Environment Conservation Journal 6 (3) 109-115: 2005
(ISSN 0972-3099)

Forest status and land use scenario at Singrauli: A Bird Eye View

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Abstract

Present paper deals with the forest status and land use pattern at Singrauli. Singrauli region once had very dense dry tropical forest, which due to rapid industrialization in recent years got significantly reduced. It is concluded from the study that in general the area under forest and agriculture reduced tremendously while the area under mining has increased markedly.

Key Words *:Forest, Agriculture, Land use pattern, Mining*

Introduction

Since the sixties, the term environment has mostly been used in reference to the human environment; actually every living organism has an environment that is made up of all the physical, chemical and biological condition in which the organism lives.

Indian civilization is distinctive in the sense that it evolved in the forests, not in the city. According to Tagore, 'Forests have nurtured India's mind and India's civilization. Intellectual growth in India did not take place in enclosures made of brick, wood and mortar, but was inspired by the life of the forests in which nature's living forces express themselves in daily variation, creating a diversity of life and sounds, providing the context for the understanding of nature and man. Human understanding in such context could not be restricted to perceiving nature as inert, as an accumulation of dead resources waiting for exploitation. Nature provides light, air food and water through living processes of creative renewal.

This awareness of life in nature as a precondition for man's survival led to the worship of light, air, food and water and they were considered sacred. Indian culture has been cradled by the culture of the forest first in the Vedic period and later during the times of Buddha and Mahavir. Thus, forests in India had remained central to its civilization evolution. The forest teased 'ashrams' (settlements) produced the best scientific research and cultural writings and India thus came to known as an 'Aranya Sanskriti' or a forest culture. Human understanding of the fundamental ecological utility of forest ecosystems and their economic importance led to veneration of trees. This basic dependence on the existence of forests for human survival was the material basis underlying the worship of trees in almost all-human societies. In the Rig Veda, forests are described as Aranyani or mother goddess who takes care of wildlife and ensures the availability of food to man. These ashrams and forests, not urban settlements, were recognised as the highest form of cultural evolution providing society with both intellectual guidance and material sustenance.

This civilization principle became the foundation of forest conservation as a social ethic through millennia. Its erosion began with the spread of colonial methods of management, of forests in India. Teak from the forests of the Western Ghats, Sal from Central and Northern India

and conifers from the Himalayas were felled to meet the timber needs of the British Empire. The results was not merely the destruction of forests but the destruction of a culture that conserved forests.The entire Singrauli region was once covered with dry tropical forest. However, rapid industrialization in recent years, such as quarrying for limestone's establishment of cement and chemical factories, thermal power station, coal mining and construction of reservoir (Plant Sager) have resulted in displacement and rapid build up of human population, deforestation, conversion of natural forest ecosystems into savanna and marginal croplands.

Location

The forest area is hilly as well as plain. The plains are under cultivation in general, and the hills have vegetations. The only hill range extends from Jeer in the North upto Bargawan in the South. The height of the hills is 200 to 400 meters, which form into a plateau near Birdaha. Gopad River form the western boundary of the plan area and all the rivers of the region fall into Gopad in the West, into Rihand in the East and into Sone in the North.In the South Eastern part of Rihand Valley lie the crystalline rocks of Archaean age. Sedimentary rocks of Vindhyan age are found in the northern part of Sone valley. The famous coal mines of Singrauli in this region.

The soil is derived from the Sandstone's, Granites, Schist's Gneiss, Quartzite, and Shale rocks. Different series of soil have derived at various heights depending upon the configuration and it varies from sandy loam to clayey loam.

Forest of East Sidhi forest division geographically lies between latitude $23^0$45' and $24^0$45' North and longitude $81^0$50' and $82^0$50'. East. The area of the division includes Deosar. Chitrangi and Singrauli tehsils of Sidhi district. There are two sub-divisions and four ranges in this division. Geographical area is 5672.83 Sq. Km., within which Reserve forests is 1303.15 Sq. Km. and Protected forest is 916.50 Sq. Km. Total forest area is 2219.65 Sq. Km. Showing Table-1.

Forest Status

There were two forest divisions namely Rewa and Umaria during the Rewa Darbar period. In 1953 four divisions were carved out in which Sidhi was one and in 1962 the Sidhi division was divided into east and west Sidhi. The silvicultural system prevailing in the area up to 1956 was CWR, and SCI introduced during 1956, prescribing the selection girth of Sal, Bija, Tinsa and Shisham as 120 CM. The selection girth of Saja, Tendu, Haldu and Khamar was 90cm. Bamboo was exploited heavily.

Before 1927 there were fourteen reserved forest divisions as per the orders of the Rewa Raj Darbar. During the period of the Rewa Raj forests were Rajas properties. In the year 1935 Rewa Maharaja approved the Rewa Rajya Van Adhiniyam, which was under operation till 1950. In 1948 new state Vindhya Pradesh came into existence, then the Rewa Rajya Van Adhiniyam was abolished and the Indian forest Act 1927 was enforced for the forests of the area. Sidhi forests have now been divided into East and West forest divisions. The total forest area of the Sidhi forest is 4000 Sq. kms. of which 2219.65 belongs to East and 1219.36 belong to West forest division. The protected and reserved forest areas in East and West Sidhi divisions are 916.50 Sq. Kms. and 1303.15 Sq. Kms. and 453.04 Sq. kms. and 766.32 Sq. kms. respectively.

Excluding the areas of Bagdara sanctuary (area 23,104.76 Hect.), the plant area has now 35 reserve forest blocks and 158 protected forest blocks, 43 new protected forest blocks (area 1448.38 Hect.) were notified recently under section 29 of the Indian forest Act, which have for the first time been included in the Plan. An area of 2124.93 hect. was denotified in order to settle the

encroachments upto 1976.

The natural vegetation of the district was mostly arboreal. About 4000 Sq. km. out of the total area of 10546 Sq. km. of the district, are classified under reserved and protected forests. The recorded forest cover, therefore, comes to 37.97% of the total and area. This statistics is no longer true. The exorbitant clearing for agriculture and unregulated grazing have stripped the forest nearly all the plain and much of the lower hills. In the plains the woodland is now almost confined riverine strip.

Description of the forest and species structure

The forests have been classified into following sub-groups as per revised classification of Champion and Seth :

1: Northern Tropical Dry Deciduous Forests, sub-group 5B, Dry Peninsular Sal : 5B/C1c
2: Northern Tropical Dry Deciduous Forests, sub-group 5B, Northern Dry Mixed Deciduous Forest: 5B/C2

In addition, following two Edaphic Sub-Types are also found :

1:	5B/E2	Salai Forests
2:	5B/E9	Dry Bamboo Area

The classification of Champion adopted in forest records mentions about a long strip of moist dry deciduous forest in southern Gopadbanas tahsil showing good coverage of Sal (*Shorea robusta*). Teak (*Tectona grandis*) and Bamboos (*Dendrocalamus spp.*) are the most important species of the district. Timber and fuel are the major products of the division. Bamboos, Tendu leaf, and Harra are the minor forest products of the area.

The main species of the forests of the region is Sal. Natural teak is not present though quite a few successful teak plantations are there. Bamboo in Sal as well as in mixed forests forms the understory over quite a large area but it is in a very degraded condition.

From the management point of view East Sidhi forests have been divided into following two categories

(1) Sal forest
(2) Mixed forest

Sal forest

The forests, which have 20 to 90 percent Sal have been classified as Sal forest. The total area of the Sal forest is 32,205 hectare. Which makes 14 percent of the total forest area. The regeneration of the Sal forest appears to be quite discouraging because of heavy grazing and fire incidences and anthropogenic activities including mining hence the young plants are rarely seen. The significant associates and the species structure are as follows.

Chief associates of top canopy :

Terminalia tomentosa, Diospyros melanoxylon, Boswellia serrata. Lannea grandis, Anogeissus latifolia.

Other Associates of top canopy :
Terminalia arjuna, Terminalia belerica, Eleodendron glaucum, Schleichera oleosa, Pterocarpus marsupium, Dalbergia paniculata, Madhuca indica.

Chief associates of middle story :
Buchanania lanzan, Emblica officinalis, Zizyphus xylopyra, Casearia tomentosa, Ougenia oojeinensis, Cassia fistula, Flacourtia indica, Careya arborea.

Other associates of middle story :
Aeacia catechu, Eugenia heyeana, Soymida febrifuga, Saccopetalum tomentosum, Mallotus philippinensis, Dalbergia lanceolaria, Cochlospermum religiosum, Holarrhena antidysenterica, Wrightia tinctoria, Bauhinia retusa, Grewia tiliaefolia, Kydia calycina, Dendrocalamus strictus .

Chief associates of under story :
Nyctanthus arbortristis, Woodfordia floribunda, Indigofera pulchera, Gardenia turgida, Flemingia spp.

Other associates of under story :
Phoenix acaulis, Carissa opaca, Asparagus racemosus, Randia dumetorum, Grewia hirsuta.

Grass species :
Heteropogan contortus, Eragrostis tenella, Themedi triandra, Bauhinia vahlii, Butea superba, Butea parviflora, Vallaris heynei, Celastrus paniculata, Zizyphus oenoplia, Abrus precatorius, Ventilago calyculata, Smilex zeylanica.

Mixed Forest :

The forests, which have mixed species by 80% of its volume, have been classified mixed forests. The total area in mixed forest is 12,0996 hectare which makes 54.5% of the total forest area. Chief constitute of mixed forest are as follows.

Chief associates of top canopy :
Anogeissus latifolia, Diospyros melanoxylon, Boswellia serrata, Terminalia tomentosa, Lannea grandis, Lagerstroemia parviflora.

Other associates of top canopy :
Terminalia arjuna, Adina cordofolia, Madhuca indica, Pterocarpus marsupium, Shorea robusta, Dalbergia lanceolaria, Terminalia balerica, Albizzia procera, Dalbergia latifolia, Sterculia urens.

Chief associates of middle story :
Buchanania lanzan, Emblica officinalis, Casearia tomentosa, Holarrhena antidysenterica, Wrightia tinctori.

Other associates of middle story :

Semicarpus anacardium, Eleodendron glaucum, Hymenodictyon excelsum, Cassia fistula, Saccopetalum tomentosum, Ehretia laevis, Acacia catechu, Gardenia latifolia, Flacouria indica, Erythrina suberosa, Garuga pinnata, Cordia macleodii, Dendrocalamus strictus.

Chief associates of under story :

Woodfordia floribunda, Nycanthus arbortristis, Carissa opaca, Zizyphus jujuba

Other associates of under story

Helicteres isora

Grass species :

Heteropogan contortus, Apulda varia, Dicanthium annulatum, Bauhinia vahlili, Zyzyphus oenoplea, Abrus precatorius, Smilex macrophylla, Vallaris heynei, Dioscoria diemona, Butea parvifloras.

Land use pattern :

Land use pattern in and around Singrauli coalfields has been worked out. Table - 2 present data for land use pattern for 1986, 1991, 1996 and 2001. The trend has been shown for a total number of fifteen years at a regular interval of five years Fig.1 and Fig.2. It is evident from the data that the area under agriculture and under forest has reduced markedly. Which comes to 19.31% and 35.76% respectively. The area under mining shows an increase from 2.6 Sq. Km. to 9.29 Sq. Km. in the past fifteen years. The built up land has also increased from 4.71 Sq. Km. to 14.73 Sq. Km., wastelands shows a decrease from 10.61 Sq. Km. to 2.96 Sq. Km. may be because of the fact of the plantation on over burden done by the NCL which was nil in 1986 and gone upto 16.5 Sq. Km. in 2001.

It can conclude from the land use pattern scenario that in general the area under forest and agriculture has reduced tremendously while the area under mining has increased markedly.

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Table 1: Showing rangewise forest area in Sidhi district

Range	Reserved forest area	Protected forest area	Total area
Chitrangi	14739.60 ha	9641.78 ha	24381.38 ha.
Bargawan	10158.00 ha.	28661.96 ha.	38819.96 ha.
Waidhan	30062.68 ha.	8090.47 ha.	38153.15 ha.
Mada	36264.82 ha.	6021.75 ha.	42286.57 ha
Sarai	18995.67 ha.	21824.12 ha.	40819.79 ha.
Jiyawan	20093.63 ha.	17410.21 ha.	37503.84 ha.
Total	130314.40 ha	91650.29 ha.	221964.69 ha

Table 2: Land use pattern in Sidhi district

	1986	1991	1996	2001	%
Agriculture land	52.8	49.4	46.00	42.6	19.31
Forest	27.6	24.31	21.02	17.73	35.76
Built-up land	4.71	8.05	11.39	14.73	-212.73
Waste land	10.61	8.06	5.51	2.96	72.10
Mining area	2.6	4.83	7.06	9.29	-257.30
Ash pond	0.3	0.73	1.16	1.59	-430.00
Water bodies	1.38	1.37	1.36	1.35	2.17
Plantation	0.0	2.7	5.4	8.1	810.00
Plantation on OB	0.0	5.5	11.00	16.5	165.00