

**NON TIMBER FOREST PRODUCE**



Forests

Forests play a significant role in the social, economic and cultural aspects in our country. Many rivers originate from forests especially in peninsular India which form the lifeline of populations cutting across eco-systems. Forests provide timber, fuel wood and non-timber products to the local communities and the national economy.

Approximately 270 million ton (Mt) of fuelwood, 280 Mt of fodder and over 12 million m<sup>3</sup> of timber and several non-timber forest products are removed from forests annually. The value of goods and services provided by the forest sector is estimated to be Rs. 25,984 crores.

Therefore forest resources and forest lands need to be sustainably managed to meet the social, economic, ecological, cultural and spiritual needs of present and future generations. Any change in forest vegetation and bio-diversity will have adverse implications for the livelihoods of communities.

**Non-Timber Forest Produce (NTFP)** - an important source of food and income of forest communities ranging from 5.4 to 55 percent.

All India average value of NTFP to be Rs 1671.54 per hectare. Commercial NTFPs are estimated to generate Rs. 3 billion (US\$ 100million) annually in India. India also exports NTFP to the tune of Rs. 10 billion (US \$ 384 million) annually. In 2006-07, India earned Rs 39.7 billion from export of NTFP and their valued added extracts. (Ganguli, 2007)

Of an approximate 5.8 lakh villages in India, 1.7 lakh villages with a total population of 14.7 crore are located in the vicinity of forests.<sup>i</sup> These communities as also an estimated additional 6 crore people depend on the forests for their livelihood. It provides substantially to the food (fruits, flowers, tubers, leafy vegetables, bamboo shoots, honey mushroom etc) supply of tribal populations, particularly in times of

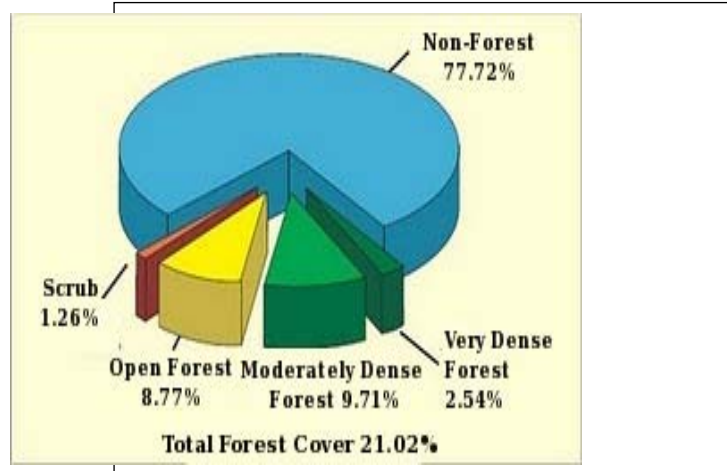
scarcity and drought, when there is an increase pressure on these forests. The forest also provide medicinal plants to the tribal and traditional communities. Nearly 6,500 native plants are still used prominently in the indigenous health care systems.

India is home to 45,500 plant species (including fungi and lower plants) and 91,000 animal species, representing about seven percent of the world's flora and 6.5 per cent of the world's fauna, 59,353 insect species, 2,546 fish species, 240 amphibian species, 460 reptile species, 1,232 bird species and 397 mammal species, of which 18.4 per cent are endemic and 10.8 per cent are threatened. The country is home to at least 18,664

## Forests

species of vascular plants, of which 26.8 per cent are endemic.

India contributes 8 per cent to the global biological diversity. It has been estimated that at least 10 per cent of the country's recorded wild flora, and possibly the same percentage of its wild fauna, are on the threatened list, many of them on the verge of extinction.<sup>ii</sup>



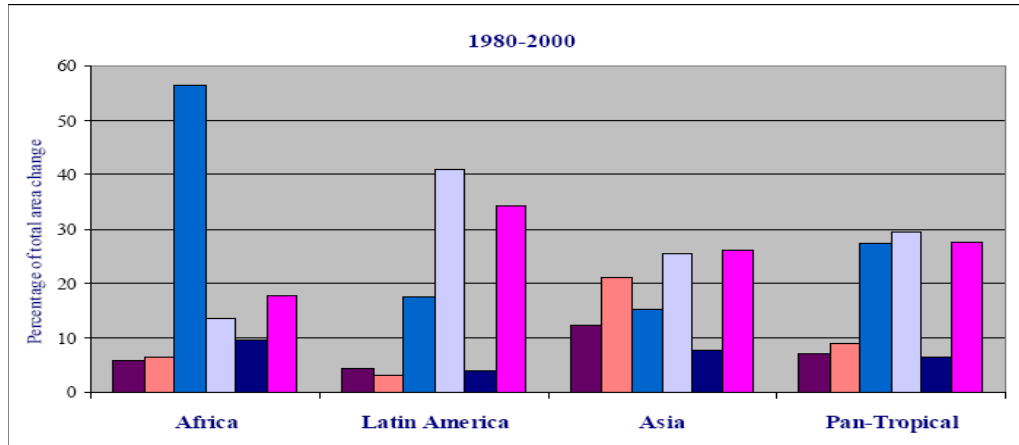
India's forests & tree cover of the country, as per the 2007 assessment is 78.37 million ha. However more than 40% of it is degraded open forest. In fact between 2005 and 2007 the area under open forest went up by 1626 sq km, at the expense of 936 sq.km of moderately dense forest. There was however a gain of 38 sq km of very dense forest.

Over the past several centuries, we have witnessed a gradual change in the land use pattern in order to accommodate the needs of a growing world population. This has led to several thousand hectares of forest land giving way to agriculture in order to meet the increasing demands for food, fuel and human settlements. According to a UN report of 2008, 13 million hectares of forest is cleared every year which translates into a loss of about 200 sq km of forest every day bringing about vast climate change.

This chart shows the results of an FAO study, on the causes of in different regions. Africa is the only place where clearing of forests for small scale permanent agriculture is dominant. Otherwise the share of the blame spreads across deforestation for large scale permanent agriculture and Others (presumably non-agriculture based)

- [ ] Expansion of shifting cultivation into undisturbed forests
- [ ] Intensification of agriculture in shifting cultivation areas
- [ ] Direct conversion of forest area to small-scale permanent agriculture
- [ ] Direct conversion of forest area to large-scale permanent agriculture
- [ ] Gains in forest area and canopy cover

[ ] Other



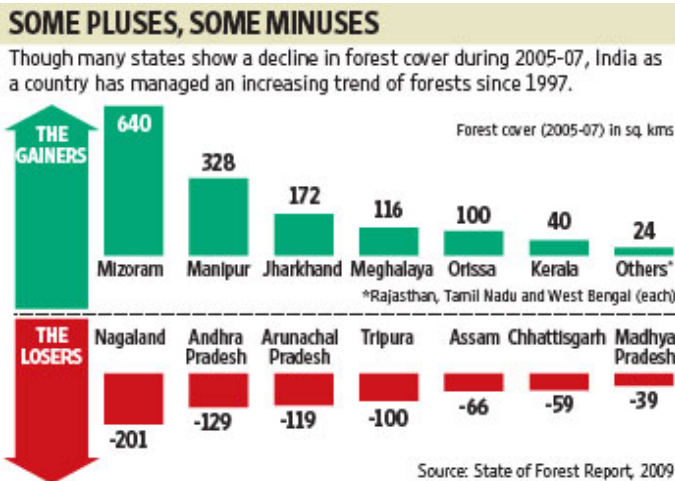
Source: <http://mdtf.undp.org/document/download/1740>

### The Political Economy of Forests

The British declared the forests in India as “reserved” in order to exploit them for timber and revenue.

Post independence, the 1952 Forest Policy discouraged shifting cultivation and reforestation. The State asserted “eminent domain” over the forests and the denouement of community rights on the commons and started exploiting the forest commercially.

### States decline in forest cover



Graphics: Ahmed Raza Khan / Mint  
<http://www.livemint.com/2009/11/30230537/India8217s-forest-cover-ros.html>

In 1980, the Government drew up a Forest Conservation Bill 1980, in which 81 of the 84 sections of the colonial 1878 Forest Act were reproduced. The Bill sought to give the government complete control

## Forests

over the forests Forest and police officials were to be empowered to take action against anyone found guilty of destroying forests. However, due to stiff resistance by social and environmental activists and tribal groups, the bill was not introduced.

This paved the way for the National Forest Policy of 1988, where the rights of local communities were given precedence over commercial exploitation of forests. The control however was still vested with the forest department. The Policy was amended forbidding state governments from diverting forests for non-forest activities without the approval of the central government. These developments led to the drafting of the 1990 resolution on joint forest management (JFM) by the Government of India.

Under the JFM, the Forest Department and the village community enter into an agreement to jointly protect and manage forest land adjoining villages and to share responsibilities and benefits.

As of 2005, 27 states of the Indian Union had various JFM schemes with over 63,000 FPCs (forest protection committees) involved in the joint management of over 140,000 km<sup>2</sup> of forested land. However this has not been able to improve the situation of the poor people depending on Non-Timber Forest Produce (NTFP), as has also been confirmed by several studies.

The struggle of adivasis and other forest dwellers finally led to the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Bill, 2006 (FRA). For the first time, the law recognized the “primary role” of forest communities in forest management. Among other things it asserted the rights of communities to protect, conserve, regenerate or manage any forest or community forest resource that has been traditionally protected.

The FRA (Forest Rights Act) however does not provide a clear road-map for institutionalizing a democratic forest management system. The legal status of committees and the powers of its member on right to stop felling etc needs to be made explicit. (says, Sharachandra Lele, ATREE :[http://www.currentconservation.org/issues/cc\\_2-4-3.pdf](http://www.currentconservation.org/issues/cc_2-4-3.pdf))

## **Development & Displacement**

Since independence, development projects under India's Five-Year plans have displaced about 500,000 persons each year. They have also led to the destruction of forests. Hydroelectric and irrigation projects are the largest source of displacement and destruction of habitat. Other major sources are mines, thermal and nuclear power plants, industrial complexes, military installations, weapons testing grounds, railways, roads, and the expansion of reserved forest areas, sanctuaries and parks.

Most of the land acquired were actually Common Property Resources (CPRs), of tribals and forest dwellers. Walter Fernandes has estimate that thirty two percent of the land acquired for development projects in Andhra Pradesh was CPRs . In Orissa it was 58 percent.

It is easy for the government to acquire these lands in the absence of legal recognition of community title to CPR lands. Also culpable is the view that displacement is the sad but an inevitable price of development. The absence of a robust rehabilitation policy and reliable data on the number of people displaced, inevitably means that such development has lead to impoverishment. With climate change, another effect of development, such communities will be further vulnerable and more and more tribal communities will be part of Internally Displaced people (IDP). The UNHCR estimates that in 2007 at least 26 million people got forcefully displaced due to climate change and got added to the growing number of climate refugees.

## **Impact of Climate Change on Forests**

The Intergovernmental Panel on Climate Change (IPCC) estimates that at least one-third of the world's remaining forests may be adversely affected by changing climate, especially in the boreal zone where the warming will be greatest.

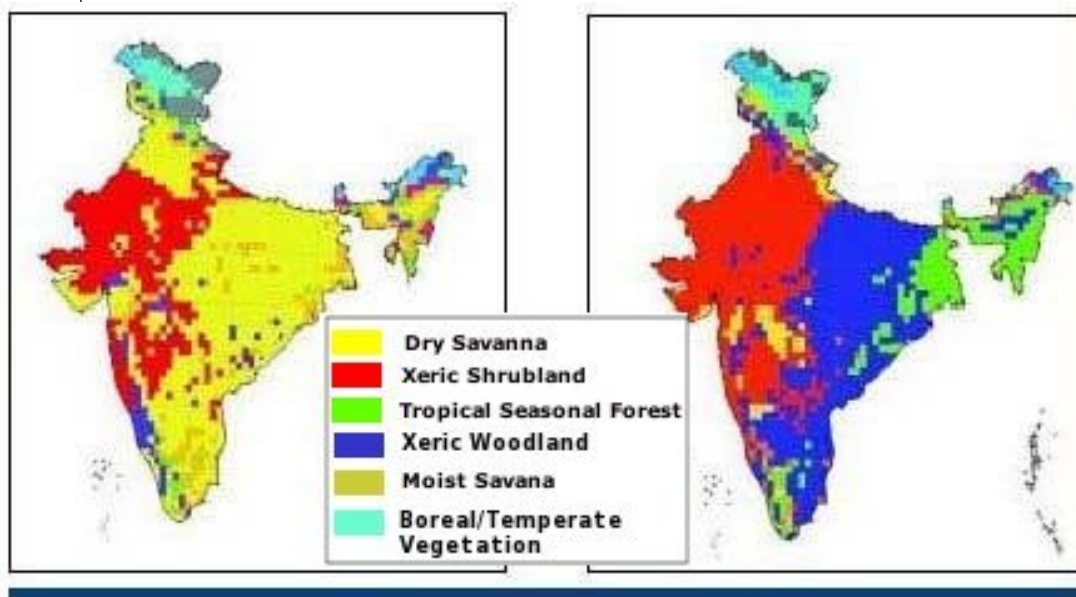
Dr. Simon Lewis, a leading scientist on climate change and forests, shows that over the coming decades climate change-induced drought may cause some of the Amazon rainforest to become savannah. He says that these models do not provide exact predictions as such, but highlight how sensitive the Earth System is to rapidly rising carbon dioxide emissions, and that such dramatic and abrupt changes are plausible.<sup>iii</sup>

## Forests

Changes in climate could alter the configuration and productivity of the forest ecosystems. Non-timber forest products are likely to be more vulnerable to changes in the climate system than timber production. These products have indirect and incremental impact on local economies, food security and health.<sup>iv</sup>

India's Initial National Communication to the United Nations Framework Convention on Climate Change, GOI, 2004.(

[http://data.undp.org.in/ene\\_pub/inatcom.pdf](http://data.undp.org.in/ene_pub/inatcom.pdf)) show shifts in forest boundary, changes in species-assemblage or forest types, changes in net primary productivity, possible forest die-back in the transient phase, and potential loss or change in biodiversity. Enhanced levels of CO<sub>2</sub> are projected to result in an increase in the net primary productivity (NPP) of forest ecosystems over more than 75 per cent of the forest area. Even in a relatively short span of about 50 years, most of the forest biomes in India seem to be highly vulnerable to the projected change in climate



Vegetation map for the year 2050(right) under GHG run of HadRM2 considering all grids of India and potential vegetation (including grids without forests). The control run (without GHG increase) is shown on the left.

Source: India's Initial National Communication to the United Nations Framework Convention on Climate Change, GOI, 2004. [http://data.undp.org.in/ene\\_pub/inatcom.pdf](http://data.undp.org.in/ene_pub/inatcom.pdf), <http://el.doccentre.info/eldoc1/e31d/16jun04goi1.pdf>

About 70 per cent of the vegetation in India is likely to find itself less than optimally adapted to its existing location, making it more vulnerable

to the adverse climatic conditions as well as to the increased biotic stresses.

Prof. Ravindranath et al, predicted shifts in forest boundary, changes in species-assemblage or forest types, changes in net primary productivity, possible forest die-back in the transient phase, and potential loss or change in biodiversity. They have estimate that about 75% of India's forests are projected to change in character irrespective of the nature of change by the end of the century.<sup>v</sup>

Thus Climate Change will have adverse socio-economic implications for forest dependent communities and the national economy.

Biodiversity is also likely to be adversely impacted. Rising temperature, changes in availability of water, and enriched CO<sub>2</sub> are expected to bring significant changes in species composition in approximately one-third of the forests worldwide.<sup>vi</sup> The populations of threatened species are expected to be at greater risk which means that those species that are currently classified as "critically endangered" will become extinct (IPCC)

**Genetic diversity:** Climate Change may have a serious impact on genetic resources in tropical forest trees. It may result in extinction of many populations and species.

**Ecosystem Boundaries:** Changes in precipitation and temperature can cause the boundaries between eco-systems to move, allowing some ecosystems to expand into new areas, while others diminish in size as the climate becomes inhospitable to the species they contain.

### **Impact of Forests on Climate Change**

The forest sector, through tropical deforestation contributes about 17-20% of global CO<sub>2</sub> emissions leading to global warming. Thus it is the second largest source of global green house emissions, the first being the energy sector. According to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, deforestation, forest degradation and forest fires are the major carbon dioxide contributors in



the developing countries. Practices such as overgrazing, over harvesting of fuel wood, illegal logging of timber and even forest fires account for the release of huge amounts of carbon dioxide.

As already seen, the projected climate change has a cascading impact on forest ecosystems and biodiversity. By 2050, forests globally will become a significant net source of CO<sub>2</sub> emissions which will lead to even greater emissions of carbon dioxide, contributing to a climate change cycle already well-underway(UK Meteorological Office).<sup>vii</sup> At the same time the forest sector has potential to sequester about 2 gigatonnes of carbon annually to mitigate climate change.

Forests accumulate carbon over a period of time through the growth of trees and the increase of organic carbon in the soil. Immature forests sequester carbon at high rates, while in mature forests carbon sequestration eventually equals decomposition; that is, the carbon balance of the ecosystem reaches a steady state. The forest is a 'carbon reservoir', but no longer acts as a carbon sink. Thus forest will act as reservoirs or as sinks depending on factors like the age of the forest, the management regime, other biotic and abiotic disturbances (e.g. insect pests, forest fires, etc.) and human-induced deforestation.<sup>viii</sup>

**Carbon Sink** is a natural or manmade reservoir that stores carbon-containing chemical compounds. Other than oceans, plants act as natural carbon sinks, absorbing huge amounts of carbon dioxide, through photosynthesis.

**Carbon sequestration** refers to any process which removes from the atmosphere and stores it in these sinks

In order to mitigate the effect of climate change, scientists have sought to use the concept of "carbon sequestration". According to the IPCC the cumulative amount of carbon that could potentially be conserved and sequestered over the period 1995-2050 by slowing deforestation (138 million ha) and promoting natural forest regeneration in the tropics (217 million ha), combined with the implementation of a global forestation programme (345 million ha of plantations and agroforests) would be about 60-87 GtC.

This is equivalent to 12-15 percent of the projected cumulative fossil fuel and deforestation emissions over the same period.

Thus, Forest can play a three fold role in the struggle against Climate Change:

- they are carbon pools
- they become sources of CO<sub>2</sub> when they burn, or, in general, when they are disturbed by natural or human action
- they are CO<sub>2</sub> sinks when they grow biomass or extend their area.



### Forest Communities and Climate Change

As highlighted by the Millennium Ecosystem Assessment (2005), 'Most of the world's 2.7 billion poor people depend on natural resources (water, forests, seas, soil, biodiversity, and so on) for survival and economic development; but the environment and the world's natural resources are already being substantially degraded and increasingly being affected by changes in the climate.'<sup>ix</sup>

Forests constitute an integral part of social life of tribals and others living in and around forest areas and contribute substantially to the food supply of tribal populations. During periods of drought and in times of scarcity, the dependence on forests for food increases. The main foods collected from forests include fruits, flowers, tubers, leafy vegetables, bamboo shoots, honey, mushrooms, etc. Most of the people living in and around forests use medicinal plants collected from forests for medicinal value. The availability of non-timber forest products are affected as a consequence of climate change. Dwindling availability of these resources has deprived the rural poor from a supplementary source of both income and food. Non-timber forest products are likely to be more vulnerable to changes in the climate system than timber production. These products

## Forests

have indirect and incremental impact on local economies, food security and health.<sup>x</sup>

Forests can greatly assist vulnerable communities adapt to the impact of climate change, if managed properly. If they are not managed sustainably, forests will exacerbate these impacts. Similarly, because of their ability to take carbon dioxide out of the atmosphere, forests have the potential to offer solutions to climate change. However, if forests are destroyed, the increasing amount of carbon in the atmosphere could lead to the destruction of what remains. The Director General of CIFOR(The Center for International Forestry Research), Francis Seymour says "The imperative to assist forests and forest communities to adapt to climate change has been poorly addressed in national policies and international negotiations. The adaptation challenge is being treated as secondary to mitigation, and yet the two are inextricably linked".<sup>xi</sup>

However, some of the challenges forest communities face today include, lack of indigenous knowledge system and the transfer of such knowledge from one generation to another; Biodiversity maintenance; effects of climate change; Lack of economic incentives; limited access to markets, insufficient capital and generally weak bargaining power; Weak coordination, communication and monitoring; and last but not least to mention is the bureaucratic hurdles.

**Community Forest Management (CFM)** can address the needs and priorities of the forest dependent communities only when we realize that it is not only important to see who manages the forests but in how forests are viewed. A community based rights regime with in-built safeguards to access for forests-dependent communities could be a solution to sustainably manage forests as well as local livelihoods.

JFM	CFM
<p><b>JFM: How Participatory?</b></p> <ul style="list-style-type: none"> <li>• Decisions taken by the communities need ratification by Forest Department.</li> <li>• Diverse, flexible local institutions replaced by uniform institutional arrangement.</li> <li>• Rigid, unilaterally defined benefit sharing formula</li> </ul>	<p><b>Guiding Principles of CFM</b></p> <ul style="list-style-type: none"> <li>• It is a democratic, decentralised and inclusive process to carry everybody along.</li> <li>• It is based on localised rules and management practices to meet local needs.</li> <li>• Its institutions are based on local socio-cultural traditions, practices and institutions.</li> </ul>

- <sup>i</sup> Regenerating India's forests, by SUSHIL SAIGAL, Deccan Herald, 26 March 2002.  
<http://www.nls.ac.in/CEERA/ceerafeb04/html/documents/forest>
- <sup>ii</sup> State of Environment Report-India 2009. Ministry of Environment & Forests,-Govt. of India, 2009.  
<http://moef.nic.in/downloads/home/home-SoE-Report-2009.pdf>
- <sup>iii</sup> Climate change in my view, Dr.Simon.L.Lewis, Royal Society URF  
<http://royalsociety.org/Content.aspx?id=5321>
- <sup>iv</sup> Climate Change: Global Risks, Challenges and Decisions, Jyotish Prakash Basu, IOP Publishing, Series: Earth and Environmental Science 6 (2009) 382011. [http://iop.fileburst.com/ees/ees9\\_6\\_382011.pdf](http://iop.fileburst.com/ees/ees9_6_382011.pdf)
- <sup>v</sup> Impact of climate change on forests in India, N. H. Ravindranath, N.V. Joshi R. Sukumar and A. Saxena, Current Science, Vol. 90, No. 3, 10 February 2006, <http://www.ias.ac.in/currsci/feb102006/354.pdf>
- <sup>vi</sup> The Role of Official Statistics in Measurement of the Impacts of Climate Change: Indian Experience by Sourav Chakraborty Social Statistics Division, Central Statistical Organisation Ministry of Statistics & PI, Government of India, New Delhi, India  
[http://unstats.un.org/unsd/climate\\_change/docs/papers/CCPaper\\_INDIA\\_session3.pdf](http://unstats.un.org/unsd/climate_change/docs/papers/CCPaper_INDIA_session3.pdf) <http://el.doccentre.info/eldoc1/e31d/080416zzz1B.pdf>
- <sup>vii</sup> Report on 'Climate change and forest carbon sequestration' by WWF  
<http://assets.panda.org/downloads/po6forestcarbonsequestration.pdf>
- <sup>viii</sup> The role of forests in global climate change: whence we come and where we go Charlotte Streck and Sebastian M.Scholz, The Royal Institute of International affairs, 2006,  
[http://www.gppi.net/fileadmin/gppi/Streck\\_Scholz\\_2006\\_Forests\\_Global\\_Climate\\_Change\\_3.pdf](http://www.gppi.net/fileadmin/gppi/Streck_Scholz_2006_Forests_Global_Climate_Change_3.pdf)
- <sup>ix</sup> Climate Change Adaptation, Enabling people living in poverty to adapt, Catherine Pettengell, Oxfam GB, April 2010.  
[http://www.reliefweb.int/rw/lib.nsf/db900sid/KHII-8587GV/\\$file/doc18002-contenido.pdf?openelement](http://www.reliefweb.int/rw/lib.nsf/db900sid/KHII-8587GV/$file/doc18002-contenido.pdf?openelement)
- <sup>x</sup> Climate Change: Global Risks, Challenges and Decisions, Jyotish Prakash Basu, IOP Publishing, Series: Earth and Environmental Science 6 (2009) 382011. [http://iop.fileburst.com/ees/ees9\\_6\\_382011.pdf](http://iop.fileburst.com/ees/ees9_6_382011.pdf)

---

<sup>xi</sup> Climate change puts forests and people at risk, adaptation needed to avert crisis, The Hindu, November 28, 2008, <http://www.thehindu.com/holnus/008200811281902.htm>