and delays in fund releases. Therefore, the project should have a separate bank account for uninterrupted and uniform flow of funds.

Institution specialist informed to the participants that he had only included preliminary indicators in the presentation; detail parameters or indicators will be developed and included for all the activity and/or components of the project. Separate bank account for smooth flow of funds has already been proposed.

- c) Representative from CHIRAG suggested that a management unit should also be created at VP level, as they are implementers at the ground level. VP should be consciously involved in decision making, and in addition there is a need to build their capacities for effective project implementation. However, at the DMU/FMU level risk exists in altering the outcome and/or outputs. For that there is a need to develop a set of rules and regulation.

Institution specialist clarified that decentralized planning process would be adopted where VPs would evolve their own micro-plan and would take key decisions in implementing and managing project funds. VP would perform their functions according to VP Rules, 2005.

- d) Representative from Beti Bachao Andolan (“save a girl child” campaign) opined that the committees / units created under the project do not have representation from social development background / academic institution and from VP, who can understand the need of the beneficiaries of the project at the ground level. The project should adopt bottom-up decision making process rather than the top-down approach.
4. The final presentation titled “Environmental and Social Considerations” was presented by Mr. Richard Rastall, Environmental and Social Consideration, Nippon Koei Ltd. (presentation attached in **Annexure VI**). The presentation highlighted on measures to be put in place to avoid, reduce, manage and mitigate the adverse environmental and social impacts of project and measures to enhance positive impacts. He then explained the (a) JICA guidelines for environmental and social considerations, (b) Environmental and social consideration and mitigation; (c) Environmental and social management framework and (d) scheduled tribes and Transhumant planning framework. During the presentation, Mr. Richard pointed out that in the past the experience of Joint Forest Management in India illustrates that the process is not participatory in nature. Forest department have entire control of decision making and implementation including finances, the JFM committee only functions on paper with no active participation or role. He suggested that to improve that and to make forest management participatory in paper and spirit, the proposed framework should be followed.
- a) A participant highlighted that with the recent disaster in Uttarakhand, nearly 400 villages are being relocated. Will this project work for relocation of the community.
Team leader, Nippon Koei Ltd replied the mandate of the project is to restore ecology with the community participation, so in case of relocation (community not being there), the project will not work in that village or VP.
 - b) Dr. R.S. Tolia, stated that Uttarakhand is a heavily forested state, there are a lot of land issues related to non-forest lands. The compensation provided

to farmers as well as conversion of forest land for developmental work remains the same. He suggested that it is necessary to double the compensation to farmers for their relief and rehabilitation.



At the end of the workshop, Dr. R.S.Tolia, Mr. STS Lepcha and Mr. AR Sinha collated a set of observations, suggestions and recommendations based on the presentation and discussions. The recommendations are as below:

- 1) The positive point of the proposed JICA project is that it builds on to the existing community institutions and strengthens them. Since FD, VP, SHG etc. are guided by different institutional guidelines and mechanism; the project should work towards ensuring administrative harmony and build capacities of line departments to ensure smooth implementation and long term sustainability.
- 2) The project should be implemented in a professional manner with help of professionals and subject matter specialists.
- 3) The project should not create any extra burden to one particular line department. The roles and responsibilities of line departments should be clearly defined.
- 4) The role of NGO's is a debatable issue throughout the country. The project should clearly define the roles and duties of the NGO in implementation.
- 5) In the past, World Bank funded forestry project implemented through forest department after the completion of project was handed over to JFM. The project should focus on conducting a study and lessons should be learnt from that experience.
- 6) With the range of similar ongoing and upcoming projects in Uttarakhand like World Bank funded Gramya phase II, IFAD funded Ajeevika Phase II. etc.; there is a need to orient the community members at the preliminary stage to avoid any confusing, duplicities etc. about the project activities and their outcome. The project should understand all the technicalities on ground and work in harmonious coordination with other projects and line department officials.

- 7) With past learning, it becomes clear that after the completion of any project, all the interventions of project have slowed down. So, the conscious effort of the project to establish NCE a one stop center with required infrastructure and enabling environment will ensure sustainability. In addition, PPP model should be additionally explored to rope in private players.
- 8) To resolve man-animal conflict, dry land plantation should be promoted, which is similar to Jhum cultivation (was prevalent but now slowly getting extinct).
- 9) Women mostly involved at the village level are found to be anemic. Forest do not have huge amount of fruit bearing plants/ trees. There is a need to promote and ensure food security, the project should encourage fruit trees and NTFP plantation on land of absentee landlord through SHG and women can get maximum benefits.
- 10) Proper micro-planning is required for the effective implementation of the project activities and DFO/ CF should be given a technical role.
- 11) Since the market of NTFP/ Non NTFP products fluctuate, so information flow mechanism should be developed using modern technologies (mobile phone, SMS, etc.).

At the end, Dr. RS Tolia congratulated the entire JICA survey team for their effort in developing a comprehensive project where livelihood is being pushed and/or promoted through forestry.

The workshop ended with a vote of thanks proposed by the Additional Team Leader, Nippon Koei Ltd.

Attachment 4.1.2 List of Participants of the Stakeholder Consultation Workshop

Sl.N	Name	Designation	Organization	Contact No	Email
1	Mr. Bhuwan Bora	Vice-President	SUDHA	9412451278	sudha.almora@gmail.com
2	Mr. Abhishek Samal		SUDHA	9755550684	sudha.almora@gmail.com
3	Ms. Kusum Ghildiyal	Secretary	SEAD ,Ddun	9412027279	sead.pkr@gmail.com
4	Dr. Ravish Joshi	Director	KAGAS	9412095649	kagas_in@yahoo.com
5	Mr. Inder Singh Bisht	B.C	I N H E R E	9410184710	inderbisht123@gmail.com
6	Dr. K.G. Wankhede	Chief Executive	IFFDC, Delhi	9810057238	wankhedekg@gmail.com
7	Dr. R.P.S. Yadav	Project Manager	IFFDC, Delhi	8130481919	rpsyadav@iffdc.org.in
8	Mr. S.K. Singh	A.F	IFFDC, D Dun	941217868	sandeep.singh.iffd@gmail.com
9	Mr. Mukul Prakash		E.S	9839057760	info@chirag.org
10	Mr. R.S. Rana	Secretary	H E T O N A	9412077721	
11	Mr. A.R. Sinha	APCCF(W P)	Uttarakhand Forest	9412086310	amulyasinha@yahoo.co.uk
12	Ms. Meghann Sandhu	Consultant	Due North	8859106799	meghann.sandhu@gmail.com
13	Mr. Sushil Bahuguna	President	RADS Ranichauri	9412027043	radsgramin@yahoo.com
14	Mr. Vipin Singh Chauhan	Secretary	SRADHA, Purola	9411140864	sradha95@gmail.com
15	Mrs. Anita Lingwal	Secretary	Nav Chetna Yuva Shakti	9927031902	
16	Mr. Biju Negi		Beti Bachao Andolan	0135-2674972	
17	Mrs. Sangita Gairola	Adviser ATI	AT India		sangita@atindia.org.sgairola
18	Dr. Ramesh Uniyal	Consultant	SMPB & UNDP-GEF Project	9900983814	uniyal68@gmail.com
19	Mr. A.J. Singh	Dy CPO	UREDA	9412051074	st.uredahg@gmail.com
20	Mr. R.S. Tolia		Doon University	9412075025	
21	Dr. Yashpal Bisht	Deputy Manager	Himothan	9412348098	bisht.yashpal@gmail.com
22	Mr. Vimal Dhiman	Programme Manager	UBFDB	9412998547	vimaldhiman@gmail.com
23	Mr. Krishna Trivedi	Manager	ATI	9411598905	krishna.chamoli@gmail.com
24	Mr. S.T.S. Leptcha	APCCF	Forest Department	9412071394	stsleptcha@gmail.com
25	Mr. Bhaskar Pant	AGM	NABARD	9412076390	bhaskar.pant@nabard.org
26	Mr. Durga Prasad	Sr. Programmer Coordinator	Mount Valley Development	9012663780	mvda_tehri@yaoo.co.in.dkomsval@gmail.com
27	Mr. Dinesh Joshi	Manager-Livelihood	UBGDH	9410134745	joshiddun@gmail.com
28	Dr. Suresh Mathpal	Secretary	HIMANI, Bhimtal (Nainital)	9412094613	sureshmathpal@yahoo.com
29	Dr. Kamal Singh	CEOULDB	ULDB	9412025669	drkamalsingh1@rediffmail.com
30	Dr. Sanjay Verma	Inv/Monitoring Sp	JICA Survey Team	9415409692	primelko@gmail.com
31	Mr. Ramchandra Panda	Soil & Moisture Conservation & Disaster mitigation	JICA Survey Team	9437056185	ramchandra.panda@gmail.com
32	Dr. Manoj Pattanaik	Supply Chain Analysis	JICA Survey Team	9437056185	manoj2005_p@yahoo.com
33	Dr. Michiko Ebato	Additional team leader/community	JICA Survey Team	9927332249	ebato-mc@n-koei.jp
34	Mr. Yoshioto Mochizuki	Institutions	JICA Survey Team	9927980934	a7348@n-koei.co.jp
35	Mr. Richard Rastall	Environmental & Social Consideration	JICA Survey Team	9927335412	a7214@n-koei.co.jp
36	Mrs. Gargi Pandey	Socio economic & Project Evaluation	JICA Survey Team	9927212678	pande.gargi@gmail.com
37	Mr. Anmol Jain	NTPP/Marketing	JICA Survey Team	9837006597	anmoljain35@gmail.com
38	Mr. Shinichiro Tsuji	Team Leader/ Forest Management	JICA Survey Team	9927336519	padiinternational@kcf.biglobe.ne.jp
39	Mr. Ajay Rai	Forest Dependent Community Assessment	JICA Survey Team	9968367187	ajay2ecc@gmail.com
40	Ms. Pushpa Kathait	Secretary	JICA Survey Team	9058440825	pushpanjali256@gmail.com

Attachment 6.4.1 Forest Type in the Priority Ranges

Division	Range	Total Forest Area	Very Dense	Moderately Dense	Open	Scrub	Water	Non Forest	Range Area
Alaknanda SC	Aser simli	28,874	5,265	13,701	9,908	0	27	7,441	36,342
Alaknanda SC	Attagad	17,999	3,054	9,595	5,349	1	93	6,234	24,327
Alaknanda SC	Tharali	53,549	7,638	30,729	15,182	0	96	27,601	81,247
Bageshwar	Bageshwar	18,625	983	14,012	3,317	313	25	10,201	28,851
Bageshwar	Dharamgarh	21,047	3,502	12,417	5,122	6	0	12,184	33,232
Bageshwar	Kapkot	58,098	10,308	32,230	15,491	70	22	56,783	114,903
Champawat	Bhingrara	21,851	5,021	12,172	4,658	0	0	7,648	29,499
Champawat	Debidhura	22,267	5,443	13,352	3,410	61	0	13,632	35,899
Champawat	Lohaghat	12,386	3,717	4,330	3,862	478	19	10,151	22,556
C&S Almora	Gananath	22,834	3,857	16,239	2,738	0	0	11,003	33,837
C&S Almora	Jageshwar	18,742	2,274	12,346	4,032	89	6	13,195	31,943
C&S Almora	Kosi	4,576	307	2,300	1,820	149	0	6,145	10,721
C&S Pauri	Pabo	31,273	7,087	14,104	9,624	457	0	12,855	44,128
C&S Pauri	Pauri	11,518	1,862	4,244	3,727	1,684	8	13,145	24,671
C&S Pauri	Satpuli	12,771	253	5,985	5,470	1,063	41	14,933	27,744
Mussoorie	Mussoorie	11,606	711	5,484	3,808	1,603	0	2,668	14,274
Mussoorie	Raipur	12,129	865	8,148	2,698	419	0	7,185	19,314
Narendranagar	Maniknath	31,035	2,277	10,534	14,260	3,964	346	23,274	54,655
Narendranagar	Saklana Chamba	19,252	3,265	10,032	5,771	183	0	12,133	31,385
Narendranagar	Shivpuri	21,822	685	9,989	10,706	441	221	6,955	28,998
Pithoragarh	Didihat	34,536	10,317	17,071	7,147	0	84	15,739	50,359
Pithoragarh	Gangolihat	20,872	2,028	11,993	6,837	13	48	16,424	37,344
Pithoragarh	Pithoragarh	27,189	8,395	11,488	7,054	252	115	19,133	46,437
SC Lansdowne	Chalusain	16,097	573	10,216	4,789	519	65	11,567	27,729
SC Lansdowne	Jaiharikhal	10,437	110	7,678	2,556	93	40	8,620	19,097
SC Lansdowne	Matiyali	14,990	97	11,896	2,715	283	0	13,131	28,121
SC Nainital	Mukteshwar	26,993	6,361	18,138	2,448	45	1	12,180	39,173
SC Nainital	Okhalkanda	18,825	3,720	12,702	2,384	19	0	5,560	24,384
SC Nainital	Ramghar	16,341	2,053	11,827	2,412	48	107	7,192	23,639
SC Ramnagar	Dhumakot	4,398	155	2,135	2,108	0	0	7,630	12,028
SC Ramnagar	Nainidanda	8,372	242	5,173	2,957	0	8	7,366	15,746
SC Ramnagar	Ringlana	59,773	16,716	39,876	3,181	0	2,840	12,309	74,922
SC Ranikhet	Chanthria	6,416	1,017	3,343	2,057	0	0	7,372	13,787
SC Ranikhet	Gagas	9,000	1,010	5,227	2,763	0	0	7,658	16,658
SC Ranikhet	Gairsain	24,947	4,127	13,289	7,455	76	8	7,365	32,319
Tehri Dam - 1	Dharkot Dam	11,115	1,074	4,539	4,195	1,307	892	15,110	27,117
Tehri Dam - 1	Nailchami Dam	47,334	5,257	31,364	9,882	832	50	37,539	84,923
	TOTAL	809,889	131,627	459,899	203,892	14,470	5,160	487,261	1,302,310

All Area are in hectare Source: Uttarakhand Forest Department

Attachment 6.5.1 Species for Plantations

	Species	Local Name	Remarks
For Hot Temperate Zone (1,000 to 1,500 m)			
1	<i>Bassia butyracea</i>	Chyura	Large deciduous tree of economic importance with oil seeds.
2	<i>Berberis sp.</i>	Kilmora	Small shrub with medicinal and fuelwood value.
3	<i>Boehmeria rugulosa</i>	Gainthi	Small to middle sized tree. Wood used for making bowls and dairy utensils. A very good fodder species.
4	<i>Celastrus paniculatus</i>	Malkangni	Large shrub with fruits of medicinal value.
5	<i>Cinnamomum tamala</i>	Tejpaat	Middle sized evergreen tree of high medicinal and economic importance.
6	<i>Elaeagnus umbellata</i>	Ginroi	Thorny deciduous shrub with edible fruits.
7	<i>Debregeasia hypoleuca</i>	Tusyari	Large evergreen shrub with high fodder value. Ripe fruit is eaten by birds.
8	<i>Dendrocalamus hameltoni</i>	Bans	Very large shrub of economic importance. Fast growing species with short harvesting time.
9	<i>Ficus spp.</i>	Ficus	Very important species of environmental and fodder value.
10	<i>Machilus odoratissima</i>	Kaul	Middle sized fruit tree.
11	<i>Punica granatum</i>	Darim	Large shrub/Small fruit tree valued for its fruits.
12	<i>Pyrus pashia</i>	Mehal	Small deciduous fruit tree valued for fuel, fodder and fruits.
13	<i>Quercus spp.</i>	Banj/oak	Middle sized evergreen tree much valued for fodder, fuel and water conservation.
14	<i>Rhus parviflora</i>	Tungla	Small to medium sized shrub of fuelwood importance and edible fruits.
15	<i>Olea spp.</i>	Kaul	Middle sized tree with edible fruits. Leaves used for fodder.
16	<i>Rubus ellipticus</i>	Hisalu	Small shrub highly valued for berries with established market.
For Cool Temperate Zone (1,500 to 2,500 m)			
1	<i>Acer spp.</i>	Putli/kainju	Medium to large sized evergreen important broad leave species.
2	<i>Berberis spp.</i>	Kilmora	Small shrub with medicinal and fuelwood value.
3	<i>Cedrus deodara</i>	Deodar	Large conifer with commercial and religious value.
4	<i>Cornus capitata</i>	Bhamor	Middle sized deciduous fruit tree with good fuel wood value.
5	<i>Corylus colurna</i>	Bhotiabadam	Middle sized deciduous fruit tree .
6	<i>Cotoneaster bacillaris</i>	Ruins	Large shrub with fuel wood value. Wood sought after for making walking sticks
7	<i>Crataegus crenulata</i>	Ghingaru	Large thorny shrub with excellent fuel wood value. Wood used for making walking sticks. Fruits are edible.
8	<i>Elaeagnus umbellata</i>	Ginroi	Thorny deciduous shrub with edible fruits.
9	<i>Ficus nemoralis</i>	Dudhila	Medium sized tree with high fodder value.
10	<i>Hippophae salicifolia</i>	Chuk	Large thorny shrub well known for its berries. Wood good fuel wood.
11	<i>Myrica nagi</i>	Kafal	Medium sized evergreen tree of economic importance. Well known for its fruits with established market.
12	<i>Prinsepia utilis</i>	Bhekal	Large thorny shrub with oil seeds. Fruits eaten by birds.
13	<i>Prunus cerasoides</i>	Padam	Middle sized evergreen tree with fodder and religious value. Cherry eaten by birds. It is gum yielding plant also.
14	<i>Punica granatum</i>	Darim	Large shrub/Small fruit tree valued for its fruits.
15	<i>Quercus spp.</i>	Banj/oak	Middle sized evergreen tree much valued for fodder, fuel and water conservation.
16	<i>Desmodium</i>	Matoi/Martoi	Small shrub of fodder and fuel value.

	Species	Local Name	Remarks
	<i>telifolium</i>		
17	<i>Rhododendron arboreum</i>	Burans	Middle sized evergreen tree (state tree) of ecological and economic importance.
18	<i>Skimmia laureola</i>	Kedarpati	Small/ middle sized aromatic shrub of economic and religious importance.
19	<i>Alnus nepolensis</i>	Utis	Large tree, a pioneer spp. for fresh soils, comparatively fast growing and valued for timber and fuel.
20	<i>Zanthoxylum alatum</i>	Timru	Small to medium sized thorny shrub of economic and religious importance.
For Sub-Alpine Zone (2,500m to tree- line)			
1	<i>Berberis petiolaris</i>	Chtrod	Small shrub of fuel wood value.
2	<i>Betula utilis</i>	Bhojpatra	Fairly large tree of economic importance. Used for fuel and fodder.
3	<i>Lonicera spp.</i>	Taknoi/phulor	Small shrub of fuel wood value.
4	<i>Juniperus macropoda</i>	Dhoop	Small tree of ecological value. Used for fuel and occasionally burned for incense.
5	<i>Prunus cornuta</i>	Jamnoi	Small tree. Leaves used for fodder and fruits eaten by birds.
6	<i>Quercus semecarpifolia</i>	Banj/oak	Middle sized evergreen tree much valued for fodder, fuel and water conservation.
7	<i>Skimmia laureola</i>	Kedarpati	Small/ middle sized aromatic shrub of economic and religious importance.
8	<i>Taxus baccata</i>	Thuner	Large coniferous tree with high medicinal and economic value.
9	<i>Ulmus wallichiana</i>	Emroi	Large deciduous tree of high fodder value.

Source: JICA Preparatory Survey based on information given by Forest Research Wing, UKFD

NTFP Species

	Species	Remarks
Sub-Alpine Zone		
1	<i>Skimmia laureola</i>	Locally known as <i>Kedar-pati</i> , has local use and assured market for puja as dhoop. Also important for WL and Soil Conservation. Leaves can be harvested nondestructively. Nursery technique is already established.
2	<i>Taxus baccata</i>	Being promoted by UKFD though long gestation period. Quality and marketing constraints are areas of concern.
3	<i>Ulmus wallichiana</i>	Locally known as <i>Emroi</i> is good fodder and can supplement livelihood opportunities by enhanced milk production. Easy to grow in nursery.
Cool Temperate Zone		
1	<i>Corylus colurna</i>	Locally known as <i>Bhotiabadam</i> has market potential.
2	<i>Crataegus crenulata</i>	Locally known as <i>Ghingaroo</i> is good shrub, can be harvested for sticks. Nursery techniques established.
3	<i>Hippophae salicifolia</i>	Locally known as <i>Chook</i> has established market for fruits. With the development of new cultivars and male female plants some research will be needed to raise female plants through vegetative propagation.
4	<i>Myrica nagi</i>	Locally known as <i>Kafal</i> is an important spp. For established market of its fruits. Nursery technique is though established but research efforts are also on to raise female plants for ensured fruiting.
5	<i>Punica granatum</i>	Locally known as <i>Darim</i> the fruits of the plant have assured local market. Nursery technique is established.
6	<i>Rhododendron arboreum</i>	Locally known as <i>Burans</i> , also state tree, is important as its flowers have established market for juice making. Nursery technique has been standardised recently by research wing of UKFD
7	<i>Rubus ellipticus</i>	Locally known as <i>Hisalu</i> , it is an important local shrub which can be easily grown even on degraded lands. Its berries have established local market.

	Species	Remarks
8	<i>Skimmia laureola</i>	Locally known as <i>Kedar-pati</i> , has local use and assured market for puja as dhoop. Also important for WL and Soil Conservation. Leaves can be harvested nondestructively. Nursery technique is already established.
9	<i>Zanthoxylum alatum</i>	Locally known as <i>Timru</i> , it is economically important local shrub. The fruits/seeds and leaves are of high medicinal value with established market. Nursery technique for the spp. Has recently been standardized by research wing of UKFD.
Hot Temperate Zone		
1	<i>Bassia butyracea</i>	Locally known as <i>Chuara</i> , it is very important local tree which is much valued for its fruits which is used for making ghee. The plant products have established market. The tree mostly grows on agriculture land and adjoining forest areas. Nursery technique is known. Seed has low viability.
2	<i>Celastrus paniculatus</i>	Locally known as <i>Mal-kangni</i> , it is economically important local shrub, much in demand for its oil seeds due to its medicinal value. Nursery technique known.
3	<i>Cinnamomum tamala</i>	Locally known as <i>Tejpat</i> , it is economically important tree. The leaves have established market for spice. Nursery technique is known and established.
4	<i>Pistacia integerrima</i>	Locally known as <i>Kankarsinghi</i> , is a small tree and has economic value of its galls. Nursery technique known.
5	<i>Punica granatum</i>	Locally known as <i>Darim</i> the fruits of the plant have assured local market. Nursery technique is established.
6	<i>Rubus ellipticus</i>	Locally known as <i>Hisalu</i> , it is an important local shrub which can be easily grown even on degraded lands. Its berries have established local market.
7	<i>Zizyphus oxyphylla</i>	Locally known as <i>Ber</i> , it is an important local shrub. Its fruits can be marketed. Grafting of improved variety of <i>zizyphus</i> can improve the quality of fruits with higher return. Plants can be easily grown in nursery and plantations.
Sub Tropical Zone		
1	<i>Aegle marmelos</i>	<i>Bel</i>
2	<i>Buchnanania latifolia</i>	<i>Chironji</i>
3	<i>Carissa opaca</i>	<i>Karonda</i>
4	<i>Embelia robusta</i>	<i>Vai-bidang</i> valued for its fruit which has medicinal value.
5	<i>Emblica officinalis</i>	<i>Amla</i>
6	<i>Grewia sapida</i>	<i>Falsa</i>
7	<i>Litsea chinensis</i>	<i>Maida</i> Bark is well known bone joint healing both in traditional and ayurvedic medicines.
8	<i>Mangifera indica</i>	<i>Aam</i>
9	<i>Moringa oleifera</i>	<i>Sahjan</i>
10	<i>Randia dumetorum</i>	<i>Manfal</i> Fruit has medicinal value to control mental disorders and is also liked by WL
11	<i>Spondias mangifera</i>	<i>Amra</i> fruit used for pickle
12	<i>Terminalia chebula</i>	<i>Harad</i>

Source: JICA Preparatory Survey based on information given by Forest Research Wing, UKFD

Species for direct seed sowing/vegetative cuttings

	Eco-Climatic Zone	For seed sowing	By Cuttings
1	Sub-Alpine Zone(2,500m to tree- line)	Direct seed sowing in the field not recommended	Hill poplar (<i>Pupulus spp.</i>), <i>Salix elegans</i>
2	Cool Temperate Zone(1,500 to 2,500 m)	Oak (<i>Quercus spp.</i>), Alnus (<i>Alnusnepolensis</i>), wall nut (<i>Juglensregia</i>), Pangar(<i>Aesculusindica</i>), Ghingaru (<i>Cretiguscrenuleta</i>), Hisalu (<i>Rubus spp.</i>), Kilmora (<i>Berberis spp.</i>), Padam (<i>Prunus spp.</i>)	<i>Ficusnemoralis</i> , <i>Salix poplar</i> <i>spp.</i> , Hill poplar (<i>Pupulusciliate</i>)
3	Hot Temperate Zone(1,000 to 1,500 m)	Kanol (<i>Bahunea spp.</i>), Oak (<i>Quercus spp.</i>)	<i>Agave bulbils</i> , <i>Salix spp.</i> , <i>Ficus spp.</i> , <i>Sapiuminsigni</i> , <i>Vitex spp.</i>
4	Sub-tropical Zone(Up to 1,000 m)	Khair (<i>Acacia catechu</i>), sheesham (<i>Dalbergiasissoo</i>), <i>Ailanthus</i> , Kanju(<i>Holopteleaintegrifolia</i>), <i>Pongamia</i> , Kachnar (<i>Bahunea spp.</i>), Tun (<i>Toonaciliata</i>), Amaltash(<i>Cassia fistula</i>)	<i>Ficus spp.</i> , Sahjan (<i>Moringaspp</i>), <i>Vitexspp.</i>

Source: JICA Preparatory Survey based on information given by Forest Research Wing, UKFD

Attachment 6.6.1 Specifications of VP Office Emergency Response Centre

1.0 Design Description

A sample field study of social infrastructures, housing specifications and design features was carried out in Aila Van Panchayat of Ranikhet Soil Conservation Department. Based on the findings, the housing pattern and pattern of living of the local communities along with existing traditional shelter construction practices will be taken into considerations during designing of Van Panchayat Office cum Disaster Response Centre (VPO cum DRC).

The salient features of the building are as follows;

Salient Features
Plinth area = 41 Sq. Mt.
Estimated Cost = Rs. 404,000/-
Carpet area of VP Office = 11.10 Sq. Mt. Store / Meeting hall = 22.22 Sq. Mt. Toilet both women and men = 3.14 Sq. Mt.

2.0 Design Option

- i. This design respects the traditional plan-forms of the existing infrastructures. The plan-form consists of a single decent size office room of internal dimensions 3.05 x 3.66 mt., a meeting hall of 3.66 x 5.50 mt. with an adequate sized space for toilets separately for women and men in the back side of the building with separate entry – a total of about 41 sq. mt. This conforms the design of typical houses of the locality.
- ii. The building form respects the vernacular (local) architectural style developed culturally over the years; there is use of local building materials like random rubble stone, local wood, GCI sheets, local kiln burnt bricks and cement.
- iii. The local building built on a highland has strong foundations (in Random Rubble Stone Masonry and Reinforced cement concrete vertical bars) so that the structure is protected and prepared to face continuous rains and the threat of erosions caused by rains or landslides.
- iv. The building has been designed as per structurally disaster-resilient (since many of these areas are highly seismic-prone as well Zone IV and V as per earthquake zonation map of India), yet a simple structure which can be erected by local construction artisans and the families themselves. Precautions have been taken to include features like anchorage, bracings, bands; hence the provision of window sill level band and anchorage rods within the stone/brick pillars for the office room, meeting hall and Toilet. The brick pillars of 250 x250 mm have 12 mm diameter steel rods running through 100 x100 of Reinforce Cement Concrete within the pillars for anchorage. These rods commence from the foundations and are connected to the roof so that the entire building behaves as a monolithic structure. The roof is a local wood rafters and purlins structure and GCI sheets as roofing material.
- v. The foundation is made up of random rubble stone masonry foundation. The plinth band is connected throughout the building at plinth level acting as plinth level band as per earthquake

principles. A window sill level band is designed at sill levels. A lintel level band is designed at lintel level and a gable level band is designed at gable band in triangular shape. The plinth height is kept about 600mm high from the natural ground level. The brick pillars along with anchorage bars are kept at every 1.80 mt distance which tied it properly from foundation to roof along with sill band, lintel band and gable band. The roof is a local wood rafters and purlins structure and GCI sheets as roofing material.

3.0 Schedule of Items (Technical Specifications)

1.	Earthwork in excavation for stepped foundation throughout the building
2.	Providing 150mm thick PCC (1:4:8) in foundations using 40 mm size graded well burnt brick aggregates in foundation trenches
3.	Random Rubble Stone Masonry (1:6) in foundation above the PCC to below plinth level.
4.	Vertical Anchorage 100 x 100mm size of Reinforced Cement Concrete (1:2:4) in foundation within RR stone Masonry and within the brick pillars at every 1.80 mt. space in superstructure. The vertical bars are coming from foundation to roof level band.
5.	Brick masonry in 1:6 Cement mortar in Superstructure in the pillars and half brick masonry in all other places according to the drawing using first class bricks
6.	M 15 Cement Concrete of mix (1:2:4) in RCC works using graded well coarse aggregates
7.	RCC M15 concrete of mix (1:2:4) Plinth Beam of (250 x 100 mm) provided at plinth level connecting to all anchorage bars coming from all the RR stone masonry pillars
8.	250 mm thick brick walling from above the plinth level to Roof level in (1:6) cement mortar using first class brick
9.	Brick steps to the building
10.	Brickwork on edge for brick pillars in super-structure(250 x 250mm) from Plinth level to lintel level
11.	Half brick walling (1:4) cement mortar excluding brick pillars
12.	Providing window sill level band (125 x 150 mm) using graded well burnt brick aggregates in M15 concrete (1:2:4) in all places
13.	Half brick walling (1:4) cement mortar excluding brick pillars from sill level band to lintel level and Lintel level to bottom of Roof beam level
14.	Providing window Lintel level band and roof level band (125 x 150 mm) using graded well burnt brick aggregates in M15 concrete (1:2:4) in all places
15.	Chajjah over windows of 450mm projection with 250mm bearing both sides of windows
16.	Providing roof frame rafters 75 x 75 mm and purlins (75 x 50mm) in local wood for GCI sheet roofing
17.	Providing and fixing Corrugated Galvanized Steel sheet for roofing fixed with polymer coated J or L hooks 8mm diameter, bolts and nuts 6mm diameter with bitumen and G.I Limpet washers or with G.I Limpet washers filled with lead and including a coat of approved steel

	primer and two coats of approved epoxy paint on overlapping of sheets complete of 0.63 mm thick zinc coating not less than 275 gm/ Sq. Mt.
18.	15mm thick cement plastering in 1:4 cement mortar over brick masonry and stone masonry
19.	Earth filling in flooring from Gl to bottom of PCC
20.	Providing 3" thick (75mm) PCC (1:3:6) in flooring using 40 mm size graded well burnt brick aggregates
21.	Neat cement punning over PCC in flooring along with red oxide in border.
22.	Local wood doors frame (75 x 100 mm) and 16mm thick shutter and window frame of (75 x 100 mm) with iron grills
23.	Enamel painting over doors and window
24.	Colour washing over plastering area and plinth plastering area

Earthquake Resistant Features:

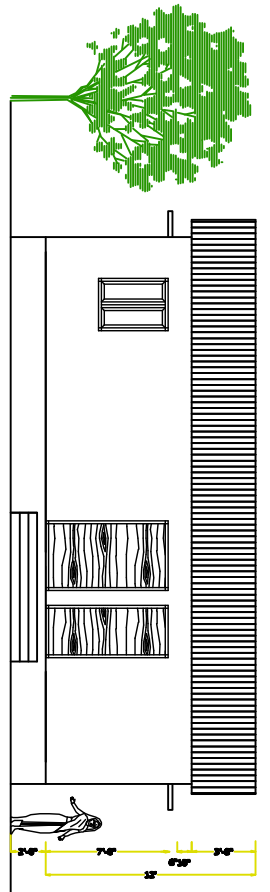
Plinth height	600 mm minimum from the existing Ground Level
Anchorage bar	12 mm dia (Ø) anchorage bar in maximum of 1.80 mt. spacing
Plinth band	250 x 100mm size with 2-10mm bars at bottom and 6mm stirrups at 150mm c/c spacing.
Window Sill level band	125 x 150 mm thick with 2-8mm dia bars in M15 (1:2:4) concrete within the walls
Lintel level beam	250 x 150mm size with 4-8 mm Ø bar and 6mm Ø stirrups 150mm c/c spacing
Gable end band	250 x 100 mm size with 2-10mm bars at bottom and 6mm stirrups at 150mm c/c spacing.
Roof height	Bottom of lintel/ roof height will be 3.05 mt and top of the gable height will be 4.20 mt.
Roofing material	Local wood rafters and purlins with GCI sheet roof
Flooring	PCC 1:3:6 in neat cement punning with red oxide in border

Use of Building Materials

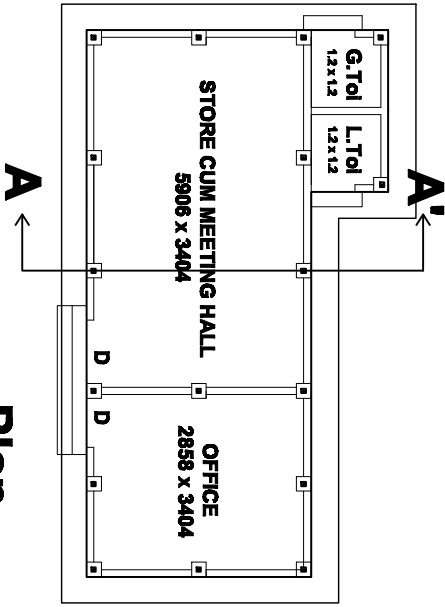
Sand River	sand
Brick	First class brick
Stone	Locally available Random Rubble stone
Cement ISI	standards
Coarse aggregates	Graded well using stone aggregates
Door/ Window	Local wood frame with shutters
GCI sheet	0.63 mm thick zinc coating not less than 275 gm/ Sq. Mt.
Earth filling	Inside the flooring

References:

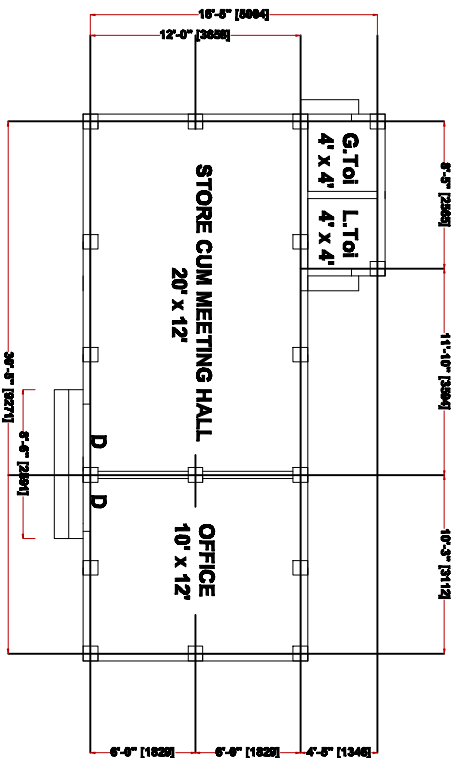
- IS:13828 – 1993 : “Improving earthquake resistance of low strength masonry buildings - Guidelines”
- IS: 4326 – 1993 : “Earthquake Resistant Design and Construction of Buildings – code of practice (Second revision 2002)”
- Technical guidelines and Information for Stone Construction in Uttarakhand, (2013) . DMMC, Govt. of Uttarakhand, 2013.
- A. S. Arya, (2000) Guidelines for damage assessment and Post-Earthquake action. Part-II: Reconstruction and New construction in Chamoli Earthquake affected areas of Uttar Pradesh. Building Materials and Technology promotion Council (BMTPC), Ministry of Urban Employment and Poverty Alleviation, Govt. of India.
- A.S. Arya, (2005).Earthquake Resistant reconstruction and new construction of masonry buildings in Jammu and Kashmir state. National Disaster Management Division, Ministry of Home Affairs, Govt. of India, 2005.
- The detailed estimation is prepared as per latest PWD Schedule of Rates, 17th May 2013 by 32 Raipur Block (Dehradun)



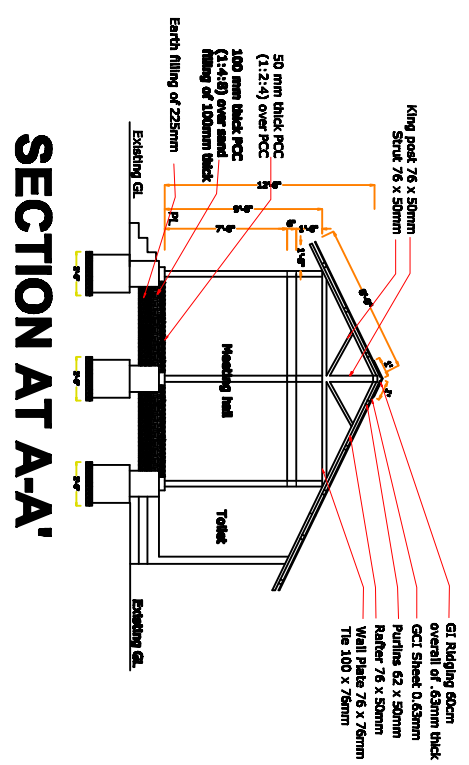
FRONT ELEVATION



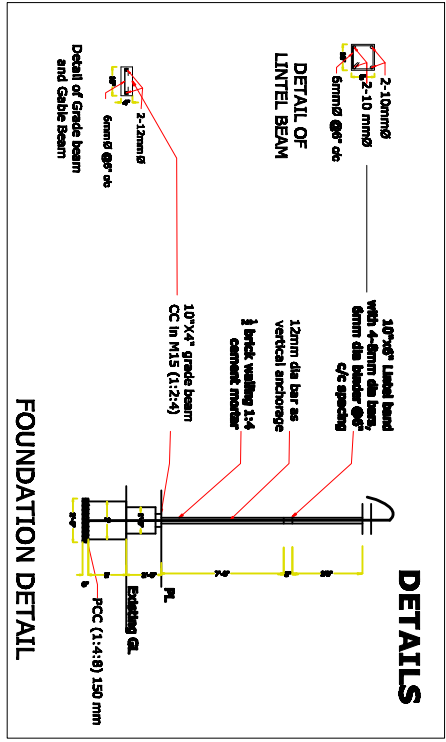
Plan



Foundation Plan

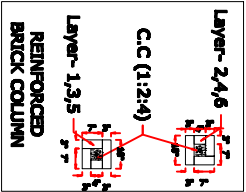


SECTION AT A-A'



DETAILS

FOUNDATION DETAIL



Plinth Area : 41 Sq. Mt.

PROPOSED DESIGN OF VAN PANCHAYAT OFFICE STORE CUM DISASTER RESPONSE CENTRE IN UTTARAKHAND

Attachment 6.6.3 Key Programs/ schemes for Convergence**(1) Rural development in the Uttarakhand (supported by State and Central Government)**

Na	me of the Program	Objective/ Activities	Nodal Agency	Duration of the program	Coverage districts	Process for accessing the program	Financing mechanism	Source of information
1 M	Mahatma Gandhi National Rural Employment Guarantee	-Employment generation for rural areas. Village wa ys, water tanks, check da m, small pond, plantation on common land, soil water conservation, land development	DRD	2006-ongoing	All districts	Member registration required in Villa ge Panchayat. Villa ge head & Panchayat Development Officer pr ovides Job Card. 33% Reser vation for women. Source: VDO/ Gram Pradhan/ BDO.	100% cost of labor and 75% cost o f material GOI and 25% cost of m aterial by GOUK	Uttarakhand Mahatma Gandhi National Rural Employment Scheme at a glance 2013-14. Mr. Khandur i, Add. Commissioner, Rural Development PMU, Uttarakhand Secretariat, Dehradun.
2 Pr	adhan Mantri Gram Sadak Yojna (PMGSY)	Rural ro ad and link roads to all weather road construction	DRD	2000-ongoing	All district	Project prepared at Block L evel and included in M aster plan on. On Approval fr om Jila Panchayat, standar d procedure adopt ed for conta ct. Source: BDO/CDO/ Executive Engineer, PWD.	100% GOI	www.rural.nic.in/sites/programmes-schemes.asp Mr. Khandur i, Add. Commissioner, Rural Development PMU, Uttarakhand Secretariat, Dehradun.
5 Solar	Lantern and street light program	Promote clean energy sources.	UREDA	Ongoing All	district	Forest Department can avail the se programs dir ectly from D irector, UREDA. For further pr ograms district lev el UREDA offices can be visited.	100 % GOI.	Mr A J Singh, Deputy Chief Project Of ficer, Uttarakhand Renewable Energy Development Agency (UREDA), En ergy Park Cam pus, Industrial Ar ea, Patel Naga r, Dehradun. Tel:0135-2521387 //2521553
	Small hydro-electric projects	Unit establishment	UREDA	Ongoing	All district	Up to 100 KW in hills.	100 % GOI	
	Community solar cooker	-Provide cooker	UREDA	Ongoing	All district	60 % support	100 % GOI	
	Pine needle program	Promote clean energy sources.	UREDA	Ongoing	All district		100 % GOI	Uttarakhand M ain Akshaya U rja Karyakram. UREDA.
	Solar water heating system	Promote clean energy sources.	UREDA	Ongoing	All district	Available on 60 % subsidy thr ough District URE DA offices.	100 % GOI	
6 M	ahila Samakhya	Equity and women empowerment . Training and	Mahila Samakhya Uttarakhand	2002-ongoing	Uttarkashi, Tehri, Pauri, Nainital, Champawat , US Nagar,	Women me mber can contact at village level Facilitator (Sahyogini) and join the programs.	100% GOI.	Ms Hemlata, Mahila Samakhya, 10 I ndiranagar, Phase I Dehradun. Tel:0135-2762050 //9412347014

Na	me of the Program	Objective/ Activities	Nodal Agency	Duration of the program	Coverage districts	Process for accessing the program	Financing mechanism	Source of information
		education Haridwar						www.msuttaranchal.org
7 I	ndira Awas Yojna (IAY)	Rural housing and employment generation for BPL families	DRD 1985		All district	Village Panchayat plan for warded to District Rural Development Agency for further processing.	75% GOI and 25% GOUK	www.rural.nic.in/sites/programmes-schemes.asp Mr S C Sharma, OSD, NRL M. Rural Development Department UK.
8	National Rural Livelihood Mission (NRLM)	Reduce poverty by promoting diversified and gainful self employment and wage employment opportunities for sustainable increase in incomes.	DRD 2011	(2013 In UK)	In process (September Tentative)	In process (September Tentative)	75% GOI and 25% GOUK	Mr S C Sharma, OSD, NRL M. Rural Development Department UK. www.rural.nic.in
9 M	ukhyamantri Shilp Vikas Yojna (MSVY)	Support BPL artisans and promote craft as enterprise.	DRD 2012-2016	2016	All Districts	Chief Development Officer and Project Director DR DA of each district can provide for details.	100 % GOUK	Mukhyamantri Shilp Vikas Yojna. DRD Uttarakhand Government. Mr S C Sharma, OSD, NRL M. Rural Development Department UK.
10	Conservation cum development plan for Primitive Tribal Groups	Promote development activities for Raji and Buxa communities	TWD 2013-2018	2018	Nainital, US Nagar and Pithoragarh	District Social Welfare Officer at district level and Assistant Development Officer at Block level provides information and implementation support.	100 % GOUK	Sri Prasant Chodhary, Principal Assistant and Mr Y Rawat, Dy Director, Tribal Welfare Directorate, E-19, Ajabpur Bangalichowk THDC, Dehradun. 0135-2532918 Mob: 9411372564 Samajkalyan Vibhag (Janjati Kalyan) Uttarakhand (Yr 2012-13) ka Varsik Prativedan Evam Karyapurti Digdarshikatathay r 2013-14 kaaya-bayak. Anusuchit

Na	me of the Program	Objective/Activities	Nodal Agency	Duration of the program	Coverage districts	Process for accessing the program	Financing mechanism	Source of information
								Janjatiounke Vikashetu Snachalityotnaonk idigdarshika. Directorate of Tribal Welfare
11	Atal Awas Yojna (Atal Housing Scheme)	Housing support for BPL ST families	TWD 2	00--- Ongoing	All districts	District Social Welfare Officer at district level and Assistant Development Officer at Block level provides information and implementation support.	100% GOI	Ditto
12	Scholarship schemes for Scheduled Tribal	Promote education and higher education among ST communities	TWD		All districts	ditto	1-8 class 100% TWD 9 onwards GOI	Ditto
13	Rajkiya Asharam Padyati Vidyalaya	Education from class 1 st to 10 th			All districts		100 %TWD	Ditto
14	National Afforestation Program (NAP)	Rehabilitation of degraded forests and other areas by institutionalizing participatory forest management and supplementing livelihood improvement process.	FDA 2000-	01 to 2012	Nainital, Pithoragarh, Champawat, Bageshwar, Dehradun, Pauri, Rudrapriyaga, Uttarkashi, Almora, Haridwar, Tehri	Being implemented by FDA in phased manner	100% GOI	National Afforestation Programme in the Uttarakhand (2000-01 to 2010-11): A decade's experience. 2011. Ministry of Environment and Forests (GOI), National Afforestation & Eco-development Board.
15	Dairy Udhymita Vikas Yojna	-rearing calf to improve breed	BANKS	All	districts	Individual farmers, FHGs and JLGs, Cooperatives can avail the scheme. Beneficiary contribution is 10%, Subsidy 25% general and 33 % BPL of the total cost of the project. Rest amount has to be bank loan as minimum 40%. All RRBs, Cooperative Banks and commercial Banks those are entitled for accessing refinance from NABARD. Concerned Bank and District Development	100% GOI	NABARD, Regional Office, 113/2 Rajpur road, Dehradun.(Publicity scheme calendar 2012).

Name of the Program	Objective/Activities	Nodal Agency	Duration of the program	Coverage districts	Process for accessing the program	Financing mechanism	Source of information
					Manager NABARD can provide more details.		
16 National Food Security Mission	<p>-Construction of water harvesting tank on beneficiary field</p> <p>-Support of Rs 5000/ha (wheat) and Rs 7500/ha (Rice) to farmers for cluster demonstration</p> <p>-A subsidy of Rs 500/Quintal is available for farmers on seed supplied by the department (wheat and Rice).</p> <p>-Micronutrient (Zn, Boron) supplied by department at 50% subsidy or Rs 500/ha whichever is less.</p> <p>-- 50% subsidy or Rs 500/ha whichever is less available on purchase of all type of chemical/bio-chemical for plant protection.</p> <p>-50% subsidy on recommended tools for Paddy and wheat i.e Napsac Sprayer, Zero till seed drill, Multi crop planter, Seed drill, Power weeder, Ledger land leveler, etc</p>	DOA 2012	2- On going	District Pauri, Haridwar, Almora, Pithoragarh and US Nagar for Rice Dehradun, Hridwar, Pauri, Tehri, Almora, Nainital, Pithoragarh and US Nagar.	Annual activities proposed by District Agriculture Plan with due consideration of District Food Security Mission Committee. District Agriculture Officer in the District and Block Development Officers of each block can be approached for the accessing the program.	100 % GOI	<i>Pragati Prativedan 2012-13 and budget digdarshika (performance budget 2013-14). Agriculture Department, Uttarakhand.</i>
17 Rastriya Krishi Vikas	Water Harvesting Tank	DOA 2007	7- on going	Almora, Bageshwar, Chamoli,	Block Development Officer, District	100 % GOI	<i>Pragati Prativedan 2012-13 and</i>

Na	me of the Program	Objective/ Activities	Nodal Agency	Duration of the program	Coverage districts	Process for accessing the program	Financing mechanism	Source of information
	Yojna constr	uction on beneficiary field. -Mini seed kit of Finger millet and coarse millet is distributed with farmer training .			Pauri, Tehri, Rudrapriya, and Uttarkashi districts	Agriculture officer.		<i>budget digdarshika (performance budget 2 013-14). Agriculture Department, Uttarakhand.</i>
18	Scholar ship schemes for Scheduled Tribal	10 + education -Rs230(non hostellers) Rs380 (hostellers)/m Graduation/P G - Rs550(non hostellers) Rs1200 (hostellers)/m	TWD Ongoing		All districts	District Social welfare officer/ Village Head and concerned schools	100% TWD	Samajkalyan Vivbag (Jan Jati Kalyan Uttarakhand 2012-13 ka Varshik Pratedanevamka ryapurti Digdarshika
19	Rajkiya Asharam Padyati Vidyalyaya	Education from class 1 st to 10 th -Rs 50 per month for class 1-5 th -Rs 8 0/m f or class 6,7,8 -Rs 120/m for 9, 10	TWD Ongoing		All districts	District Social welfare officer/ concerned schools	100 %TWD	Samajkalyan Vivbag (Jan Jati Kalyan Uttarakhand 2012-13 ka Varshik Pratedanevamka ryapurti Digdarshika
20	Uttarakhand Rural Water Supply and Sanitation Program (Sector program)	-Drinking water Pipe line installation complete -Toilet construction material cost support	Uttarakhand Peyjal Nigam, Uttarakhand Jal Sansthan & Project Management Unit (Swajal)	2006-2014	All districts	Contact to District level SWAJ AL DMU and local NGOs.	IDA: (\$ 120.0 million) GoI, GoUK & Communities : \$230 million	http://swajal.uk.gov.in/pages/view/14/19-uttarakhand-rural-water-supply-sanitation-project
21	Nirmal Bharat Abhiyan (NBA)	-Construction material cost of individual household latrines -Direct Construction of school toilet units, -Anganwadi toilets -Gram	DRDA , GOUK	1999-ongoing	All districts	Concerned NGO and village Head can be approached for accessing the scheme. Implementation of NBA is proposed with 'Gram Panchayat ' as the base unit. A project proposal that emanates from a district is	GOI Ministry of Drinking water and Sanitation 100%	http://tsc.gov.in/TSC/NBA/AboutNBA.aspx

Na	me of the Program	Objective/ Activities	Nodal Agency	Duration of the program	Coverage districts	Process for accessing the program	Financing mechanism	Source of information
		Puruskar is provided for selected villages on the basis on a comprehensive selection criteria.				scrutinized and consolidated by the State Government and transmitted to the Government of India (Ministry of Drinking Water and Sanitation) as a State Plan. HelpLine:- For any Technical Support or query regarding this website, please send mail to nicddws@nic.in You may also call at 011- 24366372 from 9:00 AM to 5:30 PM on all working days (Mon-Fri)		
22	Rastriyakrishi Vikas Yojna: Establishment of Micro-dairy units	50 % subsidy is available for- Rearing of cross breed cattle and breed up gradation.	Department of Animal Husbandry	2012-13 to 2014-15	All 13 districts	20 dairy units per Block are proposed. District Veterinary Officer, Block Head and Block Development Officer can be approached for accessing the scheme.	GOI Pr	Proposal: Establishment of Micro-dairy units as an additional IGA for rural households, Department of Animal Husbandry. GOUK.
23	Assistance for Backyard poultry Unit	Support for rearing poultry units 50% chick cost, Rs 500 per beneficiary for Net, feed, medicine and Cartage cost Rs 2 per chick.	Department of Animal Husbandry	2012-13 to 2014-15	All 13 districts	District Veterinary Officer, Block Head and Block Development Officer can be approached for accessing the scheme.	GOI	GO, no 60 XIII-I/08 RK VY 2012-13

(Abbreviation: DRD =Department of Rural Development, Uttarakhand, GOI=government of India, TWD=Tribal Welfare Department, Uttarakhand, FDA=Forest Development Agency)

Source: Compiled by JICA Preparatory Survey Team

(2) Agriculture

Na	me of the Program	Objective	Nodal Agency	Duration of the program	Coverage districts	Process for accessing the program	Financing mechanism
1	Soil Testing extension program	To test soil fertility in the state.	DOA	2009-Regular	All district	District Agriculture officer.	100% DOA
2	Plant protection program	Protect crops from insect and diseases timely availability of recommended insecticides and	DOA	Ongoing	All district	District Agriculture officer.	100% DOA

Na	me of the Program	Objective Nodal	Agency	Duration of the program	Coverage districts	Process for accessing the program	Financing mechanism
		pesticides.					
3	Coop Insurance for farmers	Support to farmers due to crop loss through diseases, natural calamities. Crops included Wheat, Rice, Finger millet.	DOA 2003-	ongoing	All districts	Block Development Officer, District Agriculture officer.	50% GOI and 50% GOUK
4	Agriculture mechanization, training, testing and demonstration	Reduce labor and cost of cultivation	DOA 2012-	ongoing	All districts	Block Development Officer, District Agriculture officer.	GOI and GOUK
5	Comprehensive-District Agriculture Plan (C-DEP)	To mainstream the village by providing complete package through village level micro-planning.	DOA 2012-	ongoing	All districts	One village from each village Panchayat. Village level planning committee is formed in presence of Village head.	DOA
6	Rastriya Krishi Vikas Yojna	Rapid growth in agriculture sector through investment in agriculture sector, flexibility in implementation, reduce productivity gaps, maximize farmer income.	DOA 2007-	ongoing	Almora, Bageshwar, Chamoli, Pauri, Tehri, Rudrapur, and Uttarkashi districts	Block Development Officer, District Agriculture officer.	100 % GOI
7	Support to state extension program for extension reform	Strengthening of agriculture extension programs in the state.	DOA	2007-ongoing	All districts	Governing board in District level is headed by District Magistrate. At block level Block technical team and Block farmer advisory committee are formed.	90% GOI and 10% GOUK
8	National Food Security Mission	To support crop production for Wheat, Rice, Activities- Cluster demonstrations, Seed distribution, Micro-nutrient distribution, Plant protection tool distribution, Training Water, Harvesting	DOA 2012-	Ongoing	District Pauri, Haridwar, Almora, Pithoragarh and US Nagar for Rice Dehradun, Hridwar, Pauri, Tehri, Almora, Nainital, Pithoragarh and US Nagar.	Annual activities proposed by District Agriculture Plan with due consideration of District Food Security Mission Committee.	100 % GOI
9	Kisan Credit Card Scheme	Easy access to farmers for need based loan from banks.	NABARD	Ongoing	All districts	Contact to nearest Bank	
10	Artisan Credit Cards	Easy loan access to artisans from Banks	NABARD	Ongoing	Subsidy support is up to 20 %.	Contact to nearest Bank	100 % GOI

(Abbreviations: DOA = Agriculture Department, Uttarakhand, GOI=government of India, OSV=Off Sea son Vegetable, MOHRD= Ministry of Human Resource Development)

Source:

1 Rural Development Schemes. National Bank for Agriculture and Rural Development, Uttarakhand Regional Office, Dehradun. 2013.

2 Pragati Pratiivedan 2012-13 and Budget Guidelines (performance budget 2013-14). Agriculture Department, Uttarakhand.

(3) Horticulture

	Name of the Program	Objective Nodal	Agency	Duration of the program	Coverage districts	Process for accessing the program	Financing mechanism	
1	Bee Keeping program	Increase fruit yield through pollination by putting 4 beehives per hectare	DOH	On going	All	First hand information from A DO Horticulture / Block Development Officer, prepare required documents and apply to Block office. DHO in each district can be contacted for further process of application.	DOH	
2	Uttarakhand Crop management program	Ropeway establishment for transport of the farm produce to the road head and corrugated boxes	DOH Ongoing		All	First hand information from A DO Horticulture / Block Development Officer, prepare required documents and apply to Block office. DHO in each district can be contacted for further process of application.	DOH	
3	Garden Fencing program	Fencing of garden to protect from wild animals (50%)	DOH On	going	All		DOH	
4	Human Resource Development program	Strengthening of Horticulture mobile team, OSV and spice demonstrations, training of farmers (100% support)	DOH On	going	All		DOH	
5	Horticulture Development in Scheduled Caste Areas	Establishment of individual gardens(50%)	DOH On	going	All		DOH	
6	Crop insurance Scheme	Insurance for apple, mango, Litchi, tomato, potato, Ginger crop insurance. (50% of the premium)	DOH Ongoing		All		DOH	
7	OSV and spice program for Scheduled Tribal areas	OSV and Spice demonstration (Free of cost for 0.1 ha)	DOH Ongoing		All		DOH	
8	Improved nursery development	Floriculture, plant protection, horticultural tools and rain water harvesting tanks (50%)	DOH -District Sector program	On going	All		DOH	
9	Processing and value addition of fruit and vegetables	Crate, packing box availability (50%)	DOH -District Sector program	On going	All		First hand information from A DO Horticulture / Block Development Officer and DHO in each district.	DOH
10	Horticulture Mission for North East and	Increase area under Horticulture crops, poly house, shade net,	DOH	On going	All		First hand information from A DO Horticulture / Block Development Officer and DHO in	100% GOI

	Name of the Program	Objective Nodal	Agency	Duration of the program	Coverage districts	Process for accessing the program	Financing mechanism
	Himalayan	training and exposure				each district.	
11	Training program for Gardeners (Udhyanpati and women Udhyanpati)	100 % support for Training on new technologies	DOH	On going	All	First hand information from A DO Horticulture / Block Development Officer and DHO in each district.	100% MOHRD, GOI
12	Development of commercial horticulture through post harvest Management and production.	Cultivation of high quality commercial crops like on green houses (33 % back ended subsidy for hill region on Aromatic, medicinal plants, OSV, Spices, Tissue culture, Sericulture, Bee Keeping)	NHB	On going	All	Proposal of the site can be sent to Director, NHB Dehradun. HDB visits the proposed site and inform applicant about the feasibility. The detail proposal is to be routed through Bank agree to finance the activity. On approval by review committee a Letter of intent issued. Evaluation is by NHB before release of subsidy after 3 years to beneficiary account	NHB,GOI
13	Cold storage, collection centers/extension/modernization for horticulture products	Increase holding capacity (55% Back ended subsidy for hill region)	NHB On	going	All	ditto	NHB,GOI
14	Technology development and transfer or Horticulture promotion	Promotional activities Community exposure Exhibitions, trainings. Post harvest management.	NHB On	going	All	Government institutions or departments can send project / activity proposal directly to Director NHB.	NHB,GOI
15	Market Information Service for Horticulture crops	Wholesale market information development	NHB	On going	All	Available on NHB website for 96 markets	NHB,GOI

(Abbreviations: DOH = Department of Horticulture, GOI=Government of India NHB=National Horticulture Board, OSV=Off Season Vegetable, MOHRD= Ministry of Human Resource Development)

Source:

- 1 Rastriya Bagwani Board ki yojnaou par ek najar, NHB Ministry of Agriculture, GOI.
- 2 Udhyan Vibhag Dwara Sanchlit Yojnaoun ka vivaran, Directorate e Horticulture and Food Processing Department, UdhyanBhawan, Chobatiya. Ranikhet. Uttarakhand.
- 3 Dr .B S Negi, Director, National Horticulture Mission, Horticulture and Food Processing Department, Circuit House Dehradun. Tel: 0135-2759796 e mail:missionhortiuk@gmail.com
- 4 Mr U S Bhardwaj, Director NHB Uttarakhand, 179 A Phase-2, VasantVihar Dehradun. Tel: 0135-2761922 e mail: nhb_dehradun@yahoo.com/ www.nhb.gov.in

(4) Health

Sl	Name of the Program	Objective Nodal	Agency	Duration of the program	Coverage districts	Process for accessing the program	Financing mechanism
1	Safe Motherhood program (Janani Surakshya Yojna)*	To support maternal health and promote safe delivery/ delivery in Hospital	DHFW	On going	All	Village ASHA	90% GOI and 10 % GOUK
2	Janani Shishu Surakshya Karyakram (JSSK)*	To assure free services to all pregnant women and sick neonates accessing public health institutions. This is to care mother and child for 41 days by providing all health facilities free of cost)	DHFW	2011-On going	All Village	ASHA (Accredited Social Health Activist)	As Above
3	Immunization*	Protection of mother and child from six diseases	DHFW	Ongoing All	All	Village ASHA	
4	Ambulance service (108)*	To provide emergency health services	DHFW	Ongoing	All	Directly call 108 a toll free number for help. The ambulance is GPS equipped and centrally controlled at Dehradun Head Quarter.	PPP mode
5	Khusiyouki Savari (Ambulance)*	Facilitate pick up and drop service to pregnant women	DHFW	Ongoing All	All	Primary health center	GOUK
6	Reproductive and Child Health program	To provide equitable RCH services through health camps at village and Block level.	DHFW	On going	All	ASHA	GOUK
7	Weekly Iron and Folic Acid Supplementation program (WIFS)	The program will reach out to boys and girls of the country in schools as well as out-of-school girls. Under this program, along with IFA tablets, adolescents and their families will be given information and counseling on nutrition and health education.	DHFW	2012-ongoing	All Health	programs can be accessed through Village Health and sanitation committee headed by Pradhan.	100% GOI
8	Rastriya Swasthya Bima Yojna (National Health Insurance Scheme)*	To provide health insurance coverage to the below poverty line families.	Ministry of Labor and Employment GOI & DHFW	2008-On going	All Accelerated	ated social health activist and Assistant nursing Mid-wife	75 %GOI and 25%GOUK and beneficiary

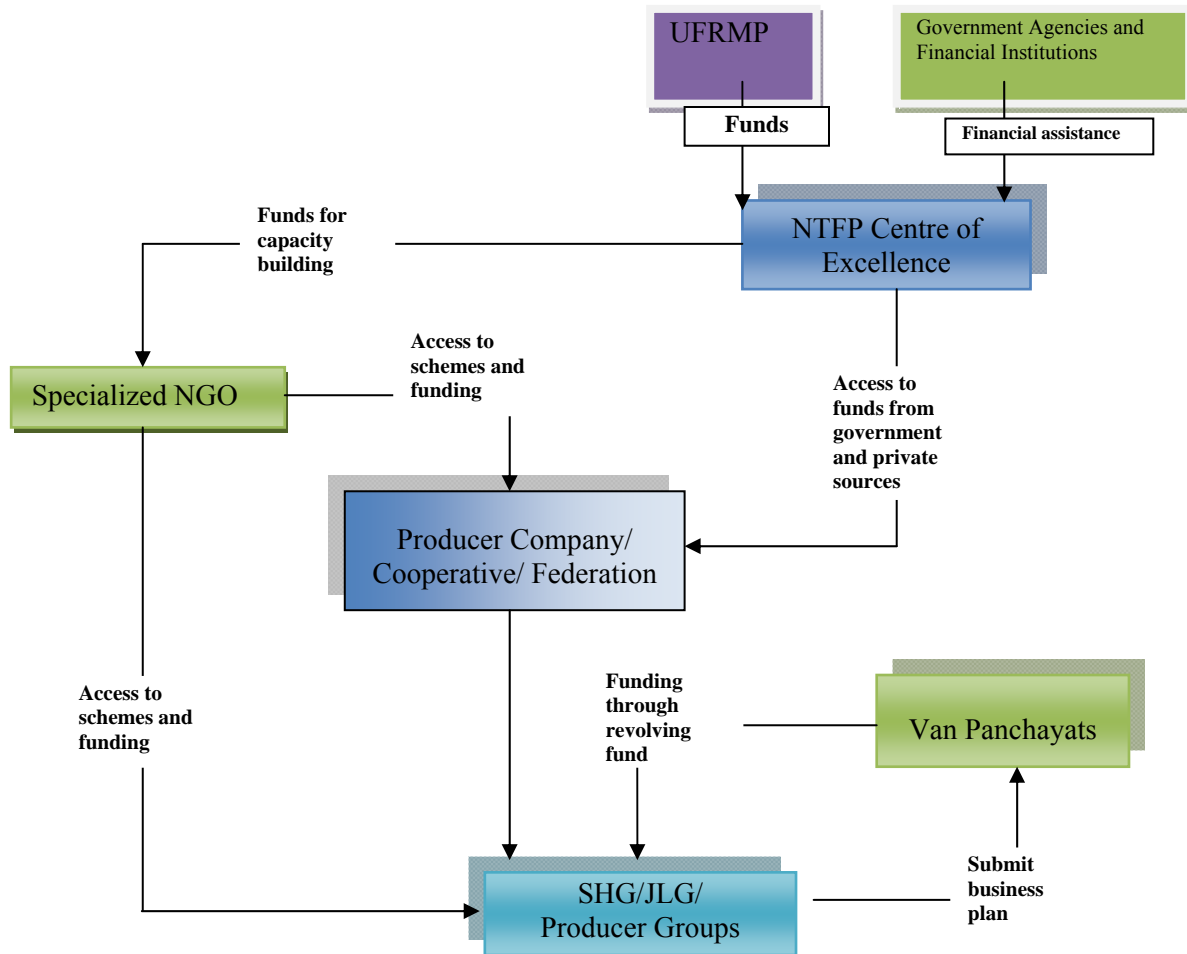
(Abbreviations: DHFW = Department of Health and Family Welfare, GOI=Government of India, GOUK=Government of Uttarakhand NRHM=National Rural Health Mission)

Source:

*Dr. Prem Pal Singh, Additional Director, NRHM, Gujrada, IT Park, Dehradun.

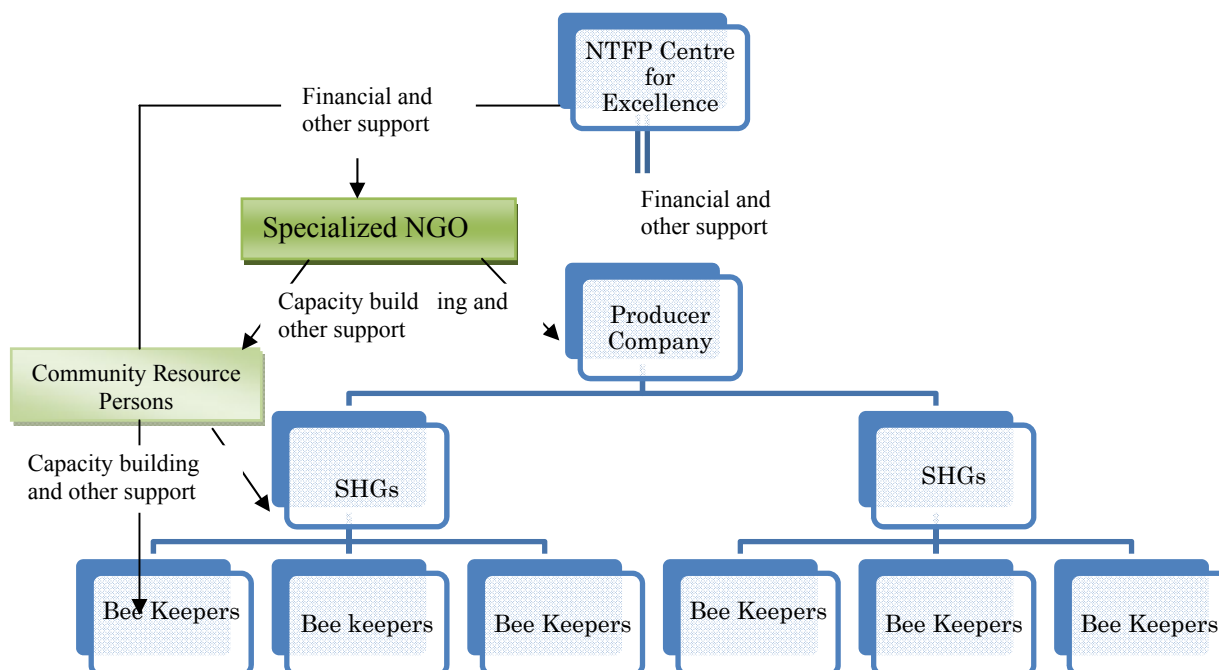
2 Directorate. National Rural Health Mission. 2.RSBY How it works: Ministry of Labor and Employment. Retrieved 2011-02-26.

Attachment 6.6.4 Suggested funds Flow for NTFP enterprise development



Source: JICA Preparatory Survey Team

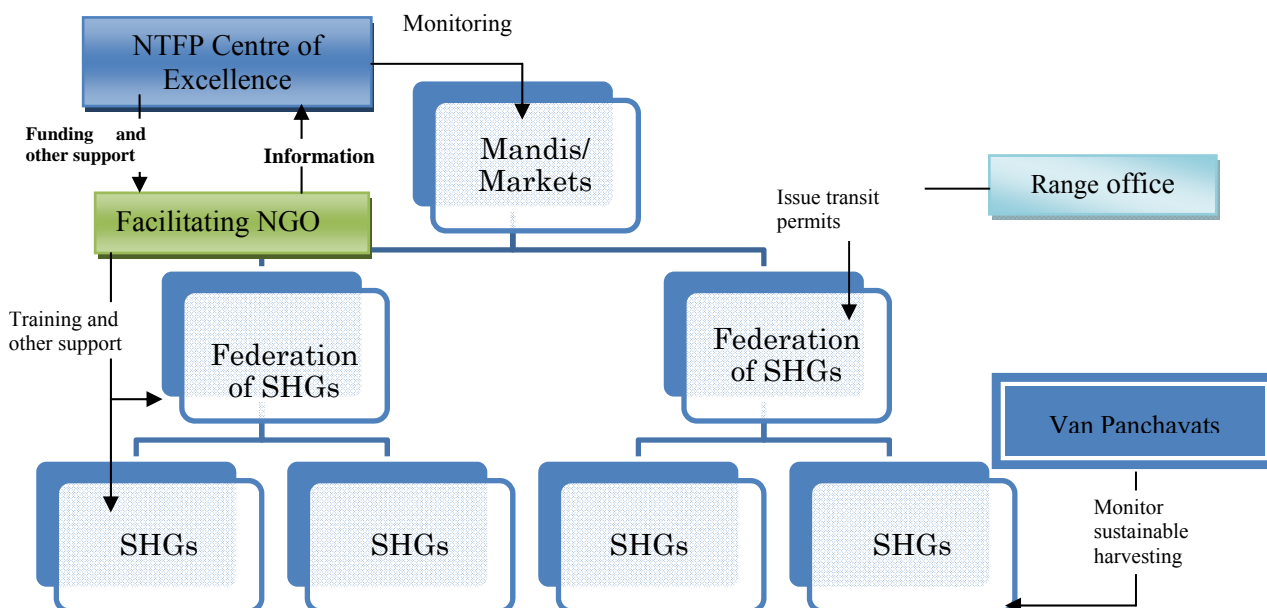
Suggested Organization Framework for enterprise development on Honey



Institution	Responsibilities
Community Resource Persons	Organization of beekeepers and formation of SHGs Providing training to the beekeepers Arranging necessary inputs for the beekeepers Trouble shooting Linkage between Beekeepers and Specialized NGO
Van Panchayats	Revolving fund support to SHGs, if needed. Monitoring of activities of Bee Keepers
SHGs	Business plan for beekeeping Close interaction with the Producer Company
Producer Company	Work for the betterment of bee keepers Set up the production/ processing facility Processing of Honey/ packaging/ branding Quality control Marketing of Honey
NGO	Business planning and organizing all activities for setting up the enterprise Training and engagement of Community Resource Persons Arranging bee colonies and other inputs for the enterprise Formation of Producer Company Assist Producer Company to set up processing facility, processing and marketing of Honey Regularly interact with NCE on enterprise development, fund raising and marketing
NCE	Develop overall business plan for enterprise development on Honey Raise funds for setting up enterprises Arrange technical assistance/ inputs Arrange training of NGOs and Producer Company Quality control Establish market linkage Closely monitor the entire operation

Source: JICA Preparatory Survey Team

Suggested Organization Framework for Enterprise Development on Lichens and Mosses



Institution	Responsibilities
SHGs	Organization of Lichen collectors Organization of training programmes in collaboration with VPs Purchase Lichens and Mosses from the primary collectors Transport them to the Federation/ Primary processing centre
Van Panchayats	Monitor the process of harvesting – sustainable harvesting practices
Federation of SHGs	Procure the Lichens and Mosses from the SHGs Carry out primary processing – cleaning, grading and packaging Get transit permit from the Range Office Transport it to the Mandi
NGO	Training of SHGs, SHG Federation and VPs on the sustainable harvesting, procurement, primary processing of Lichens Closely monitor the collection, production and marketing processes Regularly interact with NCE on fund raising and marketing
FMU	Closely monitor the sustainable harvesting of Lichens and Mosses Issue of transit permits to Federations of SHGs for transportation of the materials to Mandis/ Markets
NCE	Develop overall business plan for Lichens and Mosses Organize funds for the entire operation Arrange training of NGO Quality control Negotiate with the buyers/ industries to participate in the auction Negotiate with the industries for direct sale Closely monitor the entire operation

Source: JICA Preparatory Survey Team

Attachment 6.6.5 Preliminary Terms of Reference for Field NGOs

1. Rationale:

UFRMP will work with 1,000 VPs and 2,000 SHGs. The project will engage field level personnel to carry out the micro planning, SHG formation/ adoption, management of income generation activities, convergence, various training programmes and providing regular handholding. Especially the project will be implemented in participatory mode. It is, thus, important to engage personnel with the capacity to interact effectively with the local communities. Thus, the project will attempt to harness the capacity of NGOs in the state. The Scope of work and terms of reference of the NGOs are as below.

2. Scope of Work

The Field NGOs (FNGOs) will be responsible for strengthening the capacity of Van Panchayats and SHGs for the sustainable forest resource management and improved livelihood. It involves community mobilisation, facilitation in micro planning and convergence, management of revolving fund, providing necessary field guidance for SHGs to carry out income generation activities and carry out technical trainings for VPs and SHGs. FNGOs will also assist the project in organizing exposure visits for VP members and FNGOs. Capacity building of animators who would be active as community level resource person will also be an important element of FNGO task. In executing the above, the FNGOs will provide the qualified individuals to be placed in the field and work in close coordination with PMU/ DMU/ FMU following the project implementation modalities.

3. Team Composition

To carry out the above tasks outlined under the Scope of Work, Marketing Support Staff and Field Coordinators will be engaged from NGOs. The Marketing Support Staff will be engaged for the duration of 5.5 years and the field coordinators for 3 years. The Field Coordinators will be engaged batch wise according to the selection of VPs. Each Field Coordinator will work with approximately 4 VPs and 8 SHGs. In addition, FNGOs will also engage subject matter specialists to provide technical training for and follow up with SHGs at the suitable timing.

Indicative Number of FNGO Expert/ Field Coordinators

Circle	Division	Number of ranges	VP Selection				No of NGOs to be engaged	Marketing Support Staff	Field Coordinator			
			Batch 1 (100 VPs)	Batch 2 (350 VPs)	Batch 3 (350 VPs)	Batch 4 (200 VPs)			Batch 1	Batch 2	Batch 3	Batch 4
Shivalik	Lansdown S C	3	8	28	28	18	1	1	2	9	8	4
Yamna	Mussoorie	2	6	18	18	12	1	1	2	5	5	3
Bhagirathi	Narendranagar	3	8	28	28	18	1	1	2	7	7	4
Bhagirathi	Tehri Dam-1	2	6	18	18	12	1	1	2	5	5	3
Garhwal	Alaknanda S C	3	8	28	27	18	1	1	2	7	7	4
Garhwal	Pauri C & S	3	8	28	27	18	1	1	2	7	8	4
N. Kumaon	Almora C & S	3	8	28	27	18	1	1	2	7	7	4
N. Kumaon	Bageshwar	3	8	28	27	18	1	1	2	7	7	4
N. Kumaon	Champawat	3	8	28	27	18	1	1	2	7	8	4
N. Kumaon	Pithoragarh	3	8	28	27	18	1	1	2	7	7	4
S. Kumaon	Nainital S C	3	8	28	27	18	1	1	2	7	7	4
S. Kumaon	Ramnagar S C	3	8	28	27	18	1	1	2	7	7	4
S. Kumaon	Ranikhet S C	3	8	27	27	18	1	1	2	7	7	4
	Total	37	100	343	335	222	6	13	25	88	88	50

Source: JICA Preparatory Survey Team

4. Terms of Reference

4.1 Marketing Support Staff:

- 1) To prepare monthly work plan of the Field Level coordinators in the area of SHG formation/ adoption/ capacity building/ IGAs in coordination with DMU/ FMU
- 2) To monitor the work progress of the ensure the active coordination between field coordinators and DMU/ FMU
- 3) To guide SHGs in marketing the produces
- 4) To identify the training needs of the SHGs and organize training programmes and exposure visits
- 5) To mobilize required subject matter specialists for the technical training programmes for SHGs through FNGO
- 6) To facilitate linkages between SHGs and market, financial institutions, and other schemes/ programmes to mobilise resources
- 7) To guide Field Coordinators in SHG formation/adoption and SHG/ Animator capacity building
- 8) To facilitate development of enterprises and setting of the cluster level organisations
- 9) To prepare monthly and quarterly reports to DMU and attend annual review meeting

4.2 Ad-Hoc Demand Subject Matter Specialists

FNGOs will mobilize according to the requirement of SHGs for technical training and follow up. The envisaged technical areas would include livestock, horticulture, and handicrafts.

- 1) To guide SHGs in identifying technically feasible IGAs
 - 1) To conduct technical training programmes and follow up for SHGs
 - 2) To provide guidance to Field Coordinators in providing regular follow up with SHGs
 - 3) To prepare time sheet and report containing the output of the assignment including training achievement and technical recommendation for FNGOs and SHGs and submit to FNGOs.

4.3 Field Level Coordinator

Field Level Coordinator will carry out following tasks under the supervision of FMU and DMU:

- 1) To mobilize VPs for project implementation
- 2) To guide VP members in selection of EPAs and preparation of Micro Plans
- 3) To train and guide animators so that they can provide support to VPs and SHGs
- 4) To form/ revive SHGs and support SHGs in implementing IGAs
- 5) To assist VP/ SHGs in record keeping and holding meetings
- 6) To facilitate the linkages between VP/ SHGs with programmes/ schemes and other organisations
- 7) To record the progress of the field level activities as per the project requirement
- 8) To carry out training programmes for VPs and SHGs and organize exposure visits
- 9) To prepare monthly report
- 10) To report to FMU and attend review meeting

5. Qualification:

Proposed qualification is given below.

Position	Qualification
Marketing Support Staff	<ul style="list-style-type: none"> • Post Graduate degree in social science, rural development, development economics, anthropology and any other related field • Minimum 10 years of working experience in the related field • Able to supervise a team of NGO staff • Have Strong multi stakeholder facilitation skill • Previous working experience in the similar projects in Uttarakhand will be required. • Able to communicate and prepare reports in Hindi and English • Computer literate
Field Coordinator	<ul style="list-style-type: none"> • Post Graduate degree in social science, rural development, development economics, anthropology and any other related field • Minimum 5 years of working experience in the related field • Computer literate • Able to communicate and prepare reports in Hindi and English • Previous working experience in the similar projects in Uttarakhand will be an asset.

6. Method of procurement and Selection Criteria

6.1 General:

FNGOs will be procured through local competitive bidding following the applicable laws and regulations of the State Government of Uttarakhand. The contract amount will be fixed. The proposals will be reviewed by the Tender Evaluation Committee comprised of selected PMU members (PD, JPD (Planning and Implementation), DPD, Planning & Implementation Officer, Capacity Development & Livelihoods Officer), CCFs and DMUs. CPD will issue a notification letter to the committee members.

6.2 Review of the Proposal:

The technical proposal will be reviewed by the committee with emphasis on the financial and managerial capacity of the applicant NGO, qualification of the proposed personnel, and relevant field experience in the past 10 years. The Tender Evaluation Committee members will also carry out the interviews with the head of the NGOs and the personnel proposed for the position of NGO Field Coordinator/ Marketing Specialist. Suggested selection criteria are as below. The selection procedure and results must be recorded as a minutes of meeting.

Suggested Selection Criteria

	Criteria	Distribution of the score
Management capacity	Understanding about FNGO's roles and responsibilities in the assignment 5	
	Strategy for monitoring the work progress and ensure accountability	4
	Management Strategy for Field Coordinators	4
	Annual Turn Over –Rs. 2,500,000 Rs. or above.	1
Relevant Technical Experience	Experience of NGO in PRA/ PLA and imparting training programmes at the field level	3
	Experience in SHG and SHG federation development and IGA support/ MED Development	5
	Experience in working with VPs	3

Human resource	Academic qualification	NGO Coordinator/ Marketing Expert	Maximum 5 points each per position
		Agriculture Expert	
		Livestock Expert	
		Livelihood Support Expert	
		Field Coordinators	
	Relevant Experience	NGO Coordinator/ Marketing Expert	Maximum 5 points per person
		Agriculture Expert	
		Livestock Expert	
		Livelihood Support Expert	
		Field Coordinators	

6.3 Expected Outputs

Marketing Support Specialist: Monthly Work Plan and Monthly Report, Quarterly Report, Annual Report

Field Coordinators: Monthly Work Plan and Monthly Report

Subject Matter Specialist: Daily Work Log and Assignment Report

FNGO: Compiled Monthly Report and Expenditure Report with proof, Quarterly Report and Annual Report

7. Payment

Invoices should be submitted to DMU for verification on a monthly basis with the sufficient proof of expenditure and monthly report. After the validation of the records, the payment will be released from PMU.

8. Contract

The contract shall be exchanged between PMU and the head of FNGO. The project will carry out the review of FNGO performance on an annual basis. Depending on the results, continuation or discontinuation of the contract will be determined. The contract duration will be 2 years renewable up to 5.5 years.

Attachment 6.6.6 Details of Enterprise Development (NTFP) Activities to be carried out by the Project

1. Enterprise Development – Sustainable Harvesting, Value Addition and Marketing of Lichens and Moss Grass

Lichens and Moss grass are the important NTFP traded in the state in terms of volume and value involved. Lichens and mosses account for nearly 99% of the total traded quantity of NTFPs in the three *Mandis* of Forest Development Corporation. The total traded quantity of lichens and mosses in 2012 was 2,898 MT which amounted to Rs. 232 million. There is hardly any value addition done at the primary collectors' level. The Project shall promote enterprise development on Lichens and Moss Grass focusing on quality improvement of the produce through sustainable harvesting, proper cleaning, sorting, grading, packaging etc. Emphasis shall also be done for adoption of floating *mandis* in the project sites.

1.1. Target Area and Beneficiaries

The activities shall be implemented in two clusters in **Badrinath Forest Division (this division produces more than 85% of the total Lichens and Mosses collected and traded in the state)** through 40 SHGs and 2 SHG Federations under the guidance of Van Panchayats and NTFP Centre of Excellence. About 400 primary collectors shall be benefitted by this activity.

1.2. Activities to be carried out

- Persuasions with the State Government to give rights of procurement of Lichens and Moss Grass to VPs and SHGs formed/adopted by the Project.
- Persuasions with the State Government to allow organization of floating *mandis* in the Project sites for sale of Lichens and Mosses.
- Periodical meetings with the State Government to allow certain percentage of the Lichens to be sold by SHG Federation and NCE, directly to the Processing Industries.
- Ensure timely fixation of floor price for Lichen at least for 3 grades, which shall form the basis for auctioning.
- Identification of VPs and SHGs in the target clusters and to carry out community organizing activities to organize the primary collectors to get involved in collection and processing of Lichens and Mosses.
- Identification of SHG Federations who shall take responsibility of procurement, processing and storage of Lichens.
- Organization of repeated orientation and training programmes for the VPs and Primary Collectors/ SHGs and SHG Federations on good harvesting/ collection practices and on the whole procurement operation.
- Training of SHG Federation leaders on the primary processing – grading, sorting, packing etc. and ensuring quality control.
- Identification of sites for construction of processing and storage facilities.
- Fixation of collection price in consultation with different stakeholders and with reference to the floor price fixed by the Government
- Select some persons from the VPs and Project Staff to work as monitors and train them to inspect the adherence to rules and standards.

- Construction of small storage facility (two nos.) in the targeted clusters with racks, driers, weighing scale, proper packing and sticking instruments etc.
- Procurement of Lichens and Mosses by the SHGs and transportation of the materials from the SHGs to these primary processing centres.
- Grading, sorting and packing of Lichens (each packet with a label mentioning the grade, quantum, date of packing etc.) by the SHG Federation engaging the members of SHGs.
- NCE to explore possibilities for floating *mandis* in the target clusters.
- Arrangement of transit permits from the Range Office with payment of required royalty.
- If local auction is not possible then transportation of materials to the Mandi and ensure proper weighing and storage in the Mandi and assist Forest Development Corporation in organizing the auctions in the NTFP *Mandis*.
- NTFP Centre of Excellence shall establish linkages with different spice industries and exporters and possibilities shall be explored for direct sale to these industries

1.3. Infrastructure required

Small storage facilities (two nos.) in the targeted clusters with racks, driers, weighing scale, proper packing and sticking instruments etc. are required for primary processing, storage and marketing of Lichens and Mosses.

1.4. Project costs

The Project shall assist the SHG Federation for value addition, storage and capacity building activities. A startup capital for operation of the enterprise shall be provided to the SHG Federations. Requirement of additional finances shall be met through building linkages with financial institutions. The Project shall take care of the facilitation cost and cost for technical and market support. The total cost of the enterprise in two clusters shall be Rs. 7.616 million.

Table: Cost estimate for one cluster (20 SHGs) in INR

Sl.	Item	Specification	Unit	Qty	Unit Cost	Cost
1	Infrastructure Development	Common facility centre and warehouse 1,000 sq. ft.	Nos 1		1,200,000	1,200,000
2		Drying instruments, weighing instruments, packing machines and racks	Lump sum	1	300,000	300,000
3	Training	Sustainable harvesting - cluster level training of SHG members	No. of trainings	20	20,000	400,000
4		Enterprise management - training of SHG federations	No. of trainings	2	20,000	40,000
5	Working capital	Revolving fund (one time for each cluster)	Nos. 1		1,000,000	1,000,000
6		Enterprise maintenance and management cost	Per month	36	2,000	72,000
7	Coordination	Facilitation cost (Professional fee) (8 months per year)	Person/month 24		25,000	600,000
8		Market Access negotiating with buyers, floating auctions)	No. of auctions	5	20,000	100,000
9		Travel and coordination (8 months per year)	Per month	24	4,000	96,000
Total						3,808,000

Source: JICA Preparatory Survey Team

1.5. Technical and Facilitation Support

The FNGO engaged by the DMU shall assist the VPs, SHGs and SHG Federations in organizing and facilitating implementation of the activities. The FNGO shall engage competent persons to assist the SHGs and SHG Federations to steer the entire process of community organizing and enterprise development.

NCE shall provide all necessary technical and managerial support to FNGO and SHG Federations in procurement, processing and marketing of the produces. NCE shall regularly persuade the Government to make necessary changes in the policies and keep the Government updated on the progress of work. It shall ensure sustainable harvesting of Lichens so that there won't be over-exploitation of the forest produce.

Table: Role of different institutions

Activity	Responsible agency/institution	Remarks
Identification of clusters	DMU/FMU and FNGO	
Community mobilization	FNGO	FNGOs shall have to engage additional persons for this enterprise
Formation/ adoption of SHGs	FNGO	Priority shall be given to the existing SHGs
Allocation of forest Ranges to VPs for collection of lichen and moss	PMU and NCE	The Government need to be persuaded to change the existing practice
Capacity building of SHGs	FNGO	Training to be organized both at the VP as well as cluster level
Formation/ adoption of SHG federation	FNGO	
Capacity building of SHG federation	FNGO and NCE	
Collection of lichens and moss	SHG under the supervision of VPs and SHG Federation	
Establishment of common facility centre	DMU, NCE and SHG federation	After the formation of SHG federation
Procurement/aggregation SHG	SHG Federation	
Storage SHG	SHG Federation	
Grading, sorting, drying and packing	SHG Federation	
Market access (floating auctions) as well as auction at NTFP Mandis and contact with Processing Industries	NCE	

Source: JICA Preparatory Survey Team

1.6. Benefits to the SHGs

40 SHGs in two clusters shall be involved in the procurement, processing and marketing of Lichens and Moss grass. It is expected that 500 MTs of Lichens and 100 MTs of Moss grass shall be collected and processed by 40 SHGs and two SHG Federations. It is estimated that each SHG shall earn about Rs. 0.3 to 0.4 million a year. There is a possibility that procurement may go up to 1000 MT in both the cluster after 3-4 years.

2. Quality Improvement activities on Pine Resin

Chir pine is the predominant tree species in Uttarakhand covering an area of 3,93,384 ha (16.15% of forest area). Resin is harvested and sold by the Forest Department through auction. Resin is processed by various industries to extract turpentine oil and rosin. Rosin is being used by the industries dealing with varnish/polish, phenyl, *agarbati*, paint, paper etc. Turpentine oil is used for paints, veterinary medicines and pain killer ointments, camphor, perfumeries etc. The production of resin in 2011-12 was 16,142 MT and the revenue earned by the Forest Department was Rs. 597.451 million. The sale price (auction price) has almost remained stagnated because of less number of buyers participating in the auction. Poor quality of resin is one of the reasons for this state of affairs.

NCE shall carry out R&D activities to improve the quality of resin harvested from the pine trees. The focus shall be on building the capacity of the VPs and Resin Tappers to follow sustainable harvesting practices and also to experiment borehole method for tapping resin to improve the quality.

2.1. Target Area and Beneficiaries

Resin is harvested and sold by the Forest Department. One Forest Division shall be targeted for this activity. It is suggested that Almora Civil & Soyam Forest Division may be taken up for this as pine resin is being harvested from the VP forests. This is more of a research and demonstration activity rather than to be considered as an enterprise.

The activities shall be implemented in two clusters and in each cluster 10 Van Panchayats shall be identified.

2.2. Activities to be carried out

- Identification of the cluster in consultation with the Forest Department and then preparation of detailed plan of action with NCE and the concerned DMU. Necessary directions need to be given from the Forest Department to the concerned Forest Division.
- Organization of workshops by the NCE with different Research Institutes including the FRI and Resin Processing Industries on the quality improvement procedures to be followed and experimentation of borehole methods. Detailed R&D plan shall be prepared based on the recommendations of these workshops.
- Identification of Van Panchayats, VP members interested for tapping of resin and existing tappers.
- Identification of area/coupe for research/ experimentation of borehole method.
- Organization of meetings, orientation and training programmes at the VP level as well as the DMU level to sensitize the VPs and Resin Tappers on the issues in the quality of the product and methods and procedures to be followed for tapping the resin, packaging and storage.
- Train the leaders of the VPs to monitor the process of tapping and packaging and storage, and to ensure that sustainable harvesting standards/ protocols are followed by the tappers.
- Train the F NGO staff and leaders of VPs to carry out tasks related to the research and keep necessary records of the experimentation.
- Organize the visit of Technical Experts/ Researchers to field sites for monitoring the research activities.
- Periodically organize workshops with the Research Institutes, Technical Experts and Resin Industries to present the progress of work and the interim results from the field research.

- Prepare and circulate reports on the experimentation.
- Organize interface between the Forest Department and Resin Industries and assist the Forest Department in timely auction of the produce.

2.3. Infrastructure required

Tools for experimentation of borehole method such as drilling machines, containers etc.

2.4. Project costs

NCE shall use the funds available under the R&D for pine resin, pine needle etc. for experimentation of borehole method. The training budget available with NCE shall also be used for orientation and training of VP members, tappers and the Project staff. Detailed cost estimate for R&D shall be prepared after identification of the cluster and consultation with Research Institutes/ Technical Experts.

2.5. Technical and Facilitation Support

NCE shall provide all necessary technical and managerial support to FNGO, DMU and VPs to carry out different activities. NCE shall use the technical expertise available with FRI and other Research Institutes. The FNGO shall carry out all community mobilization and capacity building programmes under the guidance of both NCE and DMU.

Table: Role of different institutions

Activity	Responsible agency/institution	Remarks
Identification of clusters	PMU and NCE	One Range may be identified
Identification of VPs	DMU	
Identification of field sites for experimentation	DMU	
Community mobilization	FNGO	
Capacity building of VPs and Resin Tappers	NCE and FNGO	Training to be organized both at the cluster level
Organization of multi-stakeholders workshops	NCE	
Technical design and detailed plan of action for R&D works	NCE with the help of Technical Experts/ Research Institutes	
Field research	FNGO, VP with the help of NCE	
Monitoring and technical supervision	NCE and Technical Experts	
Compilation of data and analysis and preparation of findings	NCE and Technical Experts	

Source: JICA Preparatory Survey Team

3. Enterprise Development - Pine Needles Gasifier and Briquettes

Chir pine is the predominant tree species in Uttarakhand covering an area of 3,93,384 ha (16.15% of forest area). Huge amount of pine needles are produced every year, which are unutilized and piled up in the forest floor. Since these needles are highly inflammable they cause forest fires and severe destruction to the forest.

The Project shall promote enterprises on utilization of pine needles. NCE has planned to set up a 120 kw pine needle gasifier and briquette making unit in collaboration with the private entrepreneurs under PPP mode. R&D activities shall be carried out on the use of pine needles as an ingredient to make fodder and also on the production of cheap briquettes with higher calorific value.

3.1. Target Area and Beneficiaries

One gasifier has been planned to be set up in collaboration with private entrepreneurs in one cluster. NCE and the entrepreneur would work with a group of VPs or one SHG Federation to set up the unit. The VPs or the SHG Federation would take the responsibility of supply of raw materials and also involved in the management of the unit.

Pine briquette clusters shall be determined after the R&D as well as after the market feasibility study.

3.2. Activities to be carried out

- Identification of the possible clusters by NCE in consultation with the Forest Department and then carry out feasibility study in the field/ cluster.
- Preparation of preliminary project proposal for discussion with different private entrepreneurs.
- Call for proposals from different entrepreneurs to set up pine needle gasifier and explore the possibility for setting up the enterprise.
- Providing necessary support to the private entrepreneur to set up the enterprise.
- Community mobilization to ensure assured supply of pine needles to the enterprise and establish appropriate institutional and financial mechanism for collection, storage and delivery to the enterprise.
- Necessary facilitation to create multi-stakeholders management committee to manage the enterprise.
- Periodical monitoring of the progress of enterprise.
- Organization of meetings and workshops with different research and technical institutes to find out the possibilities of research on pine needle briquettes (improving the calorific value) and pine needle fodder development.
- Finalization of research proposals and budgets and commissioning of the R&D works.
- Periodically organize workshops to share the findings of R&D works and explore possibilities for use of these findings in the field/ setting up new enterprises based on the findings.
- Carry out market feasibility studies for pine needle briquettes and accordingly prepare proposals for production of pine needle briquettes and take up market promotion activities.

3.3. Infrastructure required

Establishment of pine needle gasifier requires gasifier plant with other associated machineries, shed for plant and shed for storage, briquette making machines etc. Skilled human resources are required to operate the plant and manage the enterprise.

3.4. Project costs

The total cost of the enterprise is Rs. 17.08 million and NCE shall provide support up to Rs. 7.5 million. The rest funds shall have to be invested by private entrepreneurs under PPP mode. Technical

support agency shall be hired to set up the plant and periodically maintain it. NCE shall organize training programmes for the staff, VPs and SHG Federation for proper management of the enterprise. NCE shall mobilize the support/ subsidy from the Ministry of New and Renewable Energy to set up the enterprise.

NCE shall use its funds for carrying out R&D activities on pine briquettes and fodder development works.

Table: Cost estimate of one Gasifier of 120 kw with briquette making unit in INR

Sl.	Item	Specification	Unit	Qty	Unit Cost	Cost
1	Infrastructure Development	Construction of building for gasifier 2,000 sq. ft	Nos 1		2,000,000	2,000,000
2		Biomass gasifier 120 kw plant (including transportation and installation)	Nos 1		9,000,000	9,000,000
3		Pine briquette making plant	Nos	1	200,000	200,000
4	Working Capital	One time revolving fund for VP for purchase of pine needles	L.S 1		1,500,000	1,500,000
6	Coordination	Plant operator 6 (@ Rs. 6000/month for 3 years)	Person/month	216	6,000	1,296,000
7		Hiring of consultant organization (preparation of detailed project proposal, Power procurement Agreement, supervision till year 3) @ 4% of Capital cost	Yearly 3		424,000	1,272,000
8	Maintenance	Repair and Maintenance of machinery (@ 5% of cost for 3 years)	Yearly 3		530,000	1,380,000
9	Training	Training of plant operators (5 day)		2	7,500	15,000
10		Demonstration of improved charcoal stoves	Nos 10		2,000	20,000
10	Material	Improved charcoal stoves	Nos	200	2,000	400,000
						17083000
		To be supported by the project and the rest has to be provided by the Private entrepreneur				7,500,000

Source: JICA Preparatory Survey Team

3.5. Technical and Facilitation Support

NCE shall provide all necessary technical and managerial support to FNGO, VPs and SHG Federation to set up the enterprise and its functioning. The private entrepreneur shall have the overall responsibility of setting up the unit, its functioning and marketing of electricity as well as briquettes.

NCE shall use the technical expertise available with FRI and other Research Institutes for the R&D works. Fodder research institute's services shall also be utilized to undertake fodder development works.

Table: Role of different institutions

Activity	Responsible agency/institution	Remarks
Identification of project site for setting up of enterprise	PMU and NCE	
Assessment in the field and preparation of preliminary project report	NCE	NCE may consult the technical experts/ agencies already doing the work.
Call for proposals from private entrepreneurs	NCE	
Evaluation of proposals and finalization of agency to set up the enterprise	PMU and NCE	
Community mobilization for procurement of pine needles, management of the enterprise	FNGO with the support of NCE	
Setting up of the plant/ enterprise	NCE and private entrepreneur	Technical support agency shall be hired to set up the plant
Management of enterprise and necessary technical support etc.	Private entrepreneur and NCE	Technical support agency to provide maintenance services
Organization of multi-stakeholders workshops for R&D works	NCE	
Technical design and detailed plan of action for R&D works	NCE with the help of Technical Experts/ Research Institutes	
Field research/ trials	Technical Experts/ Research Institute, FNGO, VP with the help of NCE	
Monitoring and technical supervision	NCE and Technical Experts	
Compilation of data and analysis and preparation of findings – R&D	NCE and Technical Experts	
Extension and further enterprise development works on briquettes and fodder	NCE	

Source: JICA Preparatory Survey Team

3.6. Benefits to VPs and SHGs

The collection of pine needles shall generate local employment. Rs. 1,000 shall be paid for collection of one ton of needles. Around 25-30 SHGs shall be involved in needle collection for 2-4 months. In addition the enterprise can generate about 0.5 million profit per year and the VPs shall have a share of the profit as per their investment in the management of the enterprise.

4. Enterprise development – Beekeeping, Processing and Marketing of Honey

The project will seek to promote beekeeping as a viable IGA. Beekeeping has been traditionally practiced by the rural households in Uttarakhand, through bee hives built within the walls of the houses and hence this activity is expected to have wide acceptance amongst the communities. The current level of production of honey in the state is about 1,500 MT and there is a great potentiality for beekeeping and honey production. The demand for organic honey from Uttarakhand is much higher than the current production.

4.1. Target Areas and Beneficiaries

The project activities shall focus on organization of beekeepers in the form of SHGs in 6 clusters. It is estimated that there shall be 25 SHGs per cluster with about 10 members per SHG. A project targets a total of 1500 beneficiaries. Lansdowne Soil Conservation Division, Mussoorie Forest Division, Nainital Soil Conservation Division, Narendranagar Forest Division, Pauri Civil and Soyam Division, Ramnagar Soil Conservation Division, Ranikhet Soil Conservation Division could be the potential areas for promotion of beekeeping.

4.2. Activities to be carried out

- Identification of clusters through a scoping exercise as well as from the results of micro planning.
- Identification of technical support agency to provide equipments and training to the beekeepers.
- Organization of beekeepers in the form of SHGs. For this purpose new SHGs may be formed or even the existing SHGs/producer groups from within the cluster may also be involved.
- Providing bee boxes, bee colonies and basic equipment to each member of the SHG for beekeeping.
- Capacity building of SHG members including orientation of members on beekeeping and technical trainings related to colonies and hive development, honey extraction process, semi-processing, quality management and storage techniques.
- Organization of village level SHGs in the form of a Federation at a cluster level.
- Capacity building of SHG federation in enterprise management.
- Establishment of primary honey processing facilities at the cluster level. The primary processing unit shall be run and managed by the SHG federation.
- The federations shall purchase the honey from the primary producers through a revolving fund provided to them under the project.
- The project, through the NCE, shall also take necessary steps for obtaining organic certification for the honey.
- The NCE shall assist the federations in marketing the honey.

4.3. Infrastructure required

- Bee boxes, bee colonies and other equipment for beekeepers.
- Low cost honey processing machines

4.4. Project cost

The total project cost for developing 6 clusters would be Rs. 23.09 million.

Table: Cost estimate for beekeeping and honey processing in one cluster in INR

Sl.	Item	Specification	Unit	Qty	Unit Cost	Cost
1	Materials and infrastructure	Boxes and colonies (2 per producer)	Nos	50	3,000	1,500,000
2		Equipment (1 set for each producer)	No. of sets	250	500	125,000
3		Manual honey processing unit	Lump sum	1	1	200,000
4	Training	Orientation training on beekeeping / Honey production	No. of trainings	15	2,000	300,000
5		Colonies and hive development	No. of trainings	10	2,000	200,000
6		Honey extraction, semi processing, quality and storage	No. of trainings	10	2,000	200,000
7		Enterprise management - training of SHG federations	No. of trainings	4	2,000	80,000
8	Coordination	Travel and coordination	Per month	36	5,000	180,000
9		Facilitation Cost	Per month	36	20,000	720,000
10	Operating cost	One time revolving fund for purchase of honey from producers	Lump sum	1	1	200,000
11		Rent of processing centre and other operating costs	Per month	36	4,000	144,000
						3,849,000

Source: JICA Preparatory Survey Team

4.5. Technical and facilitation support

The project shall engage the services of specialized NGO(s) who shall be responsible for community mobilization at the village level and also facilitate capacity building of the SHGs and their federations. NCE shall support in the organic certification and in marketing.

Table: Role of different Institutions for honey based enterprise development

Activity	Responsible agency/institution	Remarks
Identification of clusters	DMU/FMU and FNGO	
Community mobilization	FNGO	
Formation of SHGs	FNGO	About 10 members per SHG
Capacity building of SHGs	FNGO and NCE	
Supply of inputs to primary producers	DMU with the help of technical institutions	
Formation of SHG federation	FNGO	After 1 year of SHG formation. 25 SHGs per federation

Capacity building of SHG federation	FNGO and NCE	
Production	Primary producers (SHG members)	
Establishment of primary processing unit	NCE and SHG federation	At the cluster level after the formation of SHG federation.
Collection/aggregation SH	SHG Federation	
Storage SH	SHG Federation	
Primary processing	SHG Federation	
Marketing NCE		
Organic certification	NCE	Possibilities will be explored

Source: JICA Preparatory Survey Team

4.6. Cost benefit

It is estimated that in the first year of operation each SHG would produce around 50 kg of honey and production is expected to increase to around 190 to 200 kg of honey (along with wax and also bee colonies) by the fifth year. At current prices each SHG is expected to earn a net income of about Rs 6,250 from the sale of honey in the first year although this is expected to increase to about Rs. 26,000 by the end of fifth year. Projections show that over a 40 year period the average annual income of each SHG would be around Rs. 43,000.

5. Enterprise Development on Himalayan Nettle - Fiber and Yarn Processing Unit

Himalayan Nettle is an utilized biomass available in the forest and forest fringe areas. The project shall promote extraction and processing of fiber from Himalayan nettle. It shall also conduct R&D activities on fuel efficient processing tools and processes. Market feasibility studies shall be carried out to decide the scale of production and market segments to be targeted.

5.1. Target Areas and Beneficiaries

The activities shall be taken up in a total of 2 clusters in Alaknanda Soil Conservation Division, with each cluster comprising of 25 SHGs. The project targets a total of 500 beneficiaries (10 members per SHG).

5.2. Activities to be carried out

- Identification of clusters
- Organization of nettle fiber producers in the form of SHGs. For this purpose new SHGs may be formed or even the existing SHGs/producer groups may also be involved.
- Resource development of Himalayan nettle in each cluster, through seed broadcast in civil soyam, VP forests and also in Reserve Forests. This activity shall be taken up through the SHGs.
- Providing equipments for harvesting of nettle and also for primary processing activities for fiber extraction to each SHG member.
- Capacity building of SHGs members related to harvesting of nettle, degumming, cleaning, softening and cutting of raw fiber.

- Providing a fiber cutting machine, for properly cutting the raw fiber, and also a weighing machine to each SHG.
- Organizing the SHGs in the form of a Federation at the cluster level.
- Setting up a nettle yarn production cum storage unit to cater to the 2 clusters.
- SHG federations to engage in collection of raw fiber from the SHGs and then engage in carding the raw fiber and producing nettle yarn.

5.3. Infrastructure required

- Nettle harvesting equipment
- Equipment for fiber extraction
- Fiber cutting machines
- Weighing machines
- Machines for willowing, teasing, carding and conditioning of fiber.

5.4. Project cost

Project costs include cost for cluster development and also the cost for setting up of nettle yarn production unit. The cost for development of 2 clusters would be Rs. 5.31 million while the cost of setting up yarn production unit would be Rs. 4.23 million.

Table 8 a. Cost estimate for fiber production in one cluster in INR

Sl	Item	Specification	Unit	Qty	Unit Cost	Cost
1	Materials	Equipment (utensils etc. to individual producers)	Lumpsum 1		1	500,000
2		Fiber cutter (electrical - 1 per SHG) Nos	.	25	4,500	112,500
3		Weighing Machine (1 per SHG) Nos	.	25	600	15,000
4	Training	Harvesting, Degumming, cleaning, softening and cutting (20 trainees)	No. of trainings	25	20,000	500,000
5		SHG Federations - Enterprise management	No. of trainings	4	20,000	80,000
6	Resource Development	Seeds (for 100 ha plantation)	Kg	100	300	30,000
7		Seed broadcast (in 100 ha)	Ha	100	2,000	200,000
8	Working Capital	One time revolving fund for cluster Nos		1	500,000	500,000
9	Coordination	Facilitation cost (Professional fee for 2 years)	Person/month	24	20,000	480,000
10		Travel and Coordination	Per month	24	10,000	240,000
						2,657,500

Source: JICA Preparatory Survey Team

Table: Cost estimate for setting up yarn production unit in INR

Sl	Item	Specification	Unit	Qty	Unit Cost	Cost
1	Infrastructure Development	Carding and storage centre 1000 sq. ft	Nos.	1	1,200,000	1,200,000
2		Willowing machine (200 kg/day capacity)	Nos.	1	120,000	120,000
3		Teaser machine (200 kg/day capacity)	Nos.	1	120,000	120,000
4		Carding and conditioner (200kg/day capacity)	Nos.	1	800,000	800,000
5	MCoordination	Machine operator	Person/month	36	12,000	432,000
6		Machine helper	Person/month	36	6,000	216,000
7		Facilitation fee	Per month	24	30,000	720,000
8	Other operating costs	Electricity (for 2 years)	Per month	24	5,000	120,000
9		Revolving fund with SHG Federation for procurement of raw fibers Lump sum	psum	1	1	500,000
						4,228,000

Source: JICA Preparatory Survey Team

5.5. Technical and facilitation support

For this purpose of managerial support and facilitation the services of a professional agency/NGO may be availed. Possibility may be explored for collaboration with Uttarakhand Bamboo and Fiber Development Board and Uttarakhand Renewable Energy Development Agency. Technical support from research institutions may also be sought for improving the quality of yarn. Moreover, NCE shall take necessary steps for obtaining Wild craft certification.

Table: Role of different Institutions in nettle fiber based enterprise development

Activity	Responsible agency/institution	Remarks
Identification of clusters	DMU/FMU and FNGO	
Community mobilization	FNGO	
Formation of SHGs	FNGO	About 10 members per SHG
Resource development	SHG	
Capacity building of SHGs	FNGO and NCE	
Supply of equipments to primary producers and SHGs	DMU with the help of technical institutions	
Formation of SHG federation	FNGO	After 1 year of SHG formation. 25 SHGs per federation.
Capacity building of SHG federation	FNGO and NCE	
Collection of nettle from forests	Primary producers (SHG)	

Activity	Responsible agency/institution	Remarks
and production of raw fiber	members)	
Establishment of carding and storage centre	NCE and SHG federation	One carding unit for 2 clusters.
Collection/aggregation SH	G Federation	
Storage SH	G Federation	
Carding and willowing	SHG Federation	
Marketing NCE		
Wild craft certification	NCE	Possibilities will be explored

Source: JICA Preparatory Survey Team

5.6. Cost benefit

It is estimated that in the first year of operation each SHG would produce around 175 kg of raw fiber and production is expected to increase to 385 kg by the fifth year. At current prices each SHG is expected to earn a net income of about Rs 20,000 from the sale of raw fiber alone in the first year which is expected to increase to Rs 44,000 by the end of fifth year. Projections show that over a 40 year period the average annual income of each SHG would be around Rs. 55,000.

6. Enterprise development – Cultivation of Medicinal and Aromatic Plants (MAPs) and Marketing

The state has been giving a lot of emphasis on the cultivation of medicinal and aromatic plants. State Medicinal Plants Board, Herbal Research and Development Institute, Centre for Aromatic Plants and Bhesaj Development Unit are the key agencies involved in promotion of cultivation of medicinal plants in the private land. The Project shall encourage SHGs to promote cultivation of some medicinal and aromatic plants in the private land. The following MAPs shall be given priority.

Low to Mid altitude areas: Kalajeera (*Carom carvi/ Buniumpersicum*), Rose (*Rosa spp.*), Large Cardamom (*Amomumsubulatum*)

In Low altitude areas: Satavar (*Asparagus racemosus*), Chamomilla (*Matrichariachamomilla*), Lemon grass (*Cymbopogoncitratrus*) and Pipli (*Piper longum*)

6.1. Target Areas and Beneficiaries

Cultivation of MAP on private lands, especially fallow land, shall be taken up in a total of 4 clusters, with each cluster comprising of 30 SHGs. The project targets a total of 1,200 beneficiaries (10 members per SHG). The potential areas could be in Alaknanda Soil Conservation Division, Bageshwar Forest Division, Lansdowne Soil Conservation Division, Ramnagar Soil Conservation Division, Ranikhet Soil Conservation Division and Pithoragarh Forest Division,

6.2. Activities to be carried out

- Identification of clusters in consultation with SMPB, HRDI, CAP, BDU etc.
- Organization of MAP farmers in the form of SHGs. For this purpose new SHGs may be formed or even the existing SHGs/producer groups may also be involved.
- Registration of farmers with HRDI/CAP/SMPB for getting them subsidy.
- Capacity building of farmers for MAP cultivation.

- Formation of SHG federation at cluster level and capacity building of federation in enterprise management.
- Collection, sorting grading and packaging of the cultivated medicinal plants to be taken up by SHGs with the support of federation and NCE.
- SHG federation to facilitate the individual farmers in obtaining transit permit for the cultivated MAP from District Bhesaj Sangh/HRDI.
- The SHG federation can facilitate in extraction of oil from the cultivated MAPs or powder making. This shall be done by using existing facilities of CAP or other agencies.
- The NCE and SHG federation shall also support in marketing of the cultivated MAPs.

6.3. Infrastructure required

No specific infrastructure is proposed to be set up under the project. The existing infrastructure available in the cluster (e.g. distillation units set up by CAP for oil extraction) would be utilized.

6.4. Project cost

The project cost for cluster development of 4 MAP clusters would be Rs. 4.82 million.

Table 10. Cost estimate for MAP cultivation and enterprise development in one cluster in INR

Sl.	Item	Specification	Unit	Qty	Unit Cost	Cost
1	Resource Development	Planting material (by HRDI/CAP in 1st year)	Ha	15	0	0
2	Resource Development	Cultivation cost	Ha	15	35,000	525,000
3	Training	Training on cultivation of MAPs for SHG members	Nos	7	20,000	140,000
4	Training	SHG Federations - Enterprise management	No. of trainings	2	20,000	40,000
5	Coordination	Facilitation cost	Per month	24	12,500	300,000
6	Working Capital	One time revolving fund for SHG federation	Lump sum	1	1	200,000
		Total				1,205,000

6.5. Technical and facilitation support

For community mobilization and capacity building of farmers the project shall seek the support of professional agency/NGO. Moreover, for providing technical support related to MAP cultivation the help of HRDI/CAP may also be sought.

Table 11. Role of different Institutions for cultivation of MAPs

Activity	Responsible agency/institution	Remarks
Identification of clusters	DMU/FMU and FNGO	Micro plans recommendations shall also be considered while selecting the cluster
Community mobilization	FNGO	
Formation of SHGs	FNGO	About 10 members per SHG

Activity	Responsible agency/institution	Remarks
Registration of farmers with HRDI/CAP/SMPB and getting them subsidy	SHG, FNGO and NCE	
Capacity building of farmers	FNGO with the technical support of HRDI/CAP	
Cultivation of MAPs by farmers (members)	SHG and FNGO with the technical assistance of HRDI/CAP	
Formation of SHG federation	FNGO	After 1 year of SHG formation. 30 SHGs per federation.
Capacity building of SHG federation	FNGO and NCE	
Collection/aggregation SHG		
Storage SHG		
Grading, sorting, drying and packing	SHG	
Obtaining transit permit for cultivators	SHG Federation to facilitate transit permits from HRDI/District Bhesaj Sangh	
Oil extraction from aromatic plants	SHG Federation using distillation units of CAP	Once the production is sufficiently large the federation to avail the services of CAP for distilling.
Powder making from medicinal plants	SHG Federation using units set up by other agencies	Once the production is sufficiently large the federation can avail services of other units for powdering.
Market access	NCE and SHG Federation	

6.6. Cost benefit

At current prices each SHG is expected to earn a net income of about Rs. 40,000 from the sale of MAPs in the first year which is expected to increase to Rs. 76,000 by the end of fifth year. Projections show that over a 40 year period the average annual income of each SHG would be around Rs. 80,000.

7. Enterprise development – Procurement, Processing and Marketing of Tejpat

Tejpat produced in the state has a good demand in the market because of its ecological conditions/geographical advantage (Himalayan region). The primary focus of enterprise development is to achieve economy of scale and carry out primary processing/ value addition at the SHG Federation level, and then adopt the strategy of organizing floating *mandis* to address the issues in marketing.

7.1. Target Areas and Beneficiaries

Enterprise development based on Tejpat shall be taken up in a total of 4 clusters with each cluster comprising of 30 SHGs. The project targets a total of 1200 beneficiaries (10 members per SHG). The potential areas could be Alaknanda Soil Conservation Division, Pithoragarh Forest Division, Champawat Forest Division and Bageshwar Forest Division.

7.2. Activities to be carried out

- Identification of clusters
- Organization of Tejpat cultivators/collectors in the form of SHGs. For this purpose new SHGs may be formed or even the existing SHGs/producer groups may also be involved.
- Providing a weighing machine etc. to each SHG.

- Formation of SHG federations at cluster level and capacity building of federations in enterprise management.
- SHG federation to facilitate in obtaining transit permit for Tejpat from FD/HRDI or District Bhashaj Sangh as applicable.
- Collection, sorting grading and packaging of the Tejpat to be taken up by the SHG federation with the support of NCE.
- Establishment of common facility centre and warehouse at the cluster level. This shall be done in a rented accommodation and no additional infrastructure shall be created under the project.
- Collection, storage, sorting, drying, grading and packaging of Tejpat to be done by the SHG federation at the common facility centre.
- NCE to organize floating auctions.

7.3. Infrastructure required

Small equipment would be provided at the SHG level for weighing etc. However, no specific infrastructure is proposed to be set up under the project and if required the existing infrastructure available in the cluster would be utilized.

7.4. Project cost

The project cost for cluster development of 4 Tejpat clusters, is expected to be Rs. 4.06 million.

Table 12. Detailed cost estimate for enterprise development in one cluster in INR

Sl.	Item	Specification	Unit	Qty	Unit Cost	Cost	
1	Infrastructure Development	Weighing and other instruments	Lump sum	1	20,000	20,000	
2	Training	Enterprise management - training of SHG federations	No. of trainings	22	0,000	40,000	
3	Coordination	Facilitation cost (Professional fee) (6 months per year)	Person/month	18	12,500	225,000	
4		Market Access (negotiating with buyers, floating auctions)	No. of auctions	5	10,000	50,000	
5		Travel and coordination (average 6 months per year)	Per month	18	4,000	72,000	
6	Other operating costs	Rent of common facility centre and warehouse	Per month	36	3,000	108,000	
7		Revolving fund (one time for each cluster)	Nos. 1		500,000	500,000	
	Total cost per cluster						1,015,000

7.5. Technical and facilitation support

For this purpose of managerial support and facilitation the services of a professional agency/NGO may be availed. NCE shall provide market support and market access.

Table 13. Role of different Institutions for value addition to Tejpat

Activity	Responsible agency/institution	Remarks
Identification of clusters	DMU/FMU and FNGO	
Community mobilization	FNGO	
Formation of SHGs	FNGO	About 10 member per SHG
Weighing and other small equipments provided to SHGs	DMU	
Procurement of Tejpat from cultivators and also from collectors	SHG under the supervision of VPs	SHG members can also be cultivators or can collect Tejpat from the forests.
Capacity building of SHGs	FNGO and NCE	
Formation of SHG federation	FNGO	After 1 year of SHG formation. 30 SHGs per federation.
Capacity building of SHG federation	FNGO and NCE	
Obtaining transit permit	SHG federation to facilitate this from F D/HRDI/District Bhesaj Sangh	
Establishment of common facility centre and warehouse	SHG federation, DMU, and NCE	After the formation of SHG federation, accommodation taken on rent for CFC.
Collection/aggregation SH	SHG Federation	
Storage SH	SHG Federation	
Grading, sorting, drying and packing	SHG Federation	
Market access (floating auctions)	NCE	

7.6. Cost benefit

It is estimated that in the first year of operation each SHG would collect and market around 3 to 3.5 MT of Tejpat which is expected to increase to 5 MT by the sixth year. At current prices each SHG is expected to earn a net income of around Rs 19,000 in the first year which is expected to increase to Rs 32,000 by the end of sixth year.

It is also estimated that over a 40 year period the average annual income of each SHG would be around Rs. 46,000.

Attachment 6.6.7 Establishment of NTFP Centre of Excellence

1. Rationale for NTFP Centre of Excellence

Uttarakhand, a much-admired green and herbal state, has a distinct place in the ecology and environment of the country for its ecosystem services. The Himalayan state has 64 per cent of its geographical area covered under forest and is well known for its rich biodiversity. 80 percent of the people living in the rural and mountain villages depend on the forest resources for meeting their fuel, fodder and timber requirements. Many of them were earlier earning cash income from the sale of different NTFPs including the medicinal and aromatic plants. Overexploitation of NTFPs and MAPs from the forest has led to significant decline in availability of NTFPs, which ultimately made the Government to impose restrictions on the harvesting of NTFPs and MAPs from the forest. Most of the high value medicinal plants have been now banned for collection from the wild. Despite the fact that anthropogenic pressure and overexploitation have led to degradation of forest resources, still the forest resources, if properly regenerated, conserved and managed, can offer diverse opportunities for livelihood improvement of the people living in the hills as availability of agricultural land and other alternative livelihoods is limited.

Uttarakhand Forest Resource Management Project intends to restore the ecosystem through afforestation, protection and sustainable management of forest resources through Van Panchayats. The Project would focus on NTFP resource development, which in turn would open up scope for NTFP based enterprise development.

There are number of institutions/ agencies in the state, who claim to have been working on NTFPs and MAPs. State Medicinal Plants Board, Herbal Research and Development Institute, Centre for Aromatic Plants, Forest Development Corporation, Kumaon Mandal Vikas Nigam, Garhwal Mandal Vikas Nigam, Bhesaj Development Unit and District Bhesaj Sanghs, and Van Panchayats are the important institutions currently engaged in collection, processing and marketing of NTFPs. Most of them focus on promotion of cultivation of medicinal plants on the private land. Forest Development Corporation, which is at the helm of affairs of NTFP marketing, has been mostly managing the NTFP Mandis/ Markets in Bibiwala, Ramnagar and Tanakpur. The role of these institutions in NTFP resource development in forest, sustainable harvesting and management, enterprise development and market development is very limited. There is inadequate coordination among these institutions to develop collaborative and collective interventions for NTFP based livelihood promotion, which has enormous scope for addressing poverty in the hills. Van Panchayats (VPs) seem to lack sufficient capacities to promote sustainable harvesting and marketing of NTFPs. Moreover, majority of VPs have a small area to protect and manage and apart from harvesting of lichens and mosses in selected forest divisions their role in collection, value addition and marketing of NTFPs is very limited.

Currently, Lichens, mosses, tejpatta and pine resin are the important NTFPs being procured and traded in the state. Inventory of NTFPs as well as information related to current production and future potentiality of NTFPs is not readily available with the Forest Department (FD) or with Uttarakhand Forest Development Corporation (UFDC). UFDC only maintains records of NTFP sale based on the produce that comes to the Mandis (markets). Data pertaining to the utilization of the NTFPs, within the state as well as outside the state, is not readily available either with FD or with UFDC.

The establishment of NTFP Centre of Excellence (NCE) is the need of the hour to bring back focus of the Government and Private sector on NTFP resource development and enterprise development as a strategy to address poverty and ensure food security in the hills. It is intended that NCE would become a state of art centre to provide one stop solutions to the primary producers of NTFP for sustainable management of NTFP, enterprise development using appropriate technologies and access to market. The researchers, processing industries and marketing agencies would consider NCE as a credible institution in NTFP sector to be associated with for policy research, R&D, training & extension, enterprise development etc. NCE would function as a knowledge centre on NTFP.

2. Objective of NTFP Centre of Excellence

NCE shall be an independent body to function as a knowledge centre and promote enterprises and markets on NTFP. The broad objectives of NCE have been presented below:

- To assist the Government in appropriate policy formulation for strengthening NTFP based livelihood.
- To initiate Research and Development on NTFP processing/ value addition technologies, new product development, appropriate tools for harvesting and processing etc. in collaboration with different technical institutions.
- To carry out inventorying of NTFPs, create and manage database on NTFP potentiality, traditional use, enterprises, markets etc.
- To promote community based enterprises on NTFP in collaboration with different government and private sector agencies.
- To carry out market feasibility studies on different NTFPs and create and manage appropriate market information system.
- To enhance access of communities/ producers to market and undertake positive market development interventions.
- To advise the Government on NTFP resource development and carry out field research on production enhancement operations for selected NTFPs.
- To strengthen its own capacity to sustain the institution after the completion of the Project.

3. Structure of NTFP Centre of Excellence

NCE shall be registered as a society under the Societies Registration Act. The Governing Body shall have representation from the Government, Other Societies/ Boards, NGOs, Cooperatives, Producer Groups, Academic/ Research Institutions etc. Some of the suggested institutions include

- PMU, UFRMP,
- Forest Department,
- Horticulture Department,
- Department of Industries,

- Uttarakhand Forest Development Corporation,
- State Medicinal Plants Board,
- Forest Research Institute,
- GB Pant Institute of Himalayan Environment and Development,
- High Altitude Plant Physiology Research Centre,
- GB Pant University of Agriculture and Technology,
- Any other Department and Government Organisations

The Governing Board may be chaired by the Chief Secretary and the role of the board shall be limited to policy decisions and periodical review. The GB shall meet at least once a year and the CEO/ Executive Director of NCE shall be convener of the meeting.

There would be an Executive Committee responsible for planning and execution of activities of the NCE. The Executive Committee may be chaired by Project Director, UFRMP with the representations from the following organisations. The EC shall meet at least once in six months. The CEO/ Executive Director shall convene the meeting.

- Herbal Research and Development Institute,
- Centre for Aromatic Plants,
- Uttarakhand Bamboo and Fiber Development Board,
- Uttarakhand Organic Commodity Board,
- Bhesaj Development Unit
- Khadi and Village Industries Board
- Indian Medicines Pharmaceutical Company Ltd (GoI undertaking), Mohan
- Cooperative Drug Factory, Ranikhet
- Civil society organisations
- Organisations of primary producers

The functional team shall comprise of Chief Executive Officer or Director, Programme Managers, Programme Executives and Support Staff and the team would be hired from the market. Table: Team of NCE

Position	Nos.	Remark
CEO/ Director	1	Management Professional with adequate experience in managing NTFP and integrated development projects shall head the centre. The Governing Board shall have the responsibility to recruit/ engage the CEO/ Executive Director.
Programme	4	Management Professional with direct experience (about 10 years) in

Position	Nos.	Remark
Managers		enterprise management, marketing, research, fund raising shall be hired from the market.
Programme Executives	6	Professionals with direct field experience (more than 5 years) in community based enterprise management shall be hired from the market.
Programme Support Staff	7	Persons from documentation, administration, accounting background shall be hired to support the activities of NCE.

Source: JICA Preparatory Survey Team

The suggested duties and responsibilities of staff of NCE have been presented below:

Table: **Functions of Staff of NCE**

1. CEO/ Executive Director
<ul style="list-style-type: none"> • To become responsible for overall management of NCE achieving its goals and objectives. • To assist the society to organize the GB and EC meetings regularly. • To steer the process of preparation of perspective/ strategic plan, annual plan and budget of NCE and get it approved by the EC and GB. • To ensure proper coordination with the UFRMP for smooth planning and execution of project activities concerning NTFPs. • To ensure smooth fund flow from the Project to NCE. • To raise funds from different institutions/agencies for promotion of NTFP based enterprises and also for sustaining NCE • To ensure proper management of enterprise challenge fund. • To assist the society in recruitment of personnel of the Centre and ensure that they do their work as per the job description. • To ensure the activities of the centre is carried out as per the schedule. • To ensure the progress reports are prepared timely and submitted to the concerned agencies. • To ensure that the statutory requirements of the Centres in terms of its governance are met. • To represent NCE in different meetings, workshops, forum and before any authority. • To carry out necessary activities to build the image of the Centre and establish its credibility.
2. Programme Manager – Research and Development
<ul style="list-style-type: none"> • To assist the CEO/ Executive Director in planning and execution of activities of the Centre. • To identify the priority research and development needs of different NTFPs in consultation with different stakeholders. • To prepare necessary research proposals and strategies for R&D in consultation with technical experts. • To coordinate with different Technical/ Research Institutions to jointly conduct R&D works. • To assist the CEO/ Executive Director in monitoring the progress of R&D works. • To prepare progress reports on R&D works. • To organize technical workshops, seminars and extension camps collectively with Programme Manager – Training and Extension

<ul style="list-style-type: none"> • To ensure that the findings of R&D works are widely circulated and used for NTFP conservation, management and enterprise development. • To represent NCE in different fora.
<p>3. Programme Manager – Training & Extension</p>
<ul style="list-style-type: none"> • To assist the CEO/ Executive Director in planning and execution of activities of the Centre. • To identify the training needs of different stakeholders and prepare overall training strategy of NCE. • To prepare annual training calendar and coordinate organization of training programmes as per the calendar in collaboration with different technical agencies/ experts. • To coordinate with DMUs, FMUs and FNGOs to organize training programmes and exposure visits for communities, SHG Federations, VPs. • To prepare detailed training modules, training materials etc. in consultation with different technical experts/ institutions. • To monitor the progress of work in training and extension. • To prepare necessary training reports/ progress reports.
<p>4. Programme Manager – Enterprise development/ Business Development Services</p>
<ul style="list-style-type: none"> • To assist the CEO/ Executive Director in planning and execution of activities of the Centre. • To prepare detailed strategies for enterprise development on different NTFPs. • To coordinate with DMUs, FMUs and FNGOs for planning and establishment of different enterprises. • To prepare model business plans/ enterprise development plans, and provide them to DMUs and FNGOs. • To mobilize required technical support for planning and setting up different enterprises. • To coordinate with different financial institutions and support agencies to organize funds for setting up enterprises. • To assist CEO/Executive Director in management of enterprise challenge fund. • To carry out necessary evaluation/ appraisal of proposals submitted by SHG Federations and other Producer Organisations for financing under enterprise challenge fund. • To monitor the progress of work in the context of enterprise development. • To organize training for the SHG federations/ producer groups on enterprise development and management in consultation with Programme Manager – Training and Extension. • To liaise with the Programme Manager – Market Access for timely marketing of the products.
<p>5. Programme Manager – Market Access</p>
<ul style="list-style-type: none"> • To assist the CEO/ Executive Director in planning and execution of activities of the Centre. • To prepare detailed strategies on market access. • To design market survey and research on different NTFPs and execute it in collaboration with different market research agencies. • To create a database on NTFP markets, prices, trends, programmes, schemes etc. and update the database regularly. • To provide market related information to different DMUs, FNGOs and SHG Federations/ Producer Groups and help them to establish linkages with different buyers. • To organize buyers and sellers interfaces regularly. • To facilitate tripartite contracts among the Producer Groups, Buyers and NCE.

- To organize exhibitions/ trade fairs on NTFPs in Haridwar/ Rishikesh and to facilitate participation of the Producer Groups in different exhibitions/ trade fairs.
- To assist the Programme Manager – Enterprise Development in establishing market linkages for sale of products of different enterprises.
- To prepare progress reports and publications on market access.
- To represent NCE in different fora.

6. Programme Executives (to be reporting to Programme Managers)

- To assist the respective Programme Manager in preparation of plan and budget.
- To assist in implementation of various activities of the Centre.
- To assist in research, documentation, database management, progress reporting, publications of the Centre.
- To provide support to the FNGOs, SHG Federations, Producer Groups etc. in the field for organizing different activities on NTFPs.

Source: JICA Preparatory Survey Team

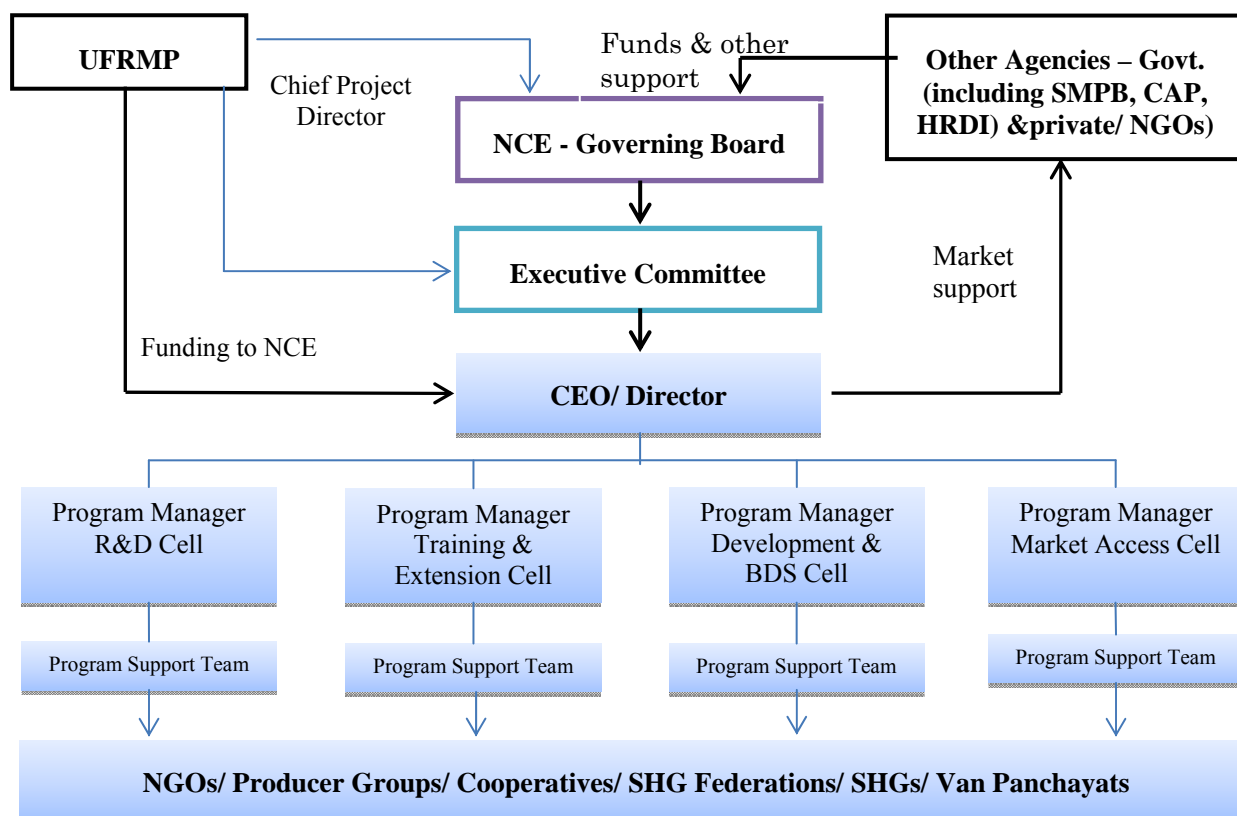


Figure: Structure of NCE

Source: JICA Preparatory Survey Team

4. Functions of NTFP Centre of Excellence

The activities of NCE shall be guided by a 5-year strategic plan prepared immediately after the formation and engagement of staff. NCE shall have four cells –

- a) **Research and development,**
- b) **Training & Extension,**
- c) **Enterprise Development/ Business Development Services, and**
- d) **Market Access.**

The key activities of each Cell have been presented below:

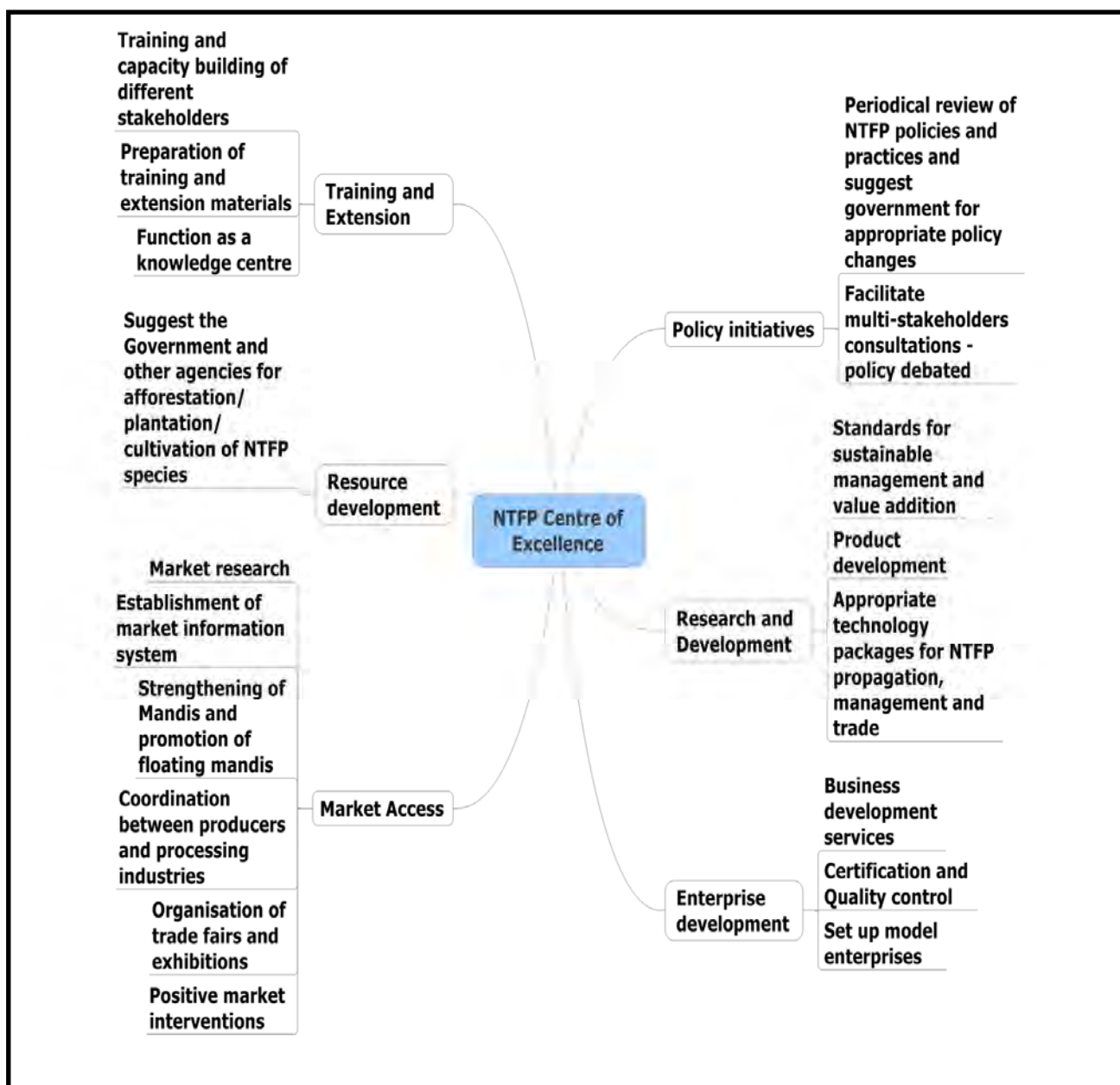


Figure: Functions of various divisions of NCE

Source: JICA Preparatory Survey Team

4.1 Research and Development Cell

The Research and Development Cell shall be headed by a Programme Manager and supported by a Programme Executive. Activities to be undertaken in the initial phase are:

Table: Activities of Research and Development Cell of NCE

Sl.	NTFP	R & D activities
1	Lichens	1. Sustainable harvesting protocols and quality improvement of Lichens
2	Himalayan Nettle	1. Fuel efficient tools and technologies for fiber production. 2. Quality improvement of yarn
3	Natural dyes	1. Efficient technology for dye production from Eupatorium and other unutilized biomass
4	Pine needles	1. Quality improvement of briquettes made of pine needles and other biomass 2. Possibility of fodder production using pine needles
5	Pine Resin	1. Quality improvement 2. Experimentation of Bore hole method
6	Other NTFPs	1. Production enhancement operations for different NTFPs 2. Sustainable harvesting protocols 3. Use of renewable energy for primary processing of selected NTFPs

Source: JICA Preparatory Survey Team

The Research and Development Cells shall establish linkages with different Technical Institutes, Universities and Manufacturing/ Processing Units for carrying out specific researches on selected NTFPs. The Cell shall periodically organize workshops, seminars, extension camps etc. for sharing of new developments in NTFP propagation, sustainable harvesting and value addition. It shall bring out mass communication materials on sustainable harvesting and value addition protocols.

The Cell with the help of DMUs, FMUs and FNGOs shall carry out inventory of NTFPs in priority sites and based on findings develop strategies for resource and enterprise development.

4.2 Training and Extension Cell

The Cell shall prepare a detailed strategy for capacity building of VPs, SHGs and SHG Federations, other producer groups, Project Staff and other stakeholders for NTFP cultivation, sustainable harvesting/ collection from the wild, enterprise development and management, product development, market access, establish linkages with financial institutions etc. The cell shall ensure that the NCE functions as a knowledge centre for primary producers of NTFP and also for the other stakeholders.

The Programme Manager in charge of the Cell shall coordinate with PMU, DMUs and NGOs for organization of different capacity building programmes. Annual training calendars, training modules and materials shall be prepared by the Cell in consultation with the Project Staff as well as Technical Experts.

NCE shall have a fully equipped training facility in Dehradun to conduct residential training programmes for the Project Staff, community members and other stakeholders. Other stakeholders of NTFP management, enterprise development and trade can also use the training facility to conduct different training and extension programmes.

The Cell shall publish extension materials in consultation with the R&D Cell and circulate it to different SHGs and SHG federation, VPs and Project Staff.

4.3 Enterprise Development/ Business Development Services Cell

The Cell shall be managed by a Programme Manager with the help of two Programme Executives in the initial phase. The key focus of the Cell shall be to promote enterprises on NTFPs in collaboration of different stakeholders. Possibilities shall be explored to experiment different business models – community managed; community enterprises with the support of private sector; enterprises set up by private entrepreneurs with stakes of SHGs and SHG Federations etc. The enterprises shall be set up at the cluster of SHGs level. Efforts shall be made to promote and strengthen institutions like SHG Federations, Cooperatives, Producer Groups/ Companies.

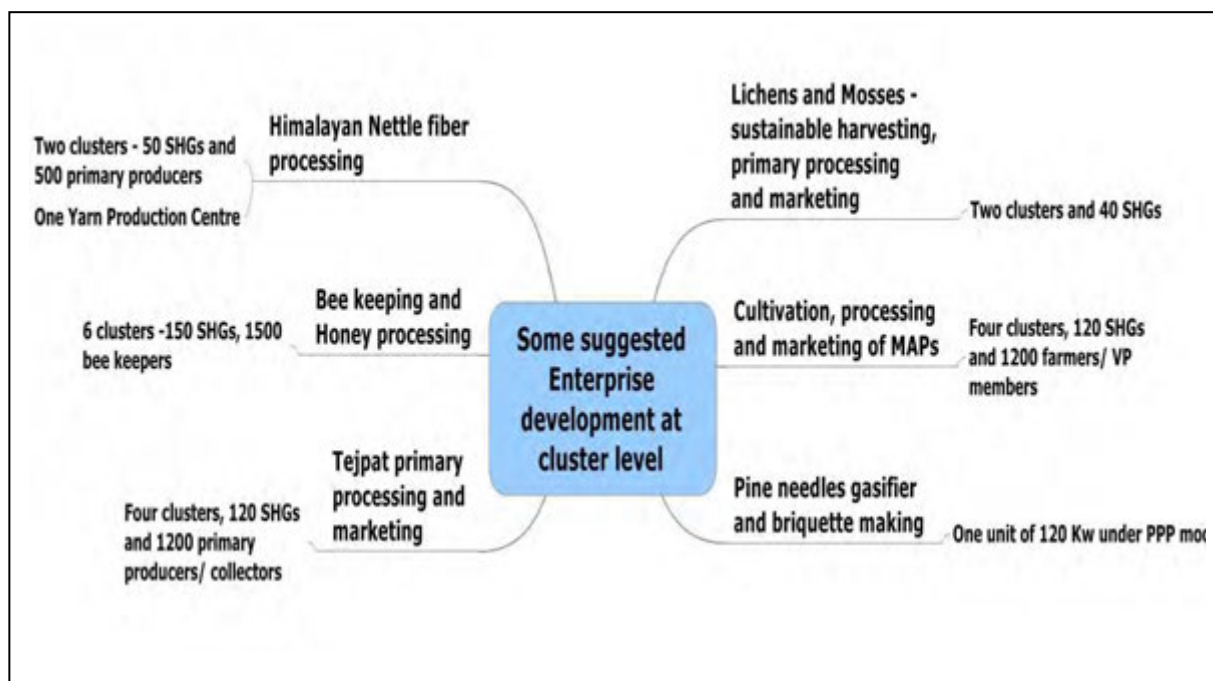


Figure: Suggested Enterprise Development at cluster level

Source: JICA Preparatory Survey Team

The Cell shall regularly interact with the PMU, DMUs, FMUs and FNGOs to identify priority enterprises to be set up by the SHGs/ SHG Federations and assist them to prepare detailed enterprise plans and projects in consultation with technical experts, and further assist the SHG Federation to set up the enterprises. The Cell shall organize interface between the SHG Federation and Financial Institutions/ Support Agencies for adequate financial and technical support to establish and run the enterprises. The Cell shall regularly monitor the progress of enterprise development and provide necessary support to the SHG Federations in enterprise management and marketing of the produces.

The above diagram presents the cluster level enterprises to be promoted by the Project through NCE. These cluster level enterprises shall be set up and strengthened to serve as training and demonstration models. Other SHGs and SHG Federations from project areas shall be brought here for training and then they would be further assisted to set up enterprises in their respective areas. The assistance shall be in the form of access to business planning, credit, technical support and market linkages.

Even for setting up the model enterprises the Project/ NCE shall support for a) establishment of common facility centre, b) technical training to SHGs and SHG Federation and c) facilitation cost. The working capital and other operating costs shall be provided as a loan to the SHG Federation managing the enterprise. The SHG Federation shall further provide loan to the SHGs and SHGs have to repay the loan to SHG Federation. The rate of interest and repayment tenure has to be decided mutually by the SHGs and SHG Federation. Similarly the working capital paid by the Project/ NCE to SHG Federation shall have to be returned to the NCE. The repayment modalities and time frame shall be mutually decided between NCE and SHG Federation. **The fund flow to enterprises has been described in the diagram below:**

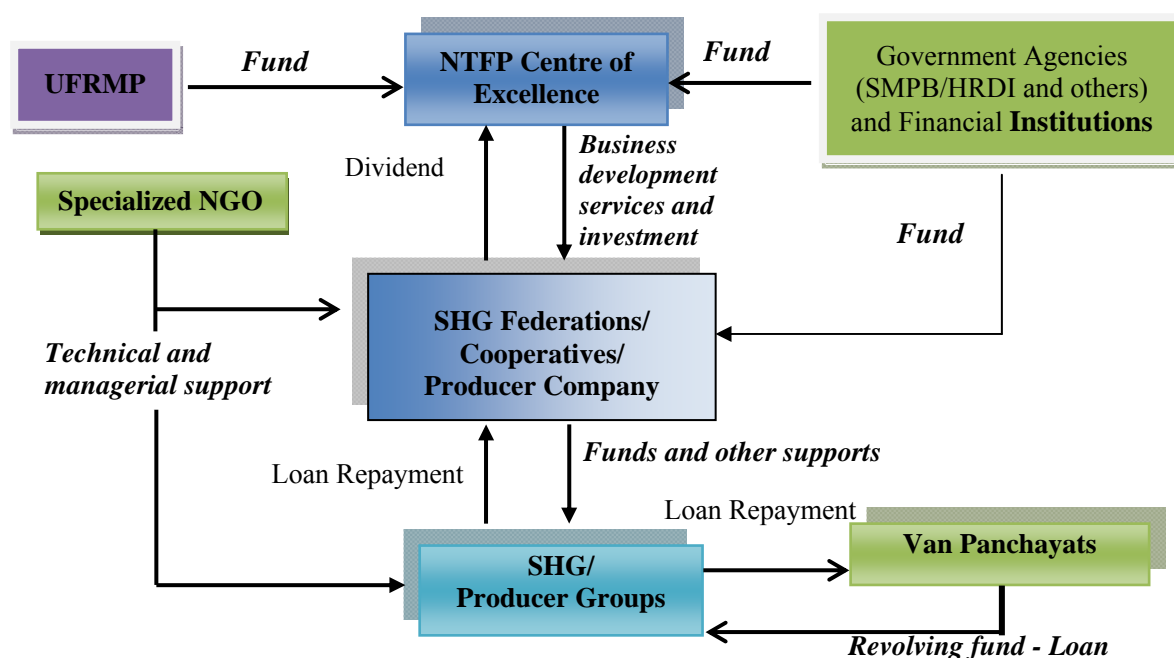


Figure: Funds flow to the Enterprises

Source: JICA Preparatory Survey Team

Enterprise Challenge Fund

The NTFP Centre of Excellence shall be provided with Rs. 50 million by the Project for promotion of enterprises on NTFP. The fund shall be used to assist SHG Federations/ producer groups to set up new enterprises on NTFP and/ or expansion of existing enterprises. The funds shall be used in such cases, where financing an enterprise from the banks becomes difficult. The Enterprise Development Cells shall establish linkages with different public and private sector agencies to raise funds and mobilize technical assistance for enterprise development. It shall participate in different call for proposals for enterprise development related to NTFP. The enterprise challenge fund shall be primarily used as a revolving credit fund to support the community managed enterprises. NCE may also use this fund as equity in different enterprises so that it earns some revenue from the utilization of the fund. NCE may

mobilize funds from different financial institutions and schemes using the enterprise challenge fund as the equity/start up capital/ pledge fund.

Creating an enterprise challenge fund would achieve the following objectives:

- To demonstrate enterprises on NTFP, which are otherwise not funded by mainstream financial institutions
- To support SHG Federations/ producer groups of poor people to initiate enterprise development on NTFP.
- To pledge this fund to raise additional funds from different financial and other support institutions, which would be used for financing different NTFP based enterprises run by SHGs and SHG Federations.

The enterprise challenge fund shall be used to finance following enterprises:

- Commercially viable NTFP enterprises.
- NTFP enterprises with short gestation period – bulk procurement, primary processing and bulk supply to processing industries – especially support for working capital.
- Cultivation of short duration medicinal plants/ herbs of high commercial importance.

Amount to be financed from the enterprise challenge fund shall be determined based on the credit worthiness of the enterprise and the institution to set up the enterprise. In general, financing up to 50 per cent of the total cost of the enterprise shall be permitted by NCE from the enterprise challenge fund. In exceptional cases it may go beyond 50 per cent. The minimum size of finance would be Rs. 500,000 and the maximum would be Rs. 5 million. Priority shall be given to SHG Federations registered under Uttarakhand State Self Reliant Cooperative Act, 2003.

Detailed guidelines shall be prepared by NCE after its establishment. The guidelines shall be approved in the Governing Board. The SHG Federations and other Producer organisations have to apply as per the prescribed guidelines. These institutions shall be asked to submit preliminary concept notes and then detailed project proposals if their concept notes are approved. The enterprise development cell of NCE shall do the preliminary screening and assessment of the requests, concept notes and proposals. The Cell may consult the technical experts/ institutions for advice on the technical and market feasibility of the enterprise/ product. NCE shall also consult the DMU and FNGO of the project area, where the enterprise is to be supported. A committee shall be constituted to recommend the proposals for financing. All the Programme Managers of NCE shall be the member of the committee and it shall be headed by CEO/Executive Director. Final decision for financing shall be taken by the Executive Committee of NCE.

After the approval by the Executive Committee the enterprise development cell of NCE shall negotiate with the SHG Federation/ Producer Organization to finalize the terms and condition of finance such as interest rate, installments for release of funds, tenure of financing, repayment mechanisms and schedule, insurance/ risk management, any other support required from NCE etc. An agreement shall be signed between the SHG Federation/ Producer Organization (represented by Chairperson or any body authorized by the Institution) and NCE represented by CEO/Executive Director. Based on agreement funds shall be released to borrower. NCE shall periodically visit the enterprise for monitoring of work of the enterprise. It shall take the advice of DMU and FNGO before financing the enterprise. The DMU and FNGO shall also periodically monitor the progress of work and update NCE on it. NCE shall also provide necessary technical and market support to the SHG Federations/ borrower to ensure proper management of the enterprise.

4.4 Market Access Cell

Market access shall be a priority function of NCE. The Cell managed by a Programme Manager and two Programme Executives shall ensure timely support to SHG Federations, SHGs and other Producer Groups in establishing market linkages. The Cell shall take up positive market interventions to market the produces of SHG Federations/ Producer Groups. The primary producers can fall back on the cell to provide them market access.

The Cell shall carry out the following activities:

1. Product specific market research in collaboration with different stakeholders.
2. Establish and manage market information system to be used by the producer groups, enterprises and buyers/ marketing agencies.
3. Help NCE and PMU to establish a brand for its products and carry out activities for promotion of the brand.
4. Carry out necessary activities for standardization and certification of NTFPs for organic, fair trade, wild craft certification (with the help of R&D Cell).
5. Organize periodical buyers-sellers interfaces.
6. Organize trade fairs/ exhibitions (at least once in a year).
7. Facilitate Producer Groups to participate in different trade fairs/ exhibitions within the state and at the country level.
8. Coordinate with different pharmaceutical companies, stockists, suppliers, exporters etc. for assessment of demand and accordingly coordinate with the primary producers and their organisations to organize their productions.
9. Assist SHG Federations/ Producer Groups to participate in bidding/ tendering processes of different pharmaceutical companies (IMPCL, Cooperative Drug Factory, Divya Pharmacy etc.) to support different medicinal plant products.
10. Assist the Forest Development Corporation in organization of NTFP Mandis in Bidiwala, Ramnagar and Tanakpur.
11. Carry out necessary advocacy works for smooth transit and transportation of NTFPs; access of SHGs and SHG Federation to NTFPs; organization of floating auctions; rationalization of royalties, taxes etc.

5. Key NTFPs to be focused by NCE

Although the NCE shall try to identify the key priorities during the preparation of strategy and roll out plan, efforts have been made here to provide an indicative list of priority NTFPs, which require attention of the Government:

- Lichens and Moss grass
- Honey
- Resin
- Pine needles
- Natural fibers
- Natural dyes
- Food and spices from the Forest
- Selected Medicinal and Aromatic plants

Table: Some suggested activities of NCE on different NTFPs

Name of the NTFP	Type of intervention	Institution to be involved
Lichens and Moss grass	<ul style="list-style-type: none"> Developing sustainable harvesting and primary value addition protocols. Selection of SHGs and SHG Federations to be involved in enterprise development through proper procedures. Capacity building of SHGs and SHG Federations to adopt sustainable harvesting and value addition protocols. Streamlining the value chain through organization of primary producers, improving the quality, organization of floating auctions and bringing in processing industries to participate in the auctions and creating provisions for direct sale by the SHG Federations to processing industries. Field research on propagation and enhancing the production of Lichens 	<ul style="list-style-type: none"> SHGs and SHG federations Van Panchayats FNGO Forest Development Corporation
Honey	<ul style="list-style-type: none"> Promotion on bee keeping Organization of bee keepers and their capacity building Provision of technical support to the bee keepers and their organisations Enhancing honey production Processing and marketing of Honey Organic certification 	<ul style="list-style-type: none"> SHGs and SHG Federations Specialized NGOs/ Technical Agencies FNGO Producer Company
Pine Resin	<ul style="list-style-type: none"> Awareness among the VPs and Resin Tappers on sustainable harvesting Building capacity of VPs to ensure sustainable harvesting of resin from their forest (VP areas) Piloting of harvesting through VPs to improve quality Experimentation of Borehole methods, development of appropriate tools 	<ul style="list-style-type: none"> DMU and FMUs Van Panchayats FNGO FRI and other Research Institutions
Natural fibers with a focus on Himalayan Nettle	<ul style="list-style-type: none"> Market feasibility study of Himalayan Nettle R&D on energy efficient processing technology (use of solar energy for processing) Cluster development initiatives for processing of fibers Wild craft certification 	<ul style="list-style-type: none"> Uttarakhand Bamboo and Fiber Development Board Research Institutions SHGs and SHG Federations
Natural dyes	<ul style="list-style-type: none"> Market feasibility study on the dye from Eupatorium and other unutilized biomass from the forest. R&D on energy efficient processing technology Organic and wild craft certification 	<ul style="list-style-type: none"> FRI and other Research Institutions/ Specialized agencies
Pine needles	<ul style="list-style-type: none"> Promotion of biomass based gasifiers for electricity production, briquette making etc. Market feasibility study on pine needle briquettes R&D on efficient production of biomass briquettes R&D on fodder production from pine needles etc. 	<ul style="list-style-type: none"> Private entrepreneurs Van Panchayats UREDA Research Institutes
Other NTFPs including Tejpatta, Kalajeera, Timur, Kaphol, Thuner	<ul style="list-style-type: none"> Enhancing the production within the forest as well as from the agriculture fields/ private land Development and establishing sustainable harvesting and value addition protocols Assisting the SHGs and SHG Federations to set up 	<ul style="list-style-type: none"> Van Panchayats SHGs and SHG Federations FNGOs

Name of the NTFP	Type of intervention	Institution to be involved
Reetha, Curry Patta, Satavar, food and spices from forest etc.	enterprises on processing of these NTFPs <ul style="list-style-type: none"> • Organic/ wild craft certification • Positive market interventions 	<ul style="list-style-type: none"> • State Medicinal Plants Board • Herbal Research and Development Institute • Centre for Aromatic Plants

Source: JICA Preparatory Survey Team

6. Financing of NCE

The Project shall provide funds for setting up of NCE and for its operating cost for 6-7 years. The Project shall provide infrastructure support such as construction of Office building and a Training Centre in Dehradun and storage facilities in the field. Training Centre shall be equipped with modern facilities for hosting different training programmes, workshops, meetings etc. and it can accommodate 40 persons for residential training programmes. The conference/ meeting facility can accommodate more than 100 participants. All the project related training programmes and workshops shall be organized in this training centre. The training facility can also be used by NCE to raise some revenue for the centre. The Project support shall also include purchase of two vehicles, furniture and fixtures, computers, printers etc. The salary to staff and programmes of all the four cells of NCE shall be supported by the Project during the project period.

Sustaining any institution requires commitment of funds from the Government as well as from other Agencies/ stakeholders. NCE requires a kind of continuous support for 10 years so as to strengthen its own institution and establish its credibility before the stakeholders in NTFP management and trade. Despite having commitment of funds from the Government and the Project, NCE would try its level best to make its operations commercially viable without compromising the safeguards to the primary producers. The State Government needs to consider one time corpus fund support to NCE in addition to the regular support to NCE for about 10 years. Some possible sources of financing of NCE have been presented below:

- Corpus from the Government,
- Operation costs for 7 years from JICA assisted UFRMP, and thereafter a follow up support for 3 years or a corpus fund,
- Priority access to funds available under different Government Programmes and Schemes,
- Fund raising through business development services i.e. business planning, building linkages, capacity building, market support etc.
- Fund raising through providing training and extension services to primary producers and their organisations, other government and private agencies,
- Revenues earned from environment challenge fund – loans given to SHG Federations and/ or equity of NCE in different enterprises,
- Participation in different call for proposals/ bids for research and development, enterprise development etc.
- Accessing funds from the private sector for setting up enterprises and earning revenue from the enterprises.

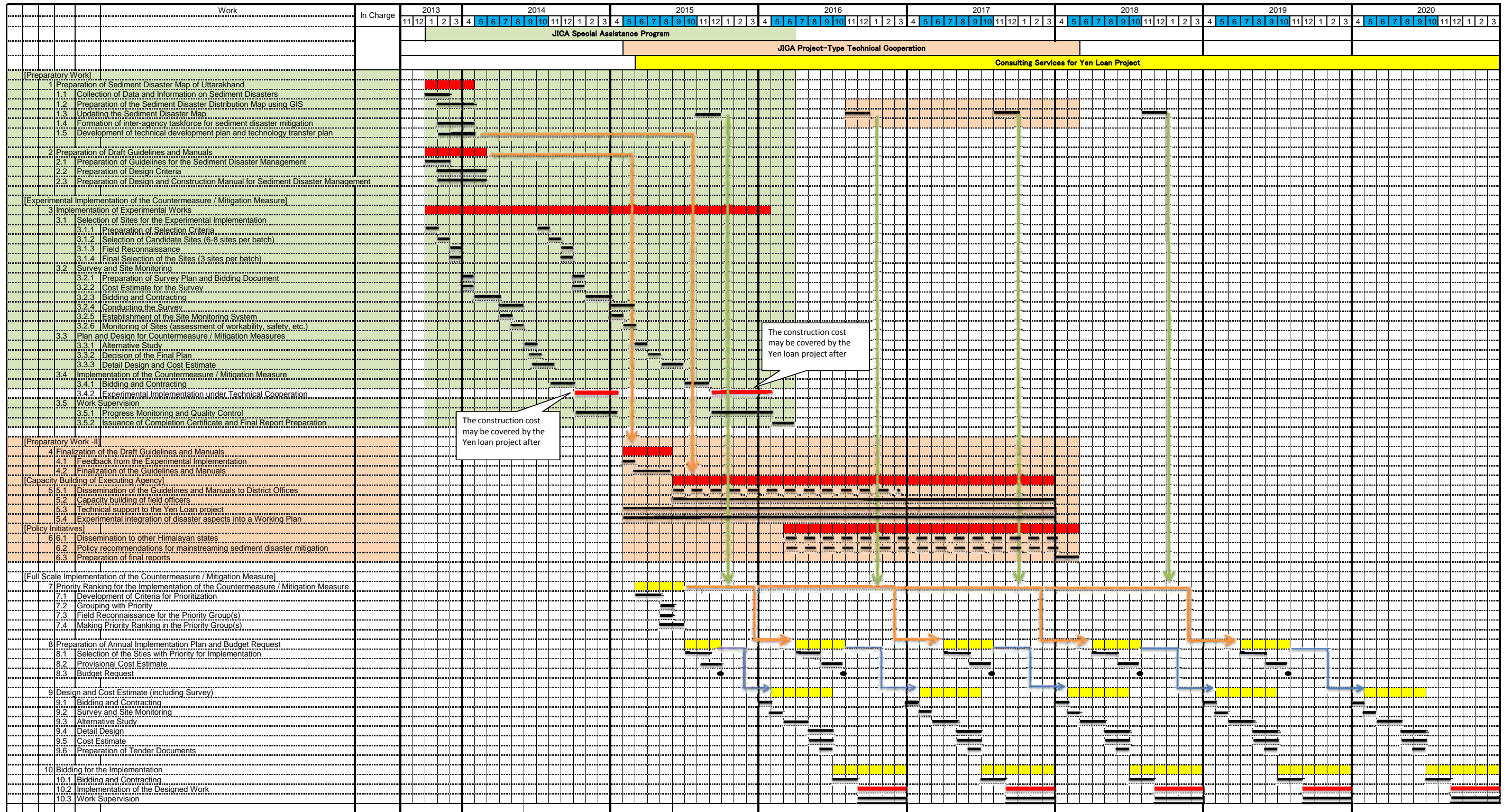
7. NCE – Activity Implementation Schedule

Table: Activity implementation schedule of NCE

Sl.	Activity	Year							
		1	2	3	4	5	6	7	8
1	Registration of NCE	*							
2	First Governing Board Meeting after formation of the Society		*						
3	Recruitment of Personnel		—						
4	Construction of NCE Building and Training Centre		—						
5	Construction of Storage Space in the field			—					
6	Purchase of furniture, fixture, equipments, computers and printers			*					
7	Purchase of Vehicles			*					
8	Training of Project Staff			—	—	—	—	—	
9	Training of Community Members			—	—	—	—	—	
10	Publicity and communication		*	*	*	*	*		*
11	Enterprise development at cluster level			—	—	—	—	—	—
12	Market Research and Promotion			—	—	—	—	—	—
13	Establishment of Market Information System			***					
14	Buyers and Sellers meets			***	***	***	**	**	**
15	Organization of Exhibitions and participation in different exhibitions			—	—	—	—	—	—
16	Research and Development on Fibers, Natural Dyes, Pine Resin, Pine Needles and other NTFPs			—	—	—			
17	NTFPs Inventorying – Selected sites			***	***				

Source: JICA Preparatory Survey Team

■ Monsoon seasons



Attachment 6.9.1 Terms of Reference for Project Management Consultants

1. Objectives of the Consulting Services

The objective of the Consulting Services for the Project is to assist Project Management Unit (PMU), Division Management Units (DMUs), and Field Management Units (FMUs) in achieving the project objectives by extending overall technical and managerial assistance in project implementation and enhancing the effective and efficient project implementation process.

2. Scope of the Consulting Services

The scope of the services of PMC is as below:

1. Assisting PMU in;
 - a) Pursuing effective and efficient project management;
 - b) Procurement and supervision of Field NGOs, MIS software development contractors, GIS data base development and surveying contractor for socio-economic survey and contractors for sediment disaster mitigation works;
 - c) Establishment of an effective and efficient monitoring and evaluation system and in operating such system;
 - d) Smooth communication between the project and the donor agency (JICA);
 - e) Establishing and operationalising NCE (except the construction of NCE building);
2. Preparation, review and revision, if necessary, of technical documents including guidelines and manuals as required;
3. Reviewing and analyzing and recommending improvements in existing policies and guidelines;
4. Designing training programs and imparting training as a resource person upon request from PMU
5. Identification of institutions/ places for international and national training/ study tours;
6. Carrying out Preliminary Investigations for sediment disasters
 - a) Review disaster reports and other related reports
 - b) Preparation of main investigation and monitoring plan
 - c) Topographic survey and mapping
7. Procurement and supervision of Survey Contractor, which will carry out Main Investigations for sediment disaster as:
 - a) Topographic survey and topographic mapping
 - b) Cross section (Transverse Section)
 - c) Cross section (Longitudinal Section)
 - d) Geological survey and Field survey
 - e) Geophysical exploration and simple seismic exploration
 - f) Extensometer setting
 - g) Pipe strain gauge setting
 - h) Inclinator guide pipe setting
 - i) Rain observation
 - j) Other observation

- k) Ensuring Environmental and Social Considerations
 - l) Recommending environmental friendly construction measure;
 - m) Lanning adverse impact mitigation during construction;
 - n) Identifying households/property affected by construction
8. Detailed Design (D/D) for sediment disaster mitigations
- a) drawings for all necessary works;
 - b) designs for landslide countermeasures, slope failure countermeasures, debris flow countermeasures and rock fall countermeasures;
 - c) designs for diversions in use during construction;
 - d) construction method and schedule;
 - e) Bill of Quantities (BOQ) and cost estimates;
 - f) packages plan and bidding schedule
 - g) instruction of the requirement for environmental protection;
 - h) instruct of the requirement for social consideration
9. Tender Assistance for sediment disaster mitigation works
- a) Preparation of Pre-Qualification (P/Q) Document
 - b) Preparation of Tender Document (T/D)
 - c) Safety During Construction/Installation
 - d) Contract Negotiation
10. Supervising sediment disaster mitigation measures

3. Service Duration

5.5 years (66 months)

4. Terms of Reference of Each Specialist

International Consultants

1. Community-Based Forest Management Specialist/ Team Leader (34 MM)

1. To assist PMU in;
 - a) Adopting innovative approaches of community-based forest management that has been tried and proven overseas
 - b) Making sure that the project will be integrated into the international platforms, such as IUCN, Collaborative Partnership on Forests (CPF), International Union of Forest Research Organizations (IUFRO), UNFCCC, CBD, etc.
 - c) Bringing short-term international experts for specific project activities
 - d) Organizing international study tours
 - e) Monitoring the work progress
 - f) Preparing/ reviewing guidelines and manuals relating to the project management, accounting procedures and procurements
 - g) Preparing/ reviewing guidelines and manuals relating to the community mobilization,

- micro planning, VP management and community mobilization
 - h) Reviewing, analyzing and recommending improvements in existing policies concerning VPs and their roles in forest management
 - i) Planning capacity development activities for DMUs, FMUs, FNGOs, animators and VPs
 - j) Identifying the relevant institutions for international and national training/ study tours
 - k) Communicating with various stakeholders including JICA.
2. To assist DMUs in:
 - a) Guiding FNGOs and animators in community mobilization, micro planning and conducting field level training for VPs
 - b) Monitoring the performance of FNGOs and VPs
 3. To guide and supervise the activities of all specialists, both International and National consultants;
 4. To supervise the activities of all office staff of Project Consultants
 5. To maintain close coordination with PMU and offices concerned and to assist PMU in coordinating with JICA
 6. To undertake the managerial responsibilities for the consultant team, including the preparation of work schedule for the consulting services
 7. To compile all periodical report of consulting services
 8. To prepare brief travel reports and monthly accomplishments reports pertaining to his/ her specialty
 9. To ensure that all the scope of consultancy are accomplished

2. International and National Marketing Specialist for NTFP (14 MM)

1. To assist PMU in:
 - a) Identifying market potential of NTFPs in national and international market
 - b) Developing marketing strategies for each identified produces
 - c) Designing an operational framework of international and domestic marketing
 - d) Executing marketing of NTFP products nationally and internationally
2. To review the laws and regulations concerning marketing in India and exporting NTFP produces
3. To perform the works related to the Project as directed by the Team Leader
4. To prepare brief travel reports and monthly accomplishment reports pertaining to his/ her specialty and submit them to the Team Leader

3. Community- Based Ecotourism Product Development and Marketing Specialist (9 MM)

1. To assist PMU in:
 - a) Collecting tourism information that are necessary for the development of community-based ecotourism development
 - b) Developing community based ecotourism strategy for the target sites
 - c) Adopting innovative approaches to community -based ecotourism concept that has been initiated overseas.

- d) Introducing innovative designs for community-based ecotourism infrastructures
 - e) Train tourism service providers in the communities at the international standard
 - f) Executing the destination development, management and international marketing of ecotourism products
2. To perform the works related to the Project as directed by the Team Leader
 3. To prepare brief travel reports and monthly accomplishment reports pertaining to his/ her specialty and submit them to the Team Leader

4. Disaster Management Engineer (18 MM)

1. To ensure all deliverables are prepared in accordance with quality and time constraints
2. To lead the Erosion Control and Sediment Disaster Mitigation Task Team under PMC
3. To design a situational assessment survey and develop TOR for the survey
4. To supervise the situational assessment survey
5. To analyse the data and identify appropriate structural requirement
6. To consult PMU in selecting the necessary works to be undertaken in the pilot sites
7. To review/ analyse/ propose adjustment of TOR of the specialists of Erosion Control and Sediment Disaster Mitigation Task Team according to the field condition in consultation with PMU and JICA
8. To prepare engineering design, working drawings, works specification and schedule, structure analysis, PERT CPM, bill of materials and cost estimates, contract documents and other requirements of civil engineering works to be constructed in the selected areas in consultation with PMU
9. To administer and supervise site investigation and design and documentation activities for civil works contracts.
10. To ensure that deliverables comply with relevant technical requirements,
11. To certify advance payments in accordance with the contracts when necessary.
12. To certify interim and final payment certificates for submission to the employer (MOI), and assist the employer in preparing the Statement of Expenditure for submission to JICA through PMU
13. To prepare tender documents in accordance with JICA procurement guidelines with assistance from the Procurement Engineer
14. To plan and conduct training programmes for the engineers and other relevant stakeholders in various technologies in flood control and sediment management
15. To design overseas study tours for PMU and associated engineers to acquire fundamental and advanced skills and knowledge in flood control and sediment management
16. To maintain close coordination with PMU
17. To issue work completion certificate
18. To prepare inception report, progress reports and completion report as specified in the contract
19. To assist PMU in:
 - a) tender evaluation of the contractors; and
 - b) organizing overseas study tours acquire the fundamental and advanced skills and

knowledge in flood control and sediment management according to the plan drawn by PMC.

National Consultants

1. IGA and Livelihood Improvement Specialist/ Co-Team Leader (41 MM)

1. To assist PMU in:
 - a) Formulating the overall IGA and Livelihood development implementation plan;
 - b) Facilitating Scoping Study and Marketing Survey;
 - c) Identifying the prominent IGA and preparation of model Business Plans;
 - d) Preparing guidelines and manuals for IGAs, management of Revolving Fund and other related topics;
 - e) Planning capacity development activities for DMUs and FNGO, NCE and Cluster Level Organisations;
 - f) Procuring resource organizations which will undertake specific works in respect to IGAs, such as market research, NWFP products development and business planning;
 - g) Supervising the work of FNGO staffs, resource organizations and guiding them in field operation;
 - h) Evaluation of accomplishments of FNGOs and resource organizations;
 - i) Establishing and operationalising NCE;
 - j) Monitoring the performance of NCE; and
 - k) Conducting IGA-related researches.
2. To assist DMUs in:
 - a) Guiding FNGO staffs in training VPs, animators and SHGs in implementation of micro planning, EPA, management of revolving fund and IGAs;
 - b) Guiding FNGO staffs and animators in facilitating micro planning and implementing EPAs, market survey, IGA selection, business planning monitoring of revolving fund;
 - c) Supporting FNGOs for organizing/ identification of SHGs and cluster level organisations;
 - d) Supporting FNGOs and NCE in developing cluster level organisations;
 - e) Monitoring FNGOs whether they are following the guidelines, manuals and handbooks;
 - f) Supporting SHGs for internal savings and linkage with other programmes/ schemes and micro finance institutions through federations and FNGO;
 - g) Supporting the cluster level organisations for their operation, including the procurement of necessary equipment, production support, marketing support, accounting, etc.;
 - h) Preparing a management plan (phase-out and phase-in plans) and IGA plans after the project.
3. To assist the Team Leader in management of the PMC and interacting with other stakeholders
4. To prepare brief travel reports and monthly accomplishment reports pertaining to his/ her speciality and submit them to the Team Leader

2. M&E and MIS Specialist (24 MM)

1. To assist PMU in:
 - a) Establishment of the effective and efficient monitoring system;
 - b) Procuring facilities and equipments for M & E, MIS and GIS
 - c) Procuring contractors for baseline survey , periodical assessments, MIS establishment, GIS database creation and other related activities
 - d) Supervising the work of the above contractors and ensuring qualities of their outputs
 - e) Preparing guidelines and manuals required for M&E, MIS and GIS
 - f) Operationalising FMAS and MIS
 - g) Field validation, preparing physical and financial progress report
 - h) Compiling billing data
 - i) Providing progress data and information required to be used by the Empowered Committee (EC), Governing Body (GB), District Advisory Committee (DAC) and JICA for review and appropriate decision making
 - j) Maintaining the FMAS and MIS
 - k) Designing, reviewing and revising a list of project performance indicators for monitoring and evaluation and developing methodologies for verification to each indicator
 - l) Compilation of periodical M & E reports
 - m) Organising annual review meetings at State Level
2. To work in collaboration with GIS and Remote Sensing Specialist who will assist PMU in integrating GIS and Remote Sensing to MIS for effective monitoring
3. To assist DMUs in the field validation
4. To train PMU/ DMU/ FMU staffs in FMAS and MIS
5. To accomplish the tasks related to the Project as directed by the Team Leader
6. To prepare brief travel reports and monthly accomplishment reports pertaining to his/ her specialty and submit them to the Team Leader.

3. Community-Based Ecotourism Specialist (9 MM)

1. To assist PMU in:
 - a) Conducting survey to identify the sites including local market potentials
 - b) Designing destination development plan
 - c) Developing strategies for marketing and promotion
 - d) Identifying capacity development requirement of stakeholders and design capacity development plans
 - e) Identifying national collaborators and establish linkages
 - f) Developing implementation and investment plan
 - g) Executing the destination development, management and marketing of ecotourism products

2. To perform the works related to the Project as directed by the Team Leader
3. To prepare brief travel reports and monthly accomplishment reports pertaining to his/ her specialty and submit them to the Team Leader
4. Assist PMU in:
 - a) Designing detailed implementation plans for biodiversity conservation activities including wetland and sacred groves;
 - b) Develop a detailed implementation plan of People's Biodiversity Register;
 - c) Help establishment of QRT and PRT and their operationalization
 - d) Facilitating convergence with other programmes and schemes.
5. To accomplish the tasks related to the Project as directed by the Team Leader; and
6. To prepare brief travel reports and monthly accomplishment reports pertaining to his/ her specialty and submit them to the Team Leader.

4. GIS and Remote Sensing Specialist (29 MM)

1. To assist PMU in:
 - a) Survey and mapping and forest boundary delineation of the project area
 - b) Procuring equipment and software necessary for the remote sensing and GIS establishment
 - c) Procuring contractor for remote sensing and GIS database development
 - d) Supervising the activities of above contractor and ensuring the quality of outcome
 - e) Processing the remote sensing data and other developed GIS database and producing data and maps as required by the project
 - f) Preparing the remote sensing and GIS related guidelines and manuals
 - g) Training of PMU and DMU staff who will use the GIS
 - h) Maintaining GIS database and GIS-based outcomes
 - i) Integrating GIS into MIS for effective monitoring
2. Providing interpretation of imageries for monitoring
3. To accomplish the tasks related to the Project as directed by the Team Leader; and
4. To prepare brief travel reports and monthly accomplishment reports pertaining to his/ her specialty and submit them to the Team Leader.

5. Grand Planning and M&E Specialist for Erosion Control/ Co-Team Leader (27 MM)

1. To assist Disaster Mitigation Specialist (Internal) in
 - a) Managing the Erosion Control Sediment Disaster Mitigation Team
 - b) Ensuring all deliverables are prepared in accordance with quality and time constraints.
 - c) Ensuring full and detailed permanent site records, which will include site correspondence, survey data, quality acceptance data, site diaries, measurement and certification, minutes of meetings, and records of all other contractually relevant matters.
 - d) Certifying advance payments in accordance with the contracts when necessary.

- e) Certifying interim and final payment certificates for submission to the employer (MOI), and assist the employer in preparing the Statement of Expenditure (SoE) for submission to JICA through PMU
 - f) Providing training to local road maintenance contractors in accordance with approved training plans.
 - g) Preparation of inception /progress/ completion report as specified in the contract
2. To report the work progress to the PMC Team Leader on a regular basis
 3. To Prepare schedule of procurement/ deliveries of construction materials, deployment of equipments and work force in accordance with the programmed project schedules (PERT-CPM)
 4. To Ensure Field Engineer to undertake comprehensive day-to-day field contract supervision, quality assurance, measurements and administration services at the site.
 5. To instruct and advise Field Engineer to maintain full and detailed permanent site records, which will include site correspondence, survey data, quality acceptance data, site diaries, measurement and certification, minutes of meetings, and records of all other contractually relevant matters
 6. To provide the contractors with all necessary survey data and reference for setting out the works
 7. To receive, assess and approve the contractors' implementation work plans and programs.
 8. To ensure that the planned works are executed in accordance with all the provisions of the contract, including those concerning standards of workmanship, and other safety provisions and protection of the environment
 9. To maintain regular estimates of the cost to completion and time to completion for each contract
 10. To assess time and cost claims submitted by contractors and advise the contractor accordingly
 11. To ensure that as-built drawings are prepared for the planned works
 12. To attend the periodical site inspection during the defects liability period and order the contractors' actions to be taken and payment methods
 13. To accomplish the tasks related to the Project as directed by the Team Leader; and
 14. To prepare brief travel reports and monthly accomplishment reports pertaining to his/ her specialty and submit them to the Team Leader

6. Construction Engineer (9 MM)

1. To conduct geological survey and boring testing on proposed infrastructure in coordination with UKFD, PMU and DMUs
2. To prepare comprehensive geo-technical analysis based on the results of geological survey and boring test as basis in the preparation of structural analysis of physical establishments to be constructed
3. To recommend alternative project sites if results of geo-technical analysis does not meet the structural design criteria or mitigating measures
4. To review/ analyse the draft manual for erosion control and sediment mitigation works and recommend necessary improvement
5. To investigate the suitability of locally available construction materials, and where necessary
6. To prepare a factual report (without interpretation of the results) on the results of all materials

testing carried out for the purpose of designing the works and incorporate in a compilation of information for bidders

7. To guide Field Engineer and Survey Engineer in the identification of vulnerable areas, and appropriate areas for planned works to be undertaken in coordination with PMU
8. To accomplish the tasks as directed by the Disaster Mitigation Specialist (International), Grand Planning and M&E Specialist for Erosion Control/ Co-Team Leader (National) and by the PMC Team Leader
9. To prepare brief travel reports and monthly accomplishment reports pertaining to his/ her specialty and submit them to the Team Leader

7. Design Engineer (12 MM)

1. To prepare engineering designs, working drawings, work specification, structural analysis, bill of materials and cost estimates, contract documents and other requirements of civil engineering works and with PMU
2. To design the experimental schemes in coordination with PMU
3. To guide Field Engineer and Survey Engineer in the identification of vulnerable areas, and appropriate areas for planned works to be undertaken in coordination with PMU
4. To accomplish the tasks as directed by the Disaster Mitigation Specialist (International), Grand Planning and M&E Specialist for Erosion Control/ Co-Team Leader (National) and by the PMC Team Leader
5. To prepare brief travel reports and monthly accomplishment reports pertaining to his/ her specialty and submit them to the Team Leader

8. Assistant Design Engineer (12 MM)

1. To carry out tasks assigned by the Design Engineer in carrying out the tasks
2. To guide Field Engineer and Survey Engineer in the identification of vulnerable areas, and appropriate areas for planned works to be undertaken in coordination with PMU
3. To accomplish the tasks as directed by the Disaster Mitigation Specialist (International), Grand Planning and M&E Specialist for Erosion Control/ Co-Team Leader (National) and by the PMC Team Leader
4. To prepare brief travel reports and monthly accomplishment reports pertaining to his/ her specialty and submit them to the Team Leader

9. Cost Engineer/ Construction Planning (6 MM)

1. To estimate the work volume required for establishing experimental schemes
2. To prepare the cost estimate for experimental schemes
3. To prepare construction schedule showing anticipated progress of works of each experimental scheme
4. To prepare bills of quantities, and calculate detailed cost estimates for civil works, broken down into foreign (direct and indirect) and local components as well as taxes and duties
5. To accomplish the tasks as directed by the Disaster Mitigation Specialist (International), Grand

Planning and M&E Specialist for Erosion Control/ Co-Team Leader (National) and by the PMC Team Leader

6. To prepare brief travel reports and monthly accomplishment reports pertaining to his/ her specialty and submit them to the Team Leader

10. Environmental Safeguard and Safety Engineer (9 MM)

1. To develop environmental safeguard manual for the project
2. To prepare environmental examination reports in accordance with existing rules and regulation
3. To prepare environmental requirements for the project; To monitor the environmental impact of the project
4. To develop effective local-base early warning & disaster response system to forewarn communities of dangers and undertake activities for the community/ VPs to carry out said system
5. To develop training modules on community-based climate change mitigation, adaption and sustainability measures
6. To establish flood and erosion warning system to vulnerable communities through establishment of network of rainfall monitoring systems
7. To support in the identification and application of area rehabilitation systems, technologies and species (Reforestation, ANR, AGF, agriculture) that are responsive to climate change
8. To assess baseline needs for identified vulnerable areas and provide general framework/ outline for rehabilitation
9. To monitor and document environmental impact of the project
10. To assist the co-team leader in the development of sharing mechanism between and among the VPs, communities, PMU and DMUs on the payment for the environmental services;
11. To accomplish the tasks as directed by the Disaster Mitigation Specialist (International), Grand Planning and M&E Specialist for Erosion Control/ Co-Team Leader (National) and by the PMC Team Leader
12. To prepare brief travel reports and monthly accomplishment reports pertaining to his/ her specialty and submit them to the Team Leader

11. Procurement Engineer (3 MM)

1. To assist the PMU to design, administer and monitor all procurement activities to ensure compliance with agreed procurement framework
2. To prepare pre-qualification (PQ) documents in compliance with JICA and GOI procurement guidelines
3. To assist PMU in the preparation of invitation for bids, evaluation of bids received, and award of civil works contracts
4. To assist PMU to procure necessary goods and services through an appropriate procurement method for execution of the planned works under Erosion Control Sediment Disaster Mitigation
5. To prepare and update database of procured goods, works and services

6. To prepare procurement documents for goods, works and services in coordination with PMU
7. To monitor the procurement procedures
8. To provide technical advice in the procurement of goods, works and services
9. To accomplish the tasks related to the Project as directed by the Team Leader
10. To accomplish the tasks as directed by the Disaster Mitigation Specialist (International), Grand Planning and M&E Specialist for Erosion Control/ Co-Team Leader (National) and by the PMC Team Leader
11. To prepare brief travel reports and monthly accomplishment reports pertaining to his/ her specialty and submit them to the Team Leader

12. Field Engineer (64 MM)

1. To measure the day-to-day quantities at site and confirm with the foreman or site supervisor of the contractor
2. To keep and maintain full and detailed measurement records, which will include quantity measurement data, site diaries and other records
3. To assist the Cost Engineer/ Construction Planning (National) managing quantity and cost
4. To assist Grand Planning and M&E Specialist to assess the contractor's claims
5. To undertake day-to-day field contract supervision, quality control and measurements at the site
6. To keep full and detailed permanent site records, which will include site correspondence, survey data, quality acceptance data, day work, records, site diaries, measurement and other field records
7. To provide measurement and inspection data required for interim payments
8. To provide the contractors with all necessary survey data and reference for setting out the works
9. To ensure that the planned works are executed in accordance with all the provisions of the contract, including those concerning standards of workmanship, and other safety provisions and protection of the environment
10. To attend and supervise so that all day-to-day field and laboratory quality tests are conducted in accordance with the technical specifications and instruction of the PMC Erosion Control Sediment Disaster Mitigation Team
11. To approve or disapprove the materials to be used by the contractors in accordance with the contract and technical specifications
12. To approve or disapprove the works executed by the contractors in accordance with the contract and technical specifications
13. To keep and maintain full and detailed permanent site and laboratory records, which will include test data, quality acceptance data, site diaries and other quality-related data
14. To assist in preparing quality assurance reports to be submitted monthly or attached to the interim certificates, if so required
15. To accomplish the tasks as directed by the Disaster Mitigation Specialist (International), Grand Planning and M&E Specialist for Erosion Control/ Co-Team Leader (National) and by the PMC Team Leader
16. To prepare brief travel reports and monthly accomplishment reports pertaining to his/ her

specialty and submit them to the Team Leader

13. Surveyor (32 MM)

1. To carry out necessary topographic surveys for design and documentation works
2. To establish control points, benchmarks and reference beacons as required to prepare detailed engineering design that would enable calculation of construction quantity with reasonable accuracy
3. To conduct boundary relocation and topographic survey of each experimental scheme sites using the prepared base map as pre-determined reference map
4. To conduct location survey of infrastructure prior to commencement of construction and prepare survey networks plan
5. To assist Design Engineer and Assistant Design Engineer in the design and implementation of experimental schemes by the contractors
6. To accomplish the tasks as directed by the Disaster Mitigation Specialist (International), Grand Planning and M&E Specialist for Erosion Control/ Co-Team Leader (National) and by the PMC Team Leader
7. To prepare brief travel reports and monthly accomplishment reports pertaining to his/ her specialty and submit them to the Team Leader

14. CAD Technician (8 MM)

1. To coordinate timely and accurate transfer of survey information to the design engineers
2. To analyze and process topographic survey data as basis for the design
3. To develop the design using Civil 3D Software
4. To accomplish the tasks as directed by the Disaster Mitigation Specialist (International), Grand Planning and M&E Specialist for Erosion Control/ Co-Team Leader (National) and by the PMC Team Leader
5. To prepare brief travel reports and monthly accomplishment reports pertaining to his/ her specialty and submit them to the Team Leader

Table: Details of consultants and their work duration

	<u>International Consultants</u>	<u>MM</u>
1	Community-Based Forest Management Specialist/ Team Leader	34
2	International and National Marketing Specialist for NTFP	14
3	Community- Based Ecotourism Product Development and Marketing Specialist	9
4	Disaster Management Engineer	18
	TOTAL	75
	<u>National Consultants</u>	
1	IGA and Livelihood Improvement Specialist/ Co-Team Leader	41
2	M&E and MIS Specialist	24
3	Community Based Ecotourism Specialist	9
4	GIS and Remote Sensing Specialist	29
5	Grand Planning and M&E Specialist for Erosion Control/ Co-Team	27

	Leader	
6	Construction Engineer	9
7	Design Engineer	12
8	Assistant Design Engineer	12
9	Cost Engineer/ Construction Planning	6
10	Environmental Safeguard and Safety Engineer	9
11	Procurement Engineer	3
12	Field Engineer	64
13	Surveyor	32
14	CAD Technician	8
	TOTAL	285
	GRAND TOTAL	360

Source: JICA Preparatory Survey Team

Manning Schedule for the Consulting Services

Attachment 6

Attachment 6.9.2

Assignment Schedule of PMC Experts

Position	2014			2015			2016			2017			2018			2019			2020			Total			
	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12		1	2	3
A 1 Community Based Forest Management/ Team Leader				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	34
A 2 International and National Marketing of				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
A 3 Community-Based Ecotourism Product Development and Marketing				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	9
A 4 Disaster Management Engineer (GA and Livelihood Improvement/ Co- Team Leader				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	18
B 1 Team Leader				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	41
B 2 M&E and MIS				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	24
B 3 GIS and Remote Sensing				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	29
B 4 Grand Planning and M&E for Erosion Control/ Co-Team Leader				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	27
B 5 Construction Engineer				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	9
B 6 Design Engineer				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	12
B 7 Assistant Design Engineer				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	12
B 8 Cost Engineer/ Construction Planning				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	6
B 9 Environmental Safeguard and Safety				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	9
B 10 Procurement Engineer				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3
B 11 Field Engineer				8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	64
B 12 Surveyor				8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	32
B 13 CAD Technician				2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	8
B 14 Eco-tourism				2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	9
[Total of Pro-A]				15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	75
[Total of Pro-B]				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	285
[Total of Pro-A+Pro-B]				2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	360
Total Cost of FC for Each Month(Pro-A)				8,400,000	8,400,000	8,400,000	8,400,000	8,400,000	8,400,000	8,400,000	8,400,000	8,400,000	8,400,000	8,400,000	8,400,000	8,400,000	8,400,000	8,400,000	8,400,000	8,400,000	8,400,000	8,400,000	8,400,000	8,400,000	310,400,000
Total Cost of FC for Each Month(Pro-B)				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Cost of LC for Each Month(Pro-A)				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Cost of LC for Each Month(Pro-B)				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C 1 Office Manager				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	60
C 2 Computer Operators				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	60
C 3 Personal Assistant				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	60
C 4 Security Guard				3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	195
C 5 Office Boy				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	60
C 6 Drivers				2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	120
[Total of Supporting Staff]				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	555
Total Cost of LC for Each Month(SS)				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9,870,000
Grand Total				2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	915

2013 Price
Source: JICA Preparatory Survey Team

Attachment 7.3.1 Environmental Checklist

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
1 Permits and Explanation	(1) EIA and Environmental Permits	(a) Have EIA reports been already prepared in official process? (b) Have EIA reports been approved by authorities of the host country's government? (c) Have EIA reports been unconditionally approved? If conditions are imposed on the approval of EIA reports, are the conditions satisfied? (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?	(a) N (b) N (c) N (d) N	(a) EIA is not required for the proposed project according to Indian Law (b) EIA is not required for the proposed project according to Indian Law (c) EIA is not required for the proposed project according to Indian Law (d) EIA is not required for the proposed project according to Indian Law
	(2) 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? (b) Have the comment from the stakeholders (such as local residents) been reflected to the project design?	(a) N (b) N	(a) Consultation and information disclosure procedures to be implemented prior to subproject implementation according to the Consultation and Participation Plan. (b) A Stakeholder Consultation workshop was held in Dehradun with local NGOs to discuss project issues and comments have been integrated into the project design. Comments of local stakeholders will be integrated into design of subprojects and activities prior to their implementation following Social Assessment Plan and Consultation and Participation Plan
2 Pollution Control	(3) Examination of Alternatives	(a) Have alternative plans of the project been examined with social and environmental considerations?	(a) Y	(a) Social and environmental considerations have been factored into project design (i.e. through exclusion criteria for project activities)
	(1) Air Quality	(a) Do air pollutants, such as dust, soot and dust, sulfur oxides (SOx), nitrogen oxides (NOx), 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? (a) Is there a possibility that the use of chemicals, such as fertilizers, and agrochemicals will cause water pollution? (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?	(a) N/A	(a) There will be no project activities with any significant impact in terms of air pollution
	(2) Water Quality	(a) Is there a possibility that the use of chemicals, such as fertilizers, and agrochemicals will cause water pollution? (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?	(a) N (b) N	(a) There may be some limited use of chemicals as fertilizers/pesticides or for certain NTFP extraction purposes, however these will have a very minimal environmental impact. In general the project will promote organic farming and the use of biofertilizers but where this is not feasible in certain areas and agricultural livelihood models are promoted, the project will develop instructions on the use of fertilizers/pesticides. Only one NTFP model uses a type of acid to aid with the extraction of pine resin, its use will be regulated by relevant guidelines. In neither instances will there be any noticeable impact on water sources. (b) There will be no 'manufacturing' of forest products under the project, except for small scale honey production. No pulp, paper or timber operations with factories etc. Thus any associated effluent and effect on water sources/sunbath will be nil or negligible
(3) Wastes	(a) Are wastes properly treated and disposed of in accordance with the country's regulations?	(a) Y	(a) There will not be any significant waste associated with project activities since there will be virtually no manufacturing. Any small-scale issues of waste e.g. related to small community infrastructures will be dealt with according to national regulations.	

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
3 Natural Environment	(4) Soil Contamination	(a) Are adequate measures taken to prevent contamination of soil and groundwater by use of chemicals, such as agrochemicals? (b) Are any agrochemicals management plans prepared? Are any usages or any implementation structures organized for proper use of the plans?	(a) N/A (b) N/A	(a) Use of such chemicals will be minimal under the project (b) Guidelines will be prepared if agricultural livelihood models are selected and supported by the project and if use of chemicals is unavoidable. Agricultural models supported by the project are small-scale (Self Help Groups of 10 farmers) and will not promote or support the use of chemicals.
	(1) 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?	(a) Y	(a) Certain parts of the project area include protected wetlands. Project interventions are aimed at their conservation, sustainable management and ecological restoration
	(2) Ecosystem	(a) Does the project site encompass primeval forests, tropical rain forests, ecologically valuable habitats (e.g., coral reefs, mangroves, or tidal flats)? (b) Does the project site encompass the protected habitats of endangered species designated by the country's laws or international treaties and conventions? (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? (d) Is there a possibility that a large-scale timber harvesting will result in loss of breeding and feeding grounds for wildlife? (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? (f) If significant ecological impacts are anticipated, are adequate protection measures taken to reduce the impacts on the ecosystem? (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?	(a) Y (b) Y (c) N (d) N (e) Y (f) N (g) N	(a) High mountain ecosystems including some areas of primary forest and important wetland sites. (b) This project intends to conserve the protected habitats and will not involve any activities which affect them negatively. (c) There will be no large-scale timber harvesting in the project (d) There will be no large-scale timber harvesting in the project (e) There will be some reforestation of degraded forest lands but measures are included in project design to promote the use of native species. (f) Significant negative ecological impacts are not anticipated. Ecological restoration is a key project objective (g) The project will not involve any deforestation. Small-scale removal of trees associated with small-scale infrastructure sub-projects will be mainly avoided or subject to relevant legislation requiring clearance (Forest Clearance under the Forest Conservation Act) on rare occasions, but as may be required.
	(3) 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? (b) Is there a possibility that decreased water retention capacity due to deforestation will affect the existing drainage patterns of the forest?	(a) N (b) N	(a) There will be no large-scale timber harvesting. The project should have generally positive impacts on surrounding hydrology due to ecological restoration of forests. There will be no access road construction under the project and therefore impacts on hydrology will be negligible. Site checks will be performed by qualified staff to ensure that small scale check dams, drainage line treatments etc are designed and implemented properly to mitigate any minor issues. (b) The project intends to increase the water retention capacity through ecological restoration of forests.
	(4) Topography and Geology	(a) Is there a possibility that loss of forest stability due to timber harvesting will cause slope failures or landslides?	(a) N	(a) There will be no significant timber harvesting in the project. The project specifically aims to stabilise vulnerable slopes through various measures including tree planting.

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
	(5) Management of Abandoned Sites	<p>(a) Are adequate restoration and revegetation plans considered for the harvested areas? In particular, are adequate measures taken to prevent soil runoff from the harvested areas?</p> <p>(b) Is a sustainable management system for the harvested areas established?</p> <p>(c) Are adequate financial provisions secured to manage the harvested areas?</p>	<p>(a) N</p> <p>(b) N</p> <p>(c) N</p>	<p>(a) There will be no significant or large-scale harvesting of timber in the project</p> <p>(b) There will be no significant or large-scale harvesting of timber in the project</p> <p>(c) There will be no significant or large-scale harvesting of timber in the project</p>
	(1) Resettlement	<p>(a) Is involuntary resettlement caused by project implementation? If involuntary resettlement is caused, are efforts made to minimize the impacts caused by the resettlement?</p> <p>(b) Is adequate explanation on compensation and resettlement assistance given to affected people prior to resettlement?</p> <p>(c) Is the resettlement plan, including compensation with full replacement costs, restoration of livelihoods and living standards developed based on socioeconomic studies on resettlement?</p> <p>(d) Is the compensation going to be paid prior to the resettlement?</p> <p>(e) Is the compensation policies prepared in document?</p> <p>(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?</p> <p>(g) Are agreements with the affected people obtained prior to resettlement?</p> <p>(h) Is the organizational framework established to properly implement resettlement? Are the capacity and budget secured to implement the plan?</p> <p>(i) Are any plans developed to monitor the impacts of resettlement?</p> <p>(j) Is the relevance/redress mechanism established?</p>	<p>(a) N</p> <p>(b) N</p> <p>(c) N</p> <p>(d) N</p> <p>(e) N</p> <p>(f) N</p> <p>(g) N</p> <p>(h)N</p> <p>(i)N</p> <p>(j)N</p>	<p>(a) There will be no resettlement (either voluntary or involuntary) associated with the project</p> <p>(b) Not applicable</p> <p>(c) Not applicable</p> <p>(d) Not applicable</p> <p>(e) Not applicable</p> <p>(f) Not applicable</p> <p>(g)Not applicable</p> <p>(h)Not applicable</p> <p>(i)Not applicable</p> <p>(j)Not applicable</p>

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
4 Social Environment	(2) Living and Livelihood	<p>(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?</p> <p>(b) Are adequate measures taken to prevent illegal entry into the forestry resource areas from the outside through newly constructed access roads?</p> <p>(c) Is there a possibility that the forest right of common is obstructed?</p> <p>(d) Are considerations given to life of residents before implementation of project?</p>	<p>(a) Y</p> <p>(b) Y</p> <p>(c) Y</p> <p>(d) Y</p>	<p>(a) The project intends to have a positive impact in terms of alleviating poverty and improving local people's livelihoods/ living conditions. It is however 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 provision of linked compensatory livelihood benefits.</p> <p>(b) The project will not construct new access roads in the majority of project areas. Road upgrade/reconstruction may be activities.</p> <p>(c) A key project objective is to strengthen community-based forest institutions and empower local people to realise their forest management and use rights. The project is however state implemented and there is the possibility that the Forestry 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.</p> <p>(d) 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 residents themselves.</p> <p>(a) The project will have no impact on archaeological, historical, cultural and religious heritage sites.</p>
	(3) Heritage	<p>(a) Is there a possibility that the project will damage the local archeological, historical, cultural, and religious heritage? Are adequate measures considered to protect these sites in accordance with the country's laws?</p>	(a) N	<p>(a) The project will not include any works affecting the landscape. Infrastructure sub-projects will be on a very small scale.</p>
4 Social Environment	(4) Landscape	<p>(a) Is there a possibility that the project will adversely affect the local landscape? Are necessary measures taken?</p>	(a) N	<p>(a) A Scheduled Tribes and Transhumants Planning Framework (STTPF) has been prepared for the project</p> <p>(b) The STTPF includes measures to ensure that the rights of indigenous peoples are respected in terms of access to land and resources</p>
	(5) Ethnic Minorities and Indigenous Peoples	<p>(a) Are considerations given to reduce impacts on the culture and lifestyle of ethnic minorities and indigenous peoples?</p> <p>(b) Are all of the rights of ethnic minorities and indigenous peoples in relation to land and resources respected?</p>	<p>(a) Y</p> <p>(b) Y</p>	<p>(a) The project will involve some labour for local people e.g. in tree planting and small scale construction works. Relevant national legislation and standard practices regarding working conditions will be observed.</p> <p>(b) There will be no significant industrial accidents. Only 1 NTFP model uses an acid for which guidelines will be prepared regarding its safe use.</p> <p>(c) Such activities are relevant for large scale construction or commercial forestry but not for this type of project. Brief orientations on safety will be provided on work days where relevant.</p> <p>(d) Security guards will not be required.</p>
	(6) Working Conditions	<p>(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?</p> <p>(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?</p> <p>(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.?</p> <p>(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?</p>	<p>(a) N</p> <p>(b) Y</p> <p>(c) N/A</p> <p>(d) N/A</p>	

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
5 Others	(1) Impacts during Construction	(a) Are adequate measures considered to reduce impacts during construction (e.g., noise, vibrations, turbid water, dust, exhaust gases, and wastes)? (b) If construction activities adversely affect the natural environment (ecosystem), are adequate measures considered to reduce impacts? (c) If construction activities adversely affect the social environment, are adequate measures considered to reduce impacts?	(a) Y (b) Y (c) Y	(a) Construction sub-projects will be of a very small-scale with limited and temporary environmental impacts. Such projects will not require environmental clearance. Rapid participatory environmental assessments will be carried out to assess and mitigate for any such minor impacts arising from construction activities. (b) Adverse environmental impacts will be minimal but will be addressed through participatory screening and assessment (c) Adverse social impacts of construction will be eliminated through the exclusion criteria (e.g. resettlement, use of private land, damage to cultural buildings etc). Communities themselves will be actively involved in the selection, implementation and monitoring of projects.
	(2) Monitoring	(a) Does the proponent develop and implement monitoring program for the environmental items that are considered to have potential impacts? (b) What are the items, methods and frequencies of the monitoring program? (c) Does the proponent establish an adequate monitoring framework (organization, personnel, equipment, and adequate budget to sustain the monitoring framework)? (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?	(a) Y (b) Y (c) Y (d) N	(a) A monitoring system will be developed for the project which includes the monitoring of environmental and social safeguards measures (b) The items, methods, and frequencies of the monitoring system are covered in the Environmental and Social Management Framework (c) Adequate provisions are made in the project proposal to cover monitoring requirements (d) The monitoring requirements will be entirely for the purposes of the project and additional reporting to regulatory agencies will not be required because the sub-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.	(a) N/A	(a) It is possible that the project may include some agricultural activities but these will be of a very small scale (home gardens/plots) and measures will be included to ensure minimal/safe use of fertilizers/pesticides (if necessary).
	Note on Using Environmental Checklist	(a) If necessary, the impacts to transboundary or global issues should be confirmed (e.g., the project includes factors that may cause problems, such as transboundary waste treatment, acid rain, destruction of the ozone layer, or global warming).	(a) N/A	(a) The project will not have any significant global or transboundary impact. It will have a slight positive global impact due to forest restoration and carbon sequestration.

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.

Source: JICA Preparatory Survey Team

Attachment 7.3.2 Environmental and Social Management System (ESMS) Checklist

	Questions	Answer	Improvement Plan
1 . Policy(environmental and social policy)			
1.	Does the financial intermediary / executing agency have any formal environmental policy or procedures? If yes, please describe them and provide appropriate documentation. If no, does the financial intermediary /executing agency have any plan to set such policy or procedures?	<p>The Executing Agency (EA) being the Uttarakhand State Forestry Department (UKFD) does not itself have environmental policies or procedures. However, projects, programs and other activities undertaken by the Department must be implemented in accordance with the relevant environmental policies and procedures of India (Ministry of Environment and Forests or MoEF) and the State of Uttarakhand. The UKFD is responsible for implementing certain aspects of national legislation and procedures, particularly with respect to the conservation and management of forests and wildlife in the State of Uttarakhand.</p> <p>India has a well developed legal policy framework for environmental and social considerations and with respect to forests has a very strong policy of centralized state control aimed at strictly preventing forest clearance. National policies (with associated procedures) which are relevant to the UFRMP are as follows:</p> <p>Environmental Protection Act (1986)</p> <p>Environmental Impact Assessment Notification (2006)</p> <p>Air Pollution (Control of Pollution) Act (1981)</p> <p>Water Pollution (Control of Pollution) Act (1974)</p> <p>2 pieces of legislation recognizing 2 Eco-sensitive areas in UK i.e. Doon Valley and Bhagirathi River.</p> <p>Indian Forest Act (1927)</p> <p>Forest Conservation Act (1980)</p> <p>Wildlife Protection Act (1972)</p> <p>Biological Diversity Act (2002)</p> <p>Forest Rights Act (2006)</p> <p>Van Panchayat Regulations (2005) – UK State legislation</p> <p>Land Acquisition Act (1894)</p>	<p>The existing legal policy framework is sufficient for the elimination of projects with serious adverse environmental impacts (A category projects) and forest clearance is strictly controlled by the Forest Conservation Act.</p> <p>UFRMP may however involve certain sub-projects with minor environmental impacts e.g. small-scale community infrastructure or limited use of chemicals in agriculture/agro-forestry. All such activities will not require environmental clearance, however, the project will introduce additional procedures to ensure that even minor adverse impacts are avoided or mitigated to the extent possible. The EA, Field NGOs and communities will be trained in how to implement these additional safeguard procedures and the project will hire additional safeguard experts through the Project Management Consultant (PMC) who will assess the environmental integrity and safety of the sub-projects eventually selected and implemented.</p> <p>UFRMP will be mainly implemented through Van Panchayats (VP), community forest institutions uniquely recognized in the State of Uttarakhand (VP Regulations, 2005). As such, the EA is in a position to adjust these regulations, if necessary. The VP regulations already contain a number of provisions intended to benefit communities through recognition of their rights to manage village forests as well as specific provisions for equitable benefit-sharing and the inclusion of vulnerable groups including women in village forest decision-making. UFRMP aims to strengthen VPs and the framework for Participatory Forest Management as a whole through capacity building.</p>

	Questions	Answer	Improvement Plan
		National Resettlement and Rehabilitation Policy (2007) Right to Information Act (2005) Scheduled Castes and Tribes (Prevention of Atrocities) Act (1989)	
2.	Are there any types of projects in which the financial intermediary / executing agency will not take part due to the environmental risks? (eg, projects involving handling of hazardous wastes or endangered plants or animals).	Yes. The project will involve community projects which will be selected in participatory mode and therefore there is some flexibility for interventions appropriate to the local context. However, the EA is a forestry agency and does not possess the technical capacity to implement certain activities which could be prioritized by communities. Thus, significant construction activities (e.g. roads, dams >5 m., large bridges etc), activities involving hazardous wastes will not be considered under UFRMP due to the environmental risks associated. As a forestry sector project, UFRMP will potentially have some contact with endangered plants or animals. However, non-timber forest products (NTFP) models utilizing endangered plant species will not be considered, meanwhile forest management activities are aimed at ecological restoration using native species and should be beneficial to indigenous fauna and flora. There may also be activities aimed at reducing human-wildlife conflict which may necessarily affect endangered fauna species but in this case appropriate measures will be adopted.	No improvements are necessary: Projects with serious environmental impacts beyond the mitigation capacity of the UKFD will be eliminated or avoided. UFRMP will not involve any projects utilizing endangered species of plants and animals UKFD staffs are well trained in technical forest and wildlife management and well aware of forest and wildlife protection legislation. Thus forestry activities involving endangered species will be implemented appropriately. Where human-wildlife conflict is an issue, specialized technical assistance will also be included in the PMC package to advise local communities and UKFD field staff.
2 . Procedures(screening category classification and review procedures)			
3.	Does the financial intermediary / executing agency have any environmental procedures such as screening, categorization and environmental review? If yes, please describe.	The EA itself is not responsible for implementation of environmental procedures such as screening, categorization and environmental review. However as mentioned above, clear guidelines and procedures exist in India as per the relevant laws. The diagram below illustrates the environmental procedures in India for screening, categorization and environmental review. The key institutions responsible are: Impact Assessment Authority under MoEF at Central level: Setting guidelines, legislative development, appraisal of EIA reports and projects/granting approval. Central Pollution Control Board: CPCB has no direct role in environmental clearance process, though it acts as a research organization, which by collecting, analyzing and disseminating	UFRMP will introduce procedures for the screening and participatory environmental and social assessment of micro plans and proposed subprojects to be financed by the project. Van Panchayats and local level project staff (Foresters and Range Officers, Field NGOs, DFOs etc.) will be trained in how to carry out these simple/rapid assessments which will effectively serve to screen out subprojects with significant adverse impacts and highlight activities with some small/moderate impacts for follow up assessment by more qualified engineers e.g. forestry staff at divisional level are already adequately trained to carry out occasional site checks

	Questions	Answer	Improvement Plan
		<p>information pertaining to pollution prevention and abatement.</p> <p>State Level EIA Authority: Certain projects may be appraised/approved at the State level and this is done by the SEIAA.</p> <p>State Pollution Control Boards under Department of Environment: Supports national environmental clearance (EC) process by conducting investigations or research as instructed by the Impact Assessment Agency (IAA).</p> <p>In relation to the management of minor environmental and social considerations which may arise but which do not require environmental clearance: UKFD has a clear organizational structure and roles and responsibilities are well-defined in the State Forest Manual. This includes oversight and supervision of forestry and small-scale construction works. It is not formally called an 'environmental and social management system' but there are certain procedures for site checks and assessments to be carried out. There is no real systematic monitoring and reporting on environmental and social considerations. The main focus is on preparation of the financial estimates.</p> <p>For forestry activities and other small scale construction works the typical procedure is as follows: An activity is determined either based on prescription in the Working Plan (e.g. for soil and conservation measures in Reserved Forests) or may have been proposed by a community or part of a program for community/forest development. The activity is reviewed by the Range Officer who prepares a cost-estimate to be approved by the Divisional Forest Officer who sanctions the work. The UKFD Forestry Manual defines the roles and responsibilities of forest officers. The Divisional Forest Officer (DFO) shall '<i>inspect, guide and supervise all the technical operations going on in his division e.g. markings, fellings, cultural operations, plantation works, construction of and special repairs to roads, buildings and wells</i>'.</p> <p>The FI is responsible for all activities in forest lands. Project activities in these areas will be in accordance with the principal legislation covering forests i.e. the Forest Conservation Act (FCA). Activities in forest areas will be strictly confined to the standard forest conservation, technical forestry and silvicultural measures permitted by the FCA. There will be no forest clearance under the project, except in rare isolated cases where</p>	<p>if required for check dams, gully-plugging and other small-scale infrastructure (wells, water and sanitation facilities). In essence the system will follow existing institutional structures, roles and responsibilities in the UKFD, only that it is formalized, more systematic and showing that environmental and social issues have been considered at the local level.</p> <p>In addition, safeguards experts shall compile simple guidelines for thematic issues or subprojects (e.g. limited use of chemicals in agriculture and NTFP processing).</p>

	Questions	Answer	Improvement Plan
		<p>some very limited removal of trees is unavoidable, and in which case the necessary procedures must be followed to obtain forest clearance and compensatory planting.</p>	
4.	<p>Please describe how you ensure that your subproject companies and their subprojects are operated in compliance with the national laws and regulations and applicable JICA's requirements.</p>	<p>UKFD does not hire companies to implement sub-projects. Sub-projects implemented by the UKFD generally relate to national afforestation and compensatory reforestation programs. As such they are implemented by the UKFD itself with support and assistance from communities and NGOs as required.</p> <p>Activities implemented in forest areas follow the relevant legislation e.g. Indian Forest Act, Forest Conservation Act, and Wildlife Act etc.</p> <p>Activities under UKFD projects or programs involving community development outside of forest areas also follow the applicable national laws and regulations e.g. Environmental Protection Notification.</p> <p>Sub-projects with significant adverse environmental and social impacts and thus requiring environmental clearance (Category A) will be eliminated. In India, 32 development activities, any development activity in ecologically fragile areas and any project falling under coastal zone regulation, require EIA.</p> <p>Since there are no safeguards procedures for projects with minimal impacts on the environment national laws and regulatory compliance will be met. The project will include additional provisions for safeguarding against other relatively minor impacts arising.</p> <p>There are also no requirements for preparation of specialized measures or plans for indigenous peoples under Indian law as required by JICA and therefore additional measures are proposed for this project.</p>	<p>In terms of meeting JICA's requirements (international best practices) further improvements are proposed in the assessment/screening and monitoring of subprojects to ensure that even minor adverse impacts are mitigated as far as possible. A broad Environmental and Social Management Framework (ESMF) is prepared for addressing issues arising under the project and subprojects. Mitigation measures are built into project component design and implementation.</p> <p>A Scheduled Tribes and Transhumant Pastoralist Framework is also prepared to cover instances where the project will directly impact or involve indigenous peoples.</p> <p>Training will be provided under the project at field and management levels to improve understanding of environmental/social assessment, screening and risk management procedures.</p> <p>To support the provision of additional environmental and social safeguards, the project will hire 2 environmental and social safeguards experts under the PMC to develop appropriate/simplify guidelines and procedures for specific project models to minimize environmental/social risks, guide and oversee implementation of the framework, monitor/review implementation etc.</p> <p>The project management information system (MIS) will also include collection of safeguards-related data and the project will also be subject to periodical evaluation and review, including independent mid-term and final evaluations which will include examination of safeguards compliance.</p>

	Questions	Answer	Improvement Plan
5.	How are environmental considerations taken into account in the credit review and approval process for project loans or equity investments? How are environmental considerations taken into account in the credit review and approval process for project loans or equity investments?	<p>There will be no loans or equity investments disbursed by the EA under this project. Instead, UFRMP will invest directly in Van Panchayats (community forest institutions) for activities aimed at ecological restoration of degraded forest lands and community development.</p> <p>As mentioned above, the community sub-projects will be developed through consultation with the communities themselves and they will also carry out preliminary screening of environmental/social impacts. Site checks and technical engineering assessments will be carried out for subprojects highlighted during the participatory assessment process. Recommendations are made for the environmentally sound and safe implementation of the subproject activities. Once site checks have been carried out and appropriate measures included for subproject implementation, funds are disbursed.</p>	N/A
6.	How are environmental issues taken into account in deciding whether to offer or extend commercial credit, working capital finance, trade finance, payment services and other financial services to a company?	None of these issues will arise in project implementation. The EA will not offer or extend commercial credit, working capital finance, trade finance, payment services and other financial services to any company under the project.	N/A
3. Organization and Staff			
(7)	Please provide us with the organization chart of the financial intermediary / executing agency's Environmental and Social Management System (ESMS).	The EA does not have ESMS as such as this is not the role of the institution. Environmental and social impacts and risks are managed by the IAA, State Level EIA Authority and Central/State Pollution Control Boards (see above).	Minor/small-scale environmental and social risks of the project will be managed through the project's institutional implementation structure which runs parallel to the UKFD's existing organizational structure.
(8)	Who is responsible for environmental and social management within the financial intermediary / executing agency? (name/role and title)	N/A	<p>For the purposes of the project:</p> <p>Mr. Anup Malik Chief Project Director (CPD)/CCF Monitoring and Evaluation Uttarakhand Forest Department</p>
(9)	Are there any staffs with training for environmental and social	All UKFD Forest Officers are well-trained in the application of the Forest Conservation Act relating to forest clearance procedures. UKFD	The Project Management Unit (PMU) will be supported by the PMC which will also provide 2

	Questions	Answer	Improvement Plan
	considerations in the financial intermediary / executing agency? If so, describe.	staff are not however trained in environmental and social impact assessment procedures and risk management	(international/national) safeguards experts who will design and oversee implementation of safeguards frameworks and guidelines etc. The project will also provide some training for relevant UKFD staff on EIA /SIA and the identification, assessment and management of environmental/social risks in the forestry sector.
(10)	Are there any technical staffs with an engineering/industry background responsible for technical analysis of credit proposals?	UKFD Forest Officers are trained in basic engineering for small scale infrastructures relevant to the tasks to be performed under the Working Plans including forest roads, soil and conservation measures, slope stabilization measures (small check dams, drainage line treatments etc.), small buildings etc. Although such training would not be sufficient for larger scale infrastructure, it is deemed to be sufficient for the purposes of UFRMP.	
(11)	What experience, if any, do the financial intermediary / executing agency have of hiring or dealing with environmental consultants?	N/A. Since UKFD programs generally have a minimal environmental impact, environmental consultants are not required.	
(12)	What was the budget allocated to the ESMS and its implementation during a year? Please provide budget details including staff costs and training as well as any actual costs. What was the budget allocated to the ESMS and its implementation during a year?	N/A. UKFD does not have an ESMS as such and therefore no budget is specifically allocated to it. Environmental and social issues arising in the field will be identified, reported and addressed through the existing chain of command in the department on a case by case basis where necessary. Such staffs are on the payroll of the department and there may be certain costs in attending meetings and monitoring but these are not separately budgeted.	During the project most costs associated with environmental and social management are covered by addressing the relevant issues in the project's conceptual approach or technical methodologies. As such they normally do not incur as separate budget lines. However there will be some allocation of budget towards environmental and social considerations under the project, mainly in the form of capacity building/training costs.
4. Monitoring and Reporting(Reporting procedures and monitoring)			
(13)	Do you receive environmental and social monitoring reports from	N/A N/A	

	Questions	Answer	Improvement Plan
	subproject companies that you finance?		
(14)	Please describe how you monitor the subproject company and their subprojects' social and environmental performance.	N/A N/A	
(15)	Is there an internal process to report on social and environmental issues to senior management?	Environmental and social issues arising from field-based programs are reported to senior management as and when required. Although there is no systematic monitoring and reporting process for environmental and social issues, particular issues may be highlighted when necessary and dealt with accordingly.	UFRMP will develop a MIS for monitoring and reporting on project progress, processes and impacts. Safeguards monitoring and reporting will be built into this system.
(16)	Do you prepare any social and environmental reports: - For other multilateral agencies or other stakeholders - E&S reporting in the Annual Report	Environmental and social reports are not prepared systematically by the EA. UKFD does prepare an Annual Report in Hindi but it does not contain a specific section on environmental and social issues. Environmental and social issues may be covered in reports for particular projects or programs e.g. periodical/mid-term/terminal evaluations of government forestry programs such as the National Afforestation Programme which may cover overall environmental impact, community participation and other livelihood benefits. In this manner there is some reporting although since baselines have not been established, monitoring is not systematic, the evaluation reports are rather vague and detailed analysis of social issues is not available.	A Social Assessment report will be produced by the project documenting baseline situation as well as on information disclosure and public consultation on project design. The PMC will support the EA in producing and submitting monitoring reports to JICA (monthly, semi-annual, annual, mid-term and final). These reports shall contain designated sections on environmental and social aspects. The project will include independent mid-term and terminal evaluations which will also assess the project's implementation of the ES MF and environmental and social issues related to the project.
5. Experience(Results of the environmental and social management)			
(17)	Has the financial intermediary / executing agency signed any national or international agreements or declarations concerning environmental issues?	The EA itself has not signed any international agreements or declarations on environmental issues but a number have been signed by the Government of India and are thus applicable, including: <ul style="list-style-type: none"> • Convention on International Trade of Endangered Species (CITES) • Ramsar Convention on Wetlands of International Importance • Bonn Convention on Conservation of Migratory Species 	N/A

	Questions	Answer	Improvement Plan
		<ul style="list-style-type: none"> • Convention on Biological Diversity • Indigenous and Tribal Peoples Convention • Nagoya Protocol • Kyoto Protocol 	
(18)	Has the financial intermediary / executing agency ever received any criticism of its environmental record? If so, what was the criticism?	<p>India is a relatively free and open democracy with a vibrant civil society and all sections of the government receive criticism from the media, NGOs and the general public. Areas of criticism leveled against the UKFD include:</p> <ul style="list-style-type: none"> • Eviction/resettlement of peoples, particularly tribes from National Parks and other protected areas e.g. Rajaji National Park • Persecution and punishment of forest dependent peoples especially transhumant groups e.g. Van Gujjars • Poor relationships with forest communities • Gender issues • Inefficiencies in fighting forest fires • Inability to control wildlife which inflicts damages on forest fringe communities <p>On the other hand UKFD is also criticized by other government departments and industrialists for being anti-development by not approving forest clearance for mining, hydropower and other major projects with significant negative environmental impacts.</p>	<p>The project as a whole is intended to strengthen community-based forestry institutions and implementation at the local level is through these institutions. The project will also build the EA's capacity for more collaborative and participatory approaches to forest management. Therefore the project aims to build better and stronger relationships with communities, addressing some of the current social associated with top-down forest management.</p> <p>The project will include social safeguards for protecting communities and especially the vulnerable segments of society including women, poor and landless – ensuring that they are properly consulted and are able to participate and benefit from the project in appropriate ways. Further specific measures are also included for Scheduled Tribes and Transhumants.</p> <p>In the above ways, the UKFD will address many of its deficiencies and areas of criticism through project implementation.</p>
(19)	Does the financial intermediary / executing agency carry out environmental audits of its properties to analyze health and safety issues, waste disposal, etc.?	No. N/A	
(20)	Please state any difficulties and/or constraints related to the implementation of the ESMS.	The EA's lack of experience in managing and monitoring environmental and social risks in a systematic way will be the principal challenge.	Through implementing the project, establishing the proposed safeguards frameworks and measures, and through specific trainings the EA will build their capacity and experience for managing and

	Questions	Answer	Improvement Plan
			monitoring environmental and social risks.
6 . Need of Capacity Development and Improvement Plan(Improvement and the need for capacity building measures)			
<p>EA capacity needs to be developed in the following areas for effective implementation of the proposed project-based ESMS:</p> <p>1. Participatory Forest Management: The EA generally appears to possess reasonable capacity in terms of technical forest (silviculture) and wildlife management, however the existing curricula for field staff in particular is very weak in terms of community/social aspects of forestry. Since the project's main focus is on working with community-based forest institutions and an identified social impact is the potential for greater State control over community forests, there is a need for capacity development of Forest Officers, at field and management levels in the knowledge and practical field skills for PFM (e.g. community facilitation, free and prior informed consent (FPIC), participatory rural appraisal (PRA), participatory planning, conflict resolution, participatory M&E, working with vulnerable groups, gender issues in forestry etc). At DFO/Division Management Unit (DMU) and PMU levels a greater appreciation of the social aspects of forestry is required and capacity development will focus on building that as well as the necessary skills for managing PFM and improved collaboration with communities and integration of community perspectives in overall forest management goals, objectives, decision-making processes etc.</p> <p>2. Environmental and Social Management System: The project will need to build the capacity of the EA as well as Field NGOs and communities for the effective establishment and operationalization of the proposed ESMF. This will involve several capacity development activities:</p> <p>Training of Field NGOs and field staff for carrying out the Social Assessment and Consultation Processes</p> <p>Safeguards Training for NGOs and field staff (covering general/basic introductory concept, Safeguard Issues (general - gender, vulnerable groups, scheduled caste (SCs)/ scheduled tribes (STs) and project specific), The ESMF for the project, steps and procedures to be applied in the project – especially focusing on micro planning/subproject planning and participatory environmental and social assessment, monitoring and reporting of safeguards, grievance procedures, etc.)</p> <p>Safeguards Training for DFO/DMU and PMU staff: As above but should be tailored to higher capacity individuals with management responsibilities (greater orientation on assessing social impacts related to forestry and conservation interventions)</p> <p>Safeguards Training for Van Panchayats: As above, but contents more basic.</p>			

Source: JICA Preparatory Survey Team

Attachment 7.3.3

Environmental and Social Management Framework

Introduction

The Environmental and Social Management Framework (ESMF) for the Uttarakhand Forest Resource Management Project (UFRMP) is attached to the main project document and is the primary reference document outlining how environmental and social considerations will be addressed in project design and implementation. The ESMF is structured as follows:

- 1) **Introduction:** An introductory section which briefly summarizes the main features of the project, JICA's environmental and social safeguard policies, and clarifies how the UFRMP shall be categorized and the appropriate safeguards frameworks applicable.
- 2) **Environmental and Social Management Systems:** Outlines the legal and policy context for assessment and review of environmental and social issues in India and the State of Uttarakhand as well as the Environmental and Social Management Systems (ESMS) of the Executing Agency (EA), the Uttarakhand Forest Department (UKFD) pertinent to the activities of the proposed project.
- 3) **Environmental and Social Risks and Mitigation Measures:** An assessment of potential positive and negative environmental and social aspects associated with the UFRMP, as well as measures for the mitigation of adverse risks in project design and implementation.
- 4) **ESMF Institutional Framework and Procedures:** Indicates the institutional framework and identifies procedures for management and mitigation of environmental and social risks at each stage of the project cycle.
- 5) **Capacity Development Requirements:** the capacity development and training requirements for effective implementation of the ESMF are assessed and identified.
- 6) **ESMF Costs:** The final sub-section discusses costs associated with the management of project-related environmental and social issues, how they may be covered under the project component costs or where there may be additional/separate costs.

Project Summary Description

(1) Project Background and Rationale

The project has been developed and proposed by the UKFD as a response to ongoing trends of forest resource degradation, particularly in the mid-hills region of Uttarakhand. Correspondingly, the project primarily focuses on the ecological restoration of degraded areas classified as forest lands across a contiguous belt in this part of the State.

In achieving this goal the project must address the underlying drivers of forest degradation related to rural population expansion, unsustainable land management and use practices, poverty and natural resource dependency among rural, forest-fringe communities. The physical terrain of the region means that there are challenges for the government in providing effective government programmes and services to rural communities and similarly they are poorly connected to the markets and opportunities which may lie in the *terai* and urban centres. The topography also means there are severe constraints for agricultural production. As a consequence the majority of households remain highly dependent on livestock farming as well as the surrounding forests for their *bona fide* livelihood and subsistence needs. At the same time the rural population of Uttarakhand has almost doubled in 30 years from 5.7 million in 1981 to 10.1 million in 2011. The net result is that population pressure in an already marginal environment has placed excessive pressure on forests particularly from livestock grazing and the unsustainable extraction of other forest resources such as firewood and certain NTFPs. Thus any effective solution to the problem must involve local communities and simultaneously address their livelihood needs.

The project area could be described as being at a zonal interface where there are certain communities with long-standing and relatively sustainable customary forest management practices as well as other communities that may be more agriculturally-oriented, but as the population has expanded, have gradually encroached into forest areas or they may have become more agriculturally-oriented and thus traditional sustainable forest management practices may no longer be applied. In both contexts, due to the limited capacity and resources of the UKFD to actively manage almost 3.5 million ha of forest lands, the reality is that local communities use the forests in their own ways, including both the forest lands allocated to them for management (Civil and Soyam and Van Panchayat forests) as well as the Reserved Forests surrounding their villages. Thus, in certain cases there may be conflicts between traditional forest management and State forest management objectives and in other cases unsustainable extraction is poorly managed and controlled by either State or community. In both instances there is a lack of effective management - 61% of Van Panchayat Forests have no management plan and no Forest Division has a Composite Management Plan for Van Panchayats.

Therefore a central aim of the project is the improved management of village forests, but this must be done in a way that recognizes the important role that communities play in forest management and thus the project will strengthen the capacity of Van Panchayats to manage their local forest resources in a sustainable manner. This however is a more participatory approach to forest management than has hitherto been practiced by the UKFD, and thus the project must also improve the capacity of the UKFD by developing new skills among forest officers in the field, such that the village forest institutions are genuinely empowered to manage local forest resources effectively and sustainably.

An additional illustration of the need for the project was the devastating flash floods which occurred in June 2013. This was one of the worst disasters affecting Uttarakhand the damages caused by the calamity were unparalleled in history in the region, if not in the country. Over 6,000 people lost their lives or still missing, and more than 100,000 people lost their homes, if not their entire villages. Nearly 8,000 km of roads were destroyed, and other key lifelines and infrastructure were put out of order, as electricity networks, water facilities, public buildings, irrigations, telephone networks, etc.

The deadly flashfloods and debris flows that crushed people's lives and properties were caused by massive landslides and slope failures, many of which were originated from forests under the control of UKFD. It has proven that the effort of UKFD in erosion and flood control within their forestlands has not been adequate. Based on the preliminary discussions and field visits by the experts of JICA Survey Team revealed that UKFD critically lacks technical expertise and field experiences in geotechnical surveys, an analysis of erosion mechanisms, identification of appropriate technologies and countermeasures to such erosions, execution of appropriate mechanical and vegetative slope stabilization works, soil/debris retaining works, water flow control measures, etc. within the forest areas. There is a great need for technical assistance to the UKFD on erosion and flood control as well as the financial assistance to implement/experience such works. It should also be noted that no donor agencies, apart from JICA, is planning to support the UKFD or addressing the issues of forest areas where the major problems of recent disasters are originated. The support of JICA would contribute greatly to the recovery from the recent disaster and to the mitigation of future disaster risks.

(2) Project Purpose and Scope

The overall goal of the project is to contribute to the eco-restoration, forest resource development, and the livelihoods improvement and income generation of the forest dependent households, while mitigating sediment disaster risks in highly vulnerable areas. The project will be implemented over a period of 8 years, across 13 forest divisions in Uttarakhand, north India and will involve the participation of 1,000 villages with approximately 64,000 beneficiary households.

(3) Project Components

The project will be comprised of 4 components; 1) Ecological Restoration; 2) Community Development and Livelihood Improvement; 3) Other Support Activities; and 4) Erosion Control and Disaster Mitigation.

JICA Environmental and Social Safeguard Policies

JICA, like most other major development agencies is committed to ensuring that human rights are respected and that environmental issues are seriously considered in its investments, projects and programmes. JICA's environmental and social safeguards policies are contained within the JICA Guidelines for Environmental and Social Considerations (2010), with some of the main provisions summarised as follows:

(1) JICA Principles for Environmental and Social Considerations

The principles state that:

- JICA Projects/programmes shall assess a **wide range of environmental and social impacts**
- Environmental and social issues must be considered **at an early stage in design and throughout the project cycle**
- **JICA is responsible for accountability and transparency**
- **Stakeholder consultation and participation** is required in consideration of environmental and social issues
- **Information disclosure is required**
- **Implementation of the guidelines should enhance organisational capacity** to ensure appropriate consideration, management and monitoring of environmental and social issues
- JICA is committed to addressing environmental and social issues **in a Prompt/Timely manner**

(2) Key Process Elements

Information Disclosure and Consultation: JICA requests that proponents disclose information on the environmental and social impact of the project both to JICA as well as local stakeholders well in advance of implementation. Frameworks for consultation and information disclosure need to be developed and agreed.

Project Categorization: Projects are categorized according to the scope/severity of the environmental and social impacts or risks, as follows

- Category A: Significant adverse impacts e.g. Large infrastructure
- Category B: Generally site-specific impacts, few impacts are irreversible, normal mitigation measures can be designed
- Category C: Minimal/little adverse impact
- FI (Financial intermediary): Substantial selection and appraisal of sub-projects after JICA approval of funding

Impacts to be Assessed: A wide range of environmental and social considerations are taken into account with view towards both enhancing positive benefits and avoiding/mitigating negative impacts.

- **Environmental Impacts:** On the natural environment transmitted through air, water, soils, waste, accidents, water usage, climate change, ecosystems, fauna and flora and transboundary/global scale impacts
- **Social Impacts:** On community/people's lands, resettlement, economies, livelihoods, employment, social institutions, vulnerable groups, gender, indigenous peoples, children, health, cultural heritage etc.

(3) Compatibility with International Standards

JICA confirms that projects do not deviate significantly from the World Bank's Safeguard Policies, and refers as a benchmark to the standards of international financial organizations; to internationally recognized standards, or international standards, treaties, and declarations, etc.; and to the good

practices etc. of developed nations as appropriate. JICA is currently in the process of assessing and further clarifying its operational policies and procedures relating to environmental and social safeguards, and for the time being refers to international policies, procedures and standards such as those of the World Bank in part so as to avoid further proliferation of safeguards approaches and standards. Of relevance to UFRMP, although JICA has special concerns related to Indigenous Peoples (IPs), it does not have a detailed policy with explicit procedures for situations where such peoples are affected by projects 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 UFRMP follows that indicated in the World Bank OP 4.10, as requested by JICA for the preparation of this project.

UFRMP Categorization and Treatment

UFRMP is currently categorized by JICA as an FI project in accordance with the JICA Guidelines (2010) since funding is provided to an Executing Agency (EA); the final selection and appraisal of subprojects will be undertaken by the EA during implementation (and therefore after JICA's approval of the loan), and those subprojects are expected to have an impact on the environment.

UFRMP is overall expected to have a mainly positive impact on the environment given that its primary objective is ecological restoration. The project should also have a largely positive social impact through its investments in community development and livelihoods improvement for rural, forest-dependent poor households. Although it is not possible to precisely state exactly what subprojects will be implemented in exactly which specific location, as will be illustrated below, the project will also exclude Category A sub-projects with a significant environmental impacts or risks. Thus, it should be possible to re-categorize the UFRMP as a Category B or C project prior to loan approval.

It is advised that even though the project is expected to have a mainly positive, and limited negative environmental and social impacts, the UFRMP should probably be treated as a Category B project for the following reasons:

- There are some (albeit limited and generally small-scale, site-specific, temporary, and reversible) potentially adverse environmental and social risks associated with certain project activities, and there should be measures in place to manage and mitigate them
- The project will be implemented in certain ecologically sensitive areas including areas of primary forest and/or important ecosystems, species and habitats of conservation concern
- The project is implemented in areas inhabited, traversed or utilized by several indigenous peoples and the project could potentially involve some restrictions on access to customary or traditional territories and resource use practices

The above potential risks are discussed further in section 1.3 of this ESMF. There is seemingly no particular guidance offered by the JICA Guidelines on the requirements for an FI category project to be treated as Category B. It is therefore proposed that whilst full-scale environmental assessment as per Category A is unnecessary Category B is advised because there is a need for a simple framework or system for management and monitoring of potential environmental and social risks arising. However, a Category C project would not require any further consideration of environmental and social issues. If it is not possible to re-categorize the UFRMP due to the fact that detailed subproject design will be defined during implementation then it is recommended to 'treat' the project as Category B, even if formally it remains categorized as FI.

Clarifying Definitions and Selection of Safeguards Frameworks

Initially JICA requested the preparation of a Forest Dwellers Development Framework (FDDF) as the primary tool for the management of environmental and social impacts arising under the UFRMP. The FDDF was to be prepared referring to the format provided in the World Bank's OP 4.10 on Indigenous Peoples. It is therefore necessary to clarify what is being prepared and whom it is being prepared for.

On the one hand, JICA very deliberately used the term ‘forest dweller’ which has a particular meaning in the context of Indian forest policy and legislation. Whilst on the other hand, the fact that the WB Policy on ‘Indigenous Peoples’ has been referenced, indicates that the task is to prepare a planning framework for ‘indigenous peoples’. Understanding clearly what the terms ‘forest dwellers’ and ‘indigenous peoples’ actually mean, forms the conceptual basis for our proposed approach in developing an appropriate framework.

(1) Analysis of definitions and terms

Forest Dwellers: The term forest dweller is in reference to ‘The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act’ (2006). The Act is intended for those who "primarily reside in forests" and who depend on forests and forest land for a livelihood. There are two stages to be eligible under this Act:

1. *Primarily residing in forests or forest lands;*
2. *Dependent on forests and forest land for a livelihood (namely "bona fide livelihood needs")*

Second, it has to be proven:

- *That the above conditions have been true for 75 years, in which case you are an **Other Traditional Forest Dweller** (s. 2(o));*

OR

- *That you are a member of a Scheduled Tribe (s. 2(c)); and*
- *That you are residing in the area where they are Scheduled (s. 4(1)).*

In the latter case you are a **Forest Dwelling Scheduled Tribe**.

Indigenous Peoples: The World Bank OP 4.10 considers that the term indigenous peoples is used in a generic sense to refer to a distinct, vulnerable, social and cultural group possessing the following characteristics in varying degrees:

1. *self-identification as members of a distinct indigenous cultural group and recognition of this identity by others;*
2. *collective attachment to geographically distinct habitats or ancestral territories in the project area and to the natural resources in these habitats and territories*
3. *customary cultural, economic, social, or political institutions that are separate from those of the dominant society and culture; and*
4. *an indigenous language, often different from the official language of the country or region.*

JICA’s request appears to indicate that forest dwellers and indigenous peoples are one and the same groups of people. However, the above definitions indicate that a) A forest dweller is someone who is dependent on forest lands and resources but is otherwise not necessarily culturally, ethnically or linguistically distinct; and b) an indigenous person may or may not live within forest areas. Therefore, although there is some overlap (many forest dwellers are in fact members of culturally distinct social groups), by definition indigenous peoples and forest dwellers are not the same thing.

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 (Operational Directive 4.10)¹. In India the term indigenous peoples appears to be most consistent with ‘Scheduled Tribes’ (STs). Although the term tribe is not defined in the law, such groups are characterized, according to the Ministry of Tribal Affairs², by primitive traits, geographic isolation, economic backwardness, distinct cultures, and shyness of contact with other communities. Other definitions have also included reference to traditional territories, specific names, common languages, strong kin relations, associations with clan structure, tribal authorities and rigid inclination to religion

¹World Bank, 2010. *Indigenous Peoples, Poverty and Development*.

²<http://tribal.nic.in/Content/IntroductionScheduledTribes.aspx>

and beliefs (e.g. Pant, 2010³). Functional independence, homogeneity, primitive means of exploiting resources, economic backwardness, rich culture and tradition and limited desire to change are some of the other characteristics dominant among the tribes (Majumdar & Madan, 1970⁴; Pati, 1991⁵). Such definitions are much more consistent with the World Bank's definition of indigenous peoples. Scheduled Castes (SCs) are also often considered in a similar bracket as STs however 'caste' more relates to social status as opposed to any cultural, ethnic, linguistic or geographical distinction. SCs are found right across India in virtually all communities. Thus, regarding the application of the World Bank policy on indigenous peoples, it would be more appropriate to focus on STs (especially those that are forest dwelling).

The FRA definition of a 'forest dweller' could still be interpreted as an appropriate basis for developing a safeguards framework for the UFRMP, even if it meant that it was applicable to a broader section of project affected peoples than IPs or STs alone. Indeed this would be desirable, particularly considering the low ST population in Uttarakhand. It would mean that the safeguards framework would apply to anyone who was recognized as being directly dependent on forest resources for longer than 75 years. However, implementation of the FRA has been extremely limited in Uttarakhand and to this day, no individual or community in the State has had their rights to forest land formally recognized⁶. There are therefore, officially no 'forest dwellers'. Hence, literally speaking, if the project were to prepare a FDDF, there would be no one to apply it to.

In reality however, an estimated 80% of the State's rural population is directly or indirectly dependent on forest resources for their livelihoods (Dobhal ed., 2012⁷) – many are *de facto* forest dwellers. Moreover, the UFRMP will however directly impact community groups that are dependent on forests for their livelihoods regardless of their ethnicity, language, or cultural distinctness.

(2) Selection of an appropriate framework

Following detailed consideration and discussion during the preparation phase it was agreed that a) the term 'forest dweller' should not be used considering the loaded nature of the term and the local context in Uttarakhand, b) that the project's safeguard framework should include some measures for ensuring maximum positive and minimal negative environmental impact, and c) that in terms of social safeguard measures, they should be applicable to a broad range of socially marginalized, vulnerable and forest-dependent community groups – not only those who are formally recognized as indigenous peoples or forest dwellers. Therefore, for the purposes of developing a safeguards framework suitable to the project and the local context:

- **Environmental and Social Management Framework (ESMF):** A broad ESMF is prepared to ensure that environmental issues are considered and that various socially disadvantaged and forest dependent groups are recognized and consulted; their needs met and their rights recognized.
- **Scheduled Tribes and Transhumants Planning Framework (STTPF):** To meet the requirements of the JICA Guidelines and in reference to OP 4.10 of the World Bank on Indigenous Peoples, a Scheduled Tribes and Transhumants Planning Framework (STTPF) will additionally be prepared to be applied where the project affects or interacts with such groups.

Target Groups of the ESMF

The ESMF has been prepared to address environmental and social considerations of the project in accordance with JICA Guidelines. As the previous section underlined, the ESMF will be applicable to all forest dependent communities and peoples within the project area. From a social safeguards

³Pant B.R, 2010; *Tribal Demography of Uttarakhand*, ENVIS, BULLETIN: Himalayan Ecology, Vol -18, 1-9

⁴Majumdar, D.N. and Madan, T.N. 1970. *An Introduction of Social Anthropology*. Asia Publishing House, Bombay.

⁵Pati, R.N. 1991. *Tribal Development in India*. Ashish Publishing House, New Delhi.

⁶Ministry of Tribal Affairs, GoI. 2013. *Status Report on Implementation of the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 [for the period ending 30th June, 2013]*.

⁷Dobhal, R. ed., 2012; *Uttarakhand State of the Environment Report*. Uttarakhand State Council for Science and Technology. Published by Abhimanyu Gahlot, Dehradun, India.

perspective this means the framework will be applicable for all villages and it will focus on ensuring that particular vulnerable groups are adequately consulted in local level project preparation, the design and development of micro plans, they are specifically included as beneficiaries, they receive appropriate benefits, their active participation during implementation, and that there are mechanisms in place to address any project-related grievances they may have. The table below indicates the groups the ESMF is aimed at protecting, although it should be noted that an individual or household may fall into more than one of the categories below.

Table: ESMF Target Groups

	Group	Description/Rationale
1	Poor/Below Poverty Line (BPL) Households	BPL 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 excluded from decision-making processes and equitable opportunities to benefit from development interventions.
2	Women and Female Headed Households (FHH)	The traditionally patriarchal society where men have <i>de jure</i> control over productive resources means women are often excluded from decision-making processes and/or that development interventions do not meet their needs. Due to male out-migration in many areas of rural Uttarakhand, women are also the ones primarily responsible for agricultural production and forest resource use and management. FHH are a particularly vulnerable sub-group with a typically limited asset base and high levels of forest dependency.
3	Landless	The landless are often highly dependent on forest resources for their daily subsistence needs and as a safety net in times of duress. Development interventions can also often neglect this disadvantaged group as investments target farmers who have land and assets.
4	Scheduled Castes (SCs)	SCs are by definition socially disadvantaged and may be excluded due to innate cultural and social norms and practices. Moreover due to their often restricted access to land and other assets, they are less able to benefit from development interventions. Roughly 15-28% of the population in rural Uttarakhand are SCs.
5	Scheduled Tribes (STs)	STs are characterized by distinct cultural practices and institutions, their own languages, geographical isolation and shy of contact with outsiders. All of this can make consultation difficult and that they may have specialized needs and priorities. There are 5 recognized ST groups in Uttarakhand representing around 5% of the State population.
6	Transhumants	Transhumants are not necessarily a distinct ethnic group or tribe, but they are characterized by a livelihood based on seasonal migration with cattle to grazing areas (where they have recognized customary rights). Such peoples' lives are closely tied to forests and natural resources and they have quite specialized needs.

Source: Compiled by JICA Preparatory Survey Team

Purpose of the Environmental and Social Management Framework for UFRMP

The purpose of the ESMF is:

- i) to provide a broad framework for the identification, management and monitoring of potential environmental and social risks arising under the project;
- ii) to enhance the project's positive environmental and social impacts and avoid or otherwise mitigate associated negative impacts;
- iii) to ensure that the rights and needs of forest dependent communities (in particular the most socially disadvantaged and vulnerable groups) affected by or involved in the project, are respected and met in the design and implementation of project interventions; and
- iv) to ensure the protection of local ecosystems and environmental resources in the design and implementation of project interventions.

The ESMF is to be considered as the primary document or framework for the management of environmental and social issues in UFRMP but works in concert with and refers to the other safeguards tools, which are intended to concentrate on or elaborate specific aspects i.e. STTP F, micro plan, etc.

Existing Environmental and Social Management Systems

The sub-sections below provide a summary description and assessment of the overall legal and regulatory framework for environmental and social considerations in India as well as the particular systems of the EA in place for the management of environmental and social risks. Further information and responses to standard areas of concern identified by JICA is provided in the ESMS and Forestry Project Checklists.

Legal and Policy Framework for Environmental and Social Considerations in UFRMP

Table 1.2.1 below summarizes key legislation and policy in India and Uttarakhand for the 3 key areas of relevance to this project i.e. i) environmental assessment, screening, categorization, protection and review; ii) forest conservation, management and protection; and iii) consultation, participation and rights of socially disadvantaged groups.

Table: National and State Level Legal and Regulatory Framework for Environmental and Social Safeguards

No.	Legislation	Main Provisions	Relevance to the Project	Institutions Concerned
National Environmental and Social Safeguards Legislation				
A) Environmental/Forestry Policies and Legislation				
6	National Forest Policy 1988	Envisages 33% of the area of India should be under forest/tree cover through involvement of local communities in JFM programmes	UFRMP will promote participatory forest management by strengthening and implementing the project through the Van Panchayats.	Min. of Environment and Forests, GoI State Forest Department Van Panchayats
2	Indian Forest Act (1878 and 1927)	Both the Acts sought to consolidate and reserve the areas having forest cover or significant wildlife, to regulate movement and transit of forest produce and duties for timber and other forest produce.	UFRMP as a project operating in forest areas needs to be in accordance with the primary legislation pertaining to forests in India.	Min. of Environment and Forests, GoI State Forest Department
3	Forest Conservation Act (1980)	No part of a reserved forest land can be used for non forest purpose without prior approval from the central government. Defines allowable use of Reserved Forest lands	UFRMP activities must be in line with the provisions of this act vis-a-vis reforestation and development activities in forest areas.	Min. of Environment and Forests, GoI State Forestry Department
4	Wildlife Protection Act (1972)	Prohibits killing/trapping of wild animals Control of collection, protection, sale of specified plants Defines restrictions on access and use of protected areas Defines powers of prevention and detection of offences - arrest, seizure, penalties	UFRMP will address human-wildlife conflict and needs to do so in an appropriate manner UFRMP needs to ensure that endangered plant species are not threatened by project activities UFRMP may work in protected areas and serve to strengthen restrictions on forest dependent communities	Min. of Environment and Forests, GoI State Forestry Department State Wildlife Board Wildlife Wardens
5.	Biological Diversity Act (2002)	Covers conservation, use of biological resources and associated knowledge in India for commercial, research purposes or bio-utilization purposes. Provides a framework for access and benefit-sharing, as well as for intellectual property rights (IPRs) to biological resources.	UFRMP will promote the utilization of certain biological resources and must ensure that applicable legislation on access and benefit sharing (ABS) and IPRs is applied.	National Biodiversity Authority State Biodiversity Board
6	Environmental Protection Act (1986)	Provide the protection of and improvement of environment (land, water and air) and related matters.	UFRMP's infrastructure development activities shall be implemented in accordance with EPA provisions.	Central Pollution Control Board, State Pollution Control Board
7	EIA Notification (2006)	Defines categorization schedule for activities/projects and procedures for Category A/B1 Projects	UFRMP shall develop criteria so that sub-projects shall not involve activities categorized as A/B1 and requiring EIA.	State EIA Authority (SEIAA)
8	Water (Prevention	Prevention and Control of water pollution and for	UFRMP forestry activities would prevent	Min. of Environment and Forests, GoI

	&Control of Pollution) Act (1974)	the maintaining or restoring the wholesome of water	undue siltation and recharge the groundwater	Ministry of Water Resources, Uttarakhand Jal Sansthan
9	Air (Prevention and Control of Pollution) Act (1981)	Prevention, control and abatement of air pollution in India.	UFRMP would soak more CO ₂ and address the climate change issues.	Min. of Environment and Forests, GoI Central/State Pollution Control Boards
B) National Social Policies and Legislation				
1	Land Acquisition Act (1894)	Allows government to acquire private lands for public purposes	UFRMP forestry and rural development activities shall avoid land acquisition.	Min. of Rural Development, GoI and State Rural Development Department
2	National Resettlement and Rehabilitation Policy (2007)	Recognizes the rights of vulnerable groups such as SCs/STs and calls for minimizing involuntary resettlement and provision of adequate compensation	UFRMP shall avoid sub-projects involving involuntary resettlement	Min. of Rural Development, GoI and State Rural Development Department
3	Scheduled Tribes and other Traditional Forest Dwellers (Forest Rights) Act (2006)	Concerns the rights of communities living in or near forests to land and resources. The rights of people living in or depending on the area to be declared as a forest or protected area are to be settled.	UFRMP shall fully respect the rights of forest dwellers in design and implementation of interventions.	Min of Environment and Forests, GoI State Forest Department District Collectorate.
4	Rights to Information Act (2005)	Mandates timely response to citizen requests for government information.	UFRMP shall respect the basic right of project affected peoples to information.	Min of Personnel, Public Grievances and Pensions State Information Commissioner
C) Environmental and Social Policies and Legislation Related to Uttarakhand State				
1	Uttarakhand Van Panchayat Regulations (2005)	Van Panchayat Rules 2005 enshrines the community rights over nearby forest to be managed by the community themselves.	UFRMP will be implemented mainly through Van Panchayats and would operate within the legal framework that governs them	Min. of Environment and Forests, GoI State Forest Department
2	Doon Valley Notification under EPA (1989)	Defines permissible and non-permissible activities and activities permissible with environmental clearance in Doon Valley	UFRMP may involve activities related to land use planning, tourism and grazing which are thus affected by this legislation in Doon Valley areas.	Ministry of Environment and Forests, GoI State Department of Tourism
3	Bhagirathi River to Ecosensitive Zone (2012)	Restricts development activities in this eco-sensitive zone	UFRMP will include activities in disaster affected and vulnerable parts of Uttarkashi. Activities (particularly any construction) will need to pay heed to this legislation.	Ministry of Environment and Forests, GoI

Source: Compiled by JICA Preparatory Survey Team

Environmental and Forest Clearance Procedures in India

The main project objective is the ecological restoration of degraded forest areas and thus it should have an overwhelmingly positive environmental impact. However, it is important to assess whether an adequate legal framework is in place for screening, avoiding and mitigating for any project activities which may have deleterious impact on the environment, especially forests and natural habitats.

(1) Environmental Clearance

The project may have some other (non-forestry) potentially environmentally damaging activities and it is therefore necessary to ensure that the Indian legislative framework is broadly consistent with JICA guidelines. From an environmental safeguards perspective the first priority concern is if possible the avoidance of projects with significant environmental impacts. Thus the JICA Guidelines and the ESMS Checklist pay particular consideration to the screening, categorization, assessment and review procedures for Category A projects.

The introduction of a number of new acts, laws and standards as well as amendments and notifications in the last 10-15 years means that India now has a fairly comprehensive legal and regulatory framework with regard to environmental assessment such that they are relatively consistent with international practices (refer to Volume I, Section 7.3.1 for a diagram illustrating EIA procedures).

EIA Notification (2006) defines projects requiring environmental clearance and environmental assessment with similar screening and categorization procedures, prior consultation is required and recent legislation also includes special provisions for vulnerable social groups and indigenous peoples. There are also legislation and standards applicable to specific issues in many cases such as air/water/noise pollution, waste management, use of hazardous substances etc. Overall, Indian environmental and social safeguards policies and related implementing legislation do not deviate significantly from the JICA Guidelines. This legal framework shall be sufficient for the elimination of projects with significant adverse environmental impacts and this is not seen to be a major safeguard issue for the project.

(2) Forest Clearance

The EA themselves do not implement the above procedures related to environmental clearance although they do have a role where any forest clearance may be required in the State of Uttarakhand as part of a project. India has a particularly strong legal framework protecting forests with clear procedural requirements for obtaining clearance to use forest lands or remove/fell trees. This legislation is also strongly implemented in practice and would be during the project. The Forest Conservation Act 1980 clearly defines procedures for obtaining clearance for activities on forest land and defines permissible activities without clearance i.e. those relating to the protection and development of forest stands (key activities to be undertaken in this project). The UKFD is the agency responsible for ensuring implementation of the Forest Conservation Act in Uttarakhand. Therefore, the EA is well aware of procedures and restrictions on forest clearance inside and outside of forest areas. Forest clearance will be avoided except perhaps for certain restricted felling for the purpose of forestry activities (e.g. firebreaks) which could potentially be supported under the project. In this case, any tree-felling required in forestry activities must be in accordance with the Working Plans for the given forest area. UKFD is the agency responsible for developing the Working Plans and there are also procedures for adjustment if required. This is all standard practice of the EA and thus there is almost zero risk of any significant forest loss under the project.

Having eliminated any significant environmental and social risks, the next step is to examine the institutional frameworks and processes of the UKFD for managing less significant issues, discussed below.

Environmental and Social Management Systems of the Executing Agency

The Executing Agency (EA), UKFD, is primarily responsible for the implementation of projects, programmes and activities with positive environmental impacts such as forest conservation, protection and restoration. As such it does not have a comprehensive ESMS in place for the screening, management and monitoring of environmental and social risks of its standard operations and programmes.

Based on discussions and interviews with UKFD staff both in Dehradun and at field sites as well as review of UKFD program documents, it was however clear that certain elements of safeguards are included in some instances. Where there is a dedicated government program such as CAMPA or NAP, there are certain procedures and outputs which demonstrate there is some limited or partial level of information disclosure and consultation with communities, some community participation in the elaboration of micro plans (e.g. recent program for Van Panchayat micro planning), there is participation of communities in implementation (usually as labor), and there is some evaluation of programmes including covering the involvement of communities. However, procedures and standards are unclear and loosely implemented, monitoring is generally ad hoc and certainly the inclusion of environmental and social safeguards cannot be described as systematic. Key gaps and shortfalls in comparison to international standards as indicated by JICA in the JICA Guidelines would include:

- Limited Free, Prior and Informed Consultation with project-affected communities
- No establishment of broad community support
- No Social Assessment is carried out prior to implementation (no baseline for impact evaluation)
- No strategy for ensuring the inclusion of women and vulnerable groups
- No specific strategy for addressing the concerns of Scheduled Tribes and Transhumants
- No procedures for environmental screening and subsequent management of environmental risks associated with small-scale construction and other activities with potential adverse impacts
- Design and implementation is centrally controlled/top-down
- Weak project monitoring as a whole and no monitoring of safeguard processes and procedures

It is therefore concluded that for the purposes of the UFRMP, a more rigorous and systematic ESMS needs to be established for satisfactory implementation of the UFRMP as per the requirements of the JICA Guidelines. The standard loan agreement text states that the ESMS must be established before the project commences, and that the EA is required to demonstrate this before disbursement of the funds. However, since the project will not involve any subprojects or activities with significant adverse environmental impacts and nor will it involve any loss of land, resettlement or significant loss of livelihoods, it is proposed that it may be sufficient in this case that improvements to the ESMS can be made during the early phases of project implementation. This recommendation is also based on internal guidelines on the application of JICA Guidelines for FI projects, which suggest that establishment of the ESMS during implementation is a possible course of action for first time loans. UKFD would need to commit to provisions for establishing an improved ESMS and implementation of the ESMF and STTPF as part of the loan agreement. This will also include use of the loan for capacity development of the UKFD and hiring of additional technical and operational capacity for implementation of safeguard measures under the project.

Environmental and Social Risks and Mitigation Measures

Intended Positive Impacts

The project will have mainly positive environmental and social impacts given its overall objectives i.e. ecological restoration of degraded forest lands and improved protection of sites of conservation

importance, as well as enhanced livelihood security and improved incomes of forest-dependent rural poor households in the project area. Table below identifies broad project benefits and positive environmental and social impacts.

Table: Potential Positive Environmental and Social Impacts of UFRMP

Benefit Type	Project Benefits and Intended Positive Environmental and Social Impacts
Natural Capital Benefits	<ul style="list-style-type: none"> ✓ Improved forest quality and quantity – increased natural assets ✓ Improved environmental services derived from forests e. g. improved watershed protection, reduced soil erosion/run-off, hydrology, soil fertility/moisture etc
Financial Capital Benefits	<ul style="list-style-type: none"> ✓ Increased incomes ✓ Direct and indirect employment opportunities arising from project activities ✓ Diversification of income sources and reduced financial risk ✓ Improved access to credit
Social Capital Benefits	<ul style="list-style-type: none"> ✓ Strengthened community institutions ✓ Improved connections and networks for producer groups ✓ Empowerment and reduced drudgery of women
Human Capital Benefits	<ul style="list-style-type: none"> ✓ Increased technical capacity for sustainable management of community forests ✓ Increased entrepreneurial and business management capacity of producer groups ✓ Improved food security from agricultural models
Physical Capital Benefits	<ul style="list-style-type: none"> ✓ Construction/Rehabilitation of priority community infrastructure (e.g. community centres, water and sanitation, primary healthcare facilities, etc.)
Vulnerability Context Benefits	<ul style="list-style-type: none"> ✓ Reduced vulnerability/increased resilience of communities to shocks (e.g. commodity prices, disasters) and trends (e.g. climate change)
Improved Structures and Processes	<ul style="list-style-type: none"> ✓ Increased participation in community development planning and activities ✓ Increased participation of local people in forest management ✓ Improved capacity of government departments and extension service delivery ✓ Improved State policies governing forest management

Source: JICA Preparatory Survey Team

Environmental and Social Risks and Mitigation Measures by Component

The Project potentially could however also bring about or reinforce a number of adverse environmental impacts. Table below presents environmental and social risks and mitigation measures by component for easy reference, with more detailed description of the particular issues in the following sub-sections.

Table: Summary Adverse Environmental and Social Risks and Mitigation Measures by Component

Component	Sub-Components	Activities	Impacts	Environmental	Mitigation Measures
				Social	
Component 1: Ecological Restoration	1.1 Rehabilitation of Degraded Forest	<ul style="list-style-type: none"> - Natural Regeneration (30,000 ha) - Assisted Natural Regeneration (20,000 ha) 	<ul style="list-style-type: none"> - Use of alien and invasive species may lead to a loss of biodiversity and other adverse impacts on forest ecology - Potential loss of customary/traditional knowledge as communities are trained in formal management approaches and standard technical silvicultural treatments - Tree species with little economic or subsistence value may be selected for eco-restoration 		<ul style="list-style-type: none"> - The project will exclusively promote the use of native species for eco-restoration
					<ul style="list-style-type: none"> - Documentation and utilization of traditional forest management approaches - Participatory selection of tree species (fodder, fuel wood species)
	1.2 NTFP Plantation	<ul style="list-style-type: none"> - 500 ha of pilot NTFP plantations 	<ul style="list-style-type: none"> - Use of alien and invasive species may lead to a loss of biodiversity and other adverse impacts on forest ecology 		<ul style="list-style-type: none"> - The project will exclusively promote the use of native NTFP species
	1.3 Biodiversity Conservation & Management	<ul style="list-style-type: none"> - People's Biodiversity Registers - Establishment of Biodiversity Heritage Sites - Human-Wildlife conflict resolution 	<ul style="list-style-type: none"> - Persecution of wildlife - Loss of customary land/resource access and use - Increased conflicts over resources 		<ul style="list-style-type: none"> - The project will promote non-violent forms of HWC resolution - Community-based/participatory land/resource use planning - Local regulations
Component 2: Community Development and Livelihood Improvement	2.1 Entry Point Activities & Basic Human Needs	<ul style="list-style-type: none"> - Van Panchayat Office cum Community Disaster Response Centres (and associated equipment) - Water supply/sanitation facilities and health camps - Other small-scale community infrastructure - Alternative household energy 	<ul style="list-style-type: none"> - Environmental impacts from construction activities including air (dust), water (siltation of water bodies), soil (soil contamination, erosion, loss), local fauna and flora, noise pollution, waste disposal etc. 		<ul style="list-style-type: none"> - Participatory environmental and social assessment procedures for screening of sub-projects and avoidance of major impacts and no forest clearance - Proper design and planning of infrastructure activities to minimize environmental risks
			<ul style="list-style-type: none"> - Social impacts such as land acquisition and resettlement - Elite capture - Social exclusion - Resource use conflicts e.g. over wells and other water supply/sanitation facilities - Increased developmental dependency 		<ul style="list-style-type: none"> - No use of private land or resettlement for community infrastructures - Community infrastructures based on participatory planning and for public good - Community involvement and employment in all aspects of construction, operation and maintenance - Corpus fund to ensure sustainability of investment - Prioritization of BPL households and vulnerable groups as beneficiaries

2.2	NTFP Enterprise Development & Livelihoods	Various models: i) Lichens & mosses; ii) Honey; iii) Natural fibers; iv) Natural dyes; v) Pine needles; vi) Pine resin; vii) Other NTFPs and medicinal plants	<ul style="list-style-type: none"> - Unsustainable exploitation of wild NTFPs - Use of chemicals in NTFP extraction and processing 	<ul style="list-style-type: none"> - Participatory development of sustainable harvesting quotas and regulations - Technical guidelines on pine resin extraction
			<ul style="list-style-type: none"> - Social exclusion/elite capture - Inequitable benefit sharing - Gender issues - Loss of traditional knowledge 	<ul style="list-style-type: none"> - Clear and equitable beneficiary selection prioritizing forest dependent poor and vulnerable households - Selection of female beneficiaries with deliberate attempts to empower women - Following Van Panchayat regulations with 90% benefit share to communities
2.3	Ecotourism	<ul style="list-style-type: none"> - Site-based ecotourism plans and marketing strategies - Site development, facilities and interpretation features - Hospitality training 	<ul style="list-style-type: none"> - Disturbance to wildlife, habitat degradation - Litter/waste, soil/water pollution from tourism facilities - Impacts on aesthetic landscape values 	<ul style="list-style-type: none"> - Proper consideration of carrying capacities and impacts of tourism on natural habitats and fauna/flora species in site development plans and strategies - Specific measures for dealing with litter and other waste produced by tourism
			<ul style="list-style-type: none"> - Elite capture - Inter/intra-community conflicts - Loss of cultural systems and customs 	<ul style="list-style-type: none"> - Appropriate beneficiary selection and benefit-sharing mechanisms
2.4	Non-NTFP Based Livelihoods	<ul style="list-style-type: none"> - Improved dairies - Poultry - Off-season vegetable production - Spice cultivation - Other IGAs 	<ul style="list-style-type: none"> - Contamination of soils and water due to use of chemical fertilizers and pesticides - Increased pressure on water resources - Loss of traditional knowledge 	<ul style="list-style-type: none"> - Widespread promotion of organic agriculture and use of bio-fertilizers - Development of IPM guidelines for agricultural activities (if required) - No use of WHO Class I and II fertilizers - Promotion of SWC techniques - Promoting climate resilient agricultural models
			<ul style="list-style-type: none"> - Loss of indigenous/traditional crops and cultivation methods - Reduced benefits for vulnerable groups with limited access to productive land - Social exclusion/elite capture - Increased developmental dependency 	<ul style="list-style-type: none"> - IGAs will be small scale and oriented towards BPL households and vulnerable groups with limited productive land
Component 3: Other Support Activities	3.1 Preparatory Works	Establishment of project structures and processes, procurement etc Consultations and Micro planning		
			<ul style="list-style-type: none"> - Disempowerment of customary village forest management institutions - Erosion of forest rights - Community conflicts - Micro planning could lead to increased 	<ul style="list-style-type: none"> - Procedural steps for ensuring adequate consultation and participation of vulnerable groups in micro planning - Promotion of best-practice participatory approaches to forest management planning

		conflict over natural resources through formalization of previously fluid, flexible and informal agreements and practices	- Capacity-building in best-practice approaches in PFM is intended to mitigate this effect
3.2 Capacity-building of EA & Other Stakeholders	- Participatory Forest Management - Environmental & Social Safeguards	N/A	Capacity building activities themselves are a part of environmental and social mitigation measures
3.3 Capacity-building of Village Institutions	- Participatory Forest Management - Environmental & Social Safeguards	N/A	Capacity building activities themselves are a part of environmental and social mitigation measures
3.4 Applied Research & Publicity	Various studies related to NTFP species/models, climate change impacts on forest ecology and livelihoods, traditional livelihoods	N/A	Certain studies are intended to assist in providing the knowledge to appropriately mitigate environmental and social issues
3.5 Monitoring & Evaluation	MIS Development, project monitoring and reporting and evaluations	N/A	Monitoring will include environmental and social safeguard issues and processes
3.6 Project Continuity Strategy	- Corpus Funds - Community-based operation & maintenance	N/A	Project continuity is intended to enhance long term sustainability of positive impacts
Component 4: Erosion Control			

Source: JICA Preparatory Survey Team

ESMF Institutional Arrangements and Procedures in the Project Cycle

Overview of ESMF Procedures

The proposed framework for environmental and social considerations in UFRMP is shown in the table below.

Table: Overview of Procedures and Institutional Arrangements

Project Implementation Stage	Safeguard activities	Suggested Guiding documents to be developed
Van Panchayats/ Village Selection and Preliminary Consultation	<ul style="list-style-type: none"> ▪ Selection of Van Panchayats/ Village ▪ Information Disclosure and Free Prior Informed Consultation ▪ Establishment of broad community support 	<ul style="list-style-type: none"> ▪ VP selection criteria reflecting the social-environmental safeguard perspective ▪ Consultation and Participation Plan
Baseline Surveys	<ul style="list-style-type: none"> ▪ Social Assessment 	<ul style="list-style-type: none"> ▪ Social Assessment Plan
Micro Planning and Subproject Development	<ul style="list-style-type: none"> ▪ Process of micro plans to be participatory to reflect on the voices of the community members ▪ Screening and selection of the activities with reference to the safeguard checklist ▪ Participatory Environmental and Social Assessment (ESA) for confirmation of the screening results and finalization of the activities to be undertaken by each VP ▪ Site visits by DMU and safeguards experts/ technical staff of government agencies 	<ul style="list-style-type: none"> ▪ Micro Planning Guidance Note ▪ Participatory ESA format
Forest Management Planning (Working Plans/Composite Plans)	<ul style="list-style-type: none"> ▪ Ensuring participation of local people in forest management planning activities 	<ul style="list-style-type: none"> ▪ Forest Management Planning Guidance Note/Guidelines
Subproject Implementation	<ul style="list-style-type: none"> ▪ Community participation in project activities 	<ul style="list-style-type: none"> ▪ Beneficiary Selection Guidance Note ▪ Guidelines for specific activities e.g. on use of pesticides/fertilizers, chemicals in NTFP processing etc. (if required, to be developed during implementation)
Monitoring and Reporting	<ul style="list-style-type: none"> ▪ Through participatory M&E mechanism the impact of the project activities will be monitored by VPs with help of FLEs/ FNGOs 	<ul style="list-style-type: none"> ▪ Participatory M&E Guidance Note ▪ Monitoring Sheets
Grievance Procedures	<ul style="list-style-type: none"> ▪ Through the project's institutional structure 	<ul style="list-style-type: none"> ▪ Institutional responsibilities for addressing grievances

Source: JICA Preparatory Survey Team

Detailed Steps and Procedures

(1) Information Disclosure and Free, Prior and Informed Consultation

Van Panchayats will be preliminarily selected based on the defined criteria, thereafter their participation in the project must be confirmed through a process of free, prior and informed consultation with the villages. Once broad community support for the project has been established, the participation of the village in the project is confirmed. If broad community support does not exist and/or the village actively does not wish to participate in the project, then another village may be found (or the financial allocation of that village could be spread among other participating villages in the same micro-watershed/division/district).

Table: Consultation for Broad Community Support

Consultation Topic/s:	Present, using simple language, basic information about the project including area, location, purpose/objectives, key activities, stakeholders involved, target beneficiaries, expected role and involvement of communities, and an overview of possible environmental and social risks. Opportunities for open discussion of the project should be provided
Purpose/Objective:	Establishing broad community support for the project
Participants:	Van Panchayats Executive Committee (VPEC) members, Member Body, Gram Sabha and other important individuals (Gram Pradhan), villagers
Time/Timing:	At an early stage in project/batch implementation, immediately following Van Panchayat selection. Adequate time should be provided following the meeting for the community to digest the information, discuss internally and decide if they do not wish to participate (suggested timeframe of 1 week – to be confirmed)
Approach:	<ul style="list-style-type: none"> • Presentation and discussion with VPEC and Gram Sabha/Panchayat • General community meeting to present, answer questions and discuss concerns
Materials Required:	<ul style="list-style-type: none"> • Provision of simple/easy to read project brochures in Hindi language. • Consultation and Participation Monitoring Sheets
Institutional Responsibilities:	<ul style="list-style-type: none"> • DMUs to propose meetings • FMUs and FNGOs to organize meetings with Van Panchayats • Van Panchayats/Animators to encourage participation • DMU to present project with assistance from FNGOs in responding to community concerns • Van Panchayats and FNGOs to record participants and meeting minutes
Special Notes:	In terms of demonstrating broad community support, it is proposed that at the time of recording meeting attendance, participants indicate their support by ticking a box on the attendance sheet. Where the majority (>50%) support the project, the project will go ahead in that village. Below 50% support will be discussed with Van Panchayats regarding the possibility that further information is required to better address community concerns. It may be possible to re-convene the meeting and try to establish broad community support a second time. If the majority of people still reject the project, alternative villages will be selected. Even if the voting is in favor of the project a VPEC may still reject the project within 1 week. In this case, another meeting is held and if the VPEC still rejects the project, another village will be selected.

Source: JICA Preparatory Survey Team

(2) Social Assessment

A social assessment will be carried out following confirmation of selected Van Panchayats. Qualified and experienced experts will be contracted to conduct a full social assessment (SA) in a gender-sensitive manner in consultation with forest dwellers in the target Van Panchayats/villages prior to sub-project planning and implementation. The SA will serve a number of purposes:

- establish the baseline socio-economic situation of forest dwellers in the project area to act as a reference for measuring project impact;
- assess access and opportunities to avail of basic social and economic services,

- c) provide a basis for identifying appropriate community development and livelihoods interventions under the project
- d) determine the short and long-term, direct and indirect, and positive and negative impacts of the project on the socio-cultural and economic status of particular vulnerable groups, including women, poor households, female-headed households, landless, SCs/STs and others as may be considered relevant
- e) highlight key social issues present, particularly those that are underscored in the JICA guidelines (e.g. relating to human rights, involuntary resettlement, loss of livelihoods, indigenous peoples, gender etc)
- f) provide a basis for developing recommendations for addressing the various concerns and issues of projects that affect them

Whilst the ESMF has identified broad theoretical issues, the SA will help the project to identify more specific issues at the field level and devise appropriate solutions accordingly for implementation. As discussed above, the ESMF is relevant to all forest dependent communities and particularly to the vulnerable groups within those communities. In order to comply with World Bank OP 4.10, the SA will also include specific recommendations resulting from consultations with STs and the provision of culturally appropriate benefits, when/where they fall within the project impact area (see the STTPF).

(3) Participatory Development of Micro plans

Many Van Panchayats will already have existing micro plans in place. In this case micro plans will be subject to a participatory review. Where Van Panchayats do not have existing micro plans participatory development of micro plans will take place. Micro plans shall concentrate on proposals concerning Van Panchayat and other forest lands within and surrounding the village. However, the micro plans shall also stipulate community development and livelihood needs/priorities expressed by villagers.

The micro planning process shall involve specific procedures ensuring that the needs and priorities of vulnerable groups are reflected in the plans.

(4) Selection and Screening of Sub-projects

Sub-projects are then selected and the priority needs identified in the micro plans. In general the sub-project selection guidelines reinforce the overall project's key objectives of ecological restoration, strengthening community-based forest management institutions, poverty alleviation and reduced vulnerability to climate change and disasters.

Specific sub-projects should be selected on the basis of community preferences and therefore guidelines should not be too prescriptive in terms of defining what a given community can and cannot do. However, certain exclusion criteria are required to ensure that the project does not include sub-projects with potentially significant adverse environmental impacts such that environmental clearance and EIA would be required (i.e. No Category A or B1 projects as per Indian EPA (1986) and the EIA Notification (2006)). Such sub-projects would not be in keeping with the objectives of the project as a whole and environmental clearance procedures would be time consuming. In accordance with the JICA guidelines various other exclusion criteria have also been developed and are shown below in the table below:

Table: Sub-project Exclusion Criteria

Category	Exclusion Criteria
Forests, Natural Habitats and Biological Diversity	<ul style="list-style-type: none"> i) Sub-projects which involve diversion of forest land ii) Sub-projects which involve felling of trees on Reserve Forest or Van Panchayat forest land unless ancillary to conservation, development and management of forests and wildlife defined in the working plan (e.g. fire breaks, thinning etc)⁹.

⁹ In general felling of any trees is to be avoided but where some small scale felling for community infrastructure may be required on Civil forest land, procedures under the Forest Conservation Act are to be followed

Category	Exclusion Criteria
	iii) Sub-projects likely to cause damage to wildlife and their habitats iv) Activities involving the 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) v) Planting of non-native or invasive species of forest trees, shrubs or plants
Pollution and Waste	i) Agricultural, agro-forestry, floricultural and horticultural activities involving the use of fertilizers and pesticides banned by WHO (Classes IA, IB and II) ii) Activities that involve the manufacture, stocking, sale or distribution of any insecticide, pesticide or medicine without a license
Land	i) Sub-projects shall not involve any resettlement or private land acquisition ii) Sub-projects with likely adverse impacts in terms of increased floods and damage to downstream resources
Dams	i) Sub-projects involving dams of 10m high or more
Indigenous Peoples and Vulnerable Groups	i) Sub-projects that cannot demonstrate the broad support of STs (where STs fall within the project area) ii) Sub-projects that involve child labor iii) Sub-projects or activities which could lead to the exploitation of women
Cultural/Spiritual Heritage	iv) Activities that could cause damage to places of religious importance, historical monuments or cultural properties

Source: JICA Preparatory Survey Team

(7) Sub-project Implementation

Van Panchayats will implement the projects themselves as far as possible. FD will provide assistance in organizing activities and assisting with procurement of goods and services as may be required. In certain cases it may be necessary to request the services of other government line agencies or hire contractors.

For construction works a priority local hire system will be a conditional requirement so that villagers are actively involved. Similarly villagers will be hired for forestry works under the project such as planting, tending, protection etc.

FNGOs will also support the Van Panchayats to implement the community development and livelihood activities. A critical social safeguard issue in the implementation stage of livelihood subprojects is beneficiary selection. For the community development and livelihoods component as a whole, as well as for each set of sub-component activities, clear guidelines on procedures for beneficiary selection shall be developed by the PMC Livelihoods Expert. Beneficiary selection procedures need to be made clear to participating communities at the micro planning stage but then implemented with the facilitation support of FNGOs once subprojects have been approved. Overall, forest dependent women, BPL, SC and ST households will be the target beneficiaries of the UFRMP.

(8) Monitoring and Evaluation

Monitoring: Activity/progress monitoring will be done by the Van Panchayats themselves but with support from FNGOs. The FNGOs will also play an important role in facilitating participatory M&E through the already established social audit process. From a safeguards perspective the key issue here is that vulnerable groups such as women, SCs, STs etc have an equal opportunity to participate in the process of being informed about project progress, evaluating implementation and contributing suggestions for improvements. It is proposed that the traditional social audit process is amended slightly to include separate consultation with women only groups, SC groups and where they are present, ST groups.

In terms of monitoring data, there are two types of indicator sets of particular importance from a safeguards perspective

- a. **Impact Monitoring Data:** Impact monitoring indicators show the impact of the project. Since this project's activities are aimed at environmental and social goals, the project's monitoring indicator set is sufficient for demonstrating impact e.g. number of hectares of forest restored, number of beneficiaries with improved incomes etc. From a social safeguards perspective, it is important to

monitor impacts on specific groups – therefore project impact monitoring needs disaggregation of the data by social status e.g. BPL households, female-headed households, sex of beneficiary, SC and ST status.

- b. Process Monitoring Data:** The monitoring system also needs to pick up whether the proposed safeguards measures are taking place and whether activities are being implemented in the right way. This involves monitoring of project processes e.g. Sub-project screening/participatory ESA has taken place, were SC/STs separately consulted in the SA/micro planning processes, was there female participation in the social audits etc. Much of this requires monitoring sheets for the various consultation meetings and signatures of attendees. A set of proposed process indicators has been developed for the project.

Evaluation: Firstly, Participatory M&E will be undertaken through the pre-existing social audit system whereby according to the Van Panchayat Regulations (2005), Van Panchayats present their progress to the wider community of members and the village as a whole. It also provides an opportunity for members and local people to raise concerns or issues related to Van Panchayat activities. Under the project it has been proposed that this usually annual community meeting now be held annually due to the fact that there will be a significant increase in the activity of the Van Panchayat under the project. It is further hereby proposed that this event should provide an opportunity for separate consultation with particular vulnerable groups in the community i.e. women, BPL and SC/STs. Such groups may find it difficult to participate actively or raise certain issues in a general community meeting environment. These separate consultations would be something akin to side-events or meetings and could be facilitated by the FNGOs. Reports from the social audit meetings should record concerns raised and discussions such that they feed into appropriate adaptive management actions in the annual plans for the following 6 months or year of implementation.

Secondly, the project will evaluate project impacts against a baseline. Therefore, a baseline survey covering relevant environmental/physical and socio-economic indicators will be conducted at an early stage in implementation. In order to measure the project impact, the UFRMP will procure the services of an appropriately qualified consultant, NGO or academic institution to conduct an independent mid-term and terminal evaluation of the project. From the perspective of environmental safeguards, all significant adverse environmental impacts should have effectively been ruled out through the safeguards framework. The independent evaluators should confirm that this has indeed been the case but otherwise the evaluation is merely focused on assessing whether the project has achieved its stated positive environmental impact in terms of forest restoration. With regard to social safeguards, the independent evaluation shall employ both quantitative and qualitative research methods in assessing whether a) social goals are being/have been achieved and b) that these impacts are proportionally reflected in the different social groups i.e. has the project had an equitable impact on women, BPL and SCs/STs. In order to do this, it is necessary that the baseline, mid-term and terminal evaluation surveys disaggregate their household survey data accordingly.

9) Grievance Procedures

Key principles for grievance redress in UFRMP:

1. The rights of all project participants are respected and their interests protected
2. Concerns of project participants arising from the project implementation process are adequately addressed and in a prompt and timely manner
3. Entitlements or livelihood support for project participants are provided on time and in accordance with the relevant GoI and JICA safeguard policies and applicable legal framework
4. Project participants are aware of their rights to access and to realize access to grievance procedures free of charge
5. The grievance mechanism will be in line with existing policies, strategies, and regulations on grievances as defined by GoI i.e. Guidelines for Redress of Public Grievances (GoI, 2010)
6. The grievance mechanism will be institutionalized in each village by the Van Panchayat

There are existing channels for lodging formal grievances with the FD and/or the Department of Administrative Reforms and Public Grievances (DARPG) in accordance with the Guidelines for Redress of Public Grievances (GoI, 2010) and particularly since the introduction of the Right to Information Act (2005), civil society and the general public has become increasingly aware of their constitutional rights to demand accountability and transparency regarding government actions. These procedures are explained below, however with regard to the UFRMP itself it is hoped that due to the comprehensive consideration of environmental and social issues in project design and implementation, including extensive requirements for information disclosure, consultation and participation, there will be little need for recourse to such formal grievance procedures. Rather, it is expected that most grievances can be dealt with through the proposed institutional structure of the project.

Project-related grievances can be raised by local people or stakeholders at any time and the first point of interaction should be the Van Panchayat. If the issue cannot be resolved informally through discussion, then the grievance shall be written down and submitted and subsequently recorded in the Van Panchayat reports. Thus simple formats should be prepared for the submission of grievances (which may be anonymously submitted) at the Van Panchayat house and a simple table for documentation in the monthly reporting format. If the Van Panchayat is not able or fails to respond to a stated grievance, the complainant may raise their issue with the FMU and may seek assistance from the appointed FNGO in lodging their grievance. Such a grievance would then appear in the monthly FMU report, and so on through the project's administrative layers and reporting structure to DMU and then PMU. If the problem cannot be resolved at the lower level, it goes up to the next level as appropriate. This means that at each level, the grievance should be addressed within 01 month.

As mentioned above, if there are more serious grievances which may go beyond being project issues alone such as some loss of land, livelihood or perhaps resource access rights, then the complainant also has the option to raise their grievance through the official channels. In this case a report is made and filed by the DFO and the case discussed at the monthly Circle/Zonal Office meetings of the UKFD. In this case the individuals and agencies directly involved in the implementation of the UFRMP would clearly be interested participants/stakeholders in the case, but the grievance redress mechanism follows that prescribed in the Indian constitution and the operational framework of the UKFD and DARPG. Overall, such a situation is not desirable and it is expected that grievances will as a rule be dealt with by the project framework.

Institutional Responsibilities

The table below highlights key environmental and social management roles of the different project stakeholders in the institutional framework.

Table: ESMF Main Institutional Responsibilities in the Project Cycle

Institution	ESMF Main Responsibilities
Van Panchayats	<ol style="list-style-type: none"> 1. Organization of community for free, prior and informed consultation, representing community interests in consultation meetings, indicating broad community support, sign MoU 2. Organization of SA activities at village level, participation in SA as key informants 3. Organization of and participation in micro planning activities at village level, submission of micro plans 4. Selecting identified community priorities for subproject packages in consultation with VPEC and member body, subproject screening, submission of subprojects 5. Participating in ESA 6. N/A (assist UKFD with any due diligence checks) 7. Receipt of funds for subprojects, beneficiary selection, subproject implementation and management, community-based operation and maintenance 8. Submission of project monitoring sheets, implementing social audit (including separate consultation with vulnerable groups), participation in independent evaluations
Field NGOs/Animators	<ol style="list-style-type: none"> 1. Support organization of communities for free, prior and informed consultation, facilitation of meetings, assist communities to understand project activities/impacts, meeting minutes 2. Logistical and survey support for SA at local levels, reporting

Institution	ESMF Main Responsibilities
	<ol style="list-style-type: none"> 3. Leading micro planning activities at village levels, finalization of micro plans 4. Assisting VPs to select sub-projects and with screening procedures 5. Supporting VPs/participating in participatory ESA 6. N/A (assist UKFD with any due diligence checks) 7. Supporting VPs with procurement, organization of project activities, ensuring appropriate beneficiary selection, promotion of convergence 8. Supporting VPs with project monitoring and reporting, assisting facilitation of social audit (including separate consultations with vulnerable groups), logistical support for independent evaluations
FMU	<ol style="list-style-type: none"> 1. Presentation of project information in consultation meetings, finalize project villages 2. Backstopping guidance and logistical support to SA, participation as key informants 3. Backstopping guidance, logistical support to and participation in micro planning 4. Primary review of subprojects and screening support, processing selected subprojects 5. Conducting participatory ESA for borderline subprojects 6. Performance of due diligence checks 7. Provision of technical advice to VPs in forest development/management activities, procurement, management and implementation of NTFP plantation, conservation and other components 8. Monitoring project investments/site checks, receipt of VP progress monitoring forms and processing
DMU	<ol style="list-style-type: none"> 1. Presentation of project information in consultation meetings, finalize project villages 2. Backstopping guidance and logistical support to SA, participation as key informants 3. Backstopping guidance, logistical support to micro planning 4. Primary review of subprojects and screening support, approval of selected subprojects 5. Conducting participatory ESA for borderline subprojects 6. Performance of due diligence checks 7. Provision of technical advice to VPs/FMUs in forest development/management activities, procurement, management and implementation of NTFP plantation, conservation and other components 8. Monitoring project investments/site checks, receipt of VP progress monitoring forms, social audits and entering data to MIS
PMU	<ol style="list-style-type: none"> 1. Preparation of project information for communities 2. Procurement of SA consultant/NGO, overall guidance/instruction for SA implementation, establishment of MIS database for key indicators 3. Approval of micro planning guidelines, overall management of micro planning process 4. Supervisory review/checking of subprojects, disbursement of project funds 5. Review of participatory ESAs 6. Performance of due diligence follow-up 7. Overall instructions and policy development on forest management activities, overall project management 8. Collection of and follow up on monitoring data, data entry into MIS, procurement of consultant for independent evaluations
PMC	<ol style="list-style-type: none"> 1. Support PMU with elaboration of project information brochures for disclosure and consultation, guidance to DMU/FMUs and FNGOs on information disclosure and consultation 2. Technical design of SA methodology and tools, elaboration of monitoring indicator set, advice to PMU on MIS establishment, support PMU with management of SA consultant/NGO, provision of SA training 3. Development of micro planning approach and guidelines, training on micro planning to FNGOs/FMUs 4. Safeguard checks on subprojects 5. Development of participatory ESA guidelines and training; Safeguard checks 6. Due diligence follow ups 7. Technical guidelines for beneficiary selection, design of component technical approaches, safeguard checks/guidelines for particular activities (if required) 8. Development of monitoring forms, review of monitoring data, reporting, assistance with evaluations

Source: JICA Preparatory Survey Team

Capacity Development Requirements for ESMF Implementation

The previous sections of this ESMF have highlighted a number of environmental and social risks associated with the proposed project and have suggested a number of measures, procedures and steps for minimizing or mitigating those risks. Although as has been stressed throughout many of those risks are relatively minor without proper identification of those risks and measures to manage them, they could grow and become problematic during implementation. The project will not include any sub-projects requiring environmental clearance nor any activities with major social impacts, however as shown above there are certain potential impacts and risks. Management and monitoring of these risks requires a certain level of awareness and capacity. Since as has been discussed in section 1.2, UKFD as EA generally implements similar initiatives with limited adverse environmental impacts and indeed generally positive impacts, it does not have a well-established ESMS. This section therefore identifies some of the capacity development requirements for implementing the ESMF measures, steps and procedures mentioned in the previous two sections.

In broad terms the project aims to strengthen CBFM institutions (Van Panchayats) and the concept of CBFM in general. Collaborative and CBFM approaches and concepts by their very nature require the deployment of knowledge and skills relevant to the consideration of environmental and social issues among forest dependent communities. On the one hand, CBFM requires empowering the Van Panchayats by building awareness of their rights and responsibilities in forest management as well as their capacity to manage and implement forestry and community development activities on lands within and adjacent to their communities. Since UFRMP implementation will be facilitated by FNGOs supporting Van Panchayats at grassroots levels, it will also be necessary to build their capacity to perform this role. On the other hand, it also requires building the capacity of the State FD to implement more inclusive and participatory approaches to forest management.

In addition to the knowledge and skills required for participatory approaches to forest management, certain specialized knowledge and skills will be required for operationalising the above-proposed procedures for assessing and screening environmental and social impacts as well as implementing and monitoring safeguards measures. The table below indicates key knowledge/skill areas required. It is acknowledged that particularly for UKFD, different knowledge and skills sets are required at different management levels (i.e. field skills versus administrative/management skills) – these will be drawn out in the environmental and social safeguards capacity development and training proposed below.

Table: Knowledge and Skills Requirements for Participatory Forest Management and Environmental/Social Safeguards

Community-based/Participatory Forest Management	Environmental and Social Safeguards
<ul style="list-style-type: none"> • CBFM/PFM Principles and Theory • Forest and Wildlife Legislation • Participatory Rural Appraisal • Participatory Land/Resource Use Planning • Participatory Micro planning • Participatory Forest Management Planning • Community participation in forest management activities (forest inventories and mapping, nurseries, planting, tending, protection, firebreaks, thinning, harvesting, wildlife management etc) • Forest Resource Access and Benefit-sharing • Natural Resource Conflict Resolution 	<ul style="list-style-type: none"> • Environmental and Social Impact Assessment - Principles and Theory • Environmental Protection and EIA legislation • Social Safeguards Legislation • Free, Prior and Informed Consultation • Indigenous Peoples and Vulnerable Groups • Gender Issues in Natural Resource Management and Rural Development • Community Facilitation/Participatory Planning • Environmental Screening Procedures for UFRMP • Participatory ESA for UFRMP • Participatory M&E (general and project-specific) • Grievance Procedures

Source: JICA Preparatory Survey Team

Attachment 7.3.4**Scheduled Tribes and Transhumants Planning Framework****Introduction**

The Scheduled Tribes and Transhumants Planning Framework (STTPF) ensures that JICA's safeguard policies relating to the protection of indigenous peoples and respect for their lands, territories and human rights are observed in project design and implementation. Specifically the STTPF intends to ensure that projects/subprojects are designed and implemented in a way that fosters full respect for indigenous peoples' identity and dignity, and safeguards their human rights, livelihood systems, and cultural uniqueness as defined by the indigenous peoples themselves so that they (i) receive culturally appropriate social and economic benefits, (ii) do not suffer adverse impacts as a result of projects, and (iii) can participate actively in projects that affect them.

This STTPF is to be understood and applied as an additional framework that works in concert with the Environmental and Social Management Framework (ESMF), the primary project safeguards document. The STTPF is applied only in situations where Scheduled Tribes (STs) and Transhumants are affected by project activities and provides guidance for specific measures which may be required in addition to the general provisions of the ESMF. In so doing the STTPF is structured in an almost identical way to the ESMF for ease of use and in many cases simply refers the reader to the ESMF unless it is necessary to explain further impacts or additional mitigation measures and/or procedures relating specifically to STs and transhumants. The STTPF is comprised of the following sections:

- 1) An introductory section presenting relevant information about the project context and the indigenous peoples/Scheduled Tribes to which this STTPF applies.
- 2) Section 2 presents the relevant legal and policy context specifically related to the rights of STs and Transhumants in India.
- 3) Section 3 identifies and discusses particular potential impacts/risks related to STs and Transhumants associated with the project and presents suggested measures intended to mitigate adverse impacts. Many of the risks are as applicable to other vulnerable groups as they are to STs and Transhumants.
- 4) Section 4 refers directly to the procedures in the ESMF for addressing safeguards issues at each stage in the project cycle, and provides additional requirements if, as and where populations of STs and Transhumants fall within the project area or are affected by project activities.
- 5) Section 5 discusses capacity building requirements for the consideration of STs and Transhumants in project implementation. In general, such capacity development for addressing ST and Transhumant issues shall be dealt with within the framework of overall capacity building as indicated in the ESMF.

JICA's Safeguard Policies on Indigenous Peoples

The ESMF provides a brief summary description of JICA's overall environmental and social safeguard policies as elaborated in the JICA Guidelines (2010). The guidelines state that social impacts to be assessed shall specifically cover indigenous peoples' issues and that Indigenous People's Plans (IPPs) will be prepared for projects that affect them.

- 1) Any adverse impacts that a project may have on indigenous peoples are to be avoided when feasible by exploring all viable alternatives. When, after such an examination, avoidance is proved unfeasible, effective measures must be taken to minimize impacts and to compensate indigenous peoples for their losses.
- 2) When projects may have adverse impacts on indigenous peoples, all of their rights in relation 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). Efforts must be made to obtain the consent of indigenous peoples in a process of free, prior, and informed consultation.

- 3) Measures for the affected indigenous peoples must be prepared as an indigenous peoples plan (which may constitute a part of other documents for environmental and social consideration) and must be made public in compliance with the relevant laws and ordinances of the host country. In preparing the indigenous peoples plan, consultations must be made with the affected indigenous peoples based on sufficient information made available to them in advance. When consultations are held, it is desirable that explanations be given in a form, manner, and language that are understandable to the people concerned. It is desirable that the indigenous peoples plan include the elements laid out in the World Bank Safeguard Policy, OP4.10, Annex B.

Therefore the STTPF follows the format and requirements outlined in World Bank OP 4.10 Annex B.

Clarifying Definitions and Selection of Safeguards Frameworks

The ESMF explains the decision to opt for a broad environmental and social framework supplemented by a framework specifically applicable to the STs and Transhumants found within the project area. As with the ESMF, a 'framework' is considered the appropriate safeguards tool since the specific indigenous peoples 'plans' will be developed in detail at the village/Van Panchayat and cluster levels during actual implementation. Therefore the framework provides a tool for the elaboration of appropriate plans during implementation. Meanwhile it is applied to Scheduled Tribes as they are considered equivalent to indigenous peoples in the Indian context. However, this particular framework also embraces the Van Gujjars as a particular transhumant group that identify themselves as culturally distinct and who are currently appealing for their recognition as a ST. The inclusion of Van Gujjars is further justified below in the section describing the legal and policy framework for indigenous peoples.

Project Categorization and Indigenous Peoples

The ESMF explained that the project category is FI due to the fact that it will be implemented through an executing agency, the UKFD and will have some environmental/social impacts although the precise nature of subprojects and specific locations will not be defined until implementation i.e. after loan approval. It was however recommended that the project be treated as a Category B project. Although the project intends to have a primarily positive impact on the environment and rural poor, forest dependent households in the project area, a significant part of the reason for this suggested treatment is due to the presence of indigenous peoples in the project area and potential adverse impacts on them. As has been discussed above, JICA has serious concerns over indigenous peoples, and as will be presented below, there are particular issues of relevance to this project steeped in a historical context of social exclusion and marginalization of such groups by the State and the FD in particular. Thus, whilst the project will not involve severe social impacts such as involuntary resettlement, formal acquisition of customary lands and territories or damage to cultural properties, certain activities could cause some access and usufruct restrictions or some loss of livelihoods. Hence the need for a degree of due care and attention with regard to certain issues as provided in this document and the ESMF as a whole.

Legal and Policy Framework for Scheduled Tribes and Transhumants

The main legislation and policies pertaining to the rights and social welfare of marginalized social groups including STs and transhumants are provided in the ESMF.

Constitutionally, 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. It should however 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.

There is considerable debate and discourse on what tribes or tribal groups are, what are their origins, how they should be characterized or defined etc (e.g. Risley, 1915; Lacey, 1931; Redfield, 1955; Majumdar, 1967; Dube, 1977; Vidyarathi and Rai, 1985; Hasnain, 1991; Dattaray, 1998 etc. as summarized in Rattan, 2012¹). The debate on the subject of identifying 'tribes' was eventually concluded by promulgation of Article 342 of the Constitution which, instead of defining tribes, specifies 'tribes' or tribal communities by public notification which shall be deemed to be Scheduled Tribes in relation to that state or Union Territory (Hasnain, 1991). 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. (HIPA, 1987).

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). Thus, now, the whole polemics on the subject of defining 'tribes' has been condensed into one single simple sentence that anyone who does not find mention in the list of STs (in terms of Article 342 of the Indian Constitution) is a non-tribe and vice-versa. This is important in the case of UFRMP and this particular safeguards document because it means that by simply following the Government of India's classification system, one of the most disadvantaged and marginalized tribal groups, the Van Gujjars would not be covered since they are not officially listed as a ST in the State of Uttarakhand.

Indigenous Peoples in Uttarakhand

The total Scheduled Tribe (ST) population of Uttarakhand is 291,903 representing around 5.7% of the State's total population. STs generally reside in rural areas and thus the percentage increases slightly in terms of rural areas i.e. 264,819 ST peoples representing 7.5% of the total rural population of Uttarakhand (based on 2011 Census Data).

Officially, five different ST groups are found in Uttarakhand: The Bhotia, Buksa, Jaunsari, Raji and Tharu groups. There is no up to date data on the exact size of the population of each group as disaggregation did not take place in the 2011 Census. Typically the 2001 Census data is still referred to for this purpose and according to this data; Tharus are the largest of the five STs in Uttarakhand. They account for 33.4 per cent ST population of the State, followed by Jaunsaris (32.5 per cent), Buksas (18.3 per cent), and Bhotias (14.2 per cent). Rajis are very small in number.

Table: Scheduled Tribe Populations in Uttarakhand

	Tribe	Population	Proportion of State Tribal Population (%)
1	Tharu	85,665	33.4
2	Jaunsari	83,262	32.5
3	Buksa	46,771	18.3
4	Bhotia	36,438	14.2
5	Raji	517	0.2
	TOTAL	256,129	100

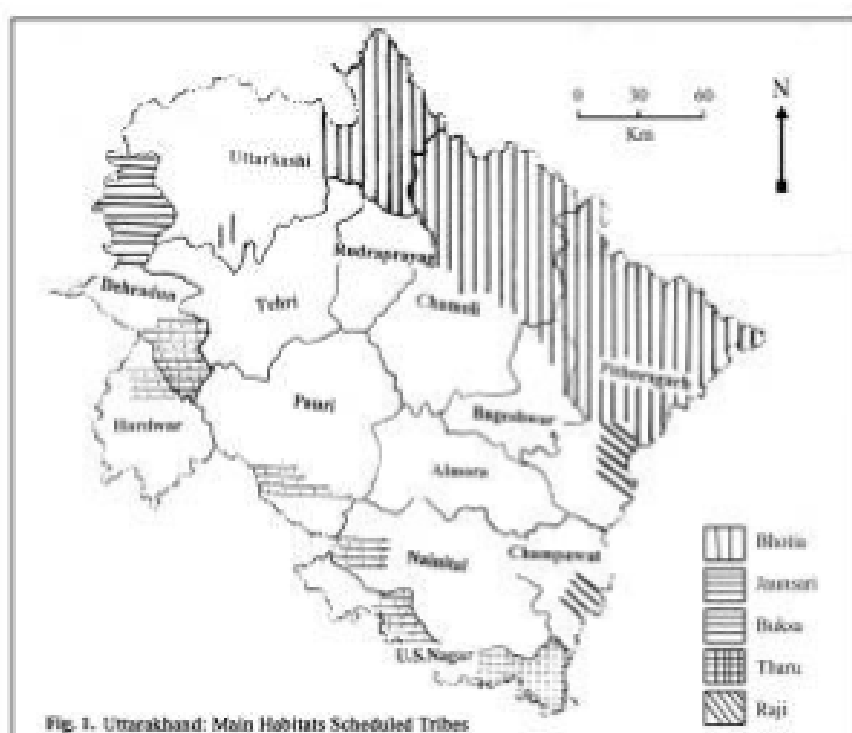
Source: Census of India (2001)

These groups are generally found in specific geographical pockets and again based on 2001 Census data – the majority of the ST population (93.4%) is concentrated in four districts, namely, Udham

¹Rattan, R., 2012. *Defining Tribes in the Indian Context*. Political Economy Journal of India.

Singh Nagar (43%), Dehradun (38.8%), Pithoragarh (7.5%), and Chamoli (4.1%). Figure below provides an illustration of the geographic distribution of STs in Uttarakhand.

Figure: Geographical Distribution of STs in Uttarakhand



Source: *Tribal Demography of Uttarakhand* (Pant, 2010)

In addition to the STs, there is also a transhumant group known as the Van Gujjars. The Van Gujjars are not officially recognized as an ST (although they themselves are demanding to be recognized as such and there is a social movement proposing this²). Due to the group's distinctive culture and way of life as well as the fact that they identify themselves as such suggests they should also be recognized under this framework. However, since the Van Gujjars have not hitherto been recognized as a ST, there are no official population figures. The table below provides a summary description of each of the ST groups.

Table: Scheduled Tribes in Uttarakhand

	Group	Distribution	Description
Scheduled Tribes			
1	Buksa	Tarai-Bharbar region	Defined as a Primitive Tribal Group (PTG), the Buksa have suffered from extensive land alienation as outside settlers settled in the Terai. As a result most Buksa's are working as landless farmers. Mulberry trees are commonly grown for sericulture as well as fruit trees
2	Tharu	Tarai-Bharbar region (particularly Udhampur Singh Nagar and Champawat Districts)	Tharu are a settled tribe found mainly in the Terai and low hills areas. There are well-documented ongoing conflicts over land rights particularly in Udhampur Singh Nagar as this tribe lost land many decades ago to Uttarakhand and other settlers. Agriculture is the mainstay of their livelihoods.
3	Bhotia	Higher altitudes of Pithoragarh, Bageshwar, Chamoli and Uttarkashi Districts	The name Bhotia is actually in reference to a geographic area, Bhot, used by the British in the colonial era. The people themselves dislike the term and should actually be addressed as the Marchas, Tolchas, Johari Saukas, Darmians, Chaudansis and Bhyansis. These peoples migrate seasonally to graze goats and sheep from which they produce wool,

²http://zeenews.india.com/news/uttarakhand/ngo-demands-st-status-for-uttarakhand-vangujjars_830407.html
<http://post.jagran.com/search/van-gujjars-of-uttarakhand>

	Group	Distribution	Description
			their primary livelihood.
4	Raji (Van Rawat)	Pithoragarh District	The Rajis are a PTG, very small in number, occupying the high altitude regions in Pithoragarh and in Nepal. They have their own dialect, live in seclusion and have a very close relationship with forests and other natural resources. Rajis derive an important part of their diet from fishing using long cloths.
5	Jaunsari	Chakrata and Kalsi Blocks, Dehradun District	The only ST group that occupy the mid-hills region. They maintain distinctive dress but they are a settled tribe, participate actively in Panchayati institutions (although they also have their own governance system, the Khat) and many are well educated. Maintain large herds of cattle and goats and depend on forest resources for timber for house construction, firewood and fodder.
Transhumants			
6.	Van Gujjar	<u>Dehradun, Pauri Garhwal and Nainital districts</u> with annual seasonal migration during the summer months to Uttarkashi and Kedarnath	<p>A nomadic group found in UK and forested Bhabar tract of U.P. The name literally means forest dwelling. They originate in <u>Jammu</u> but moved to <u>UK</u> in early 19th century. They migrate annually to their summer pastures in <u>Uttarkashi</u> and <u>Kedarnath</u> following defined routes. The governments of both UP and UK have made repeated attempts to settle them.</p> <p>The Gujjar economy revolves around buffaloes, and selling milk/milk products to settled villagers. They often rely on middlemen of the <u>Baniacaste</u>, to whom many are now indebted. They also suffer discrimination at the hands of forestry officers, who often extract money from the Gujjars. As nomads, they have difficulties proving land ownership, and often face eviction from their camp sites.</p> <p>The Van Gujjars are <u>Sunni Muslims</u>, but maintain a number of pre-Islamic customs. They speak <u>Gujri</u> language but most understand <u>Hindi</u>.</p>

Source: JICA Preparatory Survey Team (information compiled from various sources³)

Project Impacts and Risks for Scheduled Tribes and Transhumants

The ESMF already identifies and describes potential impacts on vulnerable groups in the project area. The purpose of this section is to elaborate on particular issues which may have an additional dimension for STs and transhumant groups.

Positive Impacts for Scheduled Tribes and Transhumants

Refer to ESMF – The UFRMP aims to improve the livelihoods and reduce the vulnerability of rural, forest dependent, poor households in the project area, including STs and transhumants. Thus, the range of positive impacts is equivalent as for other marginalized groups.

³Dobhal, R. ed., 2012; *Uttarakhand State of the Environment Report*. Uttarakhand State Council for Science and Technology. Published by Abhimanyu Gahlot, Dehradun, India.

Tolia, R.S., 2008; Great Tribal Diversity of Uttarakhand.

Pant B.R., 2010; *Tribal Demography of Uttarakhand*, ENVIS, BULLETIN: Himalayan Ecology, Vol -18, 1-9

Uttaranchal Watershed Management Directorate, 2004; *Indigenous Peoples Plan/Tribal and Transhumant Strategy for Uttaranchal Decentralized Watershed Development Project*. World Bank Project website:

Saklani, B., undated; *Baseline Survey of Bhoja Tribe – A Primitive Tribal Group of Garhwal Region, Uttaranchal*.

Directorate of Tribal Affairs, 2006; *Baseline Survey of Buxa and Raji Primitive Tribal Groups in Nainital, US Nagar and Champawat Districts of Uttaranchal*.

Potential Risks for Scheduled Tribes and Transhumants and Mitigation Measures

In the main, potential adverse impacts on STs and transhumants are theoretically similar as for other poor communities and vulnerable groups, as described in the ESMF. However, due to the fact that certain groups maintain culturally distinct livelihoods or governance systems, and due to their especially close relationship to their customary lands and territories, typically STs, especially PTGs and transhumants may be highly dependent on forests and natural resources. Therefore impacts on such groups may have different manifestations in some cases and often may be more pronounced. This section takes the potential adverse social risks identified in the ESMF and expands on issues of particular significance to ST and transhumant groups (where necessary or poignant to do so) and proposes mitigation measures to be applied.

(1) (1) Disempowerment of Customary Institutions

The risk as discussed in the ESMF is that in implementing a large project of this nature, UFRMP may repeat the same mistakes of the past whereby for the purposes of efficient or uniform delivery, standardized and centrally-determined institutional structures may serve to undermine and disempower existing traditional institutions and management regimes. The issue may take on particular significance for ST groups with their own institutions and governance frameworks which conflict with or run parallel to the typical Panchayati system found throughout rural India, for example the Jaunsaris well-documented system of 'Khats' (a kind of hamlet-level body). Since traditional tribal management institutions and practices are even further removed from the standard governance frameworks, there is the risk that they will be ignored or over-ruled by the standard implementation framework through the UKFD, Van Panchayats and Biodiversity Management Committees (BMC).

Mitigation: The project implementers must be particularly sensitive in working in areas with tribal populations to ensure that tribal institutions are consulted and their governance systems and structures respected in project implementation. Approaches should be sufficiently flexible to allow for collaboration between State organizations and State-imposed village institutions as well as the existing customary institutions in place. In practice this means ideally including a ST group representative in a Van Panchayat Executive Committee for each ST group in the community or at least some form of agreed formal communication channel between the VPEC and the ST group on project-related issues e.g. in order to coordinate STs for their participation in social assessments, micro planning, community meetings, training, work days etc. Many STs reside in entirely homogenous ST communities which makes the issue of communication more straightforward in a way e.g. the entire Van Panchayat is ST.

(2) (2) Loss of Access to Customary Lands and Resources

UFRMP presents some risk to all forest dependent communities that there could be some loss of access to certain lands and resources as a result of the development and implementation of formal Composite Management Plans (prepared by the UKFD), micro plans and the development of Biodiversity Heritage Sites (BHS) with corresponding management plans. The risk is however arguably more significant for STs and perhaps especially for transhumants. Several of the ST groups have had long-standing and ongoing conflicts with the FD over access to forests, including the Van Raji communities adjacent to the Askot Deer Sanctuary, the Bhotia on their seasonal migratory routes and the Van Gujjars at Rajaji and Govind National Parks. Indeed the formation of new protected areas in the form of BHS is a particular concern. Part of the issue is that the ST groups maintain 'different' and 'primitive' lifestyles with close, even spiritual relationships with the forests, and as such are more difficult for the FD to 'manage' because they are reluctant to follow or even resist the typical societal development pathway of gradual integration through more modern, sedentary agriculture and a transition towards the market economy. In addition, the fact that certain groups most notably the Bhotia and Van Gujjars are nomadic pastoralists means that they are not 'settled' and customarily practice seasonal migration, meaning in turn such groups are always regarded as outsiders by settled communities and a 'problem' for State authorities who dispute their access and use rights in different locations. Given the history of conflict and exclusion of such groups from forests and protected areas,

the project must therefore recognize the potential risks associated with loss of customary access for STs and transhumants.

Mitigation: The UFRMP shall pay considerable attention to this issue to ensure that project interventions do not lead to additional restrictions on STs and transhumants. In practical terms this means:

- STs (including Van Gujjars) customary lands, grazing pastures and migratory routes shall be acknowledged in Composite Management Plans together with documentation of existing regulations. An appropriate broad strategy for improved collaborative forest management which is inclusive of STs and transhumants and respects their customary lands, territories, traditional forest management and use regimes should also be included in the Composite Management Plans.
- STs shall be actively consulted in the social assessment, micro planning and BHS identification/gazettelement processes. An additional section is attached to the village micro plan and the BHS application as a Scheduled Tribe and Transhumants Plan (STTP) recording consultation with STs and stating specifically how the micro plan/BHS management plan also provides appropriate benefits for them. For communities with seasonal populations of transhumants, the social assessment, micro planning and BHS activities should be carried out at an appropriate time of year (e.g. during summer in the high alpine pasture areas). There may also be instances where there are communities with no STs but are transient stopping places along the migratory routes of transhumants. In this case, the micro plans shall not include any restrictions on transhumants' transient use until or unless consultation with the transhumant group has taken place. Such communities shall also partially complete a STTP – it will not be necessary for the plans to provide explicit benefits to nomadic groups (since they are only passing through), however the plans shall recognize the customary grazing rights of particular groups, state existing agreements and regulations, measures for resolving conflicts etc.
- The creation of BHS shall not involve any access or use restrictions for any community including STs and transhumants, as is indicated in the BHS Guidelines.

(3) Increased Forest and Natural Resource Conflict

The creation of new boundaries and new management plans could create new conflicts or heighten existing ones as discussed in the ESMF. This issue is directly linked to the above issue since the implementation of any new restrictions will create conflict in itself and can create new conflicts as user groups are displaced to other areas. It is worth highlighting the particular situation of pastoralists being displaced to new grazing pastures, as a result of restrictions on their customary grazing areas.

Mitigation: This issue is mitigated for as discussed in the ESMF and as above i.e. through consultation and participation with STs and transhumants in the social assessment, micro planning and BHS gazettelement/management planning processes.

(4) Increased Internal Community Conflict

This issue is essentially the same as discussed in the ESMF. It is perhaps worth stating that conflict within a community e.g. between a Van Panchayat and the Gram Sabha may often divide a community along lines of ethnicity or social status, and thus may have particular repercussions for STs.

Mitigation: The only way to minimize the possible incidence of community conflict is to have as clear, accountable and transparent project institutional structures and processes as possible. Thus all relevant village institutions and representatives should have appropriate opportunities to be informed of project activities and be consulted on their implementation e.g. through attendance of key community meetings and participation in key project processes such as micro planning, beneficiary selection, social audits etc.

(5) (5) Loss of Traditional Knowledge

The loss of traditional knowledge pertaining to agricultural landraces, biodiversity and land and forest management is particularly relevant for ST and transhumant communities whose livelihoods and production systems are typically based on a close relationship with nature and natural resources, and whose knowledge systems have evolved over long time periods. Examples of traditional ST knowledge and resource management practices in the project area include the fishing techniques of the Van Rajis, the agroforestry systems of the Bhuksa and the seasonal migration of the Bhotia and the Van Gujjars. The development of Composite Management Plans by Divisional Forest Offices, BHS Management Plans by consultants in partnership with BMCs and micro plans by FNGOs and Van Panchayats could all potentially favor forest and land use management strategies of majority groups e.g. settled villagers engaged in sedentary agricultural production for the market economy at the expense of STs and transhumants and their traditional systems.

Mitigation: The project will proactively seek to ensure that traditional knowledge and management systems are respected and conserved in the following ways:

- In general the presence of STs and transhumants is well known at local levels and therefore their resource management practices and systems can be broadly acknowledged in Divisional Composite Management Plans. Detailed planning is done during the social assessment and micro planning processes.
- The social assessment and micro planning processes shall seek to capture local land/resource management approaches through participatory consultations with various forest user groups including STs and transhumants.
- The establishment of BHS under the biodiversity conservation and wildlife management sub-component provides an opportunity for specifically celebrating and recognizing traditional systems of sustainable land and forest management.

(6) (6) Inequitable Benefit-sharing

Refer to the ESMF. The inequitable sharing of benefits derived from project interventions is not only an issue of relevance to STs and transhumants.

Mitigation: Benefit-sharing arrangements relating to forest products are already determined by the applicable forest legislation including the Van Panchayat Regulations (2005). In general, these present relatively favorable terms for communities although further benefit-sharing within the community is not specified. Inequitable benefit-sharing must be resolved through the presentation of clear information at the start of the project intervention and open and transparent implementation processes.

(7) (7) Social Exclusion and Elite Capture

Refer to ESMF – all vulnerable social groups are susceptible to social exclusion and elite capture as the more powerful groups in a community have greater power and influence over implementation arrangements at the site level. The risk that STs and transhumants are excluded from project activities and benefits is particularly high because such groups in the project area maintain different customs, governance structures and ways of life, and since they are in a minority they may be left out of or unable to participate in consultations and/or receive appropriate benefits. For example, identified subproject activities may end up being more oriented towards middle-income farming groups with sufficient land or other capital to invest in project models. Similarly, community infrastructures and their locations may be suited to those better able to take advantage of such benefits.

Mitigation: The project will mitigate these potential risks through above-mentioned participatory consultation approaches in social assessment, micro planning and subproject selection, including required consultation with STs and transhumant groups leading to the production of an STTP. In any case, it is already stated that community infrastructure shall be of wide benefit to the community especially the poor and vulnerable groups and other community development and livelihood improvement interventions shall also specifically target women, BPL, SC and ST households.

(8) (8) Gender Issues

Refer to ESMF. Inequitable gender relations are a common feature in many rural Indian societies and are therefore not specific to STs. Indeed certain STs in the project areas such as the Bhotia are renowned for slightly more equitable gender relations. However, in general most of the tribal groups have patriarchal societies where women tend to have unequal decision-making powers and whose lives are characterized by drudgery and hardships.

Mitigation: Unfortunately the JICA survey team was not able and not really qualified to conduct a proper assessment of gender issues related to UFRMP implementation. It was therefore proposed that a gender assessment should be conducted by a qualified gender specialist at an early stage in batch/project implementation, perhaps in parallel or in tandem with the social assessment process. The study would lead to the production of a Gender Action Plan which would provide guidance for the proper consideration of gender issues in project implementation. Such a study should certainly consider gender issues amongst different types of communities in the project area, including ST communities to be affected/involved (which will be known by the time of the social assessments).

(9) (9) Increased Developmental Dependency

Increased developmental dependency is a particular issue for STs throughout India. It is argued that the proliferation of social welfare programmes supporting the officially recognized STs, further exacerbates tribal dependency on the State rather than providing a platform for autonomous, endogenous development. There is a slight risk that the UFRMP could also be part of a wider process that contributes to further developmental dependency.

Mitigation: The proposed project processes of participatory consultation in micro planning etc should serve to build communities' ownership and stake in their collective futures. Since STs will be consulted in these processes, and particularly in villages or hamlets with homogenous or majority ST populations, the STs will similarly be empowered in this way. Although STs will benefit from certain handouts under the project such as wage labor days and items to meet basic human needs, STs will benefit from other livelihood development interventions to develop sustainable businesses and enterprises, will be able to receive credit (which must be repaid) and overall encouraged to develop their own opportunities, rather than simply depending on State handouts. Moreover, the livelihoods support packages are designed to provide some initial start-up capital or support e.g. for equipment, seeds, tools and basic inputs for agricultural models for first season cultivation and harvesting but then such financial support is phased out and farmers continue to implement the models with technical support only. For this reason the models are not input-heavy so as to realistically enable continued implementation with minimal recurrent investments.

Procedures for Consideration of Scheduled Tribes and Transhumants in the ESMF

The ESMF outlines procedures for the consideration of environmental and social issues in project processes. The sections below simply expand on how these processes should include STs and transhumants where they occur at the project target sites.

Scheduled Tribes and Transhumants in Free, Prior and Informed Consultation

The ESMF and the Consultation and Participation Plan justify and outline the need for free and informed consultation as a preliminary activity in project/batch implementation and prior to the planning and rolling out of subprojects. The product of this consultation process is the establishment (or not) of broad community support for the project at local levels.

It is essential that STs are consulted in the process. This means that where there are known groups of STs living within the selected project village area, such groups must be adequately represented in the attendance of the preliminary information disclosure and consultation meeting. Adequate representation means that the percentage of ST participants must be equal to or greater than their

proportional percentage in the village population (e.g. If STs represent 25% of the village population, then the meeting should correspondingly have at least 25% attendance by STs). In cases where the entire or overwhelming majority (>75 %) of the village population is ST, this does not have to be observed, however there should be adequate overall consultation in any case.

In disclosing information to and consulting with STs, the JICA survey team was concerned about the language of consultation for STs, however, it has repeatedly been confirmed that Hindi is well understood by the potentially affected ST groups in Uttarakhand. Therefore, it is appropriate for the language of such meetings and any corresponding written materials to be Hindi. Education and literacy levels among ST groups is generally quite low and particularly amongst ST women. Therefore, greater efforts must be made to ensure understanding during prior consultation. In any case it is stressed in the Consultation and Participation Plan that any written materials that shall be prepared will be simple in content, but it may be necessary to spend more time in clearly explaining, using visual presentations as much as possible, project activities, benefits and risks since certain groups such as the Van Rajis speak a Tibetan dialect and Hindi is a second language. The Animator shall have a key role in performing this task. This point remains valid for consultation with STs in all the stages in the project cycle described below.

In terms of the form of the consultation at this stage a general community meeting should be sufficient in most cases. However, in situations where there is more than one hamlet in a Van Panchayat and where it is more customarily appropriate to hold separate meetings, this can also be done following advice at local levels. Certainly, the need for this should be clarified for Jaunsari groups where 'Khats' are the customary village governance unit as well as Van Raji villages which may be comprised of distant hamlets.

STs shall indicate their broad community support for the project in the same way as the rest of the village population - by voting (see Consultation and Participation Plan) on the attendance sheet. An additional step is introduced here for communities with STs i.e. that the responses of ST participants shall be monitored and where >50% of ST participants objects to the project but overall the community supports the project, a second round of consultation is held only with the Van Panchayat ST group to negotiate more favorable terms for STs or other guarantees that the project will not damage their interests (if required). Overall, this scenario is viewed as unlikely since the project will provide specific benefits to STs.

It is difficult to consult with transhumants at this stage unless the project site is one of their summer or winter seasonal grazing areas. Consultation for establishment of broad community support for the project should only be done with the settled population of the given village. It is impractical, unnecessary and slightly unfair on the settled community for transhumants to be consulted for establishment of broad community support at every single location along their migratory routes.

The project will not be implemented in the Van Gujjars summer home in/around Rajaji NP nor are there any eco-restoration sites in their traditional alpine grazing areas. For the Bhotia, it is possible that eco-restoration and community development activities could be implemented in either their summer homes or winter grazing sites, in which case such peoples should be consulted. In both cases it is conceivable that under the biodiversity conservation sub-component the BHS could be established in areas which affect transhumant groups' seasonal territories, however since these locations are unknown it is not necessary to conduct consultations for broad community support for the project as a whole – they will be consulted as part of the BHS identification and selection process.

Scheduled Tribes and Transhumants in Social Assessment and Micro planning

The Social Assessment Plan provides a reasonably detailed outline of the objectives, contents, methods and implementation schedule for the SA. The SA is embedded in the overall micro planning process. It is essential that all affected groups are consulted during the SA and micro planning process.

STs shall be identified as a key user group and consulted independently or separately from other groups in the SA and micro planning process. The product of this consultation shall be a dedicated

section in the SA report which attends to their specific basic socio-economic statistics, livelihood and natural resource management practices and expressed needs and priorities.

Additionally, in Van Panchayats/villages where ST populations occur, a key output is a short STTP (approximately 5 pages) which is provided as an attachment to the micro plan itself. In accordance with JICA safeguard policies relating to indigenous peoples and utilizing the format provided in the World Bank OP 4.10, Annex B, the STTP should include the following:

- i) A summary table of the basic socio-economic information relating to the ST in the village (population, number of households, basic statistics e.g. literacy, poverty status etc.)
- ii) A brief summary of the social assessment findings in relation to STs and transhumants e.g. description of livelihoods strategies, natural resource dependency, traditional knowledge, land/resource management systems, development issues and priorities etc (1 page).
- iii) A short summary (0.5-1 page) of results of the free, prior, and informed consultation with the affected ST communities that was carried out during project preparation and that led to broad community support for the project (see above).
- iv) An action plan of measures to ensure that the STs receive social and economic benefits that are culturally appropriate (1 page)
- v) Identify priority interventions which are to be supported under the UFRMP

Where there are Van Panchayats or villages where the entire population or overwhelming majority is ST (e.g. >75%), it is not necessary to produce an STTP in addition to the micro plan since the micro plan itself should reflect the basic statistics, livelihoods/natural resource management, traditional knowledge and other salient issues of the community.

For villages/Van Panchayats which include the customary seasonal grazing areas (summer/winter sites) of transhumant groups, the SA and micro planning activities must take place when the transhumants are there and a STTP must be prepared (unless as above >75% of the population is transhumant, in which case only SA and micro plan are required).

For villages/Van Panchayats located along migratory routes where transhumants are passing through (i.e. stopping temporarily (a few days) to rest, trade and feed their livestock), the SA report needs to document this occurrence, specifying; the particular groups, numbers of cattle, timing, the nature of the relationship between the settled community and the transhumants, existing agreements and regulations, and any action plans for the transhumants etc. Ideally, the settled community's micro plan should not place any land/resource use restrictions on transhumant populations – in which case an STTP is not required. If the micro plan proposes any resource use restrictions on transhumants, then consultation with the affected transhumant groups needs to take place and measures need to be included in a STTP to provide adequate alternatives or compensation. This has practical implications because it is likely that considering all the various factors affecting project implementation, the SA and micro planning activities are unlikely to conveniently coincide with the seasonal migration of the transhumants. Thus, the SA and micro plan is prepared and consultation with the transhumant group takes place the next time they visit the village. At this time the STTP is finalized and only thereafter can any resource restrictions take place and assuming there has been consultation and broad support from the transhumants for the STTP (including the restrictions).

Scheduled Tribes and Transhumants in Subproject Selection

The particular activities to be supported by the UFRMP are agreed through participatory consultation processes. STs shall be a part of these consultations, subprojects will be selected with vulnerable groups in mind as target beneficiaries, and activities prioritized by STs in the STTP shall be included ensuring that the project includes appropriate benefits for the STs.

Scheduled Tribes and Transhumants in Subproject Implementation

As mentioned above and in the DFR, target beneficiaries under the project include women, BPL, SC and ST households. Thus, such groups of stakeholders will be prioritized in beneficiary selection processes. The project should establish clear beneficiary selection criteria, rules and procedures which may be agreed and/or modified appropriately following community agreements. Under these criteria it is proposed that due to the particular vulnerability of STs, benefits under the project shall accrue at least proportional to the ST population (e.g. if the ST population is 10% of a given community, then at least 1 ST household shall be a member of the 10 member SHGs). Meanwhile community infrastructure will be intended to be of public value to wide sections of the community including STs. STs shall also have preferential treatment in terms of being provided with wage labor opportunities under the project. It is conceivable that in certain cases, particular STs are not interested in participating. In which case, this needs to be documented e.g. recording number and social status of people wishing to register for project work days (plant seedlings, dig trenches, construct check dam etc.). Therefore, if less than the proportional representation of STs register for work days then others are chosen. This is reliant on clear frameworks for the provision of timely information to villagers on project works – the Animator has a key role in doing this at the local level.

Scheduled Tribes and Transhumants in Monitoring and Evaluation

The project will include participatory M&E on a 6 monthly basis through an adapted social audit process as described in the ESMF and Consultation and Participation Plan. Identified ST groups should be consulted separately in this process where they are a part of the beneficiary community to ensure that they have a fair opportunity to provide feedback on project implementation. It is proposed that a small sub-section of the social audit report should be dedicated to the inclusion of comments and perspectives of STs.

Grievance Procedures for Scheduled Tribes and Transhumants

Grievance procedures for STs and transhumants are the same as for other vulnerable groups as provided for in the ESMF.

Capacity Development for Addressing Scheduled Tribes and Transhumant Issues

Capacity development for addressing ST and transhumant issues is generally covered under the proposed training courses for FMUs, FNGOs and Van Panchayats themselves identified in the ESMF and DFR covering the social assessment and micro planning process, environmental and social safeguards procedures (including free, prior and informed consultation) and participatory or community-based forest management. Within each of these topics, the participants will cover issues relating STs and transhumants.

Attachment 9.3.1 Roles and Responsibilities within Institutional Arrangement

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 action plans of the Project; and review the project performance every six-months • Approval of the Operation Manual for the Project; • Framing operational procedures for the Project for smooth and effective implementation; • Facilitating inter-departmental coordination for required synergy, convergence and also to oversee to minimizing duplication of efforts; • Taking up initiatives to resolve issues with GOI and JBIC, if required.
Governing Body (GB)	<ul style="list-style-type: none"> • Highest decision-making body of the autonomous society • Providing authority to the Executive Body for day-to-day functioning; • Supporting the Executive Body and General Body of the society in the preparation of budget and Annual Action Plan of the project; • Rigorously review the project progress vis-à-vis annual plans at least once every quarter; monitor financial and physical progress • Facilitating the disbursement of funds and monitor the disbursement status • Guiding the Executive Body in the preparation of Operation Manual; • Prepare proposals for the HPC whenever necessary for the smooth implementation of the Project
Executive Body (EB)/ Project Management Unit (PMU)	<ul style="list-style-type: none"> • Final decision maker with regards to actual Project activities • PMU will manage the fund, disburse the fund and monitor the project activities without any interpositions from outside the office • Keep day-to-day 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 • Undertake statutory and internal audits
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
Zonal / Circle Offices	<ul style="list-style-type: none"> • Will hold responsibilities for the regular overseeing of DFO/ DMU offices • Cross-check project works vis-à-vis financial and physical progress reporting • Approve Composite Management Plan and SORs for the project • Conduct monthly meetings / hearings for Grievance Redressal • Chair and participate in Annual Planning and Review Workshop organized at divisional level
District Advisory Committees (DAC)	<ul style="list-style-type: none"> • Provide technical and administrative support to the Project • Inter-departmental coordination for required synergy and convergence; • Overseeing the implementation process to minimize the duplication and to maximize complimentary effect;

Component	Roles and Responsibility
	<ul style="list-style-type: none"> • Information sharing for appropriate project planning/ technical solution • Responsible to conduct meetings at least once every quarter
Divisional Management Unit (DMU)	<ul style="list-style-type: none"> • 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 • Maintain separate bank account and records for project funds, and facilitate audits • Organize annual planning and review workshop at state level; and DAC meetings every quarter • Prepare the Composite Management Plan and sanction micro-plans/ annual implementation plans
Field Management Unit (FMU)	<ul style="list-style-type: none"> • Assist the DMU in planning, fund management, work progress monitoring and documentation at the field level • Facilitate micro-planning process, and support its implementation • FMU will provide technical assistance directly to implementing organisations (VPs, EDCs, BMCs, SHGs) and NGOs • Maintain separate bank account and records for project funds, and facilitate audits • Prepare physical and financial reports
Non-government Organizations (NGOs)	<ul style="list-style-type: none"> • Facilitate community organizing and strengthening of implementing organizations(VPs, EDCs, BMCs, SHGs) • Provide guidance and support for undertaking prescribed project processes • Undertake/ facilitate capacity building of implementing organizations • Provide technical assistance to SHGs on market research, assistance, business planning, micro-enterprise development, product development, etc. • Reporting the progress of the activities carried out at village level • Maintain records for project funds, and regular progress reporting
Implementing organisations	<ul style="list-style-type: none"> • These organisations include VPs, EDCs, BMCs, SHGs • 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 • Responsible for planning, implementation, monitoring and reporting at the lowest level; Prepare physical and financial reports • Maintain separate bank account and records for project funds, and facilitate audits • Conduct Social Audits every six-months and record proceedings • Hire Animator, would be an educated person identified by community, to support their functioning

Source: JICA Preparatory Survey Team

Attachment 11.1.1 Cost Breakdown
Component 1: Eco-Restoration

Sub-Comp	Main Activity	Unit	Quantity	Unit Price	Cost
				Rs.	Rs.
Sub-Component 1.1: Rehabilitation of Degraded Forest					
1.1.1 ER Model 1 (30,000ha)					
	Preparatory year	Ha	30,000	23,550	706,502,362
	First year	Ha	30,000	32,182	965,457,254
	Second year	Ha	30,000	6,593	197,778,840
	Third year	Ha	30,000	6,593	197,778,840
1.1.2 ER Model 2 (10,000ha)					
	Preparatory year	Ha	10,000	31,053	310,525,927
	First year	Ha	10,000	37,196	371,963,689
	Second year	Ha	10,000	6,983	69,832,000
	Third year	Ha	10,000	6,983	69,832,000
1.1.3 ER Model 3 (10,000ha)					
	Preparatory year	Ha	10,000	38,426	384,255,927
	First year	Ha	10,000	43,677	436,771,997
	Second year	Ha	10,000	7,048	70,481,600
	Third year	Ha	10,000	7,048	70,481,600
Sub-Component 1.2: NTFP Plantation					
	Preparatory year	Ha	500	47,176	23,587,796
	First year	Ha	500	43,612	21,806,120
	Second year	Ha	500	6,983	3,491,600
	Third year	Ha	500	6,983	3,491,600
	Fourth Year	Ha	500	6,983	3,491,600
Sub-Component 1.3: Biodiversity Conservation and Wildlife Management					
	1.3.1 Study and research on Wetlands	No.	0	175,000	0
	1.3.2 Study and research on Sacred Grove	No.	13	35,000	455,000
	1.3.3 Capacity building and awareness raising of BMC and	No.	13	308,000	4,004,000
	1.3.4 Preparation of People's Biodiversity Register for the areas with selected Sacred Groves and Wetlands	No.	13	115,000	1,495,000
	1.3.5 Conservation and improvement works for selected wetlands	No.	0	269,000	0
	1.3.6 Sustainable management and improvement works for selected sacred groves	No.	13	27,000	351,000
	1.3.7 Capacity building and management costs of Technical Support Groups and Uttarakhand Biodiversity Board	l.s.	1	960,000	960,000
	1.3.8 Documentation and Publications concerning to Wetlands and Sacred Groves	l.s.	1	650,000	650,000
	1.3.9 Capacity building and awareness raising of VP/BMC for human and animal conflict	No.	20	18,000	360,000
	1.3.10 Microplanning for VP/BMC for human and animal conflict	No.	20	31,000	620,000
	1.3.11 Formation and operation of WL Primary Reaction Team (PRT) at the community level	No.	20	166,500	3,330,000
	1.3.12 Formation and operation of WL Quick Response Team (QRT) at the Circle level	No.	1	7,420,000	7,420,000
Sub-Component 1.4: Other Eco-Restoration Activities					
	1.4.1 Consultation for policy issues and engagement of resource	No.	3	40,000	120,000
	1.4.2 Documentation	l.s.	1	450,000	450,000
	1.4.3 Deployment of Animator	VP	1,000	108,000	108,000,000
	1.4.4 Survey of 1st batch project sites (outsourcing)	Ha	15,000	153	2,295,000
	1.4.5 Capacity Building of Van Panchayats				
	Training	VP	1,000	94,681	94,681,000
	On-site Training for ERMs	VP	1,000	0	0
	Exposure visits	VP	1,000	25,300	25,300,000
	1.4.6 Capacity Building of Animators				
	Training	VP	1,000	20,000	20,000,000
	On-site Training for ERMs	VP	1,000	10,600	10,600,000
	Exposure visits	VP	1,000	12,650	12,650,000
	1.4.7 Development of Modern Nurseries	DMU	13	6,000,000	78,000,000
Total					4,279,271,752

Component 2: Livelihood Improvement and Community Development

Sub-Component	Activity	Unit	Quantity	Unit Price	Cost
				Local	Local
				Total	Total
Component 2.1: Community Mobilizing and Microplanning					
2.1.1	Micro Planning				
	Batch 1 (100 VPs)	VP	100	50,000	5,000,000
	Batch 2 (350VPs)	VP	350	50,000	17,500,000
	Batch 3 (350VPs)	VP	350	50,000	17,500,000
	Batch 4 (200 Vps)	VP	100	50,000	5,000,000
2.1.2	NGO Deployment				
	NGO Marketing Support Staff	NGO	6	10,736,250	64,417,500
	Field Coordinator				0
	Batch 1	Psns	25	793,800	19,845,000
	Batch 2	Psns	87.5	793,800	69,457,500
	Batch 3	Psns	87.5	793,800	69,457,500
	Batch 4	Psns	50	793,800	39,690,000
Sub-Component 2.2: Entry Point Activities (EPA)/ Basic Human Needs (BHN) Improvement / Community Disaster Relief					
2.2.1	EPA (VPs office building, Convergence, etc.)	VP	1,000	731,238	731,238,398
Sub-Component 2.3: NTFP-Based Enterprise Development and Livelihood					
2.3.1	Establishment of NTFP Centre for Excellence	I.s.	1	220,085,140	220,085,140
2.3.2	Enterprise development (Honey, Natural Fiber and Lichen)				
	2.3.2.1 Honey	Cluster	6	3,849,000	23,094,000
	2.3.2.2 Nettle Fiber	Cluster	2	2,657,500	5,315,000
	2.3.2.3 Nettle yarn production unit	No.	1	4,228,000	4,228,000
	2.3.2.4 Medicinal and Aromatic Plants (MAPs)	Cluster	4	1,205,000	4,820,000
	2.3.2.5 Tejpat	Cluster	4	1,015,000	4,060,000
	2.3.2.6 Lichen and Moss grass	Cluster	2	3,808,000	7,616,000
	2.3.2.7 Pine needle gasifier and briquette making	Unit	1	8,541,500	8,541,500
Sub-Component 2.4: Ecotourism					
2.4.1	Destination Development	Cluster	7	40,050,000	280,350,000
2.4.2	Institutional Support to CBET	I.s.	1	21,000,000	21,000,000
Sub-Component 2.5: Non-NTFP Based Livelihood Improvement Activities					
2.5.1	Market Survey/ Scoping Study	I.s.	1	1,450,000	1,450,000
2.5.2	IGA Revolving Fund	SHG	2,000	50,000	100,000,000
2.5.3	Cluster Development - Improved Dairy	SHG	390	81,425	31,755,750
2.5.4	Cluster Development - Spice Cultivation	SHG	350	89,200	31,220,000
2.5.5	Cluster Development - Off Season Veg.	SHG	350	89,200	31,220,000
2.5.6	Cluster Development - Poultry	SHG	130	77,300	10,049,000
2.5.7	SHGs (Other IGA Activities)	SHG	300	80,000	24,000,000
2.5.8	Development of Cluster Level Organization	I.s.	1	107,484,000	107,484,000
Total					1,955,394,288

Component 3: Other Support Activities

Sub-Component	Activity	Unit	Quantity	Unit Price	Cost
				Local	Local
				Total	Total
Sub-Component 3.1: Preparatory Works					
3.1.1	Logistic support of PMU	I.s.	1	58,045,000	58,045,000
3.1.2	Logistic support of DMUs	DMU	13	10,343,000	134,459,000
3.1.2	Logistic support of DMUs (Disaster component)	DMU	4	10,343,000	41,372,000
3.1.3	Logistic support of FMUs	FMU	37	276,000	10,212,000
3.1.4	Logistic support of Circles	Zone/	8	800,000	6,400,000
3.1.5	Logistic support of VPs	VP	1,000	35,000	35,000,000
3.1.6	Strengthening of GIS Laboratory	I.s.	1	15,113,000	15,113,000
3.1.7	Construction of PMU building	m2	0	17,712	0
3.1.8	Extension of DMU office buildings	No	13	826,875	10,749,375
3.1.9	Extension of FMU office buildings	No	37	882,000	32,634,000
Sub-Component 3.2: Capacity Building of Executing Agencies and Other Stakeholders					
3.2.1	Training for PMU	I.s.	1	6,070,000	6,070,000
3.2.2	Training for DMU	DMU	13	1,968,769	25,594,000
3.2.3	Training for FMU	FMU	37	801,622	29,660,000
3.2.4	Study Tours	I.s.	1	17,041,921	17,041,921
	India (PMU+)	I.s.	1	863,625	863,625
	India (DMU)	DMU	13	172,725	2,245,425
	India (FMU)	FMU	37	86,850	3,213,450
3.2.5	Capacity Building for NGO Personnel				
	NGO Marketing Support Staff	Psns	13	83,200	1,081,600
	Field Coordinator				
	1st Yr	Psns	25	20,800	520,000
	2nd Yr	Psns	87.5	20,800	1,820,000
	3rd Yr	Psns	87.5	20,800	1,820,000
	4th Yr	Psns	50	83,200	4,160,000
	NGO Staff Refreshers (Year 4 & 5)	Psns	30	4,600	138,000
	Annual Review Meeting	Yr	5	120,000	600,000
Sub-Component 3.3: Capacity Building of Village Level Institutions					
3.3.1	Capacity Building of SHGs				
	Training	SHG	2,000	13,560	27,120,000
	Exposure visits	SHG	2,000	15,500	31,000,000
Sub-Component 3.4: Applied Research and Publicity					
3.4.1	Various research activities	I.s.	1	13,084,000	13,084,000
3.4.2	Strengthening of the existing seed storage and processing	I.s.	1	1,700,000	1,700,000
3.4.3	Preparation of 'strategic plan for Community Forestry and Research & Development for Uttarakhand'	I.s.	1	700,000	700,000
3.4.4	Organization of National level, State level and Regional level	I.s.	0	6,400,000	0
3.4.5	Publication of "Lab to Land Leaflets" for stake holders	I.s.	0	1,000,000	0
3.4.6	Preparation of detailed Research reports	I.s.	1	100,000	100,000
3.4.7	Maintenance and development of the high altitude Herbal garden cum Eco-park Munsiri (Pithoragarh)	I.s.	0	2,500,000	0
3.4.8	Enrichment of the Library and documentation section	I.s.	1	2,500,000	2,500,000
3.4.9	Hiring of technical staff	I.s.	0	5,760,000	0
3.4.10	Capacity building of Research staff	I.s.	1	1,000,000	1,000,000
3.4.11	Engaging Experts/Consultant	I.s.	0	4,800,000	0
Sub-Component 3.5: Monitoring and Evaluation					
3.5.1	Baseline Survey (Socio Economic)	I.s.	1	3,296,000	3,296,000
3.5.2	Baseline Survey (Physical)	I.s.	1	2,536,875	2,536,875
3.5.3	GIS mapping (outsourcing)	I.s.	1	6,080,000	6,080,000
3.5.4	Ad hoc assessment Studies	I.s.	1	275,550	275,550
3.5.5	Mid-End Term Evaluation (Socio Economic)	I.s.	1	3,296,000	3,296,000
3.5.6	Mid-End Term Evaluation (Physical)	I.s.	1	2,525,000	2,525,000
3.5.7	Establishment of MIS/ FMAS softwares	I.s.	1	12,445,000	12,445,000
3.5.8	Annual Review at Division level	DMU	13	225,000	2,925,000
3.5.9	Annual Review at State level	Yr	7	448,750	3,141,250
3.5.10	Monitoring & Periodical Reviews	I.s.	1	8,134,000	8,134,000
3.5.11	Social Audits			0	0
	Year 1	VP	100	3,500	350,000
	Year 2	VP	450	3,500	1,575,000
	Year 3	VP	800	3,500	2,800,000
	Year 4 + Year 7 (4 Years)	VP	4,000	3,500	14,000,000
3.5.12	Grievance Redress	Circles	6	60,000	360,000
3.5.13	Publicity & Publication	I.s.	1	3,705,000	3,705,000
3.5.14	National Level Workshop	I.s.	1	3,455,000	3,455,000
Sub-Component 3.6: Project Continuity Strategy					
3.6.1	Updating of microplans	VP	1,000	50,000	50,000,000
3.6.2	Proposal preparation	LS	1	660,000	660,000
				0	0
Total					637,576,071

Component 4: Erosion Control and Sediment Disaster Mitigation

Sub-Component	Activity	Unit	Quantity	Unit Price		Cost	
				Local	Local	Local	Local
				Total	Total	Total	Total
Sub-Component 4.1: Slope Stabilization and River Training, reconstruction of d		I.s.	1	1,036,654,943		1,036,654,943	
Sub-Component 4.2: Construction of Emergency Shelters		Unit	25	8,300,000		207,500,000	
Sub-Component 4.3: Emergency Kits		VP	1,000	150,000		150,000,000	
Sub-Component 4.4: Overseas Training on Disaster (refer to 2.4.2)		I.s.	1	5,845,058		5,845,058	
Total							1,400,000,000

Source: JICA Preparatory Survey Team

TOTAL	8,272,242,111
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Attachment 13.3.1 Economic Internal Rate of Return (EIRR) of the Project

Year	Economic Cost (Rs. 1,000)			0.9	Net Economic Benefit (Rs. 1,000)																			Total after conversion	B-C (Rs. 1,000)			
	Investment Cost	O&M Cost	Total	Total after conversion	ERM			NTFP Plantation				IGA - NTFP				IGA Non NTFP				Erosion and Flood Control	Total							
					Fodder and Grass	NTFP From ERM 2&3	CO2	Tejpat	Reetha	Kaphal	Thuner	Honey	Nettle Fibre	MAP	Tejpat	Dairy	Poultry	OSV	Spice		Total							
1	33,137	0	33,137	29,823	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-29,823	
2	620,553	0	620,553	558,498	0	0	0	0	0	0	0	0	0	0	1,160	0	0	0	0	0	16,010	17,170	15,453	0	0	-543,045		
3	1,404,177	0	1,404,177	1,263,759	0	0	0	0	0	0	0	313	1,164	0	2,320	3,186	1,892	1,632	376	32,020	42,903	38,613	0	0	0	-1,225,146		
4	1,955,012	0	1,955,012	1,759,511	24,543,000	0	7,995	0	0	0	0	1,575	1,980	2,408	2,577	14,338	8,588	7,756	1,875	48,031	121,666	109,499	0	0	0	-1,650,012		
5	1,482,268	0	1,482,268	1,334,041	65,448,000	0	35,979	0	0	0	0	3,151	1,280	6,443	2,577	24,991	15,284	15,327	5,233	64,041	239,752	215,777	0	0	0	-1,118,264		
6	865,069	0	865,069	778,562	136,350,000	0	63,962	0	0	0	0	3,902	2,202	8,070	2,577	30,116	19,069	19,120	8,107	80,051	373,525	336,173	0	0	0	-442,389		
7	415,412	0	415,412	373,871	136,350,000	48,600	79,952	0	0	0	0	3,977	2,202	8,070	3,865	30,116	18,809	22,663	9,876	96,061	460,542	414,488	0	0	0	40,617		
8	123,338	0	123,338	111,004	272,700,000	88,200	79,952	2,250	52,000	0	0	4,382	2,384	9,150	3,865	30,865	18,149	25,793	10,849	112,071	712,611	641,349	0	0	0	530,345		
9	0	68,990	68,990	62,091	272,700,000	126,000	79,952	2,250	52,000	23,288	0	4,831	2,384	6,726	3,865	31,863	18,149	27,478	10,849	112,071	774,405	696,965	0	0	0	634,874		
10	0	68,990	68,990	62,091	272,700,000	126,000	79,952	2,250	52,000	23,288	0	5,809	2,687	9,150	4,638	31,863	18,549	27,716	10,849	112,071	779,521	701,569	0	0	0	639,479		
11	0	68,990	68,990	62,091	272,700,000	126,000	79,952	2,250	57,200	23,288	0	6,102	2,687	10,133	4,638	31,863	19,069	27,716	10,849	112,071	786,518	707,866	0	0	0	645,775		
12	0	68,990	68,990	62,091	272,700,000	126,000	79,952	4,500	57,200	23,288	9,540	6,411	2,687	10,133	4,638	28,743	18,809	26,747	5,398	112,071	788,817	709,935	0	0	0	647,844		
13	0	68,990	68,990	62,091	272,700,000	252,000	79,952	4,500	57,200	23,288	9,540	6,760	3,005	10,133	5,102	20,943	18,149	24,800	4,191	112,071	904,333	813,900	0	0	0	751,809		
14	0	68,990	68,990	62,091	272,700,000	252,000	79,952	4,500	57,200	23,288	9,540	7,095	3,005	7,476	5,102	20,943	18,149	26,706	10,849	112,071	910,577	819,519	0	0	0	757,428		
15	0	68,990	68,990	62,091	272,700,000	252,000	79,952	4,500	57,200	23,288	9,540	7,457	3,005	10,670	5,102	25,124	18,549	31,866	10,849	112,071	923,873	831,486	0	0	0	769,395		
16	0	68,990	68,990	62,091	272,700,000	252,000	79,952	4,500	62,920	23,288	9,540	7,457	3,071	10,670	5,102	30,116	19,069	35,698	10,849	112,071	939,002	845,102	0	0	0	783,011		
17	0	68,990	68,990	62,091	272,700,000	252,000	79,952	4,500	62,920	23,288	14,310	7,457	3,071	11,356	5,102	30,116	18,809	37,842	10,849	112,071	946,343	851,709	0	0	0	789,618		
18	0	68,990	68,990	62,091	272,700,000	252,000	79,952	4,500	62,920	25,616	14,310	7,457	3,071	11,356	6,696	30,865	18,149	39,153	10,849	112,071	951,665	856,499	0	0	0	794,408		
19	0	68,990	68,990	62,091	272,700,000	252,000	79,952	4,500	62,920	25,616	14,310	7,457	3,071	9,916	6,696	31,863	18,149	39,629	10,849	112,071	949,700	854,730	0	0	0	792,640		
20	0	68,990	68,990	62,091	272,700,000	252,000	79,952	4,500	62,920	25,616	14,310	7,457	3,071	11,563	6,696	31,863	18,549	39,629	10,849	112,071	953,748	858,373	0	0	0	796,282		
21	0	68,990	68,990	62,091	272,700,000	252,000	79,952	4,500	62,920	25,616	14,310	7,457	3,148	11,563	6,696	31,863	19,069	39,629	10,849	112,071	954,345	858,910	0	0	0	796,820		
22	0	68,990	68,990	62,091	272,700,000	252,000	79,952	4,500	62,920	25,616	14,310	7,457	3,148	11,933	6,696	28,743	18,809	38,422	5,398	112,071	944,675	850,208	0	0	0	788,117		
23	0	68,990	68,990	62,091	272,700,000	252,000	79,952	4,500	62,920	25,616	14,310	7,457	3,148	11,933	6,696	20,943	18,149	35,403	4,191	112,071	931,989	838,790	0	0	0	776,700		
24	0	68,990	68,990	62,091	272,700,000	252,000	79,952	4,500	62,920	25,616	14,310	7,457	3,148	9,916	6,696	20,943	18,149	35,403	10,849	112,071	934,631	841,168	0	0	0	779,078		
25	0	68,990	68,990	62,091	272,700,000	252,000	79,952	4,500	62,920	25,616	14,310	7,457	3,148	11,957	6,696	25,124	18,549	38,180	10,849	112,071	946,030	851,427	0	0	0	789,336		
26	0	68,990	68,990	62,091	272,700,000	252,000	79,952	4,500	56,628	25,616	14,310	7,830	3,196	11,957	6,718	30,116	19,069	39,629	10,849	112,071	947,142	852,428	0	0	0	790,337		
27	0	68,990	68,990	62,091	272,700,000	252,000	79,952	4,500	56,628	25,616	14,310	7,830	3,196	11,957	6,718	30,116	18,809	39,629	10,849	112,071	946,882	852,194	0	0	0	790,103		
28	0	68,990	68,990	62,091	272,700,000	252,000	79,952	4,050	56,628	23,060	14,310	7,830	3,196	11,957	6,718	30,865	18,149	39,629	10,849	112,071	943,964	849,568	0	0	0	787,477		
29	0	68,990	68,990	62,091	272,700,000	252,000	79,952	4,050	56,628	23,060	14,310	7,830	3,196	8,200	6,718	31,863	18,149	39,629	10,849	112,071	941,206	847,085	0	0	0	784,994		
30	0	68,990	68,990	62,091	272,700,000	252,000	79,952	4,050	56,628	23,060	14,310	7,830	3,196	12,256	6,718	31,863	18,549	39,629	10,849	112,071	945,662	851,095	0	0	0	789,005		
31	0	68,990	68,990	62,091	272,700,000	252,000	79,952	4,050	50,965	23,060	14,310	8,224	3,228	12,256	7,054	31,863	19,069	39,629	10,849	112,071	941,280	847,152	0	0	0	785,061		
32	0	68,990	68,990	62,091	272,700,000	252,000	79,952	4,050	50,965	23,060	14,310	8,224	3,228	12,256	7,054	31,863	18,809	38,422	5,398	112,071	934,362	840,925	0	0	0	778,835		
33	0	68,990	68,990	62,091	272,700,000	252,000	79,952	3,645	50,965	18,444	13,595	8,224	3,228	12,256	7,054	28,743	18,149	35,403	4,191	112,071	920,619	828,557	0	0	0	766,466		
34	0	68,990	68,990	62,091	272,700,000	252,000	79,952	3,645	50,965	18,444	13,595	8,224	3,228	8,029	7,054	20,943	18,149	35,403	10,849	112,071	915,250	823,725	0	0	0	761,634		
35	0	68,990	68,990	62,091	272,700,000	252,000	79,952	3,645	50,965	18,444	13,595	8,224	3,228	12,256	7,054	20,444	18,549	38,180	10,849	112,071	922,155	829,940	0	0	0	767,849		
36	0	68,990	68,990	62,091	272,700,000	252,000	79,952	3,645	40,772	18,444	13,595	8,635	3,228	12,256	7,125	23,876	19,069	39,629	10,849	112,071	917,845	826,061	0	0	0	763,970		
37	0	68,990	68,990	62,091	272,700,000	252,000	79,952	2,916	40,772	18,444	13,595	8,635	3,228	12,256	7,125	30,116	18,809	39,629	10,849	112,071	923,096	830,786	0	0	0	768,696		
38	0	68,990	68,990	62,091	272,700,000	252,000	79,952	2,916	40,772	14,759	13,595	8,635	3,228	12,256	7,125	30,865	18,149	39,629	10,849	112,071	919,500	827,550	0	0	0	765,460		
39	0	68,990	68,990	62,091	272,700,000	252,000	79,952	2,916	40,772	14,759	13,595	8,635	3,228	8,113	7,125	31,863	18,149	39,629	10,849	112,071	916,356	824,720	0	0	0	762,630		
40	0	68,990	68,990	62,091	272,700,000	252,000	79,952	2,916	40,772	14,759	13,595	8,635	3,228	12,407	7,125	31,863	18,549	39,629	10,849	112,071	921,050	828,945	0	0	0	766,854		
																										EIRR	10.1%	
																											NPV	542,848,464

Attachment 13.6.1 Assumption for Benefit Calculation of Carbon Sequestration

(ERM I)

Project year	Annual Biomass Increment (ton/ha)	Carbon Contents (ton-C/ton)	Annual Carbon Sequestration (ton-C/ha)	Annual CO ₂ Sequestration (ton-CO ₂ /ha)	Estimated CER Price (Rs./ton-CO ₂)	Net Value (Rs./ha)	Total Net Value (Rs./30,000 ha)
1	0.00	0.5	0.00	0.00	784.00	0	0
2	0.00	0.5	0.00	0.00	784.00	0	0
3	0.00	0.5	0.00	0.00	784.00	0	0
4	0.04	0.5	0.02	0.08	784.00	64	1,931,374
5	0.20	0.5	0.10	0.37	784.00	290	8,691,184
6	0.36	0.5	0.18	0.66	784.00	515	15,450,994
7	0.45	0.5	0.22	0.82	784.00	644	19,313,742
8	0.45	0.5	0.22	0.82	784.00	644	19,313,742
9	0.45	0.5	0.22	0.82	784.00	644	19,313,742
10	0.45	0.5	0.22	0.82	784.00	644	19,313,742
11	0.45	0.5	0.22	0.82	784.00	644	19,313,742
12	0.45	0.5	0.22	0.82	784.00	644	19,313,742
13	0.45	0.5	0.22	0.82	784.00	644	19,313,742
14	0.45	0.5	0.22	0.82	784.00	644	19,313,742
15	0.45	0.5	0.22	0.82	784.00	644	19,313,742
16	0.45	0.5	0.22	0.82	784.00	644	19,313,742
17	0.45	0.5	0.22	0.82	784.00	644	19,313,742
18	0.45	0.5	0.22	0.82	784.00	644	19,313,742
19	0.45	0.5	0.22	0.82	784.00	644	19,313,742
20	0.45	0.5	0.22	0.82	784.00	644	19,313,742
21	0.45	0.5	0.22	0.82	784.00	644	19,313,742
22	0.45	0.5	0.22	0.82	784.00	644	19,313,742
23	0.45	0.5	0.22	0.82	784.00	644	19,313,742
24	0.45	0.5	0.22	0.82	784.00	644	19,313,742
25	0.45	0.5	0.22	0.82	784.00	644	19,313,742
26	0.45	0.5	0.22	0.82	784.00	644	19,313,742
27	0.45	0.5	0.22	0.82	784.00	644	19,313,742
28	0.45	0.5	0.22	0.82	784.00	644	19,313,742
29	0.45	0.5	0.22	0.82	784.00	644	19,313,742
30	0.45	0.5	0.22	0.82	784.00	644	19,313,742
31	0.45	0.5	0.22	0.82	784.00	644	19,313,742
32	0.45	0.5	0.22	0.82	784.00	644	19,313,742
33	0.45	0.5	0.22	0.82	784.00	644	19,313,742
34	0.45	0.5	0.22	0.82	784.00	644	19,313,742
35	0.45	0.5	0.22	0.82	784.00	644	19,313,742
36	0.45	0.5	0.22	0.82	784.00	644	19,313,742
37	0.45	0.5	0.22	0.82	784.00	644	19,313,742
38	0.45	0.5	0.22	0.82	784.00	644	19,313,742
39	0.45	0.5	0.22	0.82	784.00	644	19,313,742
40	0.45	0.5	0.22	0.82	784.00	644	19,313,742
Total			7.91			22,758	682,740,780

Source: JICA Preparatory Survey Team

Assumption for Benefit Calculation of Carbon Sequestration (ERM II)

Project year	Annual Biomass Increment (ton/ha)	Carbon Contents (ton-C/ton)	Annual Carbon Sequestration (ton-C/ha)	Annual CO ₂ Sequestration (ton-CO ₂ /ha)	Estimated CER Price (Rs./ton-CO ₂)	Net Value (Rs./ha)	Total Net Value (Rs./10,000 ha)
1	0.00	0.5	0.00	0.00	784.00	0	0
2	0.00	0.5	0.00	0.00	784.00	0	0
3	0.00	0.5	0.00	0.00	784.00	0	0
4	0.14	0.5	0.07	0.26	784.00	203	2,028,482
5	0.63	0.5	0.32	1.16	784.00	913	9,128,171
6	1.13	0.5	0.56	2.07	784.00	1,623	16,227,859
7	1.41	0.5	0.70	2.58	784.00	2,021	20,212,892
8	1.41	0.5	0.70	2.58	784.00	2,021	20,212,892
9	1.41	0.5	0.70	2.58	784.00	2,021	20,212,892
10	1.41	0.5	0.70	2.58	784.00	2,021	20,212,892
11	1.41	0.5	0.70	2.58	784.00	2,021	20,212,892
12	1.41	0.5	0.70	2.58	784.00	2,021	20,212,892
13	1.41	0.5	0.70	2.58	784.00	2,021	20,212,892
14	1.41	0.5	0.70	2.58	784.00	2,021	20,212,892
15	1.41	0.5	0.70	2.58	784.00	2,021	20,212,892
16	1.41	0.5	0.70	2.58	784.00	2,021	20,212,892
17	1.41	0.5	0.70	2.58	784.00	2,021	20,212,892
18	1.41	0.5	0.70	2.58	784.00	2,021	20,212,892
19	1.41	0.5	0.70	2.58	784.00	2,021	20,212,892
20	1.41	0.5	0.70	2.58	784.00	2,021	20,212,892
21	1.41	0.5	0.70	2.58	784.00	2,021	20,212,892
22	1.41	0.5	0.70	2.58	784.00	2,021	20,212,892
23	1.41	0.5	0.70	2.58	784.00	2,021	20,212,892
24	1.41	0.5	0.70	2.58	784.00	2,021	20,212,892
25	1.41	0.5	0.70	2.58	784.00	2,021	20,212,892
26	1.41	0.5	0.70	2.58	784.00	2,021	20,212,892
27	1.41	0.5	0.70	2.58	784.00	2,021	20,212,892
28	1.41	0.5	0.70	2.58	784.00	2,021	20,212,892
29	1.41	0.5	0.70	2.58	784.00	2,021	20,212,892
30	1.41	0.5	0.70	2.58	784.00	2,021	20,212,892
31	1.41	0.5	0.70	2.58	784.00	2,021	20,212,892
32	1.41	0.5	0.70	2.58	784.00	2,021	20,212,892
33	1.41	0.5	0.70	2.58	784.00	2,021	20,212,892
34	1.41	0.5	0.70	2.58	784.00	2,021	20,212,892
35	1.41	0.5	0.70	2.58	784.00	2,021	20,212,892
36	1.41	0.5	0.70	2.58	784.00	2,021	20,212,892
37	1.41	0.5	0.70	2.58	784.00	2,021	20,212,892
38	1.41	0.5	0.70	2.58	784.00	2,021	20,212,892
39	1.41	0.5	0.70	2.58	784.00	2,021	20,212,892
40	1.41	0.5	0.70	2.58	784.00	2,021	20,212,892
Total			24.84			71,462	714,622,840

Source: JICA Preparatory Survey Team

Assumption for Benefit Calculation of Carbon Sequestration (ERM III)

Project year	Annual Biomass Increment (ton/ha)	Carbon Contents (ton-C/ton)	Annual Carbon Sequestration (ton-C/ha)	Annual CO ₂ Sequestration (ton-CO ₂ /ha)	Estimated CER Price (Rs./ton-CO ₂)	Net Value (Rs./ha)	Total Net Value (Rs./10,000 ha)
1	0	0.5	0.00	0.00	784.00	0	0
2	0	0.5	0.00	0.00	784.00	0	0
3	0	0.5	0.00	0.00	784.00	0	0
4	0.28	0.5	0.14	0.52	784.00	404	4,042,578
5	1.26	0.5	0.63	2.32	784.00	1,819	18,191,603
6	2.25	0.5	1.12	4.13	784.00	3,234	32,340,627
7	2.81	0.5	1.41	5.16	784.00	4,043	40,425,784
8	2.81	0.5	1.41	5.16	784.00	4,043	40,425,784
9	2.81	0.5	1.41	5.16	784.00	4,043	40,425,784
10	2.81	0.5	1.41	5.16	784.00	4,043	40,425,784
11	2.81	0.5	1.41	5.16	784.00	4,043	40,425,784
12	2.81	0.5	1.41	5.16	784.00	4,043	40,425,784
13	2.81	0.5	1.41	5.16	784.00	4,043	40,425,784
14	2.81	0.5	1.41	5.16	784.00	4,043	40,425,784
15	2.81	0.5	1.41	5.16	784.00	4,043	40,425,784
16	2.81	0.5	1.41	5.16	784.00	4,043	40,425,784
17	2.81	0.5	1.41	5.16	784.00	4,043	40,425,784
18	2.81	0.5	1.41	5.16	784.00	4,043	40,425,784
19	2.81	0.5	1.41	5.16	784.00	4,043	40,425,784
20	2.81	0.5	1.41	5.16	784.00	4,043	40,425,784
21	2.81	0.5	1.41	5.16	784.00	4,043	40,425,784
22	2.81	0.5	1.41	5.16	784.00	4,043	40,425,784
23	2.81	0.5	1.41	5.16	784.00	4,043	40,425,784
24	2.81	0.5	1.41	5.16	784.00	4,043	40,425,784
25	2.81	0.5	1.41	5.16	784.00	4,043	40,425,784
26	2.81	0.5	1.41	5.16	784.00	4,043	40,425,784
27	2.81	0.5	1.41	5.16	784.00	4,043	40,425,784
28	2.81	0.5	1.41	5.16	784.00	4,043	40,425,784
29	2.81	0.5	1.41	5.16	784.00	4,043	40,425,784
30	2.81	0.5	1.41	5.16	784.00	4,043	40,425,784
31	2.81	0.5	1.41	5.16	784.00	4,043	40,425,784
32	2.81	0.5	1.41	5.16	784.00	4,043	40,425,784
33	2.81	0.5	1.41	5.16	784.00	4,043	40,425,784
34	2.81	0.5	1.41	5.16	784.00	4,043	40,425,784
35	2.81	0.5	1.41	5.16	784.00	4,043	40,425,784
36	2.81	0.5	1.41	5.16	784.00	4,043	40,425,784
37	2.81	0.5	1.41	5.16	784.00	4,043	40,425,784
38	2.81	0.5	1.41	5.16	784.00	4,043	40,425,784
39	2.81	0.5	1.41	5.16	784.00	4,043	40,425,784
40	2.81	0.5	1.41	5.16	784.00	4,043	40,425,784
Total			49.67			142,905	1,429,051,464

Source: JICA Preparatory Survey Team

Assumption for Benefit Calculation of Carbon Sequestration (Total)

Project year	Total Net Value of project (Rs.)
1	0
2	0
3	0
4	8,002,435
5	36,010,958
6	64,019,480
7	79,952,418
8	79,952,418
9	79,952,418
10	79,952,418
11	79,952,418
12	79,952,418
13	79,952,418
14	79,952,418
15	79,952,418
16	79,952,418
17	79,952,418
18	79,952,418
19	79,952,418
20	79,952,418
21	79,952,418
22	79,952,418
23	79,952,418
24	79,952,418
25	79,952,418
26	79,952,418
27	79,952,418
28	79,952,418
29	79,952,418
30	79,952,418
31	79,952,418
32	79,952,418
33	79,952,418
34	79,952,418
35	79,952,418
36	79,952,418
37	79,952,418
38	79,952,418
39	79,952,418
40	79,952,418
Total	2,826,415,085

Source: JICA Preparatory Survey Team

Note:

- 1) Basic data of annual biomass increment is refer from Ecosystem Services of Forests in Nepal and Uttarakh and Himalayas (Asia Network for Sustainable Agriculture and Bioresources) and ESTIMATING CARBON SEQUESTRATION RATES AND TOTAL CARBON STOCKPILE IN DEGRADED AND NON-DEGRADED SITES OF OAK AND PINE FOREST OF KUMAUN CENTRAL HIMALAYA (B.S. Jina et al., 2008).
- 2) CER price is derived from state of the trades of the carbon market 2012 (World Bank).
- 3) Exchange rate: US\$1=61.25 Rs
- 4) Total net value of project is calculated by adding total net value of each Eco-Restoration (ER) Models.