Loharlari Concise Micro Plan

Himachal Pradesh Forest Ecosystem Services
(HP-FES) Project

Himachal Pradesh
Forest Department

german
cooperation

giz

As a federally owned enterprise, GIZ supports the German Government in achieving its objectives in the field of international cooperation for sustainable development.

Published by:
Deutsche Gesellschaft für
Internationale
Zusammenarbeit (GIZ) GmbH

Registered offices
Bonn and Eschborn

Address
A-2/18, Safdarjung Enclave,
New Delhi- 110029, India
T +91 11 4949 5353

E biodiv.india@giz.de
W www.indo-germanbiodiversity.com
I www.giz.de

Programme/project description:
Indo-German Biodiversity Programme
Conservation and Sustainable Use of Biodiversity in India - Himachal Pradesh Forest Ecosystem Services Project (HP-FES)
The project aims to enable the Forest Department of Himachal Pradesh to introduce the Forest Ecosystem Services (FES) approach in the state's forest management system.
HP-FES

Responsible:
Dr. Konrad Uebelhör, Director
Indo-German Biodiversity Programme, GIZ

Dr. Joachim Schmerbeck, Team leader
HP-FES Project

Authors:
Dr. Joachim Schmerbeck, Team Leader, HP-FES Project
Satyan Chauhan, Advisor, HP-FES Project
A.S Thakur, Consultant

Design, layout:
Aashima Negi
Junior Communication Expert, GIZ

Photo credits:
GIZ/Aashima Negi

On behalf of
German Federal Ministry for Economic Cooperation and Development (BMZ)

GIZ is responsible for the content of this publication.

Shimla, 2019

Micro Plan for Loharlari

Himachal Pradesh Forest Ecosystem Services
(HP-FES) Project

PAGE NUMBER

Content

Contents

CHAPTER- 1
Introduction

Forest Ecosystem Services Approach

Forests provide people with numerous services and goods like fuelwood, timber, fodder, fruits etc. They also regulate abundant aspects of the environment like water, air purity and micro climate which benefit people in many ways. These goods and services are together termed as "Ecosystem Services".

The ecosystem services derived from forests are referred to as "Forest Ecosystem Services" (FES). The FES approach states that forests are managed to produce services required for human well-being.

As demands and importance for these services differ much within society, a key element of the FES approach is to manage forests that enable a supply of FES prioritised by stakeholders, giving due importance to the remaining goods and services.

HP-FES Project Background

The Indian and German Governments are working together in many areas that are important for our society. GIZ, in collaboration with the Himachal Pradesh Forest Department (HPFD), is implementing the Himachal Pradesh Forest Ecosystem Services (HP-FES) Project on behalf of BMZ (GIZ's commissioning party). The HP-FES project aims at integrating the Forest Ecosystem Services (FES) approach into the state's forest management.

Important stakeholders are consulted to identify the set of ecosystem services for which the forest is managed. Together with them, the FES that are derived from the forest are listed and prioritised. Based on this, a management plan like this one is developed.

CHAPTER- 2

Loharlari Forest Ecosystem Services Vision

Forests are ecosystems that need a long time for their development. The project can guide the plan for only two years or so. This is hardly anything, considering that the forests can be hundreds of years old. Therefore, it is important that a forest management has a long term vision and that the plan of today is in line with the long term vision.

Long Term Vision (30 years)

1. Water:

a. Increased flow of water in Jar Nala- tributary of Pun khad is sustained despite climatic hostilities.
b. Increased water in irrigation channels by 10 per cent contribute in economic upliftment of communities.

2. Fuelwood and Fodder:

a. Fodder and fuel supply is increased to meet out the demand of Nanahar, Gont and Barikhas villages.
b. Increase in income and employment opportunities due to enhanced availability of leaf fodder / fuel and water availability for irrigation.
c. Visible changes in forest structure.

3. Forest:

a. Proportion of dense forest increases up to 10 % of the base value.
b. Enhanced natural regeneration due to controlling of human disturbances results in increased density.

Measures:

a. VFDS ensures equitable usufruct sharing, regulated use of forest and protection against fire, illicit felling.

Mid Term Vision (15 years)

1. Water:

a. Increased flow of water in Jar Nala and Pun khad sustains flow of water in irrigation channels.

2. Fuelwood and Fodder:

a. Regenerated areas having broad leaf fodder species have attained pole stage with more than 80 per cent survival.

3. Forest:

a. Proportion of dense forest increases significantly (in comparison of the base value).

Measures:

a. VFDS strictly protects plantation against lopping/illicit cutting.
b. VFMS is encouraged through appreciation for good protection work.

Short Term Vision (5 years)

1. Water:

a. Reduced silt load in run-off from Jar nala.
b. Increased water availability in targeted irrigation channels up to 5 % of base discharge.

2. Fuelwood and Fodder:

a. Treated areas have well grown sapling stage plantations with 90 per cent survival.
b. VFMS ensures protection of plantation against grazing and fire.

3. Forest:

a. Reduced silt load in run-off due to grass and vegetation cover.
b. Natural regeneration takes place and reaches sapling stage in the absence of grazing and fire.

Measures:

a. VFMS carries out effective protection of forest and plantation against grazing, fire and indiscriminate lopping.
b. Conflicts in usufruct sharing are resolved by VFMS .
c. VFMS is strengthened to get funds from other cooperating agencies.

(First 2 years of 5 year Project Period)

1. Water:

a. Soil and water conservation related planned activities implemented.
b. Set up a baseline and system for measuring spring water flows and run off silt load.

2. Fuelwood and Fodder:

a. Plantation of multi-purpose fodder yielding broad leaf tree species carried out with survival percentage up to 80 percent
b. VFMS ensures protection of plantation against grazing and fire.
c. Grass yield from treated area increased upto 30 per cent.

3. Forest:

a. More forest area closed for grazing
b. VFDS members are motivated for active involvement in forest protection and management.

Measures:

a. Degraded and denuded areas are brought under regeneration and plantation.
b. Rules for protection and usufruct sharing are framed and followed.
c. Soil and water conservation measures are planned and implemented.

Micro plan Objective

To maximise the Forest Ecosystem Service values being derived from P71P Nanahar, P14P Kandbari C3 and UP25P Kanbari forests and incorporate the forest ecosystem services into the forest management.

Methodology for data collection

1. The environmental data was collected based on field measurement, working plan of Palampur forest division and compartment history file of Kandbari & Nanahar forests in Palampur forest range.
2. Demographic data was collected by using **participatory rural appraisal (PRA)** approach, baseline survey report along with other secondary sources.

3. **Seasonality matrix** was the tool used to collect information on seasonality and labour availability round the year. Seasonality of engagement in agriculture, horticulture, wage labour, migration and labour availability for project activities were shared by the **PRA participants**
4. **Stakeholder map** was the tool used to collect data on various stakeholders. The PRA participants were sensitized about the concept of stakeholders dividing them into three categories: civil society, state actors and private.

CHAPTER- 3
Data Collection Results

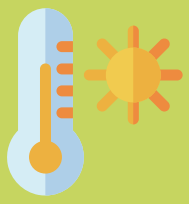
Environmental Data

ELEVATION RANGE: 1575m - 2350m

Precipitation

Annual Average Precipitation:	2125.6 mm
Rain % :	100%
Snow % :	0%
Maximum Rainfall Recorded:	3341.7 mm in 1988
Minimum Rainfall Recorded:	1376.2mm in 1991

Temperature



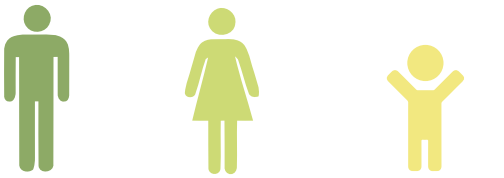
Monthly mean temperature:	10.3 - 24.3 °C
Mean maximum temperature:	15.3 - 30.0 °C
Mean minimum temperature:	5.30 - 20.1 °C
Dry months:	April, October, November

Forest types and area

Area	Forest Type
9C1b : 11.23 ha	Chir Pine
12C1a : 116.64 ha	Ban Oak

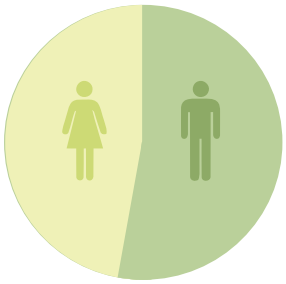
Demographic Data (Village Nanahar)

POPULATION



44.5% (533 Males) | 47.3% (566 Females) | 8.3% (99 Children)

GENDER RATIO



There are 957 females against 1000 males

LIVESTOCK

Sheep + Goat: 900 + 800

Cows: 430

Bullocks: 30

Horses + Mules: 8 + 2

Buffaloes: 0

OCCUPATION

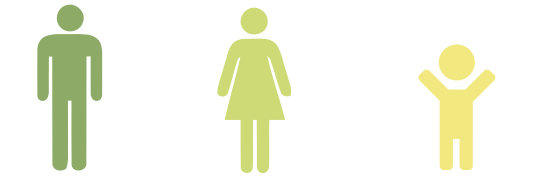
S.No.	Job Type	No. of Individuals	No. of Households
1.	Government	9	8
2.	Private	6	6
3.	Self Employed	6	6
4.	Agriculture/ Horticulture	52	
5.	Wage Labour	Men: 38 Women: 41	

LAND HOLDING

S.No.	Land Holding Type	No. of Households
1.	Marginal	253
2.	Small	—
3.	Medium	6
4.	Large	52

Demographic Data (Village Gont)

POPULATION

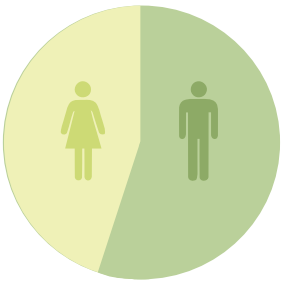


39.2%
158 Males

49.5%
200 Females

11.3%
46 Children

GENDER RATIO



There are 814 females against 1000 males

LIVESTOCK

Sheep + Goat:
400 + 300

Cows: 75

Bullocks: 20

Horses + Mules:
12 + 3

Buffaloes: 0

OCCUPATION

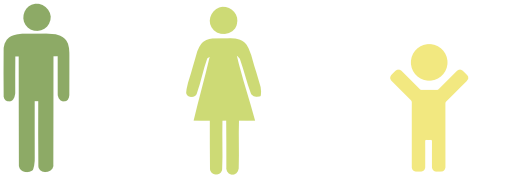
S.No.	Job Type	No. of Individuals	No. of Households
1.	Government	6	5
2.	Private	17	5
3.	Self Employed	4	4
4.	Agriculture/ Horticulture	38	
5.	Wage Labour	Men: 15 Women: 10	

LAND HOLDING

S.No.	Land Holding Type	No. of Households
1.	Marginal	87
2.	Small	—
3.	Medium	—
4.	Large	—

Demographic Data (Village Bari Khas)

POPULATION

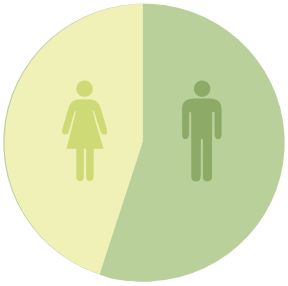


44.1%
347 Males

49.9%
393 Females

6.0%
48 Children

GENDER RATIO



There are 814 females against 1000 males

LIVESTOCK

Sheep + Goat: 700 + 600

Cows: 208

Bullocks: 10

Horses + Mules: 0

Buffaloes: 2

OCCUPATION

S.No.	Job Type	No. of Individuals	No. of Households
1.	Government	18	16
2.	Private	52	46
3.	Self Employed	5	5
4.	Agriculture/ Horticulture	54	
5.	Wage Labour	Men: 25 Women: 27	

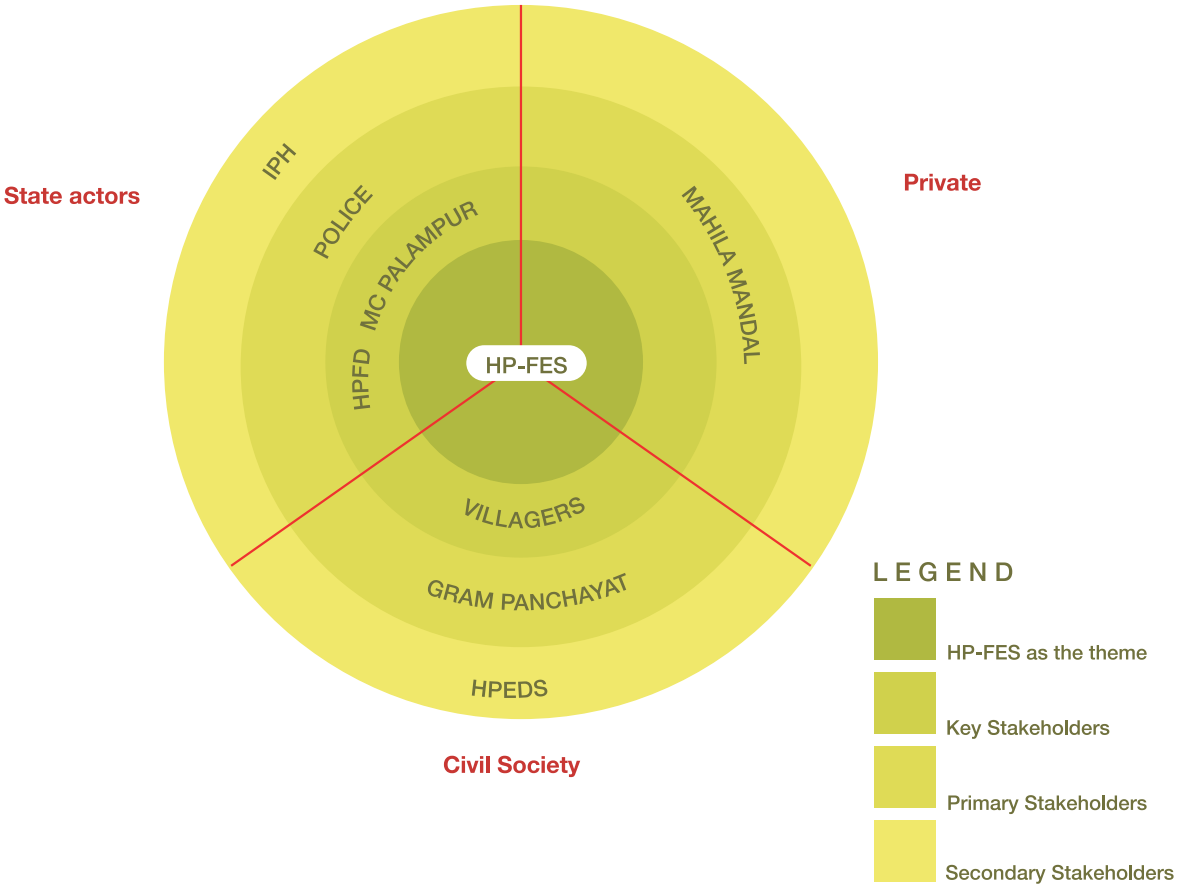
LAND HOLDING

S.No.	Land Holding Type	No. of Households
1.	Marginal	152
2.	Small	2
3.	Medium	—
4.	Large	—

Seasonality of Labour Distribution

Seasonal activity & climatic events	Months											
	J	F	M	A	M	J	J	A	S	O	N	D
Wage Labour												
Agri/ Horticulture												
Migration												
Rain												
Snow												
Frost												
Number of labour people available	85	75	80				45	55	55			

Major Stakeholders



The inner most circle consists of the key stakeholders, followed by primary and seconday stakeholders with HP-FES as the theme.
The 3 categories represent as to which class does each stakeholder belong.

Category/ Class	Key Stakeholders	Primary Stakeholders	Secondary Stakeholders
Civil Society	Villagers (Forest users)	Gram Panchayat, Mahila Mandal	HP Eco Development Society (HPEDS) Holta
Private	———	———	———
State	HPFD & Wildlife Wing of HPFDMC Palampur	MC, Palampur	Department of Irrigation and Publich Health

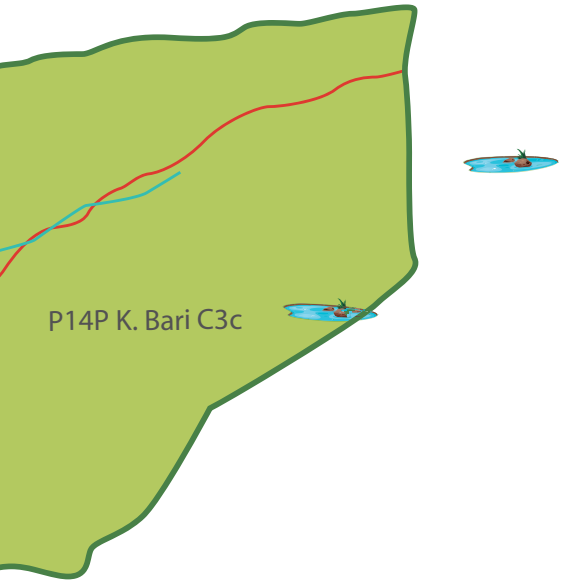
CHAPTER- 4

Rankwise Priority Forest Ecosystem Services

RANK	FOREST ECOSYSTEM SERVICE
1.	 Fodder
2.	 Watershed protection in catchment areas of Jar Nala and Punkhad - Irrigation Channel sources
3.	 Fuelwood
4.	 Timber wood (Symbol Copyright: Jan Sosse)
5.	 Air

Priority and Intervention Map

The above map consists of the forest boundary, the areas for the prioritised Forest Ecosystem Services and the interventions and activities which will be done in order to maximise these services.

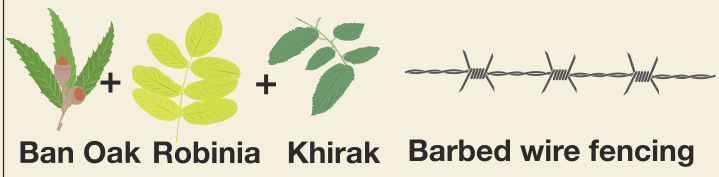


LEGEND

	Water
	Fodder
	Grazing
	Fodder lopping by people of Nanahar and Bari khas
	Fodder lopping by people of Gonth
	Check dam
	Check wall
	Contour trenches
	Desilting of ponds
	Streams
	Compartment boundary
P14P K. Bari C3b	Compartment number
1,2,3,4	FES zone numbers
	Hamlets

DISCLAIMER: This map is only for marking the forest boundaries and not for any legal purpose.

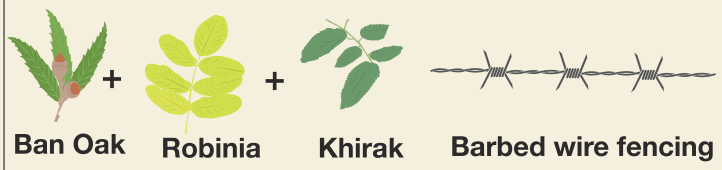
2 P14P KANDBARI C3a

FOREST ECOSYSTEM SERVICE	INTERVENTION
	 Ban Oak + Robinia + Khirak Barbed wire fencing

3 P14P KANDBARI C3b

FOREST ECOSYSTEM SERVICE	INTERVENTION
	 Rotational lopping of fodder (Community intervention)

5 P14P KANDBARI C3c

FOREST ECOSYSTEM SERVICE	INTERVENTION
	 Ban Oak + Robinia + Khirak Barbed wire fencing

6 P71P NANAHAR

FOREST ECOSYSTEM SERVICE	INTERVENTION
	 + Ban Oak  + Robinia  Barbed wire fencing

9 UP25P KANDBARI

FOREST ECOSYSTEM SERVICE	INTERVENTION
	 + Ban Oak  Robinia +  Khirak  Barbed wire fencing

1 P14P KANDBARI C3c

FOREST ECOSYSTEM SERVICE	INTERVENTION
	Broad leaved species plantation + Water infiltration measures
	Contour trenches to increase water infiltration
	Desilting of ponds for improved water infiltration

2,3,4 P71P NANAHAR

FOREST ECOSYSTEM SERVICE	INTERVENTION
	Broad leaved species plantation + Water infiltration measures

5 P14P KANDBARI C3B

FOREST ECOSYSTEM SERVICE	INTERVENTION
	Broad leaved species and water infiltration methods
	Dry masonry check walls along Jar Nala
	Check dams in cement and mortar along Jar Nala

Activity Plan and Budgeting

Activity plan for enhancing infiltration of water into ground / soil & erosion control

FES	C. No.	Activities	First Year	Second Year	Third Year	Fourth Year	Fifth Year	Total
-	P14P K. Bari C3b	Check walls in Dry stone masonry (one)	8450	-	-	-	-	8450
-	P14P K. Bari C3b	Check dams in cement mortar stone masonry (two)	82180	-	-	-	-	82180
-	P14P K. Bari C3a and P14P K. Bari C3c	Desilting of Ponds (one in each compartment)	39400	-	-	-	-	39400
W-1	P14P K. Bari C3c	Contour Trenches (800)	44700	-	-	-	-	44700.00
Total			**130030**			**-**	**-**	**174730.00**

Activity plan for plantations of broad leaved species & water infiltration measures for increasing stream water for irrigation by channel/kuhl

FES	C. No.	Activities	Details	First Year	Second Year	Third Year	Fourth Year	Fifth Year	Total
W-1, W-2, W-3, W-4 and W-5	P14Pkandbari C3b, P14Pkandbari C3c and P71P Nanahar	Plant cost*	7500 normal plants (11.5 ha)	106425	-	-	-	-	106425
			5000 tall plants (11.5 ha)	250700	-	-	-	-	250700
			Digging and filling pits (11.5 ha) **	567028	-	-	-	-	567028
		Material and supply	Barbed wire, U nail, RCC posts etc.	229806	-	-	-	-	229806
	Total Cost of Plantation			**1153959**	-	-	-	-	**1153959.00**
	Maintenance			-	55430	30705	18400	-	104535.00
	Grand Total			**1153959**	**55430**	**30705**	**18400**	**-**	**1258494.00**
	Grand Total (round off)								**1258500.00**
	Total (FES Water = Table 5.1.1+Table 5.1.2))								**1433230.00**

Activity plan for enrichment plantation of broad-leaf fodder species

FES	C. No.	Activities	Details	First Year	Second Year	Third Year	Fourth Year	Fifth Year	Total
F-9, F-6, F-5 and F-2	UP25P, P71P Nanahar, P14P K. Bari C3c and P14P K. Bari C3a	Plant cost*	8500 normal plants (9 ha)	120615	-	-	-	-	120615.00
			500 tall plants (9 ha)	25070	-	-	-	-	25070.00
			Digging and filling pits (9 ha) **	386231	-	-	-	-	386231.00
		Material and supply	Barbed wire, U nail, RCC posts etc.	249698	-	-	-	-	249698.00
	Total Cost of Plantation			**781614**	-	-	-	-	**781614.00**
	Maintenance			-	43380	24030	14400	-	81810.00
	Grand Total (FES Fodder)			**781614**	**43380**	**24030**	**14400**	-	**863424.00**
	Grand Total (round off)								**863500.00**
	Grand Total 5 (Plan)								**2296730.00**
	Grand Total 5 (Plan) (round off)								**2296700.00**

CHAPTER- 5

Monitoring and Evaluation

1. Increase of water flow in streams

a. Water flow in Jar Nala during all seasons.
b. Measurement of silt in streams originating from the forest during rainy season.

2. Increase in availability of fodder/ fuel from twigs.

a. Enrichment plantation of broad leaved species yielding fodder.

3. Rotational Fodder Management System

a. Stopping of the unplanned lopping of fodder in the area.
b. Improve in crown cover of fodder trees.

VISITOR'S FEEDBACK

S. No.	Name	Address/ E-mail	Feedback

S. No.	Name	Address/ E-mail	Feedback

S. No.	Name	Address/ E-mail	Feedback

S. No.	Name	Address/ E-mail	Feedback

Deutsche Gesellschaft für
Internationale Zusammenarbeit (GIZ) GmbH

Matsubara Building, Village Sargheen
(Near HFRI), Shimla - 171013
Himachal Pradesh (India)

For further Information
Principal Chief Conservator of Forest, Forest Department,
Himachal Pradesh, Talland, Shimla- 171001, India