



Challenges in Conserving India's Rich Biodiversity

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India's rich biodiversity

Species richness determines the status of a country in terms of biodiversity. There are 12 mega biodiversity countries in the world namely India, Brazil, Colombia, Ecuador, Peru, Mexico, Madagascar, Zaire, Australia, China, Indonesia and Malaysia. (Source: National Biodiversity Authority India). Of the 18 hot-spots in the world, two are in India- North-East and Western Ghats. India is an acknowledged centre of crop diversity, and harbors many wild relatives and breeds of domesticated .With over 46,000 species of plants and 81,000 species of animals, India accounts for 7-8% of the recorded species of the world. Due to varied topography India has wide altitudinal variation from High Himalayas to sea coast. This has given rise to different climatic conditions and diverse habitats. This is the reason for richness of biodiversity.

Conserving biodiversity has been enshrined in the constitution of India

- Article 48 A - Directive Principles of State Policy "Protection and improvement of environment and safeguarding of forests and wildlife - The State shall endeavour to protect and improve the environment and to safeguard the forests and wildlife of the country".
- 51A Fundamental Duties "to protect and improve the natural environment including forests, lakes, rivers and wildlife, and to have compassion for living creatures"

Notable wildlife values of India

Half the tiger (ca. 1600) and Asian elephant (ca.

25,000) population and nearly 80 % of the Great Indian rhino population (ca. 2000) are in India. It is only subcontinent to have wild buffaloes, swamp deer, Asiatic wild ass. India has exceptional mountain ungulate diversity with 19 species.

Forestry at a glance

With Population over 1 billion, India is only second to China. It has 2% of world's forest cover. Recorded forest area of India is 23.41% of its Geographical area.

- Forest Cover - 21.02%
- Tree Cover - 2.82%
- Forest & Tree Cover - 23.84% of GA

India supports 17% of global human population and 18% of livestock population. Out of 5,70,000 villages in the country nearly 30% live in and around forest. 60% of country's cattle (485 million) graze in forests area. About 50% of the Forest Area (69.09 million Ha) is prone to forest fire. Due to poverty large section of the forest fringe population is dependent on forest resources resulting in its unsustainable use. Land hunger has also prompted encroachment on forest land. Fuel wood removal from the forest not only for domestic need but also for livelihood takes a heavy toll of the future regeneration. Illicit felling of valuable timber also poses a serious threat to protection of forest. Country is on a fast track of development which often needs diversion of forest land for various projects like coal, steel, Power, minerals, Irrigation, power transmission lines. The need for construction of Border roads is growing on a fast track and is using



forest land in very sensitive eco systems. The forestry sector in particular and the country in general will have to address these diverse needs in a judicious manner.

Thanks to the conservation efforts so far India is within the first 10 forest rich countries (78 million ha forest land) of the world. According to FAO report during 2000-2005 while countries like Indonesia (18.71 lakh ha) brazil (31.13 lakh ha) lost forest cover, India gained 23.12 lakh ha forest cover . In the 10 year period from 1997 to 2007 India has gained 31.30 lakh ha of forest cover. This is no mean achievement considering the overbearing pressure on the forest.

Forest Conservation Act 1980

This is one single act which has made substantial contribution in saving forest since its promulgation without any significant compromise with development needs. This is evident from the facts below.

<ul style="list-style-type: none"> ● Forest land diverted : 1951-80 ● 41.35/30=1.378 lakh ha/yr. 	FCA proposals received in last 30 years -26517 Approved -20516 =77.37% In process - 1784 =6.72% Not approved -1722 =6.49% Closed + returned +Withdrawn- 2495 = 9.27%
<ul style="list-style-type: none"> ● 1981-2010: ● 10.97/30=0.366 lakh ha/yr 	

This shows that even though only 6.49% of the 26517 proposals were rejected it has been possible to reduce the rate of annual diversion of forest land drastically due to judicious application of mind by the central Govt. State Govt. and User agencies.

The various factors threatening biodiversity and

the remedial measures have been analyzed in the following paragraphs.

Encroachment on forests

This is related to rural livelihood and often involves the poorer section of the society. Hence everyone is sympathetic. Repeated regularization encourages further encroachment. Strong political will and support of local villagers may contain this problem to some extent.

Removal of fuel wood by head loads

It is a Socio-economic problem and involves the poorest of poor and a large number of people are involved. Insufficient Forest Staff in isolated location cannot apprehend the head loaders. Any strict action results in antagonisation of masses. In most of the states it is legally allowed to collect fuel wood from the forest. In actual practice dead and fallen fuelwood from forest is exhausted very soon, Thereafter green young trees are cut and left to dry out only to be collected later. This causes serious loss of future regeneration.

Uncontrolled grazing

India had 12 mha of pasture land which is almost nonexistent today. 416 m cattle population of poor breed goes for unrestricted grazing in forest. This results in compacting of soil and consequent elimination of regeneration. Limiting grazing to carrying capacity has not been possible. Introduction of rotational and controlled grazing with the cooperation of villagers coupled with better animal husbandry practices may control this damage to some extent.

Forest fire

50% of India's forest is affected by fire. Due to unrestrained access of people in forest and collection of minor forest produce in fire season this problem is difficult to contain. Traditional rituals of some tribes also cause forest fire. Though crown fire is not known in India but it burns forest floor and



results in loss of micro-organisms, loss of regeneration, seeds, loss of soil fertility and loss of water holding capacity. This not only destroys present biodiversity but also prevents future regeneration. Forest survey of India Dehradun and some state forest departments have started satellite based fire monitoring, early warning and identification of fire sensitive zones. Better fire protection measures with manpower and mobility must be put in place to reduce this menace. CAMPA resources can come handy for this.

Illegal felling in forest

Illegal felling by organized timber mafia poses threat to valuable forests of the country. With legal empowerment and modernization of protection infrastructure this has been contained substantially. But further inputs are needed along with filling up of all frontline vacancies.

Mining on forestland

India a mineral rich country which produces 90 minerals - 4 fuel, 10 metallic, 50 non- metallic, 3 atomic and 23 minor minerals. India leads the world in production of some key minerals: 2nd in barites and chromites, 3rd in coal and lignite, 4th in iron ore, and 6th in bauxite. Mining Industry has grown in India very fast. During the period 1993-2005 various industries have registered the following growth:

1. Iron ore production increased by 2.5 times - from 60 MT annually to 155 MT;
2. Bauxite increased from 5 MT to 12 MT;
3. Chromite from 1 MT to 3.4 MT
4. Coal and lignite from 260 MT to 440 MT
5. Limestone from 80 MT to 170 MT
6. Value of mineral production grew at CAGR of 10.7%.

This is just the beginning of a fast track of development in keeping with ambitious GDP target. But this cannot happen without sacrifice of forest

areas. Country has to make a difficult choice between biodiversity conservation and development. A judicious compromise is the only solution. An objective criterion has been developed by the Ministry of Environment and Forest. IN 2010 coal ministry and forest ministry carried out a joint exercise for 9 coal fields. The CMPDI Ranchi provided the digital boundary of the Coal fields along with individual mine boundaries. Forest Survey of India superimposed this on the latest Forest cover map to produce for each coalfield a composite map giving a very transparent visual image of coal mines vis-a vis forest cover. This provided an opportunity to objectively decide which coal mine can be worked without much loss of important forest values and which are the mines proposed over sensitive ecosystem with high forest and wildlife values.

Use of IT to control illegal mining

Besides legal mining leases, illegal mining for stone, sand and small minerals pose a heavy threat to forest. Information technology can prove handy in ascertaining the correct location of sanctioned mines and can prevent illegal mining to a great extent. First the mine boundary from the map of sanctioned lease has to be digitized. Then with the help of a GPS/PDA the area can be laid out on the ground. To check already working mines with GPS / PDA, lat-long of the boundary pillars can be recorded and can be superimposed on the map to see if the mine is working on correct location.

Construction of Border roads

There are 73 Indo China Border Roads in 120 segments in J&K, HP, Uttarakhand, Sikkim and Arunachal Pradesh. Almost all the segments have got forest clearance. Besides, there are 270 non-ICBR border roads in 12 states which are getting cleared from FCA angle. All border roads are cleared on priority as they are security needs of the country. But it also requires high degree of sensitivity during construction. Since the ecosystem is fragile-hence



minimum disturbance desired. In some cases tree density is very high. Alpine grass land/cold desert, though without trees, is also very sensitive. Hence it is necessary to Minimize road width from standard specification wherever possible. Even within ROW tree felling should be limited to formation width. Muck disposal should be done in designated site only. Engineering measures such as breast wall/retaining wall/drains as required must be adopted which are neglected at times with disastrous consequences. Labour camps - should be set up outside forest and their fuel needs must be met with. Important waterholes should not be occupied. Safe crossings /corridors for wildlife should be provided. The border road construction has just picked up the momentum and once all the roads are constructed a large section of biodiversity rich border areas will be opened up and vast slope of the fragile hills will be broken. Hence a strong monitoring of all the imposed conditions should be done both by defence ministry and Forest department on the construction agency.

Wildlife conservation in India

To conserve very important wildlife and biodiversity rich areas, India has adopted a strategy to create a net work of protected areas.

Wildlife conservation strategy in India

- *In-Situ*
 - ◆ Create a Network of Protected Areas (National Parks, Sanctuaries, Community and conservation reserves)
 - ◆ Protect and manage dispersal areas and viable corridors
 - ◆ Implement coexistence strategy- Ecodevelopment in and around protected areas.
 - ◆ Reintroduction of locally extinct or threatened species
- *Ex-situ*
 - ◆ Captive Wildlife facilities - as repository of

genes, for research, captive breeding and reintroduction of endangered species and for conservation awareness and education of public and

To provide for safe breeding area for wild life and also to afford special protection to representative habitats a protected area network has been established across the country with creation of 52NP and 515 sanctuaries, 44 conservation reserves and 4 community reserves representing only about 4.90% of forest area. It is generally thought that these protected areas are devoid of human population and whatever biotic pressure is exerted on a PA is due to the fringe population. The reality is much different. More than 5000 villages are situated inside these PAs with approximately 30 lakh people residing in them. This is besides a larger number of villages in the 10 Km zone of these PA's with significant dependence on these PA's for fodder, fuel, MFP and also livelihood.

However there are lot of constraints and threats in wildlife management

- Tremendous biotic pressure on forests
- Habitat damage due to grazing and encroachment
- Fragmentation of corridors and encroachment of dispersal areas
- **Increased Human** : Wildlife conflicts such as -
 - i. Loss of human life and injury,
 - ii. Cattle kill.
 - iii. Crop Depredation.

In order to manage the protected areas in a sustainable manner it is first of all necessary to rationalise the areas of National Parks and Sanctuaries. The villages which are deep inside the forest and cannot be developed and their relocation can set free a relatively large area for providing safe breeding habitat for wildlife ,should be identified and relocated on priority. Villages which are on or near



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the periphery should be excised by marginal alteration of boundary. Rest of the villages should be treated as enclaves inside the PA as islands of exclusion and should be denotified, with an ecologically sustainable way of development. Such an exercise has been done in Madhya Pradesh and Himachal Pradesh which is awaiting Supreme Court's approval. The villages in and around the protected areas should be supported through a well drawn out eco development plan so that they become proactive to conservation.

Way forward

To conserve the biodiversity of the country the protection regime has to be strengthened while a closer relationship with forest dependent comm-

unity has to be developed. There has to be wider appreciation of the need for biodiversity conservation among all sections of the society and various development agencies. Fortunately, a lot of resources are now available. More than Rs. 14,000 crore has accumulated in CAMPA fund which are being transferred to states. The guidelines for utilization of CAMPA money as approved by Supreme Court is flexible enough to accommodate all the needs of forest and wildlife conservation and development. Besides Central Scheme of Integrated forest management, Assistance from 13th Finance Commission, Externally assisted projects and resources of State's plan can be accessed to meet most of the needs of biodiversity conservation.