

# Biodiversity Conservation, Land Use, Land Use Change and Forestry (LULUCF) Programmes Ideas for Implementation



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# Executive Summary

The study, 'Biodiversity Conservation, Land Use, Land Use Change and Forestry (LULUCF) Programmes – Ideas for Implementation', was undertaken to identify pertinent and emerging issues that have implications for biodiversity conservation and livelihoods and the inter-relationship between them. A detailed review of the current national and state policies was undertaken along with the strategies being implemented by the government and various multi-lateral and bi-lateral agencies and other organizations, focused especially in the states of Arunachal Pradesh, Chhattisgarh, Jharkhand and Orissa as provided in the scope of the study. Consultations were carried out with various stakeholders – academicians, key experts, members of non-governmental organizations, research institutions and senior officials in the Central/ State forest departments in the related field. Based upon these, the report attempts to come up with suggestions for programmatic action to address the problems related to land use, land use change and forestry issues.

The assignment was conducted between December 2007 and April 2008, wherein the desk review and consultations with various stakeholders in each state were conducted. Through the review of the policy frameworks at national and state level, particularly that influencing biodiversity conservation and livelihoods, we have attempted to highlight the several strengths and gaps. Through the review of the strategies and learnings from various programmes of government, bilateral agencies and civil society organizations, we also highlight what works and what doesn't and provide suggestions and steps that may be taken up through various programmes in the next few years.

While there is a growing appreciation that biodiversity needs to be conserved, attempts are isolated either through policy prescriptions or in programmatic action. The issue of land use and conservation of biodiversity not only requires specific attention but also needs to be taken up as a cross-cutting agenda in all development programmes. There are sufficient programmes promoting improvement in pro-poor livelihoods, the intricate relation between biodiversity conservation and poverty as a safety net deserves appreciation. The programmatic ideas for addressing cross-cutting issues in biodiversity conservation and livelihoods promotion suggested are as follows:

- Identifying, conserving and protecting the important biodiversity areas
- Conservation outside protected areas
- Strengthening community institutions to promote biodiversity conservation
- Promoting livelihoods that support biodiversity conservation
- Strengthening conservation needs in important sectors like agriculture, livestock, fisheries and horticulture
- Promoting eco-tourism to protect biodiversity
- Strengthening small scale production systems at the household level
- Developing the capacity for biosafety to substantially reduce the impact on biodiversity of invasive alien species and genetically modified organisms
- Promoting trade practices that support biodiversity conservation
- Assessment and inventorisation of biological diversity
- Promoting biodiversity to combat climate change

The study has been carried out by the Foundation for Ecological Security, Anand, Gujarat. The Foundation for Ecological Security works towards the ecological restoration and conservation of land and water resources and setting in place the processes of coordinated human effort and governance towards that end. The report is an independent publication commissioned by United Nations Development Programme. The views expressed in this publication are those of the author and do not necessarily represent those of the United Nations or UNDP.

## Introduction

The study, 'Biodiversity Conservation, Land Use, Land Use Change and Forestry (LULUCF) Programmes – Ideas for Implementation' was undertaken by the Foundation for Ecological Security (FES) with the overall objective of providing input for the programmatic action on issues related to biodiversity conservation, land use, land use change and forestry. The report attempts to identify gaps and constraints that exist within the current policies and strategies and present suggestions to develop and implement suitable programmes within the UNDP Country Office with a view to conserve biodiversity and enhance livelihood opportunities.

The scope and strategy of the study was to undertake a detailed review of the current policies and strategies being piloted/implemented by various multi-lateral and bi-lateral agencies and other organizations including the Government, focused especially in the States of Arunachal Pradesh, Chattisgarh, Jharkhand and Orissa. To prepare this, information from various sources was to be collected for desk review and consultations were to be carried out with stakeholders (key experts, organizations, institutions and senior officials in the Central/State Forest Departments) in the related field. Based on the analysis, a detailed report on the issues and constraints in the current policies and mechanisms for biodiversity, land and forest conservation related programmes had to be prepared and suggestions to initiate and suitably address these activities/mechanisms had to be provided to the UNDP India Country Office.

The primary task of the study was to identify pertinent and emerging issues that have implications for biodiversity conservation and livelihoods, more specifically the requisite inter-relationship between the two. The central subject of Land Use, Land Use Change and Forests (LULUCF) has received definite importance during the course of the study, and continues to be perceived as an integral component of the ongoing debate between biodiversity conservation and livelihoods. An analysis of the implications of international conventions and national level policy was undertaken to establish the context. Apart from identifying gaps and constraints that exist within the current policies and strategies, the study also presents best practices, both local and international, and offers a set of programmatic ideas for future implementation.

The assignment was conducted between December 2007 and April 2008, wherein the desk review and consultations with various stakeholders in every State were conducted. The report is presented under five chapters. **Chapter I** provides a brief understanding of the global perspectives; **Chapter II** comprises the national level synthesis of the policies and programmes; **Chapter III** looks at state level issues; **Chapter IV** is a compilation of local and international best practices; and **Chapter V** offers programmatic ideas for biodiversity conservation and livelihoods.



## Chapter 1:

# Global Perspectives on Key Concepts

## Biodiversity

*'Biological diversity' is the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.*



Two binding agreements were signed early in 1992 at the 'Earth Summit' in Rio de Janeiro. One of them was the *Convention on Biological Diversity* (CBD), which is reckoned as the first global agreement on the conservation and sustainable use of biological diversity (CBD, 2008). It argues for conservation of biodiversity, its sustainable use, and its equitable and fair sharing. The other agreement was the *Convention on Climate Change*. This convention targeted reduction in industrial and other emissions of greenhouse gases such as carbon dioxide, methane and nitrous oxide. Together with the CBD, the Land Use, Land Use Change and Forestry (LULUCF<sup>1</sup>) sector under the Kyoto Protocol of the United Nations Framework Convention on Climate Change to limit and reduce emissions, covers two among the most crucial aspects of ecological security: biodiversity conservation and land use. Both are explicitly critical for human survival, and stress on their sustainable management has gained momentum<sup>2</sup>.

The *Convention on Biological Diversity, 2008*, describes "biological diversity" as the variability among living organisms from all sources including, inter alia, terrestrial,

marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems. Biodiversity has also been assigned economic values for its various functions (Harris, 2004). These broad functions bring forth a large set of stakeholders: global society, national governments, aid and development organizations, businesses and perhaps most importantly, indigenous groups. Biodiversity is important to each group, but its preferred uses are often conflicting among one another. Even if conservation is agreed upon, there is rarely a consensus on the best means to achieve this. Policy, often, assumes a vital role (Harris, 2007).

The recent loss of biodiversity is unprecedented and at no other time in human history has this loss been as great. Habitats are being lost and degraded (several reasons are assigned to this, almost all induced by humans); natural resources are being exploited beyond their capacity; pollution is taking a toll on the systems; species that are not native are taking over new habitats; and climate change is threatening the very existence of species.



## Livelihoods

*Biodiversity is crucial to the alleviation of poverty, due to the basic goods and ecosystem services it provides. It is integral to key development sectors such as agriculture, forestry, fisheries and tourism, on which more than 1.3 billion people depend on for their livelihoods. Although biodiversity does not contribute directly to all sectors of development, such as infrastructure or mining, sustainable development cannot be achieved if biodiversity is compromised by development efforts. (CBD).*

On indigenous use, one of the Rio Forestry Principles says, "Forest policies should support the identity, culture and rights of indigenous people and forest dwellers. Their knowledge of conservation and sustainable forest use should be respected and used in developing forestry programmes. They should be offered forms of economic activity and land tenure that encourage sustainable forest use and provide them with an adequate livelihood and level of well-being".

In this mesh of relations, the most critical is the one between biodiversity and indigenous communities. These communities are, almost universally, acutely dependent on biodiversity for the purpose of their livelihoods. Livelihoods comprise capabilities, assets (including

both material and social resources) and activities required for a means of living (Chambers and Conway, 1992) and are inextricably linked to regional biodiversity. Biodiversity is the source of fuel, fodder, medicine and cultural references too. Harvesting the components of biodiversity also provides a variety of means of living: agricultural practices, local livestock and fish variety, non-timber forest produce (NTFP) from forests, etc. To account for such uses while planning for biodiversity is essential and ethically sound; it would also be prudent to be sensitive to the biggest direct stakeholder. Such communities suffer the most when biodiversity suffers; biodiversity most often suffers owing to changes that in which these communities had little role.



## Land Use, Land Use Change and Forestry (LULUCF)

*Land use, land use change and forestry (LULUCF) refers to the way humans manage land, how that use changes and forestry. Human alteration of landscapes from natural vegetation (e.g. wilderness) to any other use typically results in habitat loss, degradation and fragmentation, all of which can have devastating effects on biodiversity.*



Land use is significantly different from 'land cover' in that the same land cover, say grassland, may have any of the different land uses possible: recreation, agriculture, transport. Exactly the opposite may hold true (the same land use may have different land cover), and these vary temporally across regions (Harris, 2004). Land is arguably the first natural resource to have been politically contested in history. It is also finite, fragile and non renewable.

However, the present land use has encouraged diversion of lands for increasing agriculture and meeting industrial requirements. Pastures and grazing lands are reducing. Common lands are being pressured far beyond their capacity and being degraded quickly whereas regeneration is being rendered increasingly difficult. Significantly, it is these very lands which support the rudimentary needs of the marginal communities. With more urgent issues taking priority, the demands of their rural and indigenous livelihoods tend to get sidelined. Given its acute limits, conflict over land is often remarkable, and hence more dependent on policy. Agenda 21 recognized that the "Expanding human requirements and economic activities are placing ever increasing pressures on land resources, creating competition and

conflicts and resulting in suboptimal use of both land and land resources" (UNCED, 1992). It suggested an integrated planning for management of land resources as the various uses may interact and often be conflicting to each other and thus undermine its role in conservation. Agenda 21, while on deforestation, biological diversity and freshwater resources (Chapters 11, 15 and 18), also lays significant emphasis on land as a productive resource, the importance of sustainable land use, and environmental pollution and conservation.

The intricate relationship between biodiversity and livelihoods, the cruciality of biodiversity for our very own survival as a species and human progress, and the impacts of land use change as regards the same provides for an important debate. It may be stated here that Common Property Resources (CPRs) in the nature of forests and revenue wastelands figure in every element of the ongoing discussion; nevertheless it is not just policies related to CPRs *per se* that have implications for biodiversity conservation. Common lands are not only biodiversity rich, but they also support livelihoods of the poor and are most often the grounds where livelihood needs are negotiated with biodiversity concerns.



## Chapter II

# National Synthesis

India is home to about 8% of the world's biodiversity on just 2.4% of global area and has one of the highest diversity of ecosystems in the form of forests, wetlands, grasslands, marine areas, deserts, glaciers, mangroves among others. This richness is shown in absolute numbers of species and the proportion they represent of the world total.

### Comparison between the Number of Species in India and the World<sup>3</sup>

Group	Number of species in India (SI)	Number of species in the world (SW)	SI/SW (%)
Mammals	350	4,629	7.6
Birds	1,224	9,702	12.6
Reptiles	408	6,550	6.2
Amphibians	197	4,522	4.4
Fishes	25,446	21,730	11.7
Flowering Plants	15,000	2,50,000	6.0

India possesses a distinct identity, not only because of its geography, history and culture but also because of the great diversity of its natural ecosystems. The panorama of Indian forests ranges from evergreen tropical rain forests in the Andaman and Nicobar Islands, the Western Ghats, and the north-eastern states, to

dry alpine scrub high in the Himalaya to the north. Between the two extremes, the country has semi-evergreen rain forests, deciduous monsoon forests, thorn forests, subtropical pine forests in the lower montane zone and temperate montane forests (Lal, 1989). The Western Ghats and the Eastern Himalayas are two of the 25 hotspots of biodiversity on Earth. India contains globally important populations of some of Asia's rarest animals, such as the

Bengal Fox, Asiatic Cheetah, Marbled Cat, Asiatic Lion, Indian Elephant, Asiatic Wild Ass, Indian Rhinoceros, Markhor, Gaur, Wild Asiatic Water Buffalo, etc. Seventy percent of the country's billion plus population depends on this rich biodiversity for sustenance (Gadgil, 1989).

Over the past few decades the world





has changed at a faster rate than perhaps any other time in history. Previously inaccessible areas are now exploitable; control regimes have changed; human relation with biodiversity has evolved from the hunter-gatherer phase to the fast-industrializing stages; and new resources are being harvested like never before. Research has shown that degradation has led to the extinction of many species and pushed many more into the threatened or endangered list. India contains 172 species of animal considered globally threatened by IUCN (World Conservation Union), or 2.9% of the world's total number of threatened species (Groombridge, 1993). These include 53 species of mammal, 69 birds, 23 reptiles and 3 amphibians.

It has been reported that India's biodiversity has started dwindling due to reasons ranging from poaching to

rampant and unplanned urbanization. In agricultural practices, monoculture has replaced inter-cropping; traditional seeds are disappearing and hybrids taking over, adding to which are destructive trade practices, poor remuneration for indigenous food grain and cereals, and demographic changes. While these factors are aiding biodiversity loss, there has also been a simultaneous depletion of traditional knowledge and cultural practices that have been instrumental in conserving biodiversity.

The changing circumstances have influenced and have been influenced by policies, in which the concern for degradation of biodiversity is relatively recent. While Indian Policy has made some remarkable progress on certain aspects, there remain a few policy areas which are still regarded as matter of concern.

## 1. Policies on Biodiversity Conservation

India is the signatory to various international conventions that affect forest and biodiversity conservation – 'Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES), 1973'; 'Convention on Wetlands of International Importance especially as Waterfowl Habitat, (Ramsar, 1971)'; 'United Nations Framework Convention on Climate Change (UNFCCC), 1992'; 'Convention on Biological Diversity (CBD), 1992'; 'United Nations Convention to Combat Desertification (UNCCD), 1994'; 'Convention on the Conservation of Migratory Species of Wild Animals, Bonn, 1979'; 'Convention for the Protection of the World Cultural and Natural Heritage, 1972'; 'International Convention for the Regulation of Whaling, 1946'; and the 'United Nations Convention on the Laws of the Sea (UNCLOS)', 1982. India has been committed to the implementation of Chapter XI of Agenda 21 and the non-binding Forestry Principles and has developed appropriate national strategies, legislation and administrative instruments to address the obligations under the conventions. India believes that all subsequent deliberations on the international arrangements or mechanisms should be guided by and be in consonance with the elements for action identified in Agenda 21 and the Forestry Principles (MOEF 2002).

The Constitution of India mandates conservation as a duty of the citizen and a responsibility of the state (Sheth, 1997). The forest policy of India is based on the principle that sustainability is not an option but an imperative. There has been a gradual transformation of the forest acts and policies over the years since the Indian Forest Act, 1927, which was a "law relating to forests, the transit of forest-produce and the duty leviable on timber and other forest-produce". It was designed as an instrument to consolidate the control of the State over forests to that of the 1988 National Forest Policy that acknowledged the dissonance between statutory law and the rights of tribals and forest-dwellers (For the first time, the policy conceded that a symbiotic relationship existed between tribals and forests, and that people living in and around forests depended on them for their livelihood and survival.) The intervening period has seen gradual changes in consonance to the international agreements – like in 1972, priorities changed after the Stockholm Conference which led to the notification of the Wildlife Protection Act 1972; the 42<sup>nd</sup> amendment of the Constitution whereby the Centre could take decisions on forests; the establishment of a separate Department of Environment (later Ministry of Environment and Forest) in 1980; and the Forest

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(Conservation) Act, 1980, which makes mandatory Central consent for diversion of forestland for non-forestry purposes.

Further, the Joint Forest Management programme and 73<sup>rd</sup> amendment to the Constitution and the Panchayati Raj (Extension to Scheduled Areas) Act, 1996 have helped in the devolution of conservation of natural resources to the local level. The Biological Diversity Act, 2002 has brought a focus on the conservation of biodiversity involving the local communities. Though the Biodiversity Act and the subsequent rules provide

rights and power to the local communities to manage and conserve local genetic resources and document local knowledge through the creation of Biodiversity Management Committees, there are many criticisms with regards to lack of powers of the community in deciding the fate of their genetic resources, such as lack of space for strong local communities' rights, lack of appreciation of the collective nature of this knowledge and lack of protection of local knowledge and biodiversity from privatization and other forms of misappropriation.

## 2. Policies on Land Use

Land is a subject within the legislative and administrative jurisdiction of the states as per the VII<sup>th</sup> Schedule of the Constitution which empowers the states to develop policies and enact laws. In India, the three Ministries responsible for the conservation and management of land resources are the Ministry of Rural Development, the Ministry of Agriculture, and the Ministry of Environment and Forests. At the national level, the Department of Land Resources under the Ministry of Rural Development is the nodal agency for coordinating different land resource development and

management programmes.

The National Commission on Agriculture in 1976 suggested the need for a rational land use policy. The National Land Use Board in 1984 drew up a draft outline for a National Land Use policy, which was adopted by the National Land Use and Conservation Board (successor to the National Land Use Board) in 1986 (Swindale 1994), neither of which is now functional. India does not have a National policy on Land Use (Nair, 2006) but land, being a State issue, the states have their own legislation such as the land revenue







code, which apart from dealing with issues of land administration, regulate the use of land resources. On agrarian matters, there are several statutes dealing with tenancy, ceilings on land holdings, etc. A major programme for the consolidation

of fragmented plots of land has been established to promote effective and scientific management of land resources, though progress has been uneven in different states<sup>4</sup>.

### 3. Review of the Policies and their Implementation

A review of the policy framework and implementation, particularly with reference to biodiversity conservation and livelihoods, renders visible certain strengths and gaps. It would be imperative to remain sensitive to these while devising programmes to conserve biodiversity and improve livelihoods. A detailed analysis of national level policies and programmes was undertaken to examine their orientation and efficacy towards biodiversity conservation (refer Annexure II) of which the significant trends and observations are presented below.

- *Different pieces of legislation take divergent views on crucial aspects of biodiversity. Community role in biodiversity conservation, for instance, has had a mixed treatment in recent laws. While there is a reasonable national direction, the implementation of the same remains to be strengthened and followed.*
- *Most policies and initiatives that address conservation issues take a human-centric view. At an individual level, decision-makers do appreciate the value of conservation. While the existing legal instruments can be enhanced, there is a need for better implementation of the programmes.*
- *Ecological concerns, which are congruent with concerns of biological diversity, have had little space in policy. Most policies are populist in design and favour options for livelihoods and enhancing incomes. An ecologically sound way of dealing with these production systems needs more emphasis.*
- *The issue of conservation of biodiversity remains to be mainstreamed across departments, schemes and policies. Local diversity needs to be appreciated by the various Centre and State*

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- administered initiatives like the National Rural Employment Guarantee Scheme, etc.*
- *The overall orientation of policy is towards identifying the user of natural resource. Policy seldom identifies the guardian/stewards of these resources; it is the State that occupies that position through the principle of eminent domain. Considering the present trends of decentralisation and devolution, it would be worthwhile to explore and experiment with mechanisms for governance at the local level.*
  - *While it is interesting that resources are increasingly being locally managed, the capacities of the people to manage the resources need to be strengthened. The community should be brought to appreciate the local and global relevance associated with the management of such resources. Building community institutions is widely deemed vital for biodiversity conservation. However, the additional responsibility also calls for a need to build the necessary capacity in such institutions.*
  - *Except for forestlands and select areas that are under community control, large tracts of land are left as open access regimes, and are degrading for lack of proper management plans. With these lands largely categorised as 'wastelands', they tend to get assigned to other uses. These lands are sizable and, apart from Protected Areas, constitute an important category in conserving biodiversity. Tenure over such lands in favour of communities would encourage them to regenerate these lands for the conservation of biodiversity.*
  - *There is a lack of clarity as regards the precise role and responsibility various government departments and agencies are required to play, and the manner in which they may partner with community-based institutions in conserving biodiversity.*
  - *Many progressive conservation legislations are weak in implementation. This could be attributed to non-compliance, or the failure in these provisions being actually implemented. More processes are oriented towards exploitation rather than conservation of biodiversity. The process of development calls for stronger checks and balances with regard to the same.*
  - *Incentives for conservation did not exist historically. Yet, even after conservation became a priority in the latter half of the last century, incentives for conservation have not materialized in earnest, rather, a disincentive to conserve seems more prevalent. There is a need for innovative programmes and policies that reward conservation initiatives.*
  - *Often there is trade-off to be made between local use, competing interests and global well-being. In the absence of a policy framework, trade-offs and conflicting interests are most often settled based on the arbitration ability of involved parties and on economic incentives. Policy needs to deal with individual cases while keeping the overall national ecological security in mind.*
- There is sufficient stress on promoting pro-poor livelihoods in debate and practice of development initiatives. The efforts from government and other agencies towards livelihoods are tremendous, and ought to be appreciated. The intricate issues of biodiversity have also begun to be recognized. Many steps have been taken for biodiversity conservation and they too deserve appreciation. It is now required to integrate these two concerns with each other for they are inherently linked. This would require sufficient planning and demonstration of model programmes and evolving institutions and utilization/conservation frameworks. The challenge lies in the demonstration of models with social norms, local efforts for conservation and harmonious development.



## Chapter III

# State Synthesis

The study '*Biodiversity Conservation, Land Use, Land Use Change and Forestry (LULUCF) Programmes – Ideas for Implementation*' was undertaken in the four States of Arunachal Pradesh, Chattisgarh, Jharkhand and Orissa in order to develop an indepth understanding of the issues specific to biodiversity conservation, land use, land use change and forestry programmes. Information regarding the

same was collected through secondary research and interaction with government officials, department heads, civil society organizations and concerned bureaucrats at the State level.

This chapter has been divided into two sections – the first part profiles the four States and the second delves on issues that cut across and have relevance to each of them.



# 1. State Profiles

## Arunachal Pradesh

Arunachal Pradesh is a part of the Eastern Himalayas and lies between latitude 26°28' to 29°30' N and longitude 91°30' to 97°30' E with a geographic area of 8.37 million ha. It shares international borders with Bhutan, China, Tibet and Myanmar. The State has five river valleys, those of Kameng, Subansiri, Siang, Lohit, and Tirap rivers. Arunachal Pradesh has a varied climate: from temperate in the northern part to warm and humid in the southern part. The average annual rainfall ranges from 2,000 mm to 8,000 mm; and the temperature ranges from below zero to 31°C.

Of the total State population of 1.10 million (Census 2001), about 79.25% are rural and 20.75% are urban. Nearly 64.2% people belong to Scheduled Tribes. The population density is 13 persons km<sup>2</sup>. The livestock population is 1.26 million (Livestock Census 2003); it has increased by about 50% since the Census of 1992.

The land use pattern of Arunachal Pradesh is shown in *Table 3.1*. About 12% of the State is under permanent snow. Forests cover nearly 94% of the State area. However, recorded forest area is 51,540 sq km, making up just 61.55% of the total geographic area. Of the total forest area, 51,380 sq km is State-owned and only 15,500 ha are under private ownership. Roughly 62% of the State area comes under the category of Unclassed State Forest. This area also supports vast tract of forests as well as the habitation and cultivation practices observed by local communities since time immemorial. The local communities have held customary

rights on these forests while the lands are categorized as government lands. The State has 347 JFM (Joint Forest Management) committees managing 90,000 ha of land. There are 2 Tiger Reserves (Namdapha and Pakhui) and 1 Biosphere Reserve (Dehang-Dibang).

The forests can be classified into four major types: Tropical Wet Evergreen Forest, Sub-Tropical Pine Forest, Montane Wet Temperate Forest and Sub-Alpine/Alpine Forest. Recent studies have led to the discovery of new species (of flora and fauna such as the *Macaca munzala*, *Arisaema siangense*, *Coelogyne arunachalensis*, *Liocichla bugunorum*, etc. However, many areas in the State still remain physically inaccessible. This has impeded the enumeration and scientific survey of its exquisite biodiversity.

Infrastructure in the State is largely underdeveloped and many areas lie beyond any reasonable civic amenities. Yet, the State is very rich in biodiversity, much of which is endemic. Communities have protected several areas with age-old customary practices, including *jhum* or shifting cultivation, which have all helped conserve the State's rich biodiversity. Models of protected areas could be replicated with their traditional practices.

However, paucity of research and grassroot work remain contributing factors in the weak implementation of environment protection laws. The civil society tends to remain weak since there are only few community organizations and those from outside the region take time

**Table 3.1: Land Use in Arunachal Pradesh**

Land Use	Area In '000 Ha	Percentage
Total Geographical area	8,374	
Reporting area for land Utilization	5,498	100.00
Forests	5,154	93.74
Not Available for cultivation	26	0.47
Permanent pastures and other grassing land	4	0.07
Land under miscellaneous tree crops & groves	36	0.65
Culturable wasteland	37	0.67
Fallow lands other current fallows	47	0.85
Current fallows	30	0.55
Net area sown (as per agriculture census 1995-96 except total cropped area)	164	2.98

*Source: State of Forest Report 2005, Forest Survey of India, Dehradun*



## Map of Arunachal Pradesh



to develop an understanding of the issues that are specific to the area in which they work.

Indigenous communities control large swathes of land and their mode of governance could differ across the State. The concept of land ownership has not been of prime importance to the tribals as they have by tradition always shared land and its natural resources. But with massive development projects on the horizon, Arunachal Pradesh is embarking on a huge makeover. Mega projects such as highways, airports, big dams to fuel the country's growing power needs, land rights and ownership have now become more important than ever. With more than 100 small and large dams being planned, many biodiversity rich forests could be adversely

affected.

With more than a million tribals with no land records and no legal documentation to prove the community's ownership, there is a situation of chaos and uncertainty. The Arunachal Pradesh (Land Settlements and Records) Act, 2000 and the Arunachal Pradesh (Land Settlement and Records) Rules 2002 have been enacted to provide a comprehensive law for land revenue administration for the whole State incorporating customary rights on the land and certain measures of land reforms.



## Chhattisgarh

Chhattisgarh is a new State that was formed out of Madhya Pradesh in November 2000. The State lies between 17°47' and 24°06' N latitude and 80°15' and 84°24' E longitude, and occupies an area of 13.52 million ha – about 4.1% of the country's area. The annual rainfall varies from 1,100 mm to 1,700 mm, and the temperature hovers between 11°C and 47°C. The State has a population of 20.83 million (Census 2001) with 79.93% living in the rural areas and 20.07% in the urban areas. The population density is 154 persons per km<sup>2</sup>. About 31.8% of the population belong to Scheduled Tribes.

Table 3.2 shows the land use pattern in Chhattisgarh. The State records a forest area of 59,772 sq km (44.21% of the total State area). Reserved Forest, Protected Forest and Unclassified Forest constitute 43.14%, 40.21% and 16.65% of the total forest area respectively (55,863 sq km and 41.32% of the total geographic area). With 35.35% of Net Sown Area it is one of the most intensely cultivated regions in the country, with paddy being the main crop.

Chhattisgarh is extremely rich in biodiversity. The State's forests are of two major types: Tropical Moist Deciduous and the Tropical Dry Deciduous. Composition-wise, there are four important formations: Teak forests, Sal forests, miscellaneous forests and Bamboo forests. The chief NTFPs (non-timber forest produce) of the State are tendu leaves (*Diospyros melanoxylon*), sal seeds (*Shorea robusta*), harra (*Terminalia chebula*), gum, chironji (*Buchanania lanzan*), etc. Chhattisgarh has 3 National Parks and 10 Wildlife Sanctuaries spread over 4.69% of its geographical area.

The Indravati National Park is the only Tiger Reserve in the State. The JFM Resolution of 2001 provides for two kinds of committees: Forest Protection Committees (FPC) for already rich forests, and Village Forest Committees (VFC) for degraded forests.

The State's agro-biodiversity is another notable factor. Nearly 22,500 varieties of rice alone were collected at the rice germplasm bank at the Indira Gandhi Agricultural University (IGAU) at Raipur, most of which were from the region itself (Menon, 2001). Like other tribal dominated and non-industrial societies, in Chhattisgarh too there exist several examples of community-initiated practices and customs that conserve and encourage biodiversity conservation. The dependence of indigenous communities on forests is high. Many of the groups rely heavily on forests for their medicinal and nutritional needs as well as for income from NTFPs (non-timber forest produce). Remote pockets with community control still exist, where such practices are especially strong.

In recent years, the Naxalite issue has impeded the overall governance and development in the State. To add to this, the weak institutional framework, including the *Panchayati Raj* institutions, and the execution of ineffective policies has not yielded much towards the State's development. In issues like *Orange Areas*<sup>5</sup>, land classification and tenure security for indigenous communities are unclear and the community rights still remain to be recognized. By and large, the administration's sensitivity towards biodiversity concerns is far from encouraging and the implementation

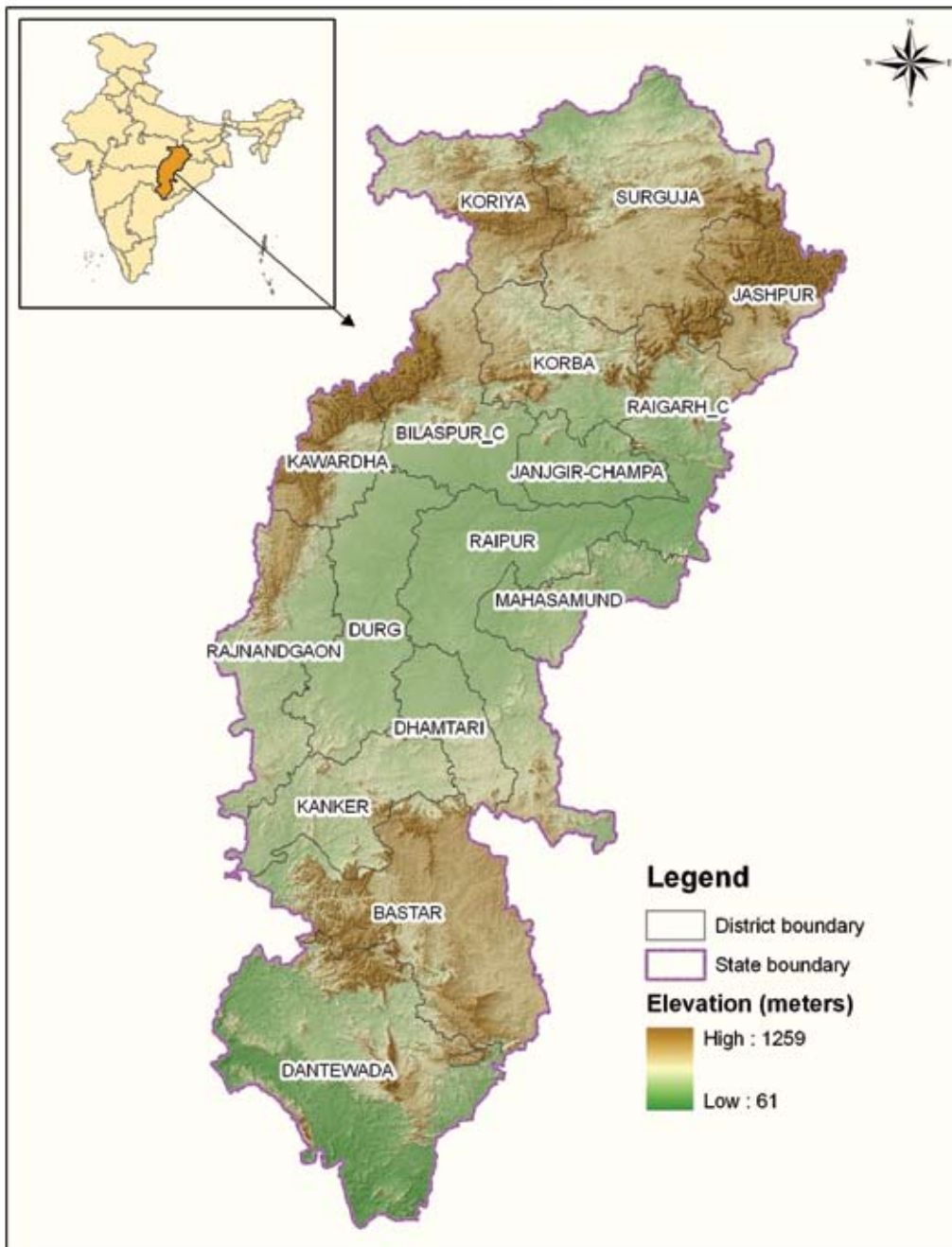
**Table 3.2: Land Use in Chhattisgarh**

Land Use	Area In '000 Ha	Percentage
Total Geographical area	13,519	
Reporting area for land Utilization	13,468	99.57
Forests	5,977	44.21
Not Available for cultivation	1,039	7.69
Permanent pastures and other grassing land	848	6.27
Land under miscellaneous tree crops & groves	1	0.007
Culturable wasteland	344	2.54
Fallow lands other current fallows	232	1.72
Current fallows	248	1.83
Net area sown (as per agriculture census 1995-96 expect total cropped area)	4,779	35.35

Source: State of Forest Report 2005, Forest Survey of India, Dehradun



## Map of Chhattisgarh



of legal checks on environmentally detrimental processes remains unproductive.

In a State so rich in biodiversity, it is ironic that the promotion of biofuels for accelerating growth and development has led to much controversy. Chhattisgarh's biofuel policy stresses on bringing 'wastelands' under biofuel cultivation, which threatens to undermine the prevalent local use as pastures, woodlots and biodiversity. Commercialization and bio-piracy of the rather rich agro-

biodiversity is a cause of deep concern with many cases being reported where locally developed varieties of crops were nearly taken over by parties with vested interests<sup>6</sup>. In such cases, access and benefit sharing becomes contestable. The issue of commercialization and the subsequent standardization of diverse breeds and varieties is an issue to reckon with. Most State-sponsored schemes take divergent views on biodiversity and a reasonable direction remains to be resolved.

## Jharkhand

Jharkhand was carved out of Bihar on November 15, 2000. The State is 7.97 million ha in area and lies between 22°00' and 24°37' N latitude and 83°15' and 87°01' E longitude. Geographically, it is marked by the Chhotanagpur Plateau and is drained by three major rivers: the Sone, the Koel, and the Damodar. Jharkhand is relatively densely populated with 338 persons per sq km. Of its total population of 26.91 million (Census 2001), 77.8% is rural. About 22.5% of the total population belongs to Scheduled Tribes.

Table 3.3 shows the land use pattern of Jharkhand. The State's recorded forest

area is 23,605 sq km, which is 29.61% of the geographic area. Of this, Reserved Forests are 18.83%, Protected Forests – 81.14%, and Unclassed Forests – 0.03%. Jharkhand has three major forest types: Tropical Moist Deciduous, Tropical Dry

Deciduous and Subtropical Broadleaved Hill forests. The State has 1 National Park and 10 Wildlife Sanctuaries on 2.62% of its total area. Nearly 10,903 JFM committees manage about 92.8% of the forest area. Very dense forests in Jharkhand cover an area of 2,544 sq km, moderately dense forests: 9,078 sq km, and open forests: 10,969 sq km.

Jharkhand has several issues similar to those of its adjacently located neighbour Chhattisgarh. The dependence of

the communities here on forests and other resources for their medicinal and nutritional needs, for cash incomes from sale of NTFPs and as grazing grounds for their livestock is very high. There have been customary practices that have helped in the conservation of biodiversity down the ages, mostly present in the tribal pockets of the State where the totemic names of the clan signify the name of an animal or a bird. Several such areas still retain a strong community control. The land tenure system in the State is governed by two acts – The Chhota Nagpur Tenancy Act, 1908 and the Santhal Parganas Tenancy

Act, 1949 – which provide specific community and individual rights. Till date, the ancient tenure systems like *Mundari Khunkhatti* and *Bhuinhari patties* continue to exist in name as well as practice, though in very scattered patches.

Despite the enactment of the Jharkhand Panchayati Raj Act in 2001, the *Panchayat* elections have not been held since the last 25 years. This has severely impeded governance. Naxalism is another issue that has curtailed the pace of development and governance of the State's natural resource and biodiversity conservation. The policy framework is weak and implementation of plans and procedures is inconsistent, often suffering due to the weak understanding of the nuances of issues at an administrative/



**Table 3.3: Land Use in Jharkhand**

Land Use	Area In '000 Ha	Percentage
Total Geographical area	7,972	
Reporting area for land Utilization	7,970	100
Forests	2,333	29.27
Not Available for cultivation	1,366	17.14
Permanent pastures and other grassing land	88	1.10
Land under miscellaneous tree crops & groves	113	1.42
Culturable wasteland	274	3.44
Fallow lands other current fallows	783	9.82
Current fallows	1,244	15.61
Net area sown (as per agriculture census 1995-96 expect total cropped area)	1,769	22.20

Source: State of Forest Report 2005, Forest Survey of India, Dehradun

## Map of Jharkhand



bureaucratic level in the newly formed State. The civil society's involvement in the State's development is quite vibrant but unfortunately not strong enough on issues related to biodiversity conservation.

Community rights too, remain to be resolved in parts. The greater stress on economic development through mining and industrial growth has negative impacts on biodiversity. Biofuel plantation poses another problem that is threatening to

affect land use and biodiversity. Many areas that are classified as 'wastelands' are being brought under biofuel plantations and this has challenged many customary uses.





## Orissa

Orissa lies in the eastern part of the country between 17°47' and 22°34' N latitude and 81°22' and 87°29' E longitude and occupies 15.57 million ha, or 4.74% of the total land mass of the country. Of the four states that form the focus of this study, Orissa is the only one with a coastline. Physiographically, the State has four regions: Northern Plateau, Eastern Ghats, Central Tableland, and Coastal Plains. There are three major rivers in Orissa – Mahanadi, Brahmani and Baitarni. The annual rainfall varies between 1,200 and 1,600 mm and the annual temperature shuttles between 25°C and 47.5°C with relatively high humidity. 85% of the 36.7 million population lives in the rural areas with a population density of 236 persons per sq km. 22.21% of the population belongs to Scheduled Tribes.

The table below describes the land use scenario in Orissa. The recorded forest area of Orissa is 58,136 sq km making up 37.34% of the entire State area, of which 45.29% is Reserved Forests, 26.70% – Protected Forests and 28.01 – Unclassed Forests. The State has six major forest types: Tropical Semi Evergreen, Tropical Moist Deciduous, Tropical Dry Deciduous, Bamboo Breaks, Littoral and Swamp Forests. There are 2 National Parks and 18 Wildlife Sanctuaries which cover 5.11% of Orissa. Of the several conservation sites, the Gahirmatha Wildlife Sanctuary and the Chilika lake are more prominent. The Gahirmatha Wildlife Sanctuary is a mangrove eco-system and a nesting site for the Olive Ridley turtle and the Chilika lake, one of Asia's largest brackish water lakes, is the largest inhabitat for the endangered Irrawady Dolphin. With about 12% of the area not available for

cultivation, of which a large part features hillocks, there is a concerted effort to bring it under vegetation for biodiversity conservation and meeting community needs.

Orissa is unique of the four states in several aspects of natural resource. The State has a rich community tradition that has helped in the protection of biodiversity through the ages. Several examples of community forest management are still prevalent and such practices have helped the communities to successfully conserve valuable biodiversity. Community dependence on forests is high in this region. Many communities are known to depend on forests for very fundamental needs such as nutrition. Orissa is extremely rich in agro-biodiversity too, a result of the conscientious collective action of communities for centuries together. The State also speaks of a very strong civil society that can be tapped to orchestrate the efforts of biodiversity conservation.

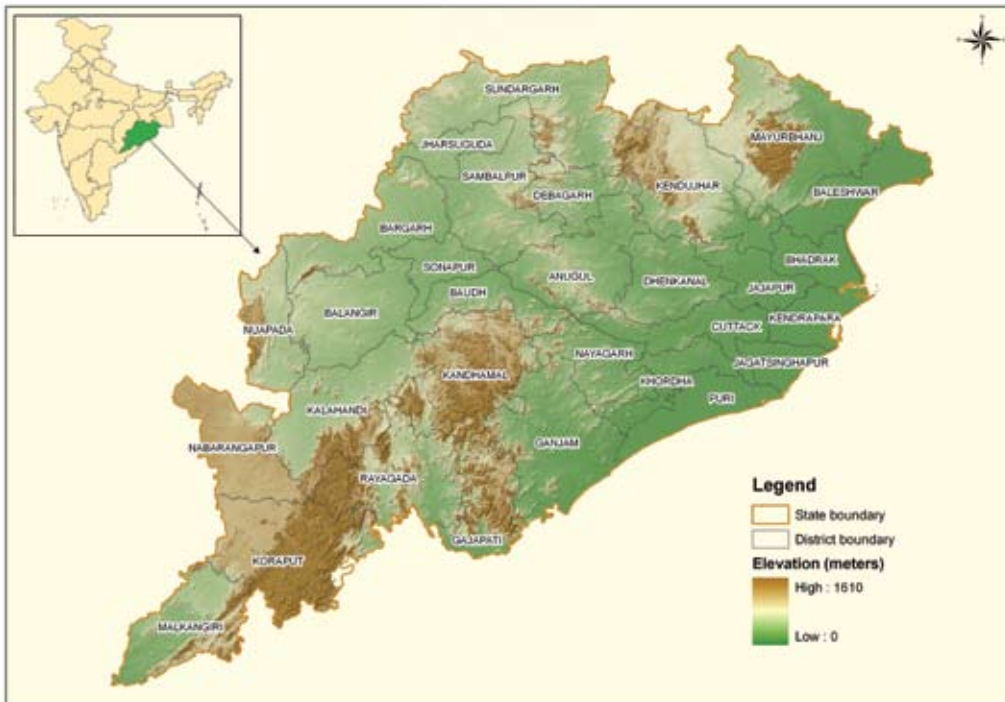
Orissa is a land prone to natural disasters such as cyclones, floods and droughts. During such calamities, all biotic and anthropogenic pressure tends to shift to natural resources, which are already rendered vulnerable after a natural disaster. This can have an adverse effect on biodiversity. A detailed study would do well to account for this detail. With economic returns on the agenda, mining and industrialization now gain top priority, thus leading to competition for and conflict over land and forest resources. State policies tend to diverge on several aspects with different departments approaching the same resource with conflicting views.

**Table 3.4: Land Use in Orissa**

Land Use	Area In '000 Ha	Percentage
Total Geographical area	15,571	
Reporting area for land Utilization	15,571	100.00
Forests	5,813	37.33
Not Available for cultivation	1,842	11.83
Permanent pastures and other grassing land	443	2.85
Land under miscellaneous tree crops & groves	482	3.10
Culturable wasteland	392	2.52
Fallow lands other current fallows	430	2.76
Current fallows	340	2.18
Net area sown (as per agriculture census 1995-96 expect total cropped area)	5,829	37.43

**Source:** State of Forest Report 2005, Forest Survey of India, Dehradun

## Map of Orissa



It is clear that the efforts on biodiversity conservation would strongly benefit from the development of a common approach. Several community protected areas need recognition and the community rights in Protected Areas need better resolution. Several community practices, such as *jhum* or shifting cultivation, need to be sensitively and carefully reoriented to accommodate current imperatives.

Many parts of the State are infested with Naxalism which hinders development, especially in the remote areas. The human-animal conflict, especially in the case of elephants, is also high in certain parts of the State. Standardization of forests, agricultural diversity and a fast developing thrust on biofuels pose grim threats to biodiversity.



Ideas for Implementation

**Table 3.5: A Few State-specific Features**

	<b>Arunachal Pradesh</b>	<b>Chhattisgarh</b>	<b>Jharkhand</b>	<b>Orissa</b>
<b>Governance</b>	<ul style="list-style-type: none"> <li>Differentiated customary laws (statutory laws hardly prevail)</li> <li>Inaccessibility; sensitive areas (international border disputes),</li> <li>Weak implementation of green laws</li> <li>Weak civil society involvement</li> <li>Most community held areas are well protected</li> <li>State biodiversity laws and Biodiversity Board in place</li> </ul>	<ul style="list-style-type: none"> <li>Weak <i>Panchayats</i></li> <li>Weak policies and implementation</li> <li>Weak implementation of green laws</li> <li>Lack of secure tenure</li> <li>Naxalite infested</li> <li>Pockets have community control</li> <li>State biodiversity laws and Biodiversity Board in place</li> </ul>	<ul style="list-style-type: none"> <li>No <i>Panchayats</i> elections since last 25 years</li> <li>Weak policy and implementation</li> <li>Rights remain unresolved in community controlled areas</li> <li>Naxalite infested</li> <li>Weak civil society involvement for conservation for biodiversity</li> <li>State biodiversity laws and Biodiversity Board in place</li> </ul>	<ul style="list-style-type: none"> <li>Unsettled rights in non-notified Protected Areas</li> <li>Weak implementation of green laws</li> <li>Divergent approaches of the departments</li> <li>Naxalite infested</li> <li>Strong civil society input</li> <li>Community control in pockets</li> </ul>
<b>Land Use</b>	<ul style="list-style-type: none"> <li>Absence of land records</li> <li>Large hydropower projects being planned could alter the existent land use</li> <li>Shifting cultivation (<i>jhum</i>) is being practised though the land under cultivation is small</li> <li>Highly differentiated biodiversity</li> <li>Community control is strong</li> </ul>	<ul style="list-style-type: none"> <li>Focus on Mining and Industrial projects</li> <li><i>Orange Areas</i> create confusions</li> <li>Very high dependence on forests; little focus in policy</li> <li>Much of the State is under Schedule V</li> </ul>	<ul style="list-style-type: none"> <li>Focus on Mining and Industrial projects</li> <li>Very high dependence on forests; little focus in policy</li> <li>Many parts are under Schedule V managed under Chhota Nagpur Tenancy Act and Santhal Pargana Tenancy Act</li> </ul>	<ul style="list-style-type: none"> <li>Focus on Mining and Industrial projects</li> <li>Very high dependence on forests; little focus in policy</li> <li>Shifting cultivation in certain locations continuing</li> <li>Many parts are under Schedule V</li> <li>Community conservation to be recognized</li> </ul>
<b>Biofuels and Biodiversity</b>	<ul style="list-style-type: none"> <li>Being introduced in a small scale by the North Eastern Development Finance Corporation Ltd ( NEDFi)</li> </ul>	<ul style="list-style-type: none"> <li>State has introduced biofuel policy and has massive plans which is a threat to biodiversity</li> <li>Huge plantation of <i>Jatropha</i> taken up in the last two years on the revenue wastelands and forest lands</li> </ul>	<ul style="list-style-type: none"> <li>Massive plans of biofuel plantation with prospective threat to biodiversity</li> <li>Massive plans, prospective threat to biodiversity</li> </ul>	<ul style="list-style-type: none"> <li>Thrust on biofuels is developing</li> <li>State has introduced biofuel policy for undertaking <i>Jatropha</i> plantations on wastelands</li> </ul>
<b>Forests and Communities</b>	<ul style="list-style-type: none"> <li>Very high community dependence on forests</li> <li>Shifting cultivation</li> <li>Weak state governance of forests</li> <li>Existence of community conserved areas - recognition of community protected areas lacking</li> <li>Existence of human-animal conflicts</li> <li>Hunting and other customary practices affect biodiversity</li> <li>Community control is strong - many practices have conserved biodiversity</li> </ul>	<ul style="list-style-type: none"> <li>Very high community dependence on forests</li> <li>Scope for improvement in forest governance</li> <li>Rights remain unresolved</li> <li>Existence of human-animal conflicts</li> <li>Need to update customary practices to prevent loss of their impact</li> <li>Many instances of community protected forests</li> <li>Many practices have conserved biodiversity</li> <li>E.g. <i>Sarna</i>, a sacred grove</li> </ul>	<ul style="list-style-type: none"> <li>Very high community dependence on forests</li> <li>Scope for improvement in forest governance</li> <li>Rights remain unresolved</li> <li>Existence of human-animal conflicts</li> <li>Need to update customary practices to prevent loss of their impact</li> <li>Many practices have conserved biodiversity</li> <li>E.g. <i>Sarna</i>, a sacred grove</li> </ul>	<ul style="list-style-type: none"> <li>Very high community dependence on forests</li> <li>Recognition of community protected areas lacking</li> <li>Many community rights remain unresolved</li> <li>Existence of human-animal conflicts</li> <li>Need to update customary practices to prevent loss of their impact</li> <li>Many practices have conserved biodiversity</li> <li>E.g. <i>Debottar</i> lands</li> </ul>
<b>Livelihoods and Biodiversity</b>	<ul style="list-style-type: none"> <li>Forests serve for everyday needs</li> <li>Standardization of crops and products</li> <li>Livelihoods depend on biodiversity - linkage can be strengthened</li> <li>Endemic diversity requires protection</li> <li>Little documentation of biodiversity with chances of biopiracy</li> </ul>	<ul style="list-style-type: none"> <li>Biodiversity versus livelihood/ Biodiversity with livelihoods - orientation of schemes</li> <li>NTFPs are valuable nutrition</li> <li>Standardization of crops and products</li> <li>Commercialization with several cases of biopiracy documented</li> </ul>	<ul style="list-style-type: none"> <li>Biodiversity versus livelihood/ Biodiversity with livelihoods - orientation of schemes</li> <li>NTFPs are valuable nutrition</li> <li>Standardization of crops and products</li> <li>Commercialization with eroding local knowledge</li> <li>Need for mechanism for protection against biopiracy</li> </ul>	<ul style="list-style-type: none"> <li>Biodiversity versus livelihood/ Biodiversity with livelihoods - orientation of schemes</li> <li>NTFPs are valuable nutrition</li> <li>Standardization of crops and products</li> <li>Commercialization and Corporate farming prevalent.</li> <li>Need for mechanism for protection against biopiracy</li> </ul>
<b>Inland Fisheries and Marine Biodiversity</b>	<ul style="list-style-type: none"> <li>Inland fisheries - traditionally supported communities</li> <li>Large hydropower projects</li> <li>Take over of markets</li> </ul>	<ul style="list-style-type: none"> <li>Inland fisheries - traditionally supported communities</li> <li>Privatization</li> <li>Introduction of exotic species</li> <li>Water Pollution - an issue</li> </ul>	<ul style="list-style-type: none"> <li>Traditionally supported communities</li> <li>Mining</li> <li>Introduction of exotic species</li> </ul>	<ul style="list-style-type: none"> <li>Traditionally supported communities</li> <li>Unaccounted use and depleting resources</li> <li>Development projects/trawlers threaten marine biodiversity and its special features</li> </ul>



## 2. State Level Analysis

In this section, effort has been made to discuss the broad aspects relating to biodiversity conservation, land use, land use change and forestry across the four states profiled and studied so as to develop programmatic ideas on issues of biodiversity conservation and related livelihoods.

### 3.01 Governance

Efforts have been made in all four states to decentralize governance in accordance with the provisions of the 73<sup>rd</sup> Amendment of the Constitution and subsequently the Panchayat (Extension to Schedule Areas) Act of 1996. While the three-tier system of *Panchayats* is in place in Chhattisgarh, Orissa and Arunachal Pradesh, elections in Jharkhand are yet to be conducted. All the four states have adopted Joint Forest Management (JFM) arrangements and have attempted to devolve forest protection to a certain extent. Though there do exist instances of community led conservation across each of the four states, the recognition of the same is still awaited. Community action has evolved in areas where there has been a preponderance of land falling under the categories of Revenue Wasteland and Protected Forest. Of the four states, Jharkhand, Chhattisgarh and Arunachal Pradesh have enacted a State Biodiversity Act and constituted the State Biodiversity Boards.

Despite the same, governance remains weak due to the lack of devolution

of powers to the *Panchayats* and improper coordination between various departments. The provisions of the 73<sup>rd</sup> Amendment and PESA of 1996 have not yet been implemented in true spirit in all the three states (Jharkhand, Chhattisgarh and Orissa) in order to transfer power to tribal representatives. Even where *Panchayats* have been constituted they are found to lack the required capacities for administering themselves or benefitting from the opportunities to govern their natural resources. There is also a need to strengthen the implementation of existing policies and government programmes so that the benefits from these could be realized. For instance, the discussions with various stakeholders in Chhattisgarh revealed that the Forest Working Plan has been drafted independently without including the provisions of the Chhattisgarh State Biodiversity Strategy and Action Plan (CSBSAP) of 2001. Rising Naxalism poses further challenges to the pro-people initiatives undertaken by civil society organizations and the government.

### 3.02 Land Use

A high percentage of land in each State is under forest cover with rich floral and faunal biodiversity. On account of the high presence of minerals in the three states of Orissa, Jharkhand and Chhattisgarh, the emphasis has shifted to large-scale mining as well as industrial and infrastructural development. The identified states have



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rich deposits of minerals such as iron ore, coal, lime stone, uranium, bauxite, dolomite, tin ore, gold, etc. The State Governments of Jharkhand and Orissa are known to have signed Memorandums of Understanding with several companies for undertaking mining and setting up industries in the respective states. In a similar way, the Vision 2020 statement of the Chhattisgarh government envisages prosperity by way of expediting mining operations<sup>7</sup>. Even though mining is restricted to smaller areas, ecological repercussions of such interventions are felt across vast expanses affecting other production systems. Many people in the state, during their discussions, pointed out that mining is the single biggest threat to biodiversity.

*Jhum* or shifting cultivation is common in certain pockets of Arunachal Pradesh and Orissa but the prejudice against *Jhum* cultivation by the State and the scientific community has not helped much. The slopes have further degraded because of the reducing period of fallow and more intensive cultivation. There have been efforts at promoting high yielding crop and livestock varieties, monoculture farming, and more recently, a disproportionate emphasis on biofuel development which has divorced cultural and ecological linkages between different traditional livelihood systems.

Land use is rendered complex in an environment where ownership and management of certain land parcels lie with two different departments as is the case of revenue forests in Orissa,

Chhattisgarh and Jharkhand. There is also the issue of *Orange Areas* in Chhattisgarh, which were forest lands that were handed back to the Revenue Department but the 12/12/1996 ruling of the Supreme Court in the Godavarman Case again mandated the Forest Department to administer control over such lands. Due to the lack of clear ownership rights, much confusion and conflict has prevailed, leading to a neglect of management of such lands and thereby degradation of the resource. Similar is the case with forest lands which are awaiting the regularization under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006.

### 3.03 Biofuels and Biodiversity

The Government of India's policy of blending biofuels with diesel has led to the evolving of the biofuels policy by the State Governments which advocates promotion of *Jatropha* (a non-edible oil-seed bearing plant) and tree borne oil seed plantations on revenue wastelands and agricultural marginal lands. Biofuels have emerged as an area of major thrust in all states, especially in Chhattisgarh and Jharkhand. Opinions on the entire issue, locally and globally, remain sharply divided. Chhattisgarh, for example, has stressed on planting *Jatropha* on its wastelands/non-cultivable areas/uplands to enhance economic opportunity from such lands. The State plans to bring up to 10 lakh ha under *Jatropha* plantation by 2012, from the 18 lakh ha of revenue wasteland and 19 lakh ha of degraded forestland. Of such





an ambitious target, 1.6 lakh ha has already been covered.

Debates around biofuels have highlighted the issue of food and fodder security. Also, this activity has been planned on lands categorized as 'wastelands', which incidentally have been used as commons to meet the fuel/fodder requirements. In these states, where most of the livestock owners are small and marginal farmers who depend largely on commons for their fodder requirements, propagation of species such as *Jatropha* at such extensive scale is set to threaten their livelihoods. The planning should account for regional land use as a concern and remain sensitive to local use. The initiative is also set to replace the existing scrub forests and secondary vegetation which are rich in biodiversity through monoculture plantations of *Jatropha*.

### 3.04 Forests and Communities

Forests are of great ecological value in the identified states since most of the perennial rivers in these regions are non-glacial in nature. Apart from being the starting points of several rivers, the forests are also a source of livelihood for infringing communities. In all the states, forests are found to act as vital sources for food, and are critical in terms of food security. Such dependence is greater in the case of tribals and other marginalized groups. Till the Joint Forest Management (JFM) was introduced, the communities did not have substantial rights over forests. In India, there are more than a lakh JFMs covering an area of 22.02 million hectares (Press Information Bureau, 2008). Viewpoints differ pertaining to the success of JFM – one maintains that JFM has been successful in areas where forests have reduced with time and the other that it still suffers the lack of sufficient devolution to the communities. In the areas where there were no forests to begin with or where large tracts of forests still exist, JFM has not been very successful.

Orissa has instances of self-initiated forest protection groups protecting large tracts of forests mainly revenue forests and *Gramya Jungles* and over the years this phenomenon has spread to reserve forests as well. In Arunachal Pradesh, communities control 62% of the total forest (Rastogi, 2007) and they are known to have historically protected them. Such



instances are also observed in Chhattisgarh and Jharkhand. People's conservation measures have long existed, but there is need for policy recognition of such conservation. The 2002 amendments of the Wildlife (Protection) Act, 1972, do provide for Community Reserves and Conservation Reserves. There has been an initiative to form 'Community Conserved Area' (CCA) in two sites – Thembang village of West Kameng district (312 sq km) and Lumpo and Muchat village of Tawang district (98 sq km) of Arunachal Pradesh. All the four states have predominantly tribal population whose cultural and religious links with nature are well documented. The Apatani system of resource management in Arunachal Pradesh, *Sarna*, a sacred grove in Chhattisgarh and Jharkhand, and *Debottar* lands in Orissa are some of the few practices that assist biodiversity conservation. Cultural references are such that the tribals in many parts of all the states would never kill certain animals which are regarded as sacred by them due to their relation to totemic names.

### 3.05 Livelihoods and Biodiversity

The linkage between biodiversity and livelihoods is quite complex and different stakeholders have different approaches. There is universal agreement that biodiversity is a resource that is linked



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to the well being of communities living in its vicinity. In the case study of an Orissa village it was found that the tribal community collects about 58 varieties of NTFPs from the forest of which it sells only five, but which nevertheless provides nearly 50% of its annual cash income. The remaining varieties are used for domestic consumption – as products for barter, nutrition, medicine, etc. In a forest there is tremendous diversity to be used all the year round and thus when diversity reduces, the local communities have fewer resources to bank on and are rendered vulnerable. Another study in Jharkhand shows that 55% food security has declined because of decline in NTFP, something attributed to deforestation and forest degradation (Centre for Environment and Food Security, 2005).

A corollary is that if community-biodiversity linkages were weakened, communities would lose on nutrition, cash incomes, agricultural productivity and healthy livestock. It is also held that there is not sufficient natural resource to supply the market, which is usually in arrangements where communities tend to lose out. This is particularly evident for agro-biodiversity. The prevalence of high yielding varieties has suppressed and sidelined the cultivation of local varieties of crops. It is also argued that forests regulate poverty and acute poverty exhausts biodiversity. The pressure on biodiversity cannot be wished away, and it is exerted from several sides, not all of which can be accounted. The best way out would be to diversify livelihoods so as to take the pressure off

biodiversity.

Market potential of certain species prompts communities to conserve them to the exclusion of the rest. For instance, lac cultivation promoted by the Indian Institute of Natural Resins and Gums (formerly known as the Indian Lac Research Institute) in Jharkhand has encouraged the protection of varieties such as *ber* and *palash*. A large number of other varieties have suffered neglect. Many schemes oriented towards livelihood generation have encouraged livelihoods on particular species but have an insufficient component for conservation of biodiversity. Local biodiversity is also overlooked in many schemes for plantations – for example under the rehabilitation plans the secondary forests continue to be cleared for plantation of commercial species like *Tectona grandis* and *Gmelina arborea*. Further, the neglect of crop and livestock biodiversity is evident from the pending Seed Bill of 2000 and the weakening of the Protection of Plant Varieties and Farmers Rights Act, 2001 and is an issue of great concern. Biopiracy too remains an issue and is weakly addressed by law both at the Central as well as at the State level.

### 3.06 Inland Fisheries and Marine Biodiversity

Water management is closely associated with livelihood and biodiversity concerns. None of the identified states receive rainfall any less than 1,100 mm, despite which a scarcity is often faced which is primarily on account of the poor management of water resources and skewed distribution. Further,





there is a trend towards privatization of water resources in many states. Each of the states has an independent water policy, most of which have been revised in accordance with the amendments made to the National Water Policy in 2002 that are oriented towards 'private participation' in water resources. This has adversely impacted the availability of clean and safe drinking water for human consumption purposes and livelihoods such as fisheries and animal husbandry.

All the four states profiled show a focus on inland fisheries with bigger, capital-intensive enterprises having leaseholder rights over larger inland water bodies for commercial purposes with restricted customary rights for the rural poor. The smaller water bodies continue to be under the *Panchayats*, village bodies or individuals and in all the states, it is the market varieties of fresh water fishes that are propagated in such village water bodies. The construction of big dams has resulted in the depletion of several indigenous varieties of carps and trouts in the downstream. In Orissa, it is further reported that construction of major irrigation and hydroelectricity projects along the Mahanadi and Brahmani rivers has reduced the discharge of fresh water to the sea, increased brackishness and affected wild fauna in the reaches where such rivers meet the sea. Additionally river pollution is high with Brahmani being one of the 20 most polluted rivers of the

world. Mahanadi is equally affected by the industrial corridors along it.

Of the identified states, Orissa is the only one with a coastline<sup>8</sup>. Even though the Coastal Regulation Zone Notification, 1991 (under the EPA, 1989) remains in force, the High Tide Line (HTL) is yet to be determined for a better part of the stretch. In the absence of a clearly identifiable High Tide Line (HTL), it has become difficult to enforce the progressive elements of the act, which prevents environmentally hazardous activities within 500 meters of the HTL area. The prevailing policy framework provides very little opportunities for community-based conservation of marine biota. On the one hand, rapid mechanization (i.e. introduction of trawlers), introduction of barricades (only affordable by bigger enterprises) and participation of foreign fishing enterprises in Indian seas have marginalized poorer groups of fisher folk traditionally dependent upon marine fish produce, and on the other, these areas are prone to natural disasters such as cyclones impacting the fishermen communities as well as agriculture in the hinterland. The crop destruction on account of natural disasters renders communities vulnerable and forces them to exert higher pressures on the prevailing biomass, which itself is recovering from the disaster. Disaster preparedness thus needs to have inbuilt components of biodiversity conservation and vice versa.

## Chapter IV

# Best Practices and Key Learning

Instances of a few acknowledged best practices and success stories are presented in this section under **key focal areas** that, in recent times, have begun to define programmatic intervention on biodiversity conservation.

## 1. Key Focal Areas

### 1.01 Biodiversity conservation as a strategy for equitable development

Biodiversity rich areas provide NTFPs for the poor. They are not only the originating points of several life sustaining rivers and tributaries but also transfer vital nutrients to small and marginal lands located in adjoining areas. Each of these benefits are of critical value to marginalized groups, heeding which a UNDP programme in Pakistan called the *Mountain Areas Conservancy* project (MACP)<sup>9</sup> has helped establish and strengthen village and valley-level conservation committees in 65 of 70 valleys and set up the Valley Conservation Fund and Mountain Areas Conservancy Fund as financing mechanisms. It has also helped to develop the official policy that empowered these committees to take responsibility for sustainable management of their own forests and wildlife. This

project has not only safeguarded the interests and livelihoods of an erstwhile-marginalized group, but has also become a means for providing the local stewards with an empowering context that ensures social and political equability, in addition to economic equity.

In another instance, the Western Terai Landscape Complex Project in Nepal has been crafted to address the issue of expanding human needs and their pressure on the ecosystem. In this initiation, conservation has been extended beyond the boundary of the Protected Area to cover larger landscape of different land use patterns with an aim to develop replicable landscape-level management model(s) for safeguarding the biological wealth and vital ecological functions in Nepal. Initiated in 2005, the eight-year long project is a joint initiative of the Government of Nepal and seven national and international organizations. The project's landscape approach envisions integrated ecosystem management to achieve the multiple objectives of conservation, sustainable natural resource management and poverty alleviation by reorienting biodiversity management approaches and its institutional arrangements. The project was designed to address major biodiversity





threats of agriculture encroachment and squatting in forestlands, high grazing pressure in the forests, overexploitation of forest resources and the replacement of traditional agricultural crop varieties and landraces with modern cultivars.

### **1.02 Models of livelihood production that assist in biodiversity conservation**

There exist several livelihood options that ensure a sustainable stream of benefits and help to create economic incentives for the long-term furtherance of conservation goals. Such livelihoods commonly include organic farming, small scale enterprises such as bee keeping, eco-tourism, etc. The honey programme of *Appropriate Technology India (ATI)*<sup>10</sup> is worthy of a mention, and is centred on the organization's 'conservation-and-enterprise' approach. The organization has introduced improved wall hive technology to increase productivity of traditional beehives in remote Garhwal Himalayan villages. In ecological terms, bees serve as efficient pollinating agents in the Western Himalayas region. This results in better seed production in forests and pastures, which contributes to better regeneration. As a result, the economic value of blossoming trees and flowers increases, thus benefitting local communities. Several such viable options are found to exist, and are of extreme value in conserving biodiversity through ecologically sound models of livelihood.

FES's project in the periphery villages of Satkosia Gorge Wildlife Sanctuary, Orissa, initiated in 2005, is aimed at conserving and improving the biodiversity and faunal habitats of the sanctuary through reduced pressure of livestock grazing and addressing the biomass needs of the periphery villages through improved vegetation outside forest areas to meet local needs and support alternative livelihood options. The project has been able to demonstrate on a small scale that work on livelihood aspects could help in both reducing the dependence on the forests as well as increasing the livelihoods of the communities living around the sanctuary. Similar projects being implemented by the Ashoka Trust for Research in Ecology and Environment (ATREE) around BRT Wildlife Sanctuary and the Keystone's project around the Nilgiris provide further examples.



### **1.03 Biodiversity conservation as a means of mitigating risks to livelihoods**

Biodiversity conservation ensures the availability of 'key assets' for different sections of rural community – agriculturists, fisher folk, livestock herders, artisans, small scale entrepreneurs, NTFP collectors, etc. – thus widening the local livelihood portfolio to encompass a variety of alternate and ecologically sustainable enterprises. A diverse livelihood portfolio, created and sustained in this manner, increases village resilience to market fluctuations, unpredictable rainfall and even natural disasters. In rain-fed regions biodiversity conservation, undertaken as part of watershed programmes, succeeds in drought proofing regions and restricting land degradation. Biodiversity conservation further equips local communities to deal with issues relating to the introduction of Genetically Modified Organisms (GMOs).

In Mexico, for instance, the country-based demonstration project to assist in capacity-building to implement national biosafety framework is partnering with the government's National Commission on Biosafety and Genetically Modified Organisms to develop a long-range plan addressing biosafety concerns. Specifically, the project is helping develop the skills and capacity needed to carry out scientific and technical risk assessments; implement activities for risk management; and foster an evaluation and strengthening, where necessary, of Mexico's legal and regulatory



framework. A flexible information sharing system, introduced as part of the project, was a significant influence in helping co-ordinate government activities, standardize risk assessments, and provide effective oversight of living modified organisms issues.

### **1.04 Promoting trade and business that will strengthen biodiversity conservation**

Since terms of trade universally determine livelihood choices at the village level, intervening agencies are required to foster market conditions that will encourage biodiversity conservation. These intervening agencies are required to assist local communities in tapping existing opportunities, as well as initiate local level market reforms that will prevent the corrosion of existing biodiversity.

In Ethiopia, for example, the Dynamic Farmer-based Approach to the Conservation of Ethiopia's Plant Genetic Resources project has fostered a unique partnership between local farmers, extension agents, scientific institutions, and government departments to conserve 316 varieties of 22 different crops on farms. The project has developed the capacity of local farmer associations and established 12 community gene banks. At the same time, the project has developed market incentives for maintaining genetic diversity.

This includes a pioneering and effective programme for reimbursing farmers for conserving different varieties, or landraces, of the same crop species. Similarly cocoa fields of Ghana are harvested among forests that include one of the world's top-25 'hotspots' of biodiversity. There, in a region that includes more than half of all mammal species found in Africa, a UNDP-GEF project is initiating work with local stakeholders, government, donors and the global cocoa industry to develop sustainable cocoa production systems that can both benefit the region's biodiversity and prove economically viable.

Market potential of certain species prompts communities to conserve them to the exclusion of the rest. For instance, lac cultivation promoted by the Indian Institute of Natural Resins And Gums (formerly known as the Indian Lac Research Institute) in Jharkhand has encouraged the protection of species such as *Ziziphus ziziphus (ber)* and *Butea frondosa (palash)*, while the others have been exploited. There are similar experiences with the promotion of *tassar* cultivation (host tree being *Terminalia arjuna*) in Jharkhand and West Bengal. While the promotion of species-based programmes for livelihood improvement could be encouraged, it must be ensured that the projects comprise a sufficient component for overall conservation of biodiversity. The challenge

remains in sensitizing global forces and priorities in a manner that market mechanisms at the grassroot level are made accommodative of local livelihood and biodiversity concerns.

### **1.05 Encouraging traditional knowledge and decentralizing management for biodiversity conservation**

The goals of decentralization largely coincide with the needs of effective biodiversity management. In theory, local people are more likely to identify and prioritize their environmental problems accurately, and in such context, resource allocation is bound to be more efficient and information costs lower. Local groups are also likely to have a greater sense of ownership of decisions made locally, such as rules pertaining to resource use<sup>11</sup>. In addition decentralized management is also capable of capitalizing upon systems of traditional knowledge and local best practices.

In this regard the Polynesian island of Niue has begun a national dialogue on Traditional Knowledge (TK) by establishing a National Forum for the Protection of Traditional Knowledge and Access to Genetic Resources and Equitable Benefit-sharing. The Forum has made evident to the government that protection of traditional knowledge through traditional intellectual property regimes is not satisfactory to Niue or its citizens. The Forum is now considering proposing

legislation based upon the Model Law for the Protection of Pacific Islands' Traditional Knowledge and Cultural Expressions developed by the Workshop on the Protection of Traditional Knowledge and Expressions of Culture (UNESCO, 2001). Recognition of Traditional Knowledge, coupled with decentralized management is guaranteed to contribute towards better governance of biodiversity.

Similarly ANTHRA is an organization of women veterinary scientists working primarily on issues of livestock development within the broader context of sustainable natural resource use. ANTHRA has documented over 700 different traditional remedies used for treating approximately 70 different conditions affecting domestic farm animals and 14 conditions of poultry. By popularizing such practices, ANTHRA has initiated a process that assists in preserving indigenous varieties of livestock.

Decentralized management requires for intervening agencies to capacitate local institutions, and strengthen institutional norms and regulations for sustainable development and biodiversity conservation.

### **1.06 Potential means for converging government programmes for biodiversity conservation**

Biodiversity conservation measures bear with them the potential means for converging programmes and initiatives,





both governmental and non governmental, and initiating a dialogue on the need to cohere policies, enactments and legislations, which in practice, are found to work at cross-purposes to one another. Biodiversity conservation ideals demand an integrated approach that necessitates interdepartmental cooperation and coordination as well.

In Sri Lanka's Wildlife Conservation and Protected Area Management project<sup>12</sup>, this has meant the training of more than 475 resource professionals – 90% of the Department of Wildlife Conservation's rangers, guards, and park staff – who are now better prepared to manage protected areas and interact positively with local populations whose communities surround them.

The Community-Based Rangeland Rehabilitation project in Sudan, implemented with support from UNDP/GEF, undertook an effort in providing leaders of rural councils with intensive training on environmental awareness. Following that, the project supported requests from council authorities for assistance in drafting a decree to stop the inefficient expansion of agricultural fields.

Both projects have succeeded in bringing local communities, subject matter specialists, intervening agencies and local communities on a common platform and initiating a dialogue on evolving governance mechanisms that would be better oriented towards biodiversity conservation.

## Supporting Sectors

Apart from the best practices and success stories mentioned as part of the key result areas, biodiversity requires assistance in the form of adequate technological support, measures to enhance local capacities and research and development. Such areas of intervention are recognized as support sectors – areas that greatly assist mainstream programmes to systematically address livelihood needs and efforts aimed at biodiversity conservation.

## Capacity Building and Technological Support

Policies of agencies such as the International Fund for Agriculture Development (IFAD) and the European Union in this regard are exemplary. Emphasis is laid on enhancing technical, legal and institutional capacities to

address negative externalities; to help beneficiaries mitigate any potential adverse impacts associated with project interventions, and to ease constraints on their adoption of environment-friendly, sustainable practices. A conscious effort to introduce technological packages to improve livelihoods should evolve out of adaptive R&D, in order to build on local knowledge systems in the face of new environmental challenges linked to climate change and to enhance local capabilities. It is further believed that certain forms of local and indigenous knowledge (for example, knowledge of medicinal plants or under-utilized plant species) need support and integration into fair, sustainable value chains which may boost local capabilities and strengthen local cultures while also contribute to climate change mitigation and biodiversity.

## Research and Development

An interdisciplinary approach wherein community mobilization is based on a scientifically correct understanding of ecological phenomena is necessary for interventions to be successful. In this regard Yemen's Conservation and Sustainable Use of the Biodiversity of the Socotra Archipelago project is widely seen as having raised national awareness on the importance of coral reef habitats and encouraged the Yemeni government to sign the Convention on the International Trade in Endangered Species of Wild Flora and Fauna (CITES). The project carried out the biodiversity research that provided the basis for designing a comprehensive conservation-zoning plan for the islands, which was ratified by the government.

It may be stated that traditional and community knowledge, as opposed to being unscientific, are found to contribute significantly to data bases and knowledge systems developed through modern, scientifically rigorous methods. Research undertaken along with community participation is bound to be more accurate, and more easily translatable into action at the local level. Research remains an important arena in being able to determine the adverse affects of climate change and increased emissions, as much as it should be an instrument for policy formulation and local decision-making.

## Chapter V

# Programmatic Ideas for Addressing Cross-cutting Issues in Biodiversity Conservation & Livelihoods Promotion



A programme plan to address biodiversity conservation and livelihood concerns for the next four years focusing on four priority States – Chattisgarh, Orissa, Jharkand and Arunachal Pradesh – is discussed in this chapter. Based on the review of policy and strategic priorities as mentioned in the previous chapters, we propose the following ideas may be taken forward:

### Idea 1: Identifying, Conserving and Protecting the Important Biodiversity Areas

The four states have several sites that are of importance in terms of biodiversity and landscapes. Protected areas have emerged as a means of conserving valuable biodiversity and landscapes. The IUCN has also urged countries participating in the Conference of Parties to the CBD, meeting in Bonn in 2008, to strengthen Protected Areas as a means to save the species, especially those in marine, freshwaters and the coastal areas (such as Chilika in Orissa). To accord these sites due protection it is important to recognize them as such. There are several possibilities under the existing legal framework. Such areas may be notified under the Indian (Forest) Act, 1927 and then under the Wildlife (Protection) Act, 1972 as community conserved areas or conservation reserves. However, areas that are not notified as forests can be declared Ecologically Sensitive Areas under the Environment Protection Act (1986), which allows a fair degree of innovation and situation-specific set of regulations.

It is required that conservation efforts do not remain restricted to the defined protected area. Rather, they should address the larger landscape comprising such areas for all purposes of healthy sustenance. The success of biodiversity conservation in the buffer zones will greatly ensure the protection of endangered species in the core areas. Most often, with the declaration of these Protected Areas, communities living in and around them are restricted from deriving benefits from forest produce,

and are sometimes antagonized against the very process of biodiversity conservation. Such conflicts are being observed in each of the aforementioned states.

There is a need to move away from an approach wherein livelihood and conservation are at cross-purposes, to one where each complements the other. Much can be achieved by involving communities in conservation around protected areas, more so by enabling them to establish norms that are sensitive to conservation needs, without sidelining livelihood requirements.

### Key Operational Ideas

1. Identify landscapes with biodiversity-rich regions
2. Understand inter-linkages between different production systems and ecosystem functions
3. Initiate pilots to demonstrate and popularize the principles of co-management
4. Help the government to regulate the activities in these regions through various measures
5. Advocate to policy makers at the Central and State level to specifically identify and regulate these regions

### Idea 2: Conservation Outside Protected Areas

It is required to address conservation issues outside protected areas as well. There are opportunities to conserve biodiversity through intervention on sizable tracts of land falling under various categories. The only impediment is that it is difficult to secure working approvals on account of policy and bureaucratic bottlenecks. If such lands can be brought under planned intervention, control ensured in favour of local communities and resources channelled in accordance with the desirable land use, they could help to greatly stimulate efforts at biodiversity conservation. This is something that could be made possible even if such lands occur

## Ideas for Implementation



in isolated blocks. These blocks can also act as units of biodiversity conservation that can reduce pressures on protected areas, and grow to form a network of concerted efforts that would enhance participation as regards biodiversity conservation and provide for community needs simultaneously.

### Key Operational Ideas

1. Identify areas outside protected areas for biodiversity conservation
2. Promote community-based conservation possibilities in order to reduce pressures on protected areas
3. Devise innovative and situation-specific tenure arrangements
4. Demonstrate appropriate land use models

### Idea 3: Strengthening Community Institutions to Promote Biodiversity Conservation

Many community institutions have been conserving forests to meet some of their livelihood needs. Such forms of institutions have conserved the biodiversity of *Gramya Jungles* as found in Orissa, community forests in Arunachal Pradesh, etc. Institutional mechanisms also prevail among fishing communities which frequently prevent the harvest of produce during the breeding season. These institutions need to be recognized and replicated to ensure a sustained effort in conserving biodiversity.

Secure tenure on land-based commons, such as lease allotted to communities over revenue wastelands, can expedite the formation of institutional templates that can effectively conserve biodiversity. In this regard it may be mentioned that tenurial rights remain to be properly defined with regard to revenue forests in all states – be it community protected areas in Orissa, *Khuntkatti* lands in Jharkhand, *Orange Areas* in Chhattisgarh, unclassed forests in Arunachal Pradesh, etc. Programmes that can build on traditional conservation practices and provide the required incentives have much to offer in this regard.

Since issues of biodiversity conservation are common to a number of villages, the formation of forums comprising all the village institutions sharing a given resource eases negotiations, reduces conflicts, and increases solidarity to protect resources

from vested interests. It is found that forums are better positioned to bargain with government departments and related agencies for their rights and entitlements. By making village institutions the locus of conservation efforts, adherence to norms is guaranteed and efforts can be undertaken over longer periods of time. The challenge however remains in ensuring equitable development by creating spaces for the marginalized in decision-making and benefit-sharing processes. In fact, biodiversity conservation provides the grounds for initiating a discussion on equity and further provides an opportunity to forge institutions that are long-standing and resilient.

### Key Operational Ideas

1. Support community-based institutions involved in conservation
2. Disseminate and build capacities of community institutions on biodiversity conservation
3. Develop management/institutional systems that include incentives for conservation of biodiversity
4. Evolve forums of village level institutions at different tiers and attempt to formulate regional plans
5. Advocate for similar systems at the national level

### Idea 4: Promoting Livelihoods that Support Biodiversity Conservation

Certain traditional occupational practices have evolved around the biodiversity prevalent in areas. Non-Timber Forest Produce from forests is a major source of income for the tribals. Artisanship based on the abundance of bamboo in Arunachal Pradesh, prospects for lac culture and *tassar* silks in Jharkhand are some of the living examples of livelihood-biodiversity linkages. Traditional healers have long been dependent on herbs and other biodiversity in forests. However, knowledge systems that have had an intricate relationship with biodiversity since the past are getting lost in the transition of tribal communities from subsistence economy to market economy. Breeding practices of the pastoralists, for example, have succeeded in conserving the best local varieties and breeds of animals. Similarly within agriculture, there are traditional practices that help conserve seeds. These



traditional occupations are dependent on diversified natural resources and ensure livelihoods. The specific advantage of these livelihoods is that they stem from an inherent interest in conservation because of the functional relationship established between conservation and livelihoods. Therefore identifying, understanding and strengthening such occupations shall be useful for biodiversity conservation.

### Key Operational Ideas

1. Promote enterprises that are not exploitative but rather sustain efforts at biodiversity conservation
2. Support efforts to conserve indigenous breeds, traditional seed varieties, medicinal and ethno-veterinary practices
3. Document and disseminate practices and knowledge around the enterprise
4. Develop suitable standards and accreditation processes

## Idea 5: Strengthening Conservation Needs in Important Sectors like Agriculture, Livestock, Fisheries and Horticulture

Farming and production systems promoted by the government have heavily undermined local varieties. The predominant approach by the government has been oriented towards maximizing productivity and meeting the country's growing consumption demands and needs. Policies implemented across the country at the national and state level have altered the biodiversity. Cultivation practices have changed through massive extension and selective seed propagation. Research in agriculture and livestock rearing is also oriented towards producing high yielding varieties that are input-intensive and less suited to local conditions and/or needs of small and marginal farmers. An example to be considered is that Orissa had nearly 500 varieties of rice/paddy till recently, and currently not more than 10 different varieties are available for the consumer in the market. This kind of monoculture is a predominant practice not only in agriculture but also in the livestock, fisheries and horticulture sectors. Alternatively there exist measures that focus on improving existing practices of livestock rearing or cultivation, and such

measures have ensured higher yields in an ecologically friendly manner. The System of Rice Intensification (SRI) is one such example.

Efforts in the direction of agro-biodiversity, promotion and development in the non-dairy livestock sector, value addition for horticulture produce that is suited to local climatic conditions and indigenous varieties of fish are needed. Biodiversity conservation measures have the potential for converging programmes and initiatives, both governmental and non-governmental, and initiating a dialogue on the need for coherent policies and inter departmental coordination.

### Key Operational Ideas

1. Build the capacities of various line departments at the national and state level on biodiversity conservation needs
2. Encourage the multi-stakeholder approach to achieve convergence among different departments and agencies
3. Reorient research and promote practices that support biodiversity simultaneously
4. Document the species diversity in various important production systems
5. Develop incentives for promotion of biodiversity

## Idea 6: Promoting Eco-tourism to Protect Biodiversity

Communities are likely to opt for eco-tourism only when it is more remunerative to protect the landscape than to clear or access it for the purpose of other livelihoods. There are several examples of biodiversity hotspots becoming interesting tourist attractions due to their natural wealth. In places where there are endangered species we require protected propagation to ensure that these species survive. The objective should be to foster and encourage the protection of such landscapes and species through tourism revenue. Since the tourism industry is highly resource intensive and also involves high generation of waste material it would require sound management to handle the delicate balance between resource conservation and utilization for the income enhancement of local communities.



## Ideas for Implementation



Tourism in such areas has to be low volume and high revenue.

The IUCN and the World Tourism Organization identify about four criteria<sup>13</sup> before an enterprise can be labeled as “eco tourism”. It would also be very important to publicize these spots as biodiversity spots and not as general tourism destinations. Infrastructure, if it were to be developed at all, would have to bear in mind the integrity of the social landscape and cultural specificities.

### Key Operational Ideas

1. Identify biodiversity-rich sites that can support and benefit from ecologically sustainable models of tourism
2. Promote partnership between communities, governments and tourism industry to manage these resources
3. Develop eco-friendly infrastructure for the tourist to access these locations
4. Build capacities of local communities to conserve and manage tourism
5. Institute charters of managing sustainable and responsible tourism

### Idea 7: Strengthening Small Scale Production Systems at the Household Level

Biodiversity can thrive better through decentralized systems, especially when choices are allowed to be made at the habitation and household level. In terms of biodiversity, these small-scale production systems including *jhum*, conserve a wide variety of local species. In this sense the small-scale cultivation of vegetables, small livestock holdings comprising few birds, ruminants and milch cattle, and propagation of fruit bearing trees on farm bunds offer ample opportunities for biodiversity conservation. Small-scale production systems, especially those followed by the tribals and in remote pockets, continue to rely on a mix of practices that help conserve biodiversity. By nursing a range of crop varieties on their small land holdings, such rural communities are not only able to satisfy their nutritional requirements but also ensure that in the event of a calamity select species ought to survive. In dire situations such practices also provide supplementary income, as they usually are easily

disposable liquid assets. With a certain degree of support to such initiatives and methods of value addition, their market value can be considerably enhanced. Thus, small-scale production systems can be used as a means to preserve indigenous genetic material, which maintains diversity and thereby enlarges the local livelihood portfolio.

### Key Operational Ideas

1. Strengthen the existing small-scale production systems in rural India by providing incentives for the promotion of such systems
2. Document and disseminate the important biological resources conserved, with additional emphasis on nutritional support provided by these species
3. Promote research around such systems
4. Advocate and develop policies to account and promote small-scale production systems

### Idea 8: Developing Capacity for Biosafety to Substantially Reduce the Impact on Biodiversity of Invasive Alien Species, Genetically Modified Organisms

Many genetically modified organisms are being introduced within the cultivated and domesticated production systems. These are usually brought in as a scientific solution for developing resistance to pests, diseases and climate vagaries. The species thus developed are in turn able to compete with the dominant species and dominate resource usage. They upset the ecological balance and often become invasive, taking over pristine habitats in the absence of any natural predators or competitors. Invasive species are one of the top four threats to biodiversity. However, the process to manage them would also need considerable amount of input from scientists.

In case of species such as *Lantana* or *Parthenium* no amount of physical input has yielded results because the species are far too adaptive. Only few research agencies address this, that too, with limited results. The effort to fight off invasive species needs a holistic effort that includes scientific institutions, government agencies and civil society into meaningful

collaboration. To add further complication to the matter, many such species could come from within the country and they would not be subject to progressive arrangements like the Cartagena Protocol on Biosafety under the CBD. There are no regulations on introducing species from elsewhere within the country, though such species will definitely be alien to the ecosystem. A species from elsewhere within the country too could be alien to the ecosystem and is potential invasive. However, there is no control on the propagation of species too could be alien to the ecosystem and potentially invasive. Such loopholes need plugging in the larger policy arrangement.

### **Key Operational Ideas**

1. Assess gaps in the legal, policy and economic framework to prevent, control and eradicate invasive alien species
2. Assess alien species and presence of GMOs (genetically modified organisms) across agro-ecological zones within the country
3. Mitigate their impacts on biodiversity and develop a community strategy to address the mitigation measures
4. Encourage both national/state level policies to manage invasive species
5. Demonstrate biosafety measures in production systems
6. Build capacities of the line departments on biosafety measures

### **Idea 9: Promoting Trade Practices that Support Biodiversity Conservation**

Trade practices across the world influence biodiversity conservation efforts. If the market is able to accommodate a large variety of food, commodities, medicines, clothes or other items of trade, it would obviously raise the scope for conservation. Free trade nevertheless is required to remain sensitive to the carrying capacity of ecosystems and must control poaching and excessive extraction. Restrictive trade practices and also encouragement of specific varieties by national and international trade regimes do affect the species diversity. Trade barriers are also being practised to protect the local varieties and to restrict the movement of alien species. Therefore efforts to

understand the influence of trade on biodiversity and to advocate right practices will be important for the nation on the whole, and especially for the four states in which work is proposed. However, precautionary checks and balances would be required to ensure that such chains remain free of risks such as pollution, genetic contamination, invasive species, etc.

### **Key Operational Ideas**

1. Identify the various trade related elements which affect the biodiversity conservation
2. Foster links between trade agreements and biodiversity conservation at the national and state level
3. Identify measures for reducing the ecological impact of globalization and trade relations
4. Advocate to various government line departments especially those related to natural resources and livelihoods on the need to identify the links and establish policies which encourage species diversity

### **Idea 10: Assessment and Inventorisation of Biological Diversity**

All resource for human survival – food, medicine, fiber, fuel – is ultimately drawn from biological resources. Humans continue to discover prospective uses of biodiversity with further advancement in technology and as newer needs arise and biodiversity often assumes the role of the only source of raw material for innovation. Yet, in these four biodiversity-rich states, the biodiversity is not even entirely and sufficiently documented. Previously unknown birds and mammal species have been discovered in Arunachal Pradesh in recent time (the last five years). Undoubtedly many more species of smaller taxa like insects and microbes remain to be discovered by science. Since the precise scale of diversity remains unknown, the impacts of its loss or the benefit from its protection are also not quantifiable, which also makes it difficult to advocate for the protection of biodiversity in these states.

Only well organized scientific research towards inventorizing the biological resources of these states would serve the purpose of identifying new uses





## Ideas for Implementation



of biological resources and promoting ecologically sensitive livelihoods on the basis of these new uses. However, care has also to be taken that inventorization of resources does not result in their usurpation at the hands of market forces, as more often than not, on finding a tally of marketable and commercially lucrative products, corporate agencies are known to attempt to acquire property rights or even unrestricted access for sale purposes. Inventorisation of biological diversity should be primarily with the intention of strengthening community-based protection mechanisms, proprietary rights over both produce and knowledge systems, and giving precedence to local needs over commercial interests.

### Key Operational Ideas

1. Identify and inventorize various aspects of biodiversity components
2. Research in properties of biological resources that may assist in human advancement
3. Bioprospect the species using various techniques and tools
4. Ensure that inventorisation does not diminish community control or ownership of resources
5. Craft village level institutions for the protection of biodiversity on the basis of information gathered

### Idea 11: Promoting Biodiversity to Combat Climate Change

Biological diversity is slowly beginning to gain recognition as one among the effective responses to the challenge of climate-change. Land and oceans act as huge reservoirs of carbon specially when compared to emissions from fossil fuels and industrial processes. The current focus for combating climate change is on the reduction of green house gas emissions from energy generation and the options have ranged from CDM to biofuels. Biodiversity, however, can be a major potential tool too, because the impact of biological process can be much higher. A few options for biological mitigation of greenhouse gases through land use change and forestry activities are avoiding of deforestation, sequestering carbon through afforestation and reforestation and

substituting fossil fuel energy by the use of modern biomass.

Though the trend is to replace forests by plantations for fiscal incentives, a biologically diverse tropical forest holds 50 times more carbon per unit area. Recognizing the importance of this fact in climate change options, the CBD has also decided to promote biodiversity in forest management. The Executive Secretary of the Convention on Biological Diversity has recently exhorted countries to lay emphasis on biodiversity to mitigate climate change as tropical forests are increasingly being felled for various uses and cultivation and for biofuels, destroying not only the pool of carbon but also the resource for further absorption.

A programme in the four focus states could use various opportunities to develop non-conventional energy resources, enhance biomass with a region-specific focus, and promote and develop practices that have potential to assist in climate change mitigation. It is queer that since local communities depend on the natural resources, it is they who are most vulnerable to effects of climate change, while their contribution to the problem is minimal. The promotion of a different land use or land cover would have to remain sensitive to and avoid disruption of local customs/needs and currently prevalent uses. The opportunity lies in recognizing prevalent local use and enhancing the biodiversity/climate change mitigation value.

### Key Operational Ideas

1. Identify potential areas where biomass and biodiversity could be enhanced with a view to combating climate change
2. Identify and operationalize measures to enhance biomass and biodiversity through reforestation/afforestation, reduction in deforestation, and diversion from fossil fuels, etc.
3. Promote incentives for customary practices that conserve biological diversity and enhance biomass or reduce biomass depletion
4. Advocate to various government departments and other agencies the gravity of climate change and the potential role of biological diversity as a tool in mitigation

# Footnotes

- 1 LULUCF here is not seen within the perspective of climate change and our understanding has been described under a sub section of this chapter.
- 2 In the late 1980s, the World Commission on Environment and Development (the Brundtland Commission) proposed that economic development must become less ecologically destructive. Coming soon after that, the CBD argued for conservation of biological diversity for sustainable development. Environmental conservation has to be intertwined with economic development and that is our only hope for sustained optimal existence. It lays stress on an ecosystem approach to sustain biodiversity.
- 3 Biodiversity of India by Madhav Gadgil
- 4 This information was provided by the Government of India to the Eighth session of the United Nations Commission on Sustainable Development. Last Update: 1 April 2000. <http://envfor.nic.in/divisions/biodiv/csd2k/csd1man.html>
- 5 Orange Areas are lands recorded as forest land in the records of the Department of Forests and as revenue land in the records of the Department of Revenue. This disputed land is known as the "Orange Area" because the area has been marked in orange color on the maps.
- 6 Syngenta, a Swiss MNC, tried to get access to the germplasm of twenty thousand rice varieties of Chhattisgarh from Indira Gandhi Agriculture University, Raipur in 2004 but luckily the information leaked out before finalization of the deal. Again in 2006, germplasm of 18 local varieties of *Jatropha* has been taken over by a multinational company known as D-one. Many variants of *Jatropha* are widely found in some forests of Chhattisgarh. The variety found in Pendra area of Chhattisgarh is considered to be of high quality which is one of the varieties of which the germplasm was stolen. (<http://www.grain.org/bio-ipr/?id=465> accessed on 3rd March 2008)
- 7 It is claimed that the state of Chhattisgarh has earned Rs. 7 billion in mineral royalty on coal, bauxite and iron ores during the first nine months of the current fiscal 2007-08.
- 8 Coast line length is 482 kms
- 9 Accessed from [www.undp.org.pk](http://www.undp.org.pk) on 3rd March 2008 for the details on the Mountain Areas Conservancy project (MACP)
- 10 Appropriate Technology India is based in Rudraprayag, Uttaranchal, and is presently working in the mountain state of Uttaranchal along the Central/Western Himalayas of India.
- 11 <http://www.undp.org/oslocentre/docs06/TimClairs.pdf>
- 12 The project was supported by the Government of Sri Lanka, Asian Development Bank, Global Environment Facility and the Government of the Netherlands.
- 13 The World Tourism Organization (and lately the IUCN) list certain characteristics of responsible eco tourism. They may be enlisted as: (a) Conscientious, low-impact visitor behaviour, (b) Sensitivity towards, and appreciation of, local cultures and biodiversity, (c) Support for local conservation efforts, (d) Sustainable benefits to local communities, (e) Local participation in decision-making, (f) Educational components for both the traveller and local communities.

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# Annexure - I

## People Consulted:

1. **Mr A K Bansal**, *Director*, Orissa Forestry Sector Development Project, Bhubaneswar
2. **Mr H S Chahar (IAS)**, *Principal Secretary*, Forest and Environment Department, Orissa
3. **Dr Debashish Roy**, *Scientist, Ecology and Environment*, Forest and Environment Department, Orissa
4. **Sri Deepak Mohanty**, *IFS, Programme Director, OTELP & Ex-Officio-Additional Secretary to Government Orissa, Tribal Empowerment and Livelihood Programme*, Orissa
5. **Mr Sisir Pradhan**, *Team Leader*, Spear Head Team, Angul Foundation for Ecological Security
6. **Mr Pranav Choudhary**, *Consultant*, Bhubaneswar, Orissa
7. **Ms Shweta Mishra**, *Programme Officer, Vasundhara*, Orissa
8. **Mr Sharat Singh**, *Programme Officer, Society for Promotion of Wasteland Development*, (Eastern Region office)
9. **Mr Pran Ranjan**, *Senior Programme Officer, Society for Promotion of Wasteland Development*, (Eastern Region office)
10. **Mr Ram Lal Prasad**, *Director*, Jan Sewa Parishad, Hazaribagh
11. **Ms Rajbala Verma**, *Principal Secretary*, Department of Finance, Government of Jharkhand, Jharkhand
12. **Mr S.K. Satpathy**, *Principal Secretary*, Department of Rural Development, Government of Jharkhand
14. **Mr Meghnad**, *Film maker on Development Issues*, Akhra, Ranchi
15. **Dr Himadri Sinha**, *Professor*, Xavier Institute of Social Service, Ranchi
16. **Dr Ranjay Kumar Singh**, *Scientist, Lac Production Division*, Indian Institute Of Natural Resins And Gums (Formerly known as Indian Lac Research Institute)
17. **Mr R Krishnamurthy (IFS)**, *Director*, Institute of Forest Productivity, Ranchi
18. **Sanjay Basu Mallick**, *Convenor*, Jharkhand Jungle Bachao Andolan, Ranchi
19. **Siman Hansda**, *Researcher*, B.I.R.S.A. Mines Monitoring Centre, Ranchi
20. **Mr Rameshwar Das (IFS)**, *Conservator of Forest*, Institute of Forest Productivity, Ranchi
21. **Mr Rabindra Kumar Singh (IFS)**, *Director*, State Institute for Rural Development, Raipur, Chattisgarh
22. **Mr S K Shukla**, *Executive Director, Special Secretary (Energy)*, Chhattisgarh Biofuel Development Authority (CBDA), Government of Chhattisgarh
23. **Mr Gautam Bandhopadhyay**, *Chhattisgarh Action and Research Team*, Raipur, Chhattisgarh
24. **Mr Rajat Choudhary**, *Church's Auxiliary for Social Action (CASA)*, Raipur, Chhattisgarh
25. **Dr Sanket Thakur**, *Chairman*, Agricons Agropreneurs Limited, Raipur, Chhattisgarh
26. **Dr Anup Bhalla**, *Additional Chief Conservator of Forests (JFM/Policy Analysis)*, Department of Forest and Environment, Government of Chhattisgarh
27. **Mr M. Firoz Ahmed**, *Wildlife Biologist*, Aaranyak, Guwahati
28. **Mr Amarjyoti Borah**, *Journalist*, Guwahati
29. **Ms Nandita Hazarika**, *Executive Director*, EcoSystemes-India, NE Centre, Guwahati
30. **Dr A Borang**, *Scientist*, State Forest Research Institute, Department of Environment & Forests Government of Arunachal Pradesh, Itanagar
31. **Dr G V Gopi**, *Scientist-C, Wildlife Biology*, G. B. Pant Institute of Himalayan Environment and Development (An Autonomous Institute of Ministry of Environment & Forests, Government of India)
32. **Mr Jitendra Singh**, *Senior Researcher*, G. B. Pant Institute of Himalayan Environment and Development, (An Autonomous Institute of Ministry of Environment & Forests, Government of India)
33. **Mr P Ringu**, *Director*, Dihang Dibang Biosphere Reserve, Department of Environment & Forests Government of Arunachal Pradesh, Itanagar
34. **Mr M K Palit**, *Deputy Conservatory of Forests (Wildlife and Biodiversity)*, Department of Environment & Forests, Government of Arunachal Pradesh, Itanagar
35. **Mr S Banerjee**, *Principal Secretary*, Department of Environment & Forests, Government of Arunachal Pradesh, Itanagar
36. **Hibu Dole**, *Deputy Conservatory of Forests*, Department of Environment & Forests Government of Arunachal Pradesh, Itanagar
37. **Dr. Padmaraj Gajurel**, *Research Fellow, Department of Forestry*, North Eastern Regional Institute of Science & Technology (NERIST)
38. **Mr Bamang Anothony**, *Chairman*, Arunachal Citizen Rights, Itanagar
39. **Mr K D Singh**, *Former Technical Advisor, Forest Resources Division Forestry Department FAO* Rome, Delhi
40. **Ms Vishaish Uppala**, *WWF-India (Delhi Office)*
41. **Mr Nitin Sethi**, *Journalist*, Times of India, Bureau, New Delhi
42. **Ms Manju Menon**, *Member*, Kalpavriksh, New Delhi
43. **Ms Kanchi Kohli**, *Member*, Kalpavriksh, New Delhi
44. **Mr Sanjay Upadhyay**, *Advocate (Supreme Court) and Managing Partner*, Enviro Legal Defence Firm, New Delhi

# Annexure - II

## Section 1. Central Acts and Policies

### A. Forests, Biodiversity and Wildlife

#### Indian Forest Act 1927

The act empowers the government to notify 'forests'. Forests are classified as 'Reserve', 'Protected' and 'Village'. The act allows for settlement of rights, also with respect to shifting cultivation. It vests the government with the authority on forest produce. Forest officer can make arrests even to prevent offense. It has been criticized for vesting control with state. It does not specify the criteria for notifying 'forests'. The stated purpose of the act was to vest government with control for easy extraction, not conservation. The act, it is said, led to large-scale notification, without recording rights, leading to complications in tenure. Many important areas were conserved. Nearly 24% of the country's area is under forest department now under various stages of protection. Complications in tenure because of irregularly followed process of settlement of rights. The use of forests was oriented towards extraction till later 1970s. Forest departments now manage their divisions according to 10 year 'Working Plans', which are based on principles of scientific forestry.

#### Wildlife Protection Act 1972 (amended 2006)

This is the only act, which gives the legal provision for declaring Protected Areas: Wildlife Sanctuaries, National Parks. The Wildlife Advisory Board is mandated to oversee matters related to Protected Areas. The act regulates hunting, trade, ownership, transport of wild animals and products of scheduled species, also uprooting scheduled plants growing in wild. It sets relatively high penalties for non-compliance. It now also gives legal recognition to Community Reserves. It also mandates the National Tiger Conservation Authority, to oversee the management of 28 tiger reserves in the country. The act has found criticism for weakly followed process of settlement of rights. Issues of encroachment and relocation remain contentious. Community reserves, even though are a means of voluntary protection, take away from indigenous control. They are largely unsuccessful because they have not been followed strongly. The relation of this act with Scheduled Tribes (and Other Traditional Forest Dwellers) Recognition of Forest Rights Act, 2006, is ambiguous. This act gives the only legal backing for conservation of several critically important areas. It recognizes and regulates zoos, the major means of ex-situ conservation. It also mandates the working of the National Board for Wildlife, State Wildlife Boards and National Tiger Conservation Authority—these oversee the Protected Areas and Tiger Reserves. The act remains the only law for protection of wildlife. It has been a deterrent in changing land use in Protected Areas. Protected Areas now account for 4.77% of the country (the world has over 10%). It allows the state to 'scientifically manage' protected areas.

#### Forest Conservation Act 1980

The act makes clearance from the Centre mandatory before directing forest for non forest purposes. It makes top officials responsible and punishable. It is argued that a central control of forest has marginalized and weakened community control. Critics have said that rather than reduce diversion of forest, it has simply transferred the authority for diversion. Nonetheless, the act is appreciated for being a strong legislation. Several biodiversity rich areas were protected after this act; the act has acted as a deterrent in diversion. Forest clearances from the Centre are mandatory before any work (even plantation) and so that has discouraged land use change on forestlands (though, contentiously, several high profile cases have been cleared). The rate of diversion of forests dropped significantly after this act was brought in. The act mandates Compensatory Afforestation for diversion.

#### Environment (Protection) Act 1986

*(Only relevant sections viz, Section 3 of the Act and Section 5 (1) or the Rules have been reviewed.)*

The Centre can take all measures that it feels is necessary to protect and improve quality of the environment and to prevent and control environmental pollution, and it can restrict industrial/development activity in certain areas. These have come to be known as Ecologically Sensitive Areas (ESAs). These have been formulated for accepting local priorities and application to any kinds of eco systems. The other environment laws would still be applicable, but ESA gives conservation a legal backing. Implementation in earnest is said to be wanting. National Environment Tribunal Bill, if enacted, will dismiss the local authorities that govern ESAs. This can be extended to any kind of areas, even to agro-biodiversity hotspots but only about nine areas are under it. Land use is governed and even arrested (like in the case of Dahanu, Maharashtra) in ESAs, but the clause has not been brought to good use.

#### National Forest Policy 1988

It recognizes, perhaps for the first time in Indian policy, subsistence use of local communities. It subordinates economic benefit to environmental stability. Fuelwood, the policy statement has considered NTFP needs of local communities. It is hailed as a revolutionary policy, which reoriented the conservation/extraction mandate of the forest department, to include indigenous use. It recognizes forests as a national asset rather than a resource. The policy is the source of the Joint Forest Man-

agement mechanism (see programmes). The policy explicitly discourages the use of exotic species, unless their suitability has been scientifically determined. It identifies the importance of 'corridors' that connect Protected Areas. It strongly discourages diversion of agricultural land to forestry. It also encourages afforestation of wastelands to meet local use and increase forest cover. It mandates that the country will increase forest cover "through massive afforestation and social forestry programmes, especially on all denuded, degraded and unproductive lands." The policy statement sets a 33% target for forest cover; two-thirds for the hills. It encourages social forestry and forests for village use.

### **Biological Diversity Act 2002**

It prohibits transfer of Indian genetic material outside the country, without specific approval of the Indian Government; claims of an Intellectual Property Right (IPR), such as a patent, over biodiversity or related knowledge, without permission of the Indian Government. The act regulates collection and use of biodiversity by Indian nationals, while exempting local communities from such restrictions; it sets measures for sharing of benefits from the use of biodiversity, including transfer of technology, monetary returns, joint Research & Development, joint IPR ownership, etc.; and also sets measures to conserve and sustainably use biological resources, including habitat and species protection, environmental impact assessments (EIAs) of projects, integration of biodiversity into the plans, programmes, and policies of various departments/sectors. There are provisions for local communities to have a say in the use of their resources and knowledge, and to charge fees for this; to protect indigenous or traditional knowledge, through appropriate laws or other measures such as registration of such knowledge. The act regulated use of genetically modified organisms.

It mandates setting up of National, State, and Local Biodiversity Funds, to be used to support conservation and benefit-sharing; and setting up of Biodiversity Management Committees (BMC) at local village level, State Biodiversity Boards (SBB) at state level, and a National Biodiversity Authority (NBA). The act has been criticized for approving 'patents on life' and potential commercialization of biodiversity. These, it is said, could be used to further commercialise biodiversity, and do not truly empower communities. The main function of the Biodiversity Management Committee (the local level body) is reduced to mere maintenance of People's Biodiversity Register, which documents the local biodiversity knowledge. But consent of the community is not mandated, before an outsider uses the knowledge. It has been criticized for approving IPRs and going against the spirit of the Convention on Biological Diversity. It has also been criticized that its provisions do not apply to plants that are registered under the Protection of Plant Varieties and Farmers' Rights (PVPFR) Act, 2001, which allows corporations and scientists to gain intellectual property rights. Citizens cannot directly approach the courts; can only appeal in High Court against any order by the NBA or the SBB. Indian corporate and other entities require only "prior intimation" to a SBB for the commercial use of bio-resources, rather than permission from the NBA as in the case of foreigners. It does not fully empower local communities, to protect their resources and knowledge from being misused, or to generate benefits (except charging collection fees). The power of declaring a Biodiversity Heritage Sites lies with the state government (Article 37 of the Act).

Several organisations and people feel that the basic framework of the Act is problematic, since it accepts intellectual property rights on biodiversity, could be used to further commercialise biodiversity, and does not truly empower communities. Others feel that the Act provides some potential for checking biopiracy, achieving conservation, and facilitating community action. They stress that a combination of strong rules, and amendments related to the above points, would help strengthen this potential.

## **B. Fisheries**

### **International conventions having implications for Indian fisheries:**

*Basel Convention, 1992* – concerned with the monitoring of hazardous waste

*Ocean Policy statement* – concerned with development of oceans

*Convention on migratory species* – offers protection to species such as turtles, sharks and crocodiles.

MARPOL 73/78 – appropriate disposal of ship based wastes.

### **Participation in international agreements**

Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (New York 1995)

*Agreement for the Establishment of the Indian Ocean Tuna Commission (1993)*

*Agreement for the Establishment of the Network of Aquaculture Centres in Asia and the Pacific (Bangkok 1988)*

### **Acts and Bills on Fisheries**

#### **Indian Fisheries Act, 1897**

It prevents destruction of fish by explosives in inland waters and on coasts and by poisoning of waters. The legislation is severely outdated. It is far too general and does not specify limits such as the TAC (total allowable catch), closed seasons, mesh limits etc. The legislation by itself (and even state



level legislations formulated in accordance) remain fixated on 'access' to fish resources, rather than its sustainable management and scientific conservation. Also, no measures are articulated for involving fishing communities in the conservation of marine biota.

#### **Marine Fishing Regulation Bill, 1978**

Regarded a model bill drafted in response to the shortcomings of the prevailing legal framework, it has not been brought to force despite the recommendations of the Mazumdar committee report in 1978 and the more recent Murari committee report. Shortcomings and limitations as mentioned under Indian Fisheries Act, 1897 remain.

#### **The Deep Sea Fishing Policy, 1991**

It is claimed that marine water below 50 meters of depth are under exploited. The policy seeks to intensify fishing activities in such reaches. If not scientifically regulated deep-sea fishing bears with it the threat of disturbing breeding grounds of several critical/endemic marine species.

#### **Water (control and prevention of pollution) Act, 1974, amended in 1988**

It pertains to control of pollution from land based resources. The Act bears with it a clause empowering State Governments to restrict the application of the act to certain areas: Sec. 19 reads "Notwithstanding anything contained in this Act, if the State Government... is of opinion that the provisions of this Act need not apply to the entire State, it may, by notification in the Official Gazette, restrict the application of this Act to such area or areas..."

#### **Coastal Regulation Zone Notification, 1991 (under the EPA, 1989)**

The regulation declares the coastal stretches of seas, bays, estuaries, creeks, rivers and backwaters which are influenced by tidal action (in the landward side) up to 500 meters from the High Tide Line (HTL) and the land between the Low Tide Line (LTL) and the HTL as Coastal Regulation Zone. The regulation prohibits certain activities in the afore mentioned zone. Establishment of HTL has become a necessity but it is not an easy task, and it remains undetermined for a better part of India's coastline. What of lagoons, (and other such bodies) which are not subject to tidal action? There is no scientific validity to back the 500 meter figure. The CRZ remains conveniently blind to global change – withdrawal of trade barriers, liberalization etc. Disaster mitigation measures take a longer duration when routed through the CRZ. The act has been amended nearly 19 times. Besides there is a plan to replace the CRZ with 'CMZ' – an idea promulgated on the basis of recommendations made by M.S. Swaminathan. The proposal has met with stiff resistance from community-based organizations, NGOs and local movements. The CMZ proposal is criticized as being corporate friendly, and insensitive to the needs of fishing communities and conservation needs of marine biota.

### **C. Tribal Development**

#### **Constitution Articles – Articles 15 (4) 46, 244 (1) and 339**

Powers to promote laws and administrative policies relating to the tribal population. Relate to special provisions meant for tribal welfare/development.

#### **Schedules V and VI of the Constitution**

List the schedule areas, or areas identified as having tribal population. Administration of forest resources in such areas covered under the V and VI schedule. Rights of Tribals over their land, administrative specificities with regard to such land specified here in.

#### **Panchayat (Extension to Scheduled Areas) Act, 1996**

It extends the provisions of the 73rd Constitutional Amendment 1993 to the Schedule V Areas of the country. It accords statutory status to the gram sabhas in Schedule V areas and recognises the prevailing traditional practices and customary laws. State Governments were required to pass suitable legislations to make the provisions of other policies and programmes consistent with PESA – this did not happen. Minor forest produce remains undefined by the Act, owing to which there has been much confusion. Ownership of MFP has remained centralised as per earlier legislations. Community based resources not clearly defined in the Act, as a result of which ownership rights of gram sabhas remain vague and ambiguous. There is no provision for capacitating gram sabhas to undertake tasks/ measures concerning biodiversity conservation and appropriate land use planning. It provides the management and control of all the natural resources – land, water and forest in the hands of people living in the Schedule Areas. Creates scope for community based conservation measures, hands over ownership rights over Minor Forest Produce (MFP) to local gram sabhas and recognizes and imparts importance to community based protection mechanisms, based upon indigenous systems and local best practices. Gram sabha is empowered to sanction/ or dismiss lease agreements and development projects (such as mining, sand quarrying etc.). Gram sabha has powers to articulate measures to prevent land alienation.

#### **Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 (to be read alongside Rules of 2008)**

The Act allows ownership of up to 4 hectares of land to each nuclear family for habitation and self-cultivation purposes. It extends to both tribal and other non-tribal forest dwelling communities. It gives right to Minor Forest Produce for bona fide livelihood purposes. The recognition of forest

dwelling communities is prima facie determined on the basis of their land holding. Dependence of communities not holding lands but using other types of forest produce is not significantly recognized. Land remains heritable and not transferable - thus reducing chances for land alienation. Powers devolved to Gram sabhas likely to prevent the usurpation of forest based resources by powerful lobbies and corporate agencies for their ends. According to some critics: with an allocation of 4 ha to 20 million nuclear families (tribal alone) 50 million ha of forest cover is likely to be lost. Human and livestock pressures on forests will only increase with time.

The act is criticized because conservation ethics of Tribals are romantically over-prized; a marked change in aspirations and consumerist tendencies among Tribals is ignored. The act lacks a specific and rigorous description of terms like 'biodiversity', 'sustainability' and 'wild life'. It is also unclear with regard to the manner in which roles and responsibilities have to be shared between the government and local institutions for the implementation of other Acts relevant for biodiversity conservation and wild life protection. It is criticized for it empowers gram sabhas without assessing local institutional strengths and capacities. Responsibility as regards compliance and implementation of wildlife and Biodiversity Conservation Act(s) is handed over to gram sabhas. It also recognizes other traditional rights of Tribals and creates incentives for community based conservation efforts. By empowering gram sabhas and involving local communities, the Act reduces bureaucratic hurdles in the implementation of legislature pertaining to Biodiversity Conservation and Wildlife. It excludes the traditional right of hunting or trapping wild animals and prevents sale of timber for commercial purposes.

## **D. Agriculture**

### **India's Participation in International agreements**

- Agreement on Agriculture with the WTO
- Trade Related Aspects of Intellectual Property Rights (TRIPS), 1994
- Trade Related Investment Measures (TRIMS), 1994
- Convention on Biodiversity (CBD), 1992
- International Treaty on Plant and Genetic Resources for Food and Agriculture (ITPGR), 2001
- International Convention for the Protection of New Plant Varieties (UPOV), 1991
- General Agreement on Trade and Tariffs (GATT), 1994
- General Agreement on Trade in Services (GATS), 1994

### **National Agricultural Policy, 2000**

Aiming to attain a growth rate in excess of 4 percent per annum, it advocates a technically sound, economically viable, environmentally non-degrading, and socially acceptable use of the country's natural resources, (including land, water and genetic endowment) to promote the sustainable development of agriculture. It stresses on containing biotic pressure. It seeks involvement of farmers and landless in the development of pastures/forestry programs on public wastelands by giving financial incentives and entitlements to the usufructs of trees and pastures. It aims to evaluate traditional practices, knowledge and wisdom and to harness them for sustainable agricultural growth. Identifies the need of shifting cultivation to be addressed.

It emphasises the need for conserving biodiversity by promoting agro-forestry. Promotes survey and evaluation of genetic resources and safe conservation of both indigenous and exogenously introduced genetic variability in crop plants, animals and their wild relatives. Encourages balanced and conjunctive use of biomass, organic and inorganic fertilizers and controlled use of agro chemicals through integrated nutrients and pest management (INM & IPM). It also seeks to control indiscriminate diversion of agricultural lands for non-agricultural purposes. Reclamation of degraded and fallow lands to be given high priority, to optimize their productive use. NAP emphasizes use of watershed approach to manage land resources (as per recommendations of Hanumantha Rao, 2000). Policy document is lacking in strategic content; does not articulate any measures for achieving the afore said objectives. It is not accompanied with any time bound directives/action plan to achieve the same. Threat to forest resources from the entry of lobbies and corporate houses in the agro-forestry sector remain uncommented upon. Threat to wild and indigenous plant species from GMOs are not dealt with. Does not prohibit entry of genetically engineered crops from entry into Indian farms and markets and it does not comment on patents of seed varieties. It also does not provide sufficient incentives for zero-chemical and polyculture methods of farming. There is no mention of organic farming per se in the document; only a "balanced and conjunctive use of organic and inorganic methods". The NAP does not stress quality improvement in livestock through use of better quality indigenous germplasm. It remains silent on undoing of land reforms and lease arrangements in favor of local communities, as a means of expediting reclamation of wastelands for agricultural purposes.

### **National Policy for Farmers, 2007**

Objectives: (i) To improve economic viability of farming by improving the net income of farmers, (ii) to provide appropriate price policy and trade policy mechanisms to enhance farmers income, (iii) to introduce measures which can help to attract and retain youth in farming and processing of farm products for higher value addition by making it both intellectually stimulating and economically

rewarding. Along side the PM's package for relief to farmers in distress districts it prioritizes economic needs and livelihood concerns over conservation needs.

### **Protection of Plant Varieties and Farmer's Rights (PPVFR) Act (2001)**

A plant breeder can acquire breeders rights on a new variety, if it is 'distinct', 'stable', 'uniform' and 'novel'. A breeder thus acquires exclusive right to trade in the variety. Farmers retain the right to sow, re-sow, exchange, save, share and sell all kinds of seed, including seeds of protected varieties [i.e. seeds covered by Plant Breeders Rights (PBR)] – but farmers are not allowed to sell such varieties under a brand name. The act also strives to encourage investment in, and development of new plant varieties by providing protection to plant breeders rights. Breeders are required to pay into a national gene fund for using traditional varieties to breed new ones – acts as a 'royalty' to farmers who have played a central role in conserving and improving traditional varieties. The value of traditional varieties is duly acknowledged. Terminator technology banned under the Act (where seeds become sterile, 'one time use' seeds). It introduces the idea of private ownership of seeds (works against ideas on community control over seeds). Ushers market forces into erstwhile community dominion. It is Difficult to recognize and categorize traditional varieties using the scientific criteria as advised by the Act.

### **The Seed Bill 2004**

Intended to replace the Seed Act of 1966, it aims to regulate the quality of seed for sale, import and export, and secondly to facilitate the production and good quality of seeds. Aims to completely curb the sale of spurious seeds and establishes strict punishment for offenders. As per the Seed Policy of 2002 all genetically engineered crops/varieties will be tested for environment and biosafety before their commercial release as per the regulations of the EPA, 1986 (the EPA in turn necessitates the approval and sanction of the Genetically Engineered Approval Committee for all such purposes). Dilutes pro-farmer rights of PPVFR – farmers will not be allowed to sell seeds without registration. With registration compulsory for seeds breeders/marketers are more likely to dominate trade in seeds; local farmers are less likely to take the effort of registering their varieties for sale purposes. If farmers find that it is far too troublesome to sell/buy local varieties due to the law, they may abandon growing traditional varieties. Breeders not required acknowledging the parentage of varieties. The bill makes it easy for breeders to register traditional varieties (or even new varieties based on traditional ones). This will allow breeders to gain a sort of monopoly over traditional varieties. There will be no National Gene fund as in the case of PPVFR.

## **Section 2. Major Court Rulings**

### **T.N. Godavarman Thirumulpad versus Union of India & ORS.**

Defined 'Forest land' as any area under forest dept, or any area recorded a forest in any government records or any area where a forest exists, in the 'dictionary sense' of the word, irrespective of ownership or classification. It became the omnibus case for over thousand subsequent appeals; still continues. It is criticized for having confused the already convoluted laws on forests. The effects of the case are debatable. Though the courts have been quite sensitive to the 'conservation' in a broad sense, many judgments have been seen as too lax for exploitative industry (refer, comments of a member of the bench). The Supreme Court is now involved with the framing, and execution of policy, for which, critics say, it does not have sufficient expertise. Land use in forest areas has been arrested after this case. A fund for compensatory afforestation was created, and an authority to oversee it. This authority is not yet functional. A 2000 interim order, against removal of wood etc from forests, has been used to ban grazing and NTFP collection. Various interpretations exist for this, like for most of the other orders under the case.

### **CEL-WWF Case**

Several orders on protected areas. Several major orders have asked the states to issue final notifications for protected areas, to build capacity to control poaching and to not denotify protected areas without Supreme Court permission. The Supreme Court is now actively involved in the conservation cases. No de-reservation of protected areas (and currently, even for forests because of a complicated case of Forest Advisory Committee), can take place without Supreme Court permission.

## **Section 3. Major Programmes and Schemes**

### **A. Forest, Biodiversity and Wildlife related programmes**

#### **Joint Forest Management**

Joint Forest Management (JFM) is a forest management strategy under which the Forest Department and the village community enter into an agreement to jointly protect and manage forestland close to villages and to share responsibilities and benefits. Arising from the National Forest Policy 1980, the Centre issued a circular to all State Governments in 1990 (Circular number 6.21/89-F.P. of June 1, 1990). There are supposed to be nearly 84000 Forest Protection Committees on more than 140 thousand sq km.



Several issues have been identified with JFM. Most pertain to inequities within local communities, parameters of defining community, gender bias in village protection committees, control of forest department, pre-JFM patterns disturbed, external aid, markets acting as external pressure, inter-community conflicts, inflexibility of rules, NTFP related policies – (low share of communities doesn't sustain their interest), adaptive silviculture – (with the change in direction from production to subsistence), marketing, legal issues – (dependent on government orders), links with panchayats and JFM in dense forests and protected areas. Its strengths are said to lie in change in attitude and relationship, improvement in the condition of forests, reduction in encroachment, increase in income and involvement of NGOs.

### **National Afforestation and Eco-development Board (NAEB)**

The National Afforestation and Eco-development Board (NAEB) was set up in August 1992 for promoting afforestation, tree planting, ecological restoration and eco-development activities in the country. Special attention is being given to the regeneration of degraded forest areas and lands adjoining forest areas, national parks, sanctuaries and other protected areas as well as the ecologically fragile areas like the Western Himalayas, Aravallis, Western Ghats etc. NAEB operates following three major schemes:

#### **1. National Afforestation Programme (NAP) Scheme**

The flagship scheme of NAEB, provides support to the Forest Development Agencies (FDAs) (federation of Joint Forest Management Committees (JFMCs) ) for Joint Forest Management. Rather than route funds through states, works directly and focuses on Jhum as well. Seven hundred and fifteen FDAs have been operationalised so far at a cost of Rs. 1,521.10 crores to treat a total area of 9.24 lakh ha. Rehabilitation of jhumlands (shifting cultivation) have been given specific focus under the programme, and so far 19 jhum projects have been sanctioned in North-Eastern (NE) States and one in Orissa.

#### **2. NAEB Scheme**

The major components of the Scheme are Grants in Aid for Greening India (GIA for GI) Scheme. This is for Tenth Five year plan for raising tree cover outside RFA and works at raising mass awareness about QPM (Quality Planting Material) and tree planting; and enhancing the capacity for QPM production; and for tree planting with people's participation. Also works for Monitoring and Evaluation (M&E) and Communication Support to Regional Centres (RCs).

#### **3. Eco Development Forces (EDF)**

The scheme is based on twin objectives of ecological regeneration in difficult areas, and promotion of meaningful employment to ex-servicemen. This scheme affords the establishment and operational expenditure on the Eco Task Force (ETF) Battalions raised by Ministry of Defence. It is reimbursed by Ministry of Environment and Forests while the inputs like sapling, fencing, etc. as also the professional and managerial guidance is provided by the State Forest Departments.

### **Integrated Forest Protection Scheme**

Integrated Forest Protection Scheme was formulated by the merger of two schemes of the Ninth Five Year Plan namely 'Forest Fire Control and Management' and 'Bridging up of Infrastructural Gaps in the Forestry Sector in the North Eastern Region and Sikkim'. It is operational from 2002-03. The scheme covers all the States and UT's for the Tenth Five Year Plan period. Central Assistance is provided for various activities, which will help to protect and improve the existing forest. The major items include communication, mobility, firefighting measures, construction of offices and residences particularly of the front line staff, technology upgradation and skill development, survey and demarcation and writing of working plans, assistance to JFMC's, etc.

### **UNDP-CCF II Project "National Programme on Promoting Conservation of Medicinal Plants and Traditional Knowledge for Enhancing Health and Livelihood Security"**

It was started in nine states viz; Karnataka, Kerala, Tamil Nadu, Andhra Pradesh, Maharashtra, Madhya Pradesh, Orissa, West Bengal and Rajasthan with the following objectives: to assist nine project states to conserve wild population of medicinal plants, to revitalize the indigenous health care knowledge and, to enhance the health and livelihood security.

### **The National Wetland Conservation**

Programme for conservation and management of wetlands has been undertaken to lay down policy guidelines for implementing programs of conservation and management of wetlands in the country, to undertake intensive conservation measures on priority wetlands, to monitor implementation of the Programme of conservation, management and research, and to prepare an inventory of Indian wetlands.

## **B. Programmes on Land Use**

### **Guidelines for Hariyali**

To involve village communities in the implementation of watershed projects under all the area development programmes namely, Integrated Wastelands Development Programme (IWDP), Drought

Prone Areas Programme (DPAP) and Desert Development Programme (DDP), the Guidelines for Watershed Development were adopted w.e.f.1.4.1995, and subsequently revised in August 2001. To further simplify procedures and involve the Panchayat Raj Institutions (PRIs) more meaningfully in planning, implementation and management of economic development activities in rural areas, these new Guidelines called Guidelines for Hariyali were brought in effect from 1.4.2003. A Common Guide-line for watershed implementation has been introduced recently.

### **Integrated Wasteland Development Programme**

National Wasteland Development Board was established in 1985 under the Ministry of Forests and Environment mainly to tackle the problem of degradation of lands, restoration of ecology and to meet the growing demands of fuel wood and fodder at the national level. Major programme implemented for improving the productivity of waste & degraded lands keeping in view the poverty, backwardness, gender & equity is Integrated Wasteland Development Programme. It recognizes the problems of increasing biotic pressure, absence of adequate investments and appropriate management practices, high rate of population growth and high incidence poverty in rural areas, over-exploitation of national resources, break-down of traditional institutions for managing common property resources and failure of new institutions to fill the vacuum, faulty land use practices. It works on the consequences of land degradation: soil erosion & land degradation, depletion of natural resources, lower productivity, ground water depletion, shortage of drinking water, reduction in species diversity, increase in the extent of wastelands.

### **Technology Development, Extension & Training (TDET)**

Central Sector Scheme of TDET was launched during 1993-94 to develop suitable technologies for the reclamation of Wastelands for sustained production of food, fuel wood, fodder etc. The objectives are, (i) development of data base for planning sustainable development of wastelands, (ii) operationalisation of cost effective and proven technologies for development of various categories of wastelands specially problem lands affected by soil erosion, land degradation, salinity, alkalinity, waterlogging etc., (iii) implementation of location specific pilot projects/ demonstration models including pisciculture, duckery, bee keeping, domesticated animals and birds etc., (iv) dissemination of research findings and appropriate technologies for promoting wastelands development, (v) evaluation of impact, and replication of these models in larger areas, (vi) organising of publicity, awareness campaign, seminar/ conferences, circulation of handouts/ extension materials. This scheme is being implemented through ICAR, State Agricultural Universities, District Rural Development Agencies (DRDA's), and Government Institutions having adequate institutional framework and organisational back up. Successful implementation of the Scheme is expected to bridge the gap between the existing technologies and the need relevant to the latest situation. Under this Scheme, 100% Central grant is admissible to implement the projects on wastelands owned by Govt., Public Sector Undertaking including universities, Panchayats etc. In the case of projects on wastelands of Private Farmers/Corporate Bodies, the cost of the project requires to be shared on the basis of 60:40 between the Dept. of Land Resources (DoLR) and the beneficiaries.

### **Computerisation Of Land Records**

The scheme of Computerisation of Land Records (CLR) was started in 1988-89. This is a 100 per cent grant-in-aid scheme executed by the State Govts. The main objectives are: Providing computerized copies of the Record of Rights(ROR) to the Land owners at nominal rates on demand; Ensuring speed, accuracy, transparency and dispute resolution; Information empowerment of land owners and freeing them from the clutches of colonial systems - paradigm shift from tax based approach to management of land administration; Providing fast and efficient retrieval of information for decision making; Achieving low cost and easily reproducible basic land record data for reliable and durable preservation; Value addition and modernization in Land Administration. Under the scheme, 100% financial assistance is provided to States for completion of data entry work, setting up computer centres at the tehsil or taluk or block and sub - divisional levels and monitoring cell at the State level. Funds are also provided under the scheme for imparting training on computer awareness and applications software to revenue officials for regular updating of records of rights and smooth operation of computer centers.

### **Strengthening Of Revenue Administration And Updating Of Land Records (SRA & ULR)**

The second important scheme, viz., Strengthening of Revenue Administration and Updating of Land Records was started during 1988-89 with 50:50 sharing basis between the Centre and the State. The main objectives of the schemes are: 1. Strengthening of survey and settlement organizations for an early completion and preparation of land records in areas where this work still remains to be done, 2. Setting up of survey and settlement organization especially in the northern regions where no land records exist, 3. Imparting the pre-service and in-service training of revenue, survey and settlement staff and strengthening of training infrastructure in their purpose, 4. Providing the facilities for the modernisation of survey and settlement operations, printing of survey maps, reports/documents and for storage, copying and updating of land and crops records using, amounting other things, science and technology inputs, 5. Strengthening of revenue machinery in the village and immediate supervi-

sory levels on a selective basis to make the workload of these functionaries manageable.

### **Government Wastelands & Bhoodan Lands**

Distribution of Government' Wastelands has been one of the key strategies of land reforms in the Country. It has been the accepted policy of the Central Government that wastelands at the disposal of the State Governments should be distributed amongst eligible rural poor. The criteria governing the distribution of ceiling surplus land should also apply to the distribution of wasteland. So far, an area of 147.47 lakh acres of Government Wastelands has been distributed amongst landless rural poor. Out of a total area of 39.16 lakh acres of Bhoodan land, 21.75 lakh acres have been distributed.

### **Prevention Of Alienation And Restoration Of Alienated Tribal Land**

State governments have accepted the policy of prohibiting transfer of land from tribals to non-tribals and restoration of alienated land to tribals. States with large tribal populations have enacted laws prohibiting alienation of tribal lands and promoting restoration of alienated land. Though results have been forthcoming in efforts undertaken by different States for restoration of tribal lands, the task is yet to be completed.

### **Central Sector Scheme of National Land Use & Conservation Board (NLCB) Scheme**

The National Land Use & Conservation Board (NLCB) is a Central Sector Scheme with 100% Central assistance. Objectives of the Scheme are to serve as a policy planning, coordinating and monitoring agency at national level for issues concerning the health and scientific management of land resources of the country. The role and functions of the NLCB are to formulate a National Policy and Perspective Plan for Conservation, Management & Development of land resources of the country, taking into account appropriate land use and soil capability and other factors; make an overall review of the progress of implementation of ongoing schemes and programmes connected with conservation and development of land resources, soil and allied matters; consider and review proposals concerning soil surveys and general assessment of land resources; consider measures for ensuring that good agricultural land is not indiscriminately diverted to non-agricultural purposes; consider and undertake all other measures necessary for promoting the scientific management of land use and conservation; sponsor studies to organise regional and national deliberations/seminars/workshops through various agencies in collaboration with State Land Use Boards, Universities, Research Institutes; take measures for creating a general awareness about the importance and problems of proper soil management; act in full collaboration with the National Wastelands Development Board and National Afforestation and Eco-Development Board in regard to matters of common interest.

### **Watershed Development Project for Shifting Cultivation Area (WDPSCA) - Additional Central Assistance to State Plan Scheme**

- a) To protect the hill slopes of jhum areas through soil and water conservation measures on watershed basis and to reduce further land degradation
- b) Encourage relocation of jhumia families by providing developed productive land and improved cultivation packages.
- c) To improve the socio-economic status of jhumia families through household/land based activities
- d) To mitigate the ill effects of shifting cultivation by introducing appropriate land use as per land capability and improved technologies.

### **Central Sector Scheme of All India Soil & Land Use Survey (AIS&LUS) Organization All India and Land Use Survey and application of Remote Sensing Technology**

To carry out rapid Reconnaissance surveys in the catchments of River Valley Projects, Non-RVPs, and Flood Prone Rivers for demarcating priority watersheds yielding maximum sediment load/run-off which are in need of conservation treatment on priority basis for minimizing sediment load and flood control. Detailed soil surveys in the priority watersheds, which have been recognized, and other watersheds for special development programmes in ravinous areas, saline-sodic lands, rehabilitation etc. to provide detailed data on characteristics and classifications and other related properties of the soil.; Development of promotion advanced techniques of aerial photo-interpretation and remote sensing for increased efficiency and accuracy in the soil surveys, priority delineation and assessment of degraded lands; District based Land Degradation Mapping (LDM); Monitoring and evaluation study of watershed development project using Remote Sensing and GIS.

### **Soil Conservation for Enhancing the Productivity of Degraded Lands in the Catchments of River Valley Project & Flood Prone River**

Aims at prevention of land degradation by adoption of a multi- disciplinary integrated approach of soil conservation & watershed management in catchment areas; improvement of land capability and moisture regime in the watersheds; promotion of land use to match land capability; prevention of soil loss from the catchments to reduce siltation of multipurpose reservoirs and enhance the in-situ moisture conservation and surface rainwater storages in the catchments to reduce flood peaks & volume of runoff.

### **Centrally Sponsored Programme for Strengthening of State Land Use Board (SLUB)**

All the States and Union Territories have been advised to establish State Land Use Board (SLUB) as an



apex body with these major objectives a) To provide policy directive for sustainable development of land resources, b) To ensure close coordination among various land user departments and, c) To initiate necessary steps for integrated planning for optimal use of available land resources.

### C. Important Programs in Livelihoods Enhancement

#### National Rural Employment Guarantee Act

The National Rural Employment Guarantee Act (NREGA) was brought into force in most backward districts with the objective of providing 100 days of guaranteed unskilled wage employment to each rural household opting for it. The NREGA marks a paradigm shift because it bestows a legal right and guarantee to the rural population through an Act of Parliament and is not a scheme unlike the other wage employment programmes. The ongoing programmes of Sampoorna Grameen Rozgar Yojana (SGRY) and National Food for Work Programme (NFFWP) have been subsumed in NREGA. The NREGA would cover all districts of the country now. The focus of the Act is on works relating to water conservation, drought proofing (including afforestation/tree plantation), land development, flood control/protection (including drainage in waterlogged areas) and rural connectivity in terms of all-weather roads

#### Swarna Jayanti Gram Swarozgar Yojna

The Swarnjayanti Gram Swarozgar Yojana (SGSY) was launched as an integrated programme for self-employment of the rural poor with effect from 1 April 1999. The objective of the scheme is to bring the assisted poor families above the poverty line by organising them into Self Help Groups (SHGs) through the process of social mobilisation, their training and capacity building and provision of income generating assets through a mix of bank credit and government subsidy. The scheme emphasizes establishment of activity clusters through selection of key activities based on aptitude and skill of the people, availability of resources and market potentiality. The scheme adopts a process approach and attempts to build the capacities of the rural poor.

#### Sampoorna Grameen Rozgar Yojna

The Sampoorna Grameen Rozgar Yojana (SGRY) was launched on 25 September, 2001 by merging the schemes of EAS and the JGSY with the objective of providing additional wage employment and food security, alongside creation of durable community assets in rural areas. The programme is self-targeting in nature with provisions for special emphasis on women, scheduled castes, scheduled tribes and parents of children withdrawn from hazardous occupations. Preference is given to BPL families for providing wage employment under SGRY.

#### National Food for Work Programme

The National Food for Work Programme was launched in November 2004 in 150 most backward districts of the country, identified by the Planning Commission in consultation with the Ministry of Rural Development and the State governments. The objective of the programme was to provide additional resources apart from the resources available under the Sampoorna Grameen Rozgar Yojana (SGRY) to 150 most backward districts of the country so that generation of supplementary wage employment and providing of food-security through creation of need based economic, social and community assets in these districts are further intensified.

### D. Programmes related to Horticulture

#### National Horticulture Mission

Implemented to promote holistic growth of the horticulture sector covering fruits, vegetables, root & tuber crops, mushroom, spices, flowers, aromatic plants, cashew and cocoa. The main objectives of the Mission are to provide holistic growth of the horticulture sector through an area based regionally differentiated strategies which include research, technology promotion, extension, post harvest management, processing and marketing, in consonance with comparative advantage of each State/region and its diverse agro-climatic feature; to enhance horticulture production, improve nutritional security and income support to farm households; to establish convergence and synergy among multiple on-going and planned programmes for horticulture development; to promote, develop and disseminate technologies, through a seamless blend of traditional wisdom and modern scientific knowledge; to create opportunities for employment generation for skilled and unskilled persons, especially unemployed youth.

#### Micro Irrigation (MI) Scheme

The Panchayati Raj Institutions (PRIs) will be involved in selecting the beneficiaries. All categories of farmers are covered under the scheme. The focus will be on horticultural crops being covered under the National Horticulture Mission. The Precision Farming Development Centres (PFDCs) will provide research and technical support for implementing the scheme. Scheme on Micro Irrigation (MI) aims at increasing the area under efficient methods of irrigation viz. drip and sprinkler irrigation.

#### Coconut Development Board

It strives to increase production and productivity of coconut; bring additional area under coconut in potential non-traditional areas; develop new technologies for product diversification and by-prod-

uct utilization; strengthen mechanism for transfer of technologies; elevate the income level of small and marginal farmers engaged in coconut cultivation; build up sound information basis for coconut industry and market information; generate ample employment opportunities in the rural sector. The scheme provides for production and distribution of quality planting material, expansion of area under coconut, integrated farming practices for productivity improvement, technology demonstration, market promotion and human resource development.

### **Technology Mission for Development of Horticulture in North Eastern Region including Sikkim**

This aims to establish convergence and synergy among numerous ongoing governmental programme in the field of horticulture development to achieve horizontal and vertical integration of these programmes; ensure adequate, appropriate, timely and concurrent attention to all the links in the production, post harvest and consumption chain; maximize economic, ecological and social benefits from the existing investment and infrastructure created for horticulture development; promote ecologically sustainable intensification, economically desirable diversification and skilled employment; generate value addition; promote the development and dissemination of eco- technologies based on the blending of the traditional wisdom and technology with frontier knowledge such as bio-technology, information technology and space technology; and to provide the missing links in ongoing horticulture development projects.

## **E. Programmes related to Tribal Development**

### **Special Central Assistance**

The Ministry of tribal Affairs provides this form of assistance to the State Government as an additive to the State TSP (tribal Sub Plan). SCA is Primarily meant for family-oriented income-generation schemes in sectors of agriculture, horticulture sericulture and animal husbandry cooperation.

### **Central assistance to Primitive Tribal Groups**

Seventy-five Primitive Tribal Groups have been identified in 15 States/UTs as being more vulnerable than the rest. States/UTs have been requested to allocate requisite funds from Centrally Sponsored and State Plan schemes for their socio-economic development of this recognized group.

### **Central Assistance for the Establishment of Grain Banks**

The scheme aims at establishment of grain banks in tribal villages. It is focused upon the more vulnerable tribal groups where deaths are known to due to starvation, malnutrition etc.

### **Tribal Sub Plan**

Allocation of fund for tribal areas from State Plan as well as Central Ministries, at least proportionate to population of tribals in the state (from state plan) and to the overall proportionate tribal population for the country from the budget of Central Ministries and Financial Institutions etc. Watershed activities and CFM arrangements most often figure in the Tribal Sub Plan

## **F. Important Programs related to Livestock**

- Central Cattle Breeding Farms
- Central Herd Registration Scheme
- Livestock Health & Disease Control (LH & DC)
- Sheep Development
- Conservation Of Threatened Breeds
- National Project For Cattle And Buffalo Breeding (NPCBB)
- Central Frozen Semen Production And Training Institute (CFSP&TI) Hessarghatta, Bangalore
- Fodder Development
- Assistance To Cooperatives – Central Sector Plan Scheme
- Dairy Development Perspective Plan, 2010
- Intensive Dairy Development Programme (IDDP)
- Livestock Insurance Scheme
- Operational Guidelines on Central Sector Plan Scheme “Dairy/Poultry Venture Capital Fund”
- Strengthening Infrastructure for Quality & Clean Milk Production (CMP)

## **G. Programmes related to Fisheries**

### **Central sector scheme on strengthening database and information networking for the fisheries sector**

It aims at promoting standardized methodology of data collection through sample survey for estimation of inland fisheries resources. But scientific know how not adopted to detect depletion of endemic/endangered species and assist in their protection.

### **Centrally Sponsored Scheme on 'Fisheries Training & Extension'**

Training service primarily aimed at human resource development, establishment of fish farmers' training centre and awareness centers. Schemes primarily focused at developing human resource for maximizing harvests. Curriculum not based on indigenous knowledge systems and best practices.

### **Centrally Sponsored Scheme on 'Development of Inland Fisheries and Aquaculture'**

Aims at the development of brackishwater aquaculture, coldwater fisheries and aquaculture, development of waterlogged Areas, utilization of inland saline/alkaline soils for aquaculture, and Integrated development of inland capture resources (i.e. reservoirs/rivers etc.). Does not consider the damage caused to indigenous varieties of fish by the damming of rivers

### **Centrally sponsored scheme on development of marine fisheries, infrastructures and post harvest operations**

Assistance to fishers through the State/ UT Governments for activities such as motorization of traditional fishermen, rebate on HSD oil, construction of fishing harbours and fish landing centers, and setting up of inland fish marketing centers. Infrastructure created primarily for intensifying market operations

## **H. Programmes on Agriculture**

- Integrated Evaluation of Centrally Sponsored Scheme of Integrated Scheme on Oilseeds, Pulses, Oilpalm and Maize
- Central Sector Scheme on Transport Subsidy for the movement of Seeds to the North-Eastern States, Sikkim, Himachal Pradesh, Jammu & Kashmir, Uttaranchal and Hill Areas of West Bengal.
- Seed Bank Scheme
- Central sector scheme for implementation of legislation on plant varieties and farmers rights protection
- Strengthening of Central Fertiliser Quality Control & Training Institute and its Regional Labs
- Setting up of State Biocontrol Laboratories Under the Scheme Strengthening and Modernisation of Pest Management Approach in INDIA' - Grants in aid to NGO's
- Projects of the National Land Use and Conservation Board (NLCB)
- Project for Reclamation and Development of Alkali Soils in Bihar and Uttar Pradesh
- Watershed Development Project in Shifting Cultivation Areas (WDPSCA)
- Watershed Development Council (WDC)
- NABARD - Watershed Development Fund
- Projects initiated by the Indian Council for Agricultural Research (ICAR)





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