

Conversion of Forest Land in Goalpara district for Construction of Roads and Railway: A threat to environment.

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Abstract

The role of forest in maintaining local and global environment is known to everybody. Forest provides food and energy for various living beings and provides some basic needs of human community. Valuable forest cover of the earth comes under great threat due to deforestation, encroachment leading to shrinkage of its coverage and losing its natural characteristics. Forest plays an important role as regulator of global health in general and local climate in particular. Immense pressure of growing population on land and increasing human activity intensely degrading forests cover of the earth's surface and forest areas have continued to be converted to other land uses. This causes heavy loss of wild plants and animals endangering floral and faunal species. The up-gradation and conversion of forest roads also causing serious degradation of forest ecosystem which increasing vehicular movement inside the forest area. Goalpara district one of the westernmost district of Assam was dominantly covered with dense *Sal* (*Shorea robusta*) forest, widely distributed in both the low-land and hilly areas of the district. *Sal* plant is closely associated with the livelihood of local people in the district thorough the uses in various forms like fuel, food and fodder as well as in the construction of houses and necessary domestic accessories. The dense *Sal* forests of the district experiencing massive depletion during the last few decades due to the excessive exploitation and encroachment of forest land. The narrow natural forest tracts that developed due to animal and man movement inside the forest have been undergoing rapid upgradation in the way of widening and surface topping for smooth movement with vehicles cause a great threat towards the forest ecosystem. In this paper an attempt has been made to explore the conversion of forest lands for construction and upgradation of forest roads inside the forest areas leading to great threat to the environment.

Key words: Forest, roads, deforestation, forest conversion, Goalpara.

Introduction :

Valuable forest cover of the earth comes under great threat due to deforestation, encroachment leading to shrinkage of its coverage and losing its natural characteristics. Forest plays an important role as regulator of global health in general and local climate in particular. Immense pressure of growing population on land and increasing human activity intensely degrading forests cover of the earth's surface and forest areas have continued to be converted to other land uses. The rapid depletion of biological diversity of a vital resource has been built up over millions of years of evolutionary history (Ehrlich, P. and Ehrlich, A., 1981). A number of case studies reveals greatly about the contribution of geomorphic effects of deforestation (Ruangpanit, N, 1985). The accelerate growth of population, human need and greed have destroyed the environment and ecological balance of nature, leading to vast degradation of soil , water, air, biodiversity at local, regional and global level.

The process of development is closely related with the environment use, resource exploration and human activities. The objectives of the economic development are usually conflicting requiring trade-off between them. This development and accessibility have direct bearing upon the environment and the later has the most significance parameters on hills an plains developmental activities and sensitive linkage among the ecological elements and thus a river basin also represent the structural mountains, hills, plateaus, foothills, alluvial and flood plains, different high and low interactions. Constructions of roads disturbed the stability of the hill side and serious damage to the hydrologic system and remove the protective cover from the vulnerable slopes (Kumar, V.K. & Sing J.). From the sites of road construction the amount of sediments eroded away is ten times greater than the amount derived from agricultural land about 200 times greater than from the grassy areas, and 2000 times greater from forest areas (Dendy, E. E., 1968).

In Goalpara district the construction of roads inside the forest and its upgradation cause intrusion of human beings and increase non-forest activities causes great threat to the forest areas and ecological setup of. Goalpara district topographically identified by dissected hills and hillocks towards the Meghalaya plateau in the south, limited built up areas in the middle and flood affected extensive low lying areas near the river Brahmaputra in the north. The district has a total road length of only 1034 km of which 92 km is National Highway 94km state highway and 848 km PWD roads. In many parts of the National Highways and State Highways are passes along the forest areas within the district.

Description of Study Area :

Goalpara district, situated in western part of Assam in between the River Brahmaputra to the north and Garo hills to the south extending between 25° 28' N and 26° 15' N latitudes and 89° 42' E and 90° 15' E longitudes covering a geographical area of 1824 sq. km with a total population of 10,08,959 (as per 2011 Census). The district is bounded by river Brahmaputra in the north, foothills of Meghalaya plateau in the south, river Petabhokla in the east and flood plains of Dhubri district in the west. Politically the district is bounded by Bongaigaon and Barpeta district in the north; Kamrup district in the east; Meghalaya state in the south and Dhubri district in the west. The district is well connected with the other parts of the state through rail and road network. But most of the roads are passing through forest areas under different forest ranges leading to shrinkage of forest land as well

as



intrusion of human activity inside the forest areas.

Materials and Methods :

The study is based on both primary and secondary data. In this study the parameters like road density, seasonal condition of road, and different means of transportation system are taken into account. There are four forest ranges under the Goalpara Forest Division. Study has been carried out with the data of different parameters adopting simple quantitative methods and techniques. Secondary data are collected from the published sources, book, journals, and official records taken from the forest offices and PWD offices. The primary data have been collected from the field visiting selected roads and through the interview with local senior personalities. Collected data are tabulated properly and analysed.

Results and Discussion :

Since civilization human beings have been continuously changing the surface of the Earth for different developmental activities, which has accelerated with the invention of scientific technology. But the development so attained by human community at the cost degradation of natural environment. Construction of road and up-gradation of roads in and near forest areas cause lots of affect in the forest environment. Physiographic condition, drainage pattern, nature and extent of vegetation cover, soil textures on one hand and natural hazards like intensified floods of different damaging characters, serious erosion on river banks and agricultural lands, determined the nature of demand for roads in the region. Since 1981 (table 1 and 2) there has been shrinkage of reserved forests (RF) and proposed reserved forests (PRF) of about 2126.91 ha mainly due to encroachment for construction of road and 150 .04 ha for BG railway line. Among the four ranges under the Goalpara forest division in Goalpara district namely, Rangjuli, Lakhipur, Krishnai (Central) and Goalpara forest ranges, the dominant species of the forest is sal (*Shorea robusta*). The analysis of encroached forest areas for the construction of road and railway line in range wise since 1950 are as follows.

In Rangjuli range (Table 1 & 2) the total encroachment occurred for about 507.64 ha of reserved forests, out of that the reserved forest areas in Baghmara and Dabpara 29.88 ha; Budlung and kachibari 112.05 ha; Madang Dakuakata 74.7 ha; Buraburi and Ghagra hill 67.23 ha; Ambuk and Chekowary 82.17; Salpara and Athiabari 67.23 ha; Gathiapara 59.76 ha for road construction and Lanky 5.16 ha; Buraburi 5.08 ha; Amimoni 2.16 ha and Gathiapara 2.21 ha for railway construction. The length of roads within the reserved forest from Baghmara to Siluk 4 km, through the reserved forest of Bagmara and Dabpara.; Rangjuli to simlitola 15 km; through the forest area of Budlung and Kachibari; Rongjuli to Athiabari 10 km, through Madang and Dakuakata forests; Kheropara to Padupara 8 km through Gathiapara forest; Gulianpara to Athiabari 9 km through Salpara and Athiabari forest; Dhupdhara to Adogiri 11 km through Ambuk and Chekowary forest and Salpara to Tiplai 9 km through Buraburi, Ghagra hill and Chitalmari forests.

Table 1 : Encroachment of forest land for construction of roads in Goalpara Forest Division, Goalpara district.

Forest Ranges	Name of road	Length In Km	Area in ha	Nature of road	Forest areas
Rangjuli Forest Range	Baghmara – Siluk	4	29.88	K	Baghmara RF – Dabpara
	Rangjuli – Simlitola	15	112.05	BT	Budlung RF – Kahibari RF
	Rangjuli – Athiabari	10	74.70	G	Madang RF – Dakuakata RF
	Kheropara – Padupara	8	54.76	G	Gathiapara RF
	Gulianpara – Athiabari	9	67.23	K	Salpara RF, Athiabari RF
	Dhupdhara – Adogiri	11	82.17	BT	Ambuk RF, Chekuwari RF
	Sarapara - Tiplai	9	67.23	G	

					Buraburi RF, Ghagra hill RF and Chitalmari RF
Total		66	493.02		
Central Range Krishnai	Resubelpara NH 15	15	112.05	G	Paikan RF, Dairang PRF and Khardang PRF
	Balijana – Rang sai	25	186.75	G	Ajagar Hill RF
	Medhipara Bakenang	3	22.41	G	Kachumari PRF
	Paikan - Bajengdoba	18	134.46	G	Paikan RF, Tukreswari RF and Zangrajansa RF
Total		61	455.67		
Goalpara Forest Range	Goalpara – Agia	15	112.67	BT	Rakhyasini PRF, Bagulamari PRF, Pancharatna RF
	Goalpara – Pancharatna	17	126.99	BT	
	Goalpara – Makri Kharmuja	17	126.99	G	Makri RF, Rendu RF, Kharmuja
	Goalpara – Maladhara	26	194.77	G	Matia RF
	Solmari – Bardamal	7	52.29	G	Matia RF, Rakhapara PRF
	Goalpara – Dubapara Matia	23	171.81	G	Rakhyasini PRF
	Goalpara – Harimura	17	126.99	G	Do
	Bhaishkuli – Goraimari	5.5	41.09	G	Do
	Solmari – Moijonga	10	74.47	G	Do
	Nichinta forest road	2.5	18.68	G	Segunbahi RF
	Kalyanpur Bordal	2	14.94	G	Bagulamari PRF
Total		133	993.51		
Lakhipur forest range	Kumarkhali – Makri	1.5	11.20	G	Kumarkhali RF, Bordal RF
	Maladhara - Baguan	20	149.40	G	Bamundanga RF
	Rang sai – Balijana	18	134.46	G	Ajagar Hill RF
	Lakhipur – Bechakhana	5	37.35	G	Kumarkhali RF
	Aidoba – Pipalbari	11	82.17	G	Tangaon PRF
	Hashdoba – Thorko	6	44.82	G	Nalbari RF
	Harkachung – Panishali	6	44.82	G	Harkachung PRF
	Lakhipur – Joyramkuchi	9	67.77	G	Janjipara PRF
	Lakhipur – Gossaidubi	9.5	70.97	G	Thorkonalbari PRF, Nalbari RF
	Medhipara – Foamed	27	201.69	G	Nakkati RF
	Rongsai – Hatisila	3.5	26.16	G	Chatabari PRF
	Baida – Gajapara	10	74.47	K	Bamundanga RF
	Lakhipur - Agia	48	358.56	BT	Chatabari PRF, Mogho RF, Depalchung RF, Bamundanga RF, Rongsai PRF
Total		178.5	1133.40		

Source :- Office of the Forest range, Goalpara.

In Central Range (Krishnai) (Table 1 and 2) shows the occurrence of encroachment found in the reserved forest of Paikan, dairang, Khardang and proposed reserved forest 112.05 ha; Ajagar Hill RF 186.75 ha; Kachumari PRF 22.41 ha; and Paikan, Tukreswari and Zangrajansa RF 134.46 ha for road construction and it was followed by reserved forest of Dahikata 3.70 ha and Borjhar 6.97 ha for railway line construction. The length of the road within the reserved forests, Resubelpara NH 51 road length is 15 km through reserved forests of Paikan, Tukreswari and Zangrajansa; Balijana to Rang sai 25 km through reserved forests of Ajagar Hill and Medhipara to Bakenang, proposed reserved forests of Kachumari.

Table 2 : Encroachment of forest land for construction of Pancharatna Guwahati railway line in Goalpara Forest Division, Goalpara.

Name of forest ranges	Name of forest	Nature of forests	Area (in ha)
Rangjuli Range	Lankey	Reserved Forest	5.16
	Buraburi	Do	5.08
	Amimoni	Do	2.16
	Gathiapara	Do	2.21
Total			14.61
Central Range Krishnai	Dahikata	Reserved Forest	3.70
	Borjhar	Do	6.97
Total			10.68
Goalpara Range	Pancharatna	Reserved Forest	36.22
	Bagulamari	Proposed Reserved Forest	30.62
	Rakhyasini	Proposed Reserved Forest	55.93
Total			122.77
Lakhipur Range	Nalanga	Proposed Reserved Forest	0.98
Total			0.98
Grand Total			149.04

Source :- Office of the Forest range, Goalpara.

In Goalpara range (Table 1 and 2), the total encroachment occurred for about 993.51 ha of reserved forest and proposed reserved forests, out of that the reserved forest of Rakhyasini and Bagulamari was 112.05 ha; Pancharatna 126.99 ha; Matia, Rendu, Kharmuja 126.99 ha; Matia 194.22 ha; Matia and Rakhapara 52.29 ha; Rakhyasini 383.36 ha; Segunbasi 18.68 ha and Bagulamari 14.94 ha for the construction of roads and it was followed by reserved forests 36.22 ha of Pancharatna and proposed reserved forests 30.62 ha of Bagulamari and 55.93 ha of Rakhyasini for the construction of railway line. The length of the roads within the reserved forests Goalpara to Agia road length of 15 km through the proposed reserved forest of Rakhyasini and Bagulamari; Goalpara to Pancharatna 17 km through reserved forest Pancharatna; Goalpara Makri Kharmuja 17 km; forest Makri, Rendu and Kharmuja; Goalpara to Maladhar 26 km, forest Matia; Solmari to Bordamal 7 km, forest Matia and Rakhapara; Goalpara-Dubapara- Matia 23 km, Goalpara Harimura 17 km, Bhoishkhuli-Goroimari 5.5 km and Solmara-Moijonga 10 km, through Rakhyasini proposed reserved forest; Nichinta – forest road 2.5 km through Segunbashi reserved forest and kalyanpur – Bordal 2 km, forest Bagulamari proposed reserved forest.

In Lakhipur Range (Table 1 and 2) the total encroachment of forest occurred for about 1133.4 ha of reserved forest out of the reserved forest of Kumarkhali and Boedal was 11.2 ha; Bamundanga 149.4 ha; Ajar hill forest 134.46 ha; Kumarkhali 37.35 ha; Nalbari 44.82 ha; Nakkati 201.69 ha; Bamundanga 29.88 ha and proposed reserved forests were Hurkachang 44.82 ha;

Thorkonalbari 70.97 ha; Chatabari 26.16 ha and Rongsai 358.56 ha for the construction of roads and it was followed by proposed reserved forest 0.98 ha of Nalanga for railway line. The length of the roads within the reserved forest, Kumarkhali to Makri length is 1.5 km, through reserved forest of Kumarkhali and Bordol; Makadhara to Baguan 20 km, forest Bamundanga, Rongsai to Balijana 118 km, forest Agia hill; Lakhiur to Bechakana 5 km, forest Kumarkhali; Hashdoba to Thorko village 6 km, forest Nalbari; Medhipara to Folimari 27 km, forest Nakkati; Baida to Gojapara 10 km, forest Mogho and Depalchung; Bajipara to Borjhar 4 km, forest bamindanga; Lakhipur to Agia 48 km, forest Chatabari PRF, Mogho RF, Depalchung RF, Bamundanga RF and Rongsai PRF. Aidoba to Pipalbari 11 km, forest Tangaon PRF; hurkachungi to Panishali 6 km, forest Hurkachung PRF; Lakhipur to Joyramkuchi 9 km, forest Janjipara PRF and Rangsai to hatisila 3.5 km, forest Chatabari PRF.

The total number, length and nature of roads were for Rongjuli range, total number of roads 7, nature 1 (K) katcha, 2 black top (BT) 4 gravel (G) and total length is 66 km; in central range Krishnai, total number of roads 4, nature of the all roads are gravel (G) and total length is 66 km; in Goalpara range total number of roads 10, nature 2 (BT), 8 (G) and total length 142 km; in Lakhipur range total number of roads 14, nature 1 (BT) 3 (K), 10 (G) and total length 178.5 km. In Rangjuli range, total deforestation occurred 493.02 ha for road construction, 14.62 ha for railway line, it was followed by central range Krishnai 455.67 ha and 10.68 ha; in Goalpara range 993.51 ha and 123.76 ha and in Lakhipur range 1133.4 ha and 0.98 ha respectively. The highest number of roads was found in Lakhipur range followed by Goalpara, Rongjuli and central range Krishnai.

Conclusion :

Population pressure and large scale commercialization is the prime factor responsible for heavy destruction of forest in basin area (Kalita. B, 1995). Construction of roads and railway line through forests and massive unplanned bamboo harvesting for paper mill, oil mining, cement plants coal mining are some of such activities leading to depletion of forest. Rapid growth of population, large scale anthropogenic activities, development of transport system has been accelerated the exploration of natural resource and encroachment of forest areas. The increasing trend of encroachment, in forest areas have been causing not only shrinkage of forest but also affect the forest ecosystem in the region. The forests of Goalpara District particularly occupied by sal trees are one of the important tree species found in the Goalpara.

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