

FOREST LAND USE PLANNING FOR DHARHARA RANGE, MONGHYR FOREST DIVISION (BIHAR)

RAMESH KUMAR JHA, RAVINDRA KUMAR PANDEY AND GOPAL RAM SHARMA

*Rajendra Agricultural University,
Krishi Vigyan Kendra, Monghyr (Bihar)*

Introduction

Planning plays a key role in the management of making best use of limited resources. Land use planning is the systematic assessment of land and water potential, alternatives for land use and economic and social conditions in order to select and adopt the best land use options. Its purpose is to select and put into practice those land uses that will best meet the needs of the people while safeguarding resources for the future (Jha *et al.*, 2002).

The study area is facing much biotic pressure from the surrounding villages, which are situated amidst and in between degraded forest areas (Sharma, 1993). The poor people are mostly depended on forests to meet their urgent requirement of fuelwood, fodder and small timber. The aim of this study is to ensure the growth and development of the Sal forests of Dharhara hills by proper land use planning.

Study Area

The study area is situated in the Dharhara hill block, Dharjara Range, Monghyr Forest Division (Bihar). This hill block is the most important and extensive hill range in the region, which covers 154.82 km² in area. This hill range forms a distinct watershed, the country to the West

being drained by the river Kiul and that to the East by the Karali and other streams. As such, the ecological boundaries of this range coincide with its legal limits. The topography is undulating with long steady slope which varies from 1 to 6 per cent in nearby villages; in gully lands it varies from 7 to 10 per cent but hill areas slope up to 30 to 55 per cent and 20 per cent area has less than 6 per cent slope. This is a stable shield which rises gradually towards the South. Beyond this stable shield are ridges of resistant rocks chiefly quartzite and fine-grained rocks of granite family. The granite gneisses and schists are sometimes accompanied by laterite which is a residual product of weathering of the rocks. A large development of laterite is seen in the Bangalwa hills, where it has resulted from the laternation of ferruginous shales, phylite, sand and ferruginous quartzite. The occurrence of slag heaps at the foot of the hills in the neighbourhood of Bangalwa and Ghatwari in the Dharhara hills offers evidence that the local laterites have been used in primitive furnaces by the ancients for the extraction of iron. Traces of vanadium and negligible amount of titanium have been recorded in these slags.

The soils found in this zone are thin and a meagre crop of Maize, Kulthi, Eleusine, Til, Mustard and Arhar is taken. The soil susceptible to desiccation and

erosion by rejuvenated waterways. Erosion has been further aggravated by maltreatment of forests, frequent fires and over-grazing. Erosion is rampant and even the exterior faces of all the accessible hills have suffered where the parent rocks have been exposed. What were rich forests before are now poor wastelands menacing fields due to erosion, over-grazing and illicit felling. The climate of this area can be described as mean between the scorching heat of West and moist of the East. The existing study area has tropical deciduous to moist deciduous Sal forests. The entire forest area is interspersed by rural settlements, agriculture fields, grasslands and orchards. The main crops raised are paddy and maize; pulses raised are gram, kulthi and arhar (during Kharif season). Farmers are now taking interest in Rabi crop. Crops such as wheat and mustard are being raised with lift irrigation. The heterogeneous land use of the study area is supporting a variety of forest vegetation types occurring in different relief zones. The most common gregarious formations are *Shorea*, *Boswellia*, *Aegle*, *Euphorbia*, scrub and their associates.

Methodology

A detailed survey of Dharhara Range of Monghyr Forest Division was carried out during 2001-2002 by Krishi Vigyan Kendra, Monghyr along with local inhabitants of this forest range and the important features of the area were noted through participatory learning and action (Ingrid and Westerby, 1998). PLA tools used in this study, were:

- Semi-structured interviewing
- Participatory Transect walk-visualisation
- Matrix scoring and ranking

- Problem tree and problem prioritization
- Participatory planning for development of forest land resources

The villagers were informed in advance about the PLA exercise and were asked for convenient time for discussions. They decided that it was best to have discussions to take place in the evening and this way the PLA was scheduled. The villagers who attended the discussions were excited about the topic. After rapport building, the villagers were asked to name usufruct/products which they used from the forest at different times of the year and their distance from village to streams.

The next day, during our transect walk, we were observed coverage (crust) gravel, stones, tree strata (>3m), shrub strata (<3m), herbal strata, plant biodiversity, resource degradation, crop choice and crop rotation, availability of water, access to resources, livestock density and land management practices.

Matrix ranking were also carried out to understand villagers priorities in respect of tree species, crop varieties, vegetable and livestock categories for their land planning. Reasons for their liking and dislike and the subtle differences in choice of priority among the villagers of different areas could also be understood which helped us to prioritise and determine a strategy.

Finally, discussions were facilitated between the members/villagers and scientists and foresters with a view to developing suitable land use planning for enhancing the productivity of the Range (IIED, 1997).

Results and Discussion

Dharhara Range having four compartments, namely Paisra, Kathautiya, Karmegh and Narokol has a total population of 407 belonging to scheduled tribes and has 66 families (Table 1). Some area of the range where forest is degraded is exposed to erosion because of over-grazing and indiscriminate cutting of trees and shrubs which is irregular and common feature of the area. The total population of animals is 621 (Table 1). Some areas have pasture and grassland but these are in degraded state. Stall-feeding of animals is negligible. The animals are allowed to graze on fallow and barren lands. Mostly local breeds are domesticated, which have very low, draught and milch potential. The scrub formation has been found mostly on either very poor sites or under heavy biotic pressure. Patches of *Butea monosperma*, *Boswellia serrata*, *Pterocarpus marsupium*, *Diospyros melanoxylon* and *Albizia lebbek* are the main gregarious formations within the community of dry deciduous forests. Vegetation like *Acacia catechu*, *Dalbergia sissoo* and *Bombax ceiba* is mostly confined along near the nalas, rivulets/riversides. Based on inputs of villagers and with help of scientific assessment of scientists and foresters, matrices were developed and potential land use classes were ascertained (Table 2).

Commercial Forestry I : Areas supporting high-density moist Sal with more than half km distance from village centre and 100 m distance from Nala stream have been classified under this category. The total area under this category has been estimated as 12 071 km² or 8.21% of entire area (Table 3)

Commercial Forestry II : Areas supporting

dry Sal having medium density (20-40%) and miscellaneous forest with high density, more than half km distance from village centre and more than 100m distance from Nala stream have been classified under this category. The total areas under this category have been estimated as 5.895 km² and 3.75% of entire areas.

Community Forestry : The area supporting Sal, *Boswellia*, *Aegle*, *Euphorbia* and medium density miscellaneous, and where the negative change have been observed and within one km from villages or more than 100 m from river, nala and rivulets has been classified under this category. The tree species *Terminalia tomentosa*, *Acacia catechu*, *Dalbergia sissoo*, *Dalbergia melanoxylon*, *Tectona grandis*, *Leucaena leucocephala*, *Melia azaderach*, *Toona ciliata*, *Acacia nilotica*, *Terminalia arjuna* and other miscellaneous species having fuelwood, fodder and small timber value which can fulfill the urgent requirement of the villagers are recommended for cultivation. The total area under this category has been estimated as 47.979 km² and 30.99% of the entire area.

Protection Forestry : The area where all the forest types, all density classes of scrub/shrubs, degraded grasslands, agriculture fallows are more than 100 m away from nala/stream or rivulets has been classified under this category. The total area under these category has been estimated as 33 518 km² and 21.65% of the entire area.

Agroforestry : The area where rainfed agriculture within 100m has been classified under this category. The total area under this category has been estimated as 17.99m² and 11.62% of entire area.

Table 1
Demographic information and cattle population of Dharhara Range, Monghyr Forest Division.

Comptt.	No. of villages/ tolas	Total of house-holds	Total Population	Male	Female	General	SC	ST	Cattle population						
									Cow	Ox	Buffalow	Goat	Sheep	Pigs	Total
Paisra	2	14	104	51	53	-	-	104	20	18	5	40	8	8	99
Kathautiya	3	22	132	62	70	-	-	132	88	22	16	108	12	13	259
Karnegh	2	20	125	58	67	-	-	125	60	17	10	92	10	14	203
Narokol	1	10	46	21	25	-	-	46	12	7	4	25	.	12	60
Total	8	66	407	192	215	-	-	407	180	64	35	265	30	47	621

Table 2

Matrix for potential forest landuses, Dharhara Range, Monghyr Forest Division

Type of potential Forest land uses	Existing forest cover, Forest type and land use	Forest density	Distance from village (km)	Distance from nala (m)
Commercial/Production Forestry I	Moist Sal	High density (>40%)	>0.5	> 100
Commercial/Production Forestry II	Dry Sal/ Plain Sal	Medium density (20-40%)	>0.5	>100
	Northern Mixed Deciduous forest with Bamboo	High density	> 0.5	> 100
Community Forestry	Sal	Open degraded	< 1	> 100
	<i>Boswellia</i>	Open degraded	< 1	> 100
	<i>Aegle</i>	Open degraded	< 1	> 100
	<i>Euphorbia</i>	Open degraded	< 1	> 100
	Miscellaneous	Medium density and open degraded	< 1	> 100
Protection Forestry	All forestry type degraded Grasslands, Agriculture & Agriculture fallow		.	> 100
Agroforestry	Dry land Agriculture	-do-	-	-
Farm Forestry	Agriculture fallow	-do-	-	-
Silvi-pasture	Grassland Degraded	-do-	-	-
Aqua-silviculture	Moist Sal	Low density	< 0.5	Nearby
Permanent agriculture and Habitation	Agriculture & Habitation	-	> 0.5	< 100
Homestead Forestry	Agriculture & Habitation	-	-	-

Farm Forestry : The area within the range of 100 m has been classified under this category. The total area

under this category has been estimated as 1.842 km² and 1.19% of entire area.

Table 3

Potential forest and other land use of
Dharhara Range, Monghyr Forest Division

Forestry Land Use	Area (km ²)	%
Commercial Forestry I	12.071	8.21
Commercial Forestry II	5.805	3.75
Community Forestry	47.979	30.99
Protection Forestry	33.518	21.65
Agroforestry	17.99	11.62
Farm Forestry	1.842	1.19
Silvi-pastrure	4.938	3.19
Aqua-silviculture	2.957	1.91
Homestead Forestry	20.498	13.24
Permanent Agriculture	1.981	1.28
Riverbed	4.598	2.97
Total	154.821	100.00

Silvi-pasture : The areas 100m from village have been classified under this category. The total area under this category is estimated as 4.938 km² and 3.19% of the entire area. Preference should be given to local grass species with introduction of legumes e.g. *Stylosanthes hamata*.

Aqua-Silviculture : Areas supporting low

density moist Sal with less than 100m distance and near nala/stream have been classified under this category. The total area under this category has been estimated as 2.957 km² and 1.91% of the entire area.

Homestead Forestry : Agriculture within the range of 100 m has been classified under this category. The total area under this has been estimated as 20.498 km² and 13.24% of the entire area.

Conclusion

The study highlights maximum area under community forestry followed by protection forestry, agroforestry, commercial forestry I, commercial forestry II, silvi-pasture and aqua-silviculture. However, farm forestry shows lowest extent. These results indicate maximum interference by human beings within the surrounding forest area. Participatory learning and action is an effective tool for suitability analysis of different forestry land use and their respective land utilization planning with the help of grassroots workers, village foresters and scientists concerned.

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SUMMARY

Participatory Learning and Action (PLA) is an effective and formal approach to provide policy-makers and others with sufficient information to make sound decisions. PLA is a combination of participatory activities, semi-structural interviews, observations and questionnaires intended to provide decision makers at regional, national and international levels with valuable information for present and future planning. The study highlights that by combining information from government officials, peoples participation and scientific assessment of the

knowledge, it has been possible to categorise the forest land into different forestry land uses and subsequent planning for better sustainable management of these forest lands for good return and fulfilling the day to day needs of society.

धरहरा परिक्षेत्र, मुंगेर वनमण्डल की वनभूमि उपयोग आयोजना
रमेश कुमार झा, रवीन्द्र कुमार पाण्डेय व गोपाल राम शर्मा
सारांश

सहभागी शिक्षा और कार्य नीति निर्माताओं और अन्य लोगों को सही-सही निर्णय लेने को पर्याप्त जानकारी मुलभ क्तने में प्रभावकारी और औपचारिक अभिगमन देने वाले सिद्ध होते है । सहभागी- शिक्षा और कार्य सहभागिता से किये जाने वाले क्रियाकलाप, अर्द्ध- संरचित साक्षात्कार, पर्यवेक्षणो तथा औपचारिक प्रश्नावली का सयोग होते है जिनका उद्देश्य वर्तमान और भविष्य की आयोजना के लिए क्षेत्रीय, राष्ट्रीय और अन्तरराष्ट्रीय स्तरों पर निर्णय करने वालों को मूल्यवान सूचनाएं उपलब्ध कराना होता है । यह अध्ययन इस बात पर प्रकाश डलता है कि सरकारी अधिकारियों, जन सहभागियों से मिली जानकारी और ग्रामीण ज्ञान के वैज्ञानिक आकलनों को संयुक्त कर लेने पर वन लगी भूमि को विभिन्न यानिकी भूमि उपयोग श्रेणियों में बांट पाना और तदन्तर अच्छी प्रत्याय पाने और श्रेष्ठतर दीर्घकाल तक टिक कर चल पाने वाले विकास के लिए समाज की दिनानुदिन जरूरतें पूरी करने के लिए इन वनभूमियों की दीर्घकाल तक टिकाऊ आयोजना बना पाना बिल्कुल संभव है ।

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