Assessment of Forest Ecosystem Services

Himachal Pradesh Forest Ecosystem Services (HP-FES) Project

Ministry of Environment, Forest and Climate Change

Himachal Pradesh Forest Department

german cooperation
DEUTSCHE ZUSAMMENARBEIT

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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

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Assessment of Forest Ecosystem Services (FES) for the Working Plan of Solan Forest Division

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HP-FES Project Background

The Indian and German Governments are working closely 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.

Components of the project

a. Micro plans
b. Long Term Ecological Monitoring (LTEM)

Solan Forest Division Working Plan

- A large proportion of society depends on FES.
- FES approach is not directly addressed in forest management plans.
- 2014 Working Plan code includes FES approach to be included in the preparation of working plans.
- HPFD in collaboration with GIZ has has prepared the Preliminary Working Plan Report (PWPR) to include FES approach in the Solan Forest Division Working Plan.

Ecosystem

An ecosystem is defined as a dynamic complex of plant, animal, and microorganism communities and their non-living environment interacting as a functional unit.
An ecosystem consists of :

1. Living components:
a. Plants
b. Animals
c. Bacteria
d. Fungus

2. Non-living components:
a. Water
b. Light
c. Soil
d. Air
e. Minerals

The boundary of an ecosystem depends on the user.

Example 1: For a woman working in the field, the ecosystem becomes the field she is working in.

Example 2: For a butterfly, the flower, it is receiving the nectar from, becomes its ecosystem.

Forest Ecosystem Services (FES)

A natural woodland consisting of all plants, animals and micro-organisms (living components) in that area, functioning together with all of the non-living components of the environment is called a forest ecosystem.All forests are forest ecosystems.
Benefits provided from forest ecosystems to humans are known as forest ecosystem services.

Categories of FES

Provisioning Services

Products that humans obtain directly from ecosystem.

Food and fiber | Fresh water | Medicinal plants | Timber | Genetic resources

Regulating Services

These are the products that are obtained from the regulation of ecosystem processes.

Water purification | Pollination | Climate regulation | Biocontrol

Cultural Services

These are the non-tangible benefits that people obtain from ecosystems.

Aesthetics | Recreation | Spiritual | Tourism

Supporting Services

These are those services that support the production of other ecosystem services.

Primary production | Nutrient cycling | Soil formation

Drivers affecting ecosystem services

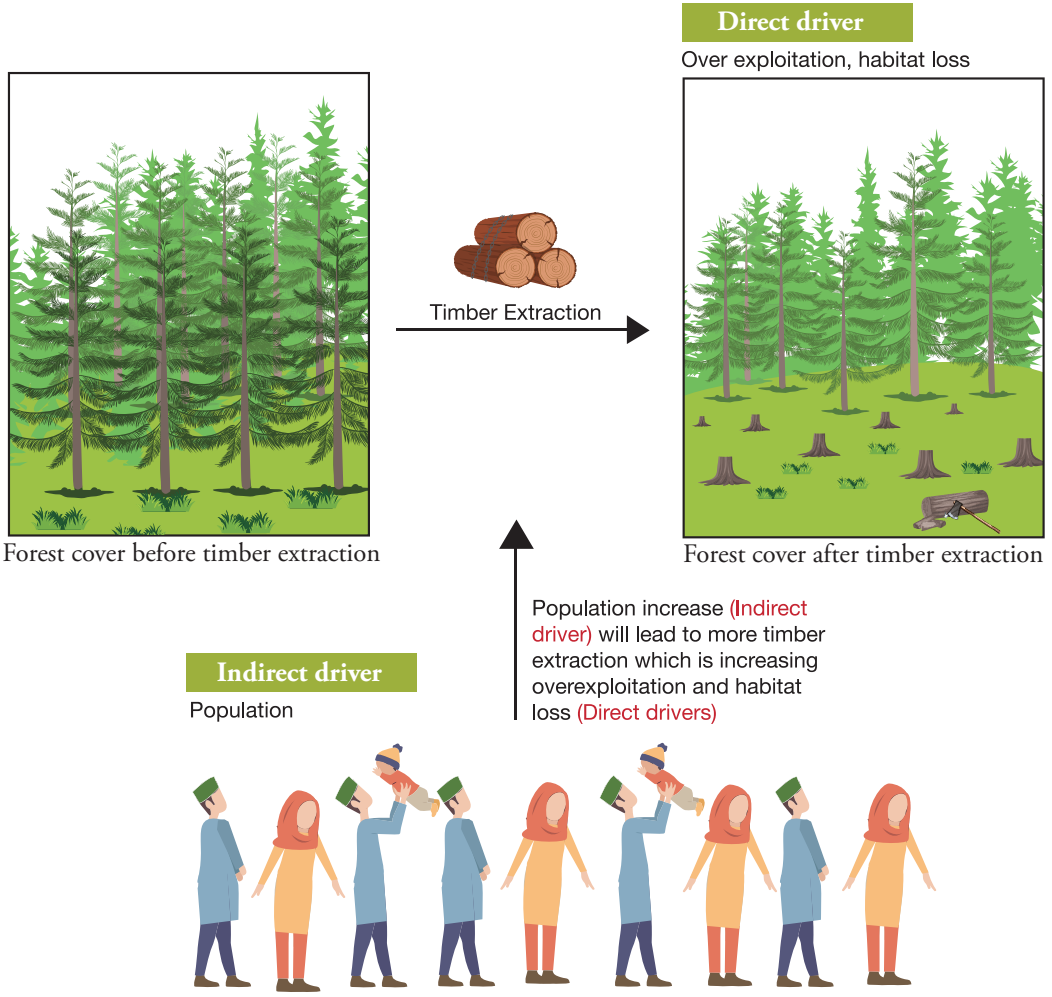
Drivers are the factors that influence the amount and quality of forest ecosystem services or their importance for the recipients.

They are of two types:

a. **Direct drivers** - They directly influence the ecosystem processes. Examples: over exploitation, habitat loss, climate change, pollution, fires and natural disasters.

b. **Indirect drivers** - They indirectly influence the ecosystem processes by affecting direct drivers. Examples: Demographic socio-political, economic.

Example Description:

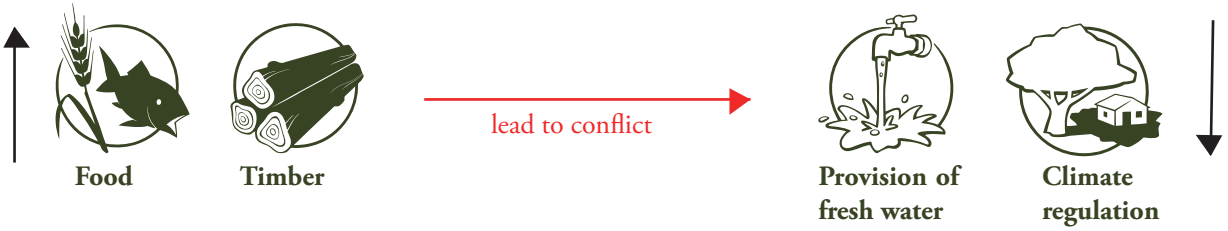


Trade-off in ecosystem services

Trade-off is a choice that involves losing some quality or quantity of one service in return for gaining another service's quality or quantity. It is generally used when a choice needs to be made between two or more services which cannot be had at the same time.

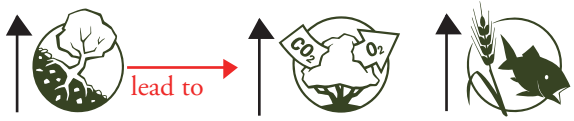
Rationale of trade-offs

1. Not all ecosystem services can be maximised at once.
2. A focus on delivering a few ecosystem services may conflict with the delivery of other ecosystem services.
   Example: Food and timber may conflict with the delivery of climate regulation and provision of fresh water.

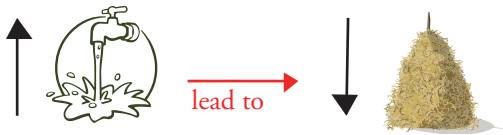


3. Existence of different trade-offs may also conflict with different development objectives.

Positive Trade-offs	Negative Trade-offs
1. Also called positive co-variations.	1. Also called negative co-variations.
2. More of one ecosystem service means more of another ecosystem service.	2. More of one ecosystem service means less of another ecosystem service.
Example:	**Example:**



Maintaing soil quality | Primary production & Carbon storage | Food services



Water from pine forests | Fodder availability

Types of trade-offs

Trade-offs are amongst:

1. Types of services:
Example: Between provisioning and regulating services.

2. Time:
Example: Present versus future generations.

3. Space:
Example: Use of an ecosystem service in point A decreases availability in point B

Trade-offs have effects on beneficiaries (distribution of benefits and costs)

Why should we mind trade-offs?

1. **Trade-offs have an impact on current and future provision of ecosystem services:** Sometimes, the future impacts can be potentially greater than anticipated which often have unknown consequences.

2. **Better decision making:** By highlighting the relative impacts of trade-offs on the future supply of ecosystem services, critical elements can be focussed on for making better decisions.

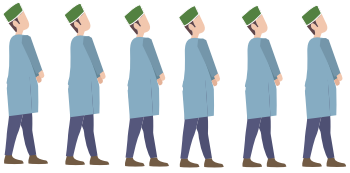
GROUP EXERCISES

Group Exercise-1

Selection of villages for Focus Group Discussions (FGDs)

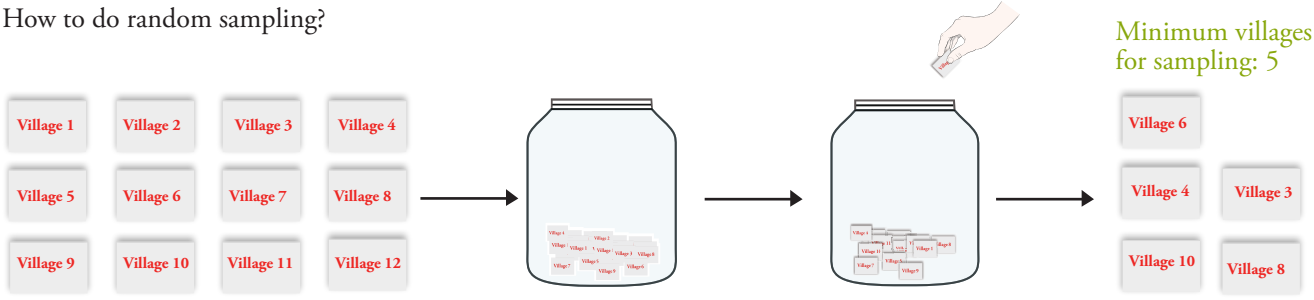
Instructions:

1. Each group should have 6 people.



2. **Random sampling** should be used to sample the number and name of the villages.

How to do random sampling?



a. Write the name of each village on a small piece of paper.

b. Each group should put all the slips in the given container.

c. Pick 25% of the total number of slips from the container.

d. The selected villages will be the ones to be sampled

Group Exercise-2

Data sheet for Focus Group Discussions

Instructions:

1. Each group is given:

a. Pictures having different forest ecosystem services

b. Pebbles

c. Cards of 4 colors

d. Markers

2. Each group has to select pictures of forest ecosystem services which they get from their respective forest.
3. Score the forest ecosystem service using **Pebble Distribution Method (PDM) :** Number of pebbles given for each FES based on their relative importance. (Refer to example on page 10)
4. Identify the **drivers** of ecosystem change for each forest ecosystem service.
5. Identify the trade-offs for each forest ecosystem service.

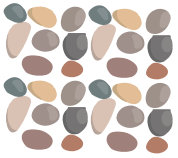
How to collect data on trade-offs?

Ask the villagers, what is going to be the positive and negative trade-offs for each of the listed FES. For example, in the case of water, which FES are they going to lose in gaining water. If they are going to lose fodder. then the negative trade-off is Fodder. But in gaining water, they are going to gain good soil quality, which is a positive trade-off.
Following can be the cases:
1. If they are going to lose fodder heavily, score Fodder =2 under negative trade-off column
2. If they are going to gain soil quality heavily, score Soil Quality=2 under positive trade-off column
3. If they are going to lose fodder in medium quantity, score Fodder =1 under negative trade-off column
4. If they are going to gain soil quality in medium quantity, score Soil Quality=1 under positive trade-off column
5. If they are going to lose fodder in low quantity, score Fodder =0 under negative trade-off column
6. If they are going to gain soil quality in low quantity, score Soil Quality=0 under positive trade-off column.

NOTE: It is not always necessary to have a trade-off. In some cases increase in one FES might not lead to increase (+ve trade-off) or decrease (-ve trade-off) of any other FES).

(The data sheets are attached at the end of the booklet)

Example:

Forest Ecosystem Service	Number of pebbles (based on relative importance of the listed FES)	Drivers (direct and indirect)	Trade-offs	
			Positive	Negative
 Water	 40	↑ Habitat loss, overexploitation, climate change, demographics	2. Good soil quality	2. Fodder 1. Grazing
 Timber	 10	↑ Habitat loss, overexploitation, climate change, fire and natural disaster, demographics	2. Water	2. Fuelwood 2. Fodder 2. Grazing
 Food	 30	↑ Habitat loss, overexploitation, climate change, demographics		1. Grazing 1. Fodder 1. Fuelwood
 Fuelwood	 20 **Total should be 100**	↑ Habitat loss, overexploitation, demographics, climate change	1. Water	

11.

(The docket will contain the data sheets)

NOTES

NOTES

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