# Deeper Roots of HISTORICAL INJUSTICE

## *Trends and Challenges in the Forests of India*

Ramachandra Guha • Nandini Sundar • Amita Baviskar •
Ashish Kothari • Neema Pathak • N. C. Saxena • Sharachchandra Lélé •
Don G. Roberts • Smriti Das • K. D. Singh • Arvind Khare

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# **Deeper Roots of Historical Injustice:** Trends and Challenges in the Forests of India

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# Acknowledgements

THE STRENGTH OF THIS BOOK lies in the intellectual vigor of the authors. Each one of them is a recognized authority in his/her field and it is gratifying to note that they brought their intellectual rigor to bear in the productions of this comprehensive new narrative on key trends and underlying drivers of developments in India's forests and possible future scenarios and challenges for the sector. We are grateful to them for their contribution, as well as their patience, when delays in the publication of this volume were beyond our control.

The chapters within were discussed in a conference which RRI jointly organized with Indian National Trust for Art and Cultural Heritage (INTACH). The leadership of INTACH, particularly Mr. S. K. Mishra and Mr. Yogendra Narayan, then Chairman and Member Secretary, provided their unyielding support for the success of the conference. Mr. Samar Singh, then Senior Advisor at INTACH was instrumental in designing, executing and managing this conference. Without his efforts it would have been impossible to assemble the key people responsible for the forest policy processes in India. Mr. V. B. Eswaran, Chairman of the Society for Promotion of Wastelands Development (SPWD), Mr. A. K. Mukherjee, former Director General of Forests, Dr. Sunita Narayan, Director of the Center for Science and Environment, Dr. Gabriel Campbell, former Director General of ICIMOD, and Dr. Ishwari Das of INTACH all ably presided over various segments of the conference. We are grateful to them for readily sharing their time and knowledge with us.

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Andy White
*Coordinator*

Rights and Resources Initiative
Washington DC

# Prologue

IT IS WELL RECOGNIZED THAT forests and other living natural resources are being depleted or destroyed rapidly, while human demands and pressures are ever growing and intensifying, and the capacity to conserve and manage these resources is proving to be very inadequate and ill-organized. In India, the situation is further compounded by the fact that a very sizeable number of the poorer people are concentrated in the forested regions, especially in the central and eastern parts of the country, and their legitimate claims as well as subsistence needs cannot possibly be wished away. These forest areas are also rich in minerals and water resources and are increasingly becoming lucrative destinations for domestic and foreign investments. The complexity and dynamics of the situation is unleashing forces and trends that are shaping social, economic and political developments in and around the forest areas. In other words, the forest landscapes in India are now witnessing the major challenge of how to harmonize the path of rapid economic growth with the ability to cope with complex social problems.

Looking to the future, it is apparent that the competition over land, water, and forest resources will become fiercer, thereby further exacerbating the conflicting claims between economic development and peoples' rights, and between inclusive growth and limits to growth. Climate change policies, in response to pressure on India to reduce carbon emissions, will further impact the way the forests are managed, including the rush to tap into carbon and bio-energy markets. The high hopes generated by the passage of The Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act 2006 have been blunted because of tardy implementation on one hand and inadequate policy response by the state on the other. The fact is that policies relating to forests are now firmly embedded in other sectoral policies and development policy in general.

It is to track all these trends and developments in India's forest sector that the Rights and Resources Initiative (RRI) deserves all appreciation for tapping into the large reservoir of knowledge and analytical skills of some leading Indian scholars and experts with their range of disciplines, experiences and perspectives. This is evident from the think-pieces put together in this volume, in which the various authors take a critical look at the trends that have shaped developments in India's forest sector over the past two decades and the underlying drivers of these trends. They analyze key actors, institutions, laws, policies and politics – and unravel the interplay between the factors that influence the direction of economic development, govern models of industrialization, determine the nature and status of civil rights, shape different conservation models, and sway policy responses. It is necessary to add that the think-pieces contained herein were initially presented at the Conference on Indian Forestry: Key Trends and Challenges held in New Delhi on 5 – 6 March 2009, which was also a laudable initiative of RRI in collaboration with the Indian National Trust for Art & Cultural Heritage (INTACH).

Despite the delay in its publication, this book will hopefully inform the future discourse on India's forest policies, mainly because it deals with the larger forces that shape the role and actions of the various actors. It is also hoped that the contents of the book will help in shaping the forest sector in India that ensures the integrity of forest ecosystems along with the need to harmonize the development aspirations of the poor and provides a stake to the rural communities in the trajectory of economic growth.

**– Samar Singh**

*Samar Singh served in the Indian Administrative Service for nearly four decades before retiring as Secretary to the Government of India. His assignments included, among others, serving as Member Secretary of the Indian Board for Wildlife chaired by the Prime Minister, Member Secretary of the Court and Executive Council of Forest Research Institute and Colleges, and Member Secretary of the National Land Board and National Commission for Conservation and Development of Land Resources in India. He also worked on deputation as Secretary General of the World Wide Fund for Nature-India. Singh has authored numerous books, including "Conserving India's Natural Heritage" and "The World Charter for Nature." He currently serves on the Board of the Foundation for Ecological Security and Society for Promotion of Wastelands Development and is associated with several other conservation bodies. He is the Recipient of 'Order of the Golden Ark' - an international award for exceptional work done in the field of nature conservation.*

1

# The Past and Future of Indian Forestry

RAMACHANDRA GUHA

**Right**
by Cherabandaraju

I will not stop cutting down trees
Though there is life in them
I will not stop plucking out leaves
Though they make nature beautiful
I will not stop hacking off branches,
Though they are the arm of a tree
Because—
I need a hut
(translated from Telugu by C. V. Subba Rao).

AMONG THE DIFFERENT AGENCIES OF the Indian Government, the Forest Department is distinctive in having been exempt from the scrutiny of scholars for most of its long history. The department was founded in 1864, but it was not until the 1980s, more than a century later, that scientists and social scientists began to systematically examine its policies and programmes. This is in striking contrast to other arms of the state, for example the revenue administration, the agriculture and irrigation departments, the judiciary, and the education and health departments, which had come under the gaze of scholars and academics early on in their institutional history.

In fact, the critical scrutiny of those other departments was an inseparable part of the history of Indian nationalism. In the late 19th century, Dadabhai Naoroji and R. C. Dutt wrote major works arguing that the land and revenue policies of the colonial state were inimical to the interests of the majority of Indians. Their writings influenced later nationalists, such as Gopal Krishna Gokhale and Bal Gangadhar Tilak, and, above all, Mahatma Gandhi, who between 1917 and 1922 converted an intellectual critique into a widespread social movement. This movement was based on the premise that for Indians to live in dignity and economic security, India needed to achieve freedom from alien rule; and on the further premise that when that freedom came, Indians would at last be free to design land, agriculture, education (and other) policies which were more suitable to the country and its inhabitants.

What the nationalists began, the social scientists carried forward. Through the 1930s and 1940s, as it became clear that India would become self-governing in the near future, scholars based in universities and research institutions began turning their minds to framing policies appropriate to the soon-to-be free nation. Thus, economists worked on land reform, irrigation policy, industrial relations, fiscal federalism, and related issues; political scientists on the respective merits of the presidential versus the parliamentary systems of governance; sociologists on the place of the caste system in a future democratic republic; anthropologists on the place of tribals in a modern and industrializing world.

Among the scholars who contributed to these debates were the founders of modern social science in India. Consider these names: D. R. Gadgil, C. N. Vakil, V. K. R. V. Rao, Radhakamal Mookerjee, D. P. Mukerji, P. C. Mahalanobis, Irawati Karve, Nirmal Kumar Bose. These intellectuals all made their mark in the 1930s and 1940s, to carry on their work beyond the transfer of power in August 1947. Their writings deeply informed debates on agricultural, industrial, and educational policy in the decades following Indian independence.

## II

While other spheres of the economy and of social life were the subject of systematic research before and after Independence, the forestry sector remained untouched and unanalysed. There were dozens of economists and sociologists who worked on agriculture and industry, but very few who worked on forestry. So far as I can tell, the first social scientist in India to conduct serious empirical research in this area was the economist S. W. Muranjan, who in the 1970s did some interesting studies on the functioning of forest labour co-operatives in Maharashtra (Muranjan 1974 and 1980). But he remained an exception; besides, his work was little noticed at the time.

To be sure, the Forest Department was not entirely exempt from scrutiny. The academics may have neglected the sector; but activists and popular social movements did not. Thus, there was an *implicit* critique of the workings of the Forest Department in the very many peasant and tribal protests in defence of traditional forest rights, which took place at regular intervals and in different parts of India from the 1860s onwards. There was a more explicit critique of the workings of the Forest Department in the writings of activists connected with or working within rural communities. Among those who wrote insightfully about the commercial and centralizing bias of colonial forest policy were the social reformer Jotiba Phule—in a pamphlet of 1882-3 called *Shetkaryacha Asud*, or 'The Whipcord of the Cultivator'; the Kumauni Congressman Govind Ballabh Pant—in a tract published in English in 1922 under the title *The Forest Problem in Kumaun*; and the activist ethnographer Verrier Elwin, who in a series of books and essays published in the 1930s and 1940s criticized the state for making the forest-dwelling tribal an alien in his own land (see, for more details and references, Guha 2006: Chapter 4).

These precocious pioneers notwithstanding, it was not until the 1980s that the forestry sector attracted the more focused attention of social scientists. There were several reasons behind this (belated) awakening. First, and perhaps foremost, was the upsurge of forest-based protest movements in the decade of the 1970s, among them the Chipko Andolan in Uttarakhand, and the Jharkhand movement in central India, which placed control of forests in the forefront of the agenda for regional autonomy. A second reason for this new interest in forestry was the evidence from satelite photography, which suggested that while some 22 percent of India was officially designated as 'forests', perhaps as much as half of this area had no tree cover. A third reason was the growing scarcities of forest produce, as felt by different sections of society, with village women having to walk longer in search of fuelwood, and paper and plywood companies having to forage further in search of raw material.

Once these problems were identified, they were analysed by many scholars, working from a variety of perspectives. Sociologists studied the origins of forest-based conflicts in the discriminatory policies of the state; anthropologists worked on the decline and possible revival of common property resource management regimes; legal scholars analysed the biases of forest law; economists investigated the causes of the shortage of forest raw materials and suggested means of overcoming them.

These studies were conducted in different parts of India, using different research methods, and with varying degrees of seriousness. Nor were they the preserve of social scientists alone. For it was also in the 1980s that biodiversity became a hot topic in the world of science and activism. India was home to the largest population of tigers, and to still-viable populations of other endangered

mammals such as the elephant and the rhinoceros. Apart from such charismatic animals, India was also home to a staggering variety of natural (and likewise endangered) landscapes, from alpine meadows and coastal wetlands to deserts and tropical rainforests. There was now a surge of scientific interest in the conservation and management of these threatened species and habitats, concurrent with the surge of social-scientific interest in how forests intended for human use had been managed—and, it must be said, mismanaged—by the state since the late 19th century.

## III

The present collection of papers, commissioned by the Rights and Resources Initiative, handsomely and constructively builds on these three decades of research on forestry and conservation in India. Many of the authors are themselves pioneers, having worked intensively in this field for much of their working lives. The papers cover a wide range of subjects—among them, social conflicts around forests, the economics of forest use and abuse, the impact of the global economy on the Indian forestry sector, the role of institutions, and the efficacy of different kinds of conservation strategies.

In view of the richness of insight and information that these papers individually provide, to summarize them would be impossible; to seek to provide a 'synthesis' (my original mandate) an act of impertinence. So let me instead use these excellent essays as a launching pad for some general reflections on the state of the forestry sector in India, past, present, and future. My comments run sequentially through four themes, which I may gloss as the *scientific*, the *social*, the *economic*, and the *ethical*.

The first set of issues relate to the public institution which is physically in control of the massive areas designated as 'forests', and hence responsible for their use and management. The debate on forestry and conservation in India over these past few decades has seen two polar positions being articulated. Let us term them the 'narrative of state enlightenment' and the 'narrative of state exclusion' respectively. The origin myth of the Indian Forest Department is that the department was established by the British to replace the (allegedly) erratic, unsystematic and destructive resource use patterns of villagers with the scientific forestry of the new rulers. But, like other origin myths, this is merely—a myth. As Madhav Gadgil pointed out in a brilliant essay published twenty years ago (Gadgil 1989), by the accepted canons of science, the management of India's publicly owned forests was based on what is more accurately characterized as 'pseudo-science'. The database for forest management was extremely scanty—thus, there were no

reliable yield tables for many tree species that were commercially exploited; no studies of the impact on co-existing tree species of the harvesting of a particular kind of tree; no studies at all of the other plant and animal species that made up the environment of the commercially exploited plots; no studies of the human impact on these forest areas (yet plenty of unsubstantiated assertions). Indian foresters published their papers in house journals, which did not follow the accepted scientific system of impartial, blind, and external refereeing. As a consequence, in a hundred (and more) years of forestry research under state auspicies, no single serving Indian forester has made any kind of name or impact in the international community of scientists.

More recently, a similar sort of critique has been forthcoming with regard to biodiversity conservation as well. The Forest Department is physically in charge of the several hundred National Parks and Sanctuaries in India, and responsible also for their scientific management. But here, as with state forests managed for economic or commercial purposes, the empirical base on which management plans are framed is very scanty. It is fair to say that the requisite domain expertise does not exist within the Forest Department itself. The Indian scientists who know most about large mammals such as the tiger and the elephant, for example, or the scientists who have most systematically studied habitats such as wetlands or oak forests, are not usually found to be working within the Indian Forest Service. In fact, the latter are often suspicious of the former, rarely taking their advice on how to develop more sustainable management practices, and on occasion even putting hurdles in the way of their research.

Scientific research on forest and wildlife takes place within two sorts of institutional settings: in organizations that are controlled by the Forest Department, and in universities and independent research institutes. In the case of the former, quality research is inhibited by the fact that cadre officers of the Indian Forest Service command the most influential positions, with career scientists with Ph D's being relegated to inferior posts. Largely because of this discrimination, neither the Forest Research Institute nor the Wildlife Institute of India has contributed anywhere near as much as they might (or should) have to the deeper understanding of forest ecosystems. Some top class, even world-class, research is conducted in universities and other research institutes, but this work is—for reasons of jealousy or rivalry, or through sheer inertia and laziness—rarely incorporated into the management plans of the Forest Department.

That said, the counter-narrative of 'state exclusion' has focused not so much on the scientific limitations of the Forest Department as on the social impact of its policies. As both Nandini Sundar and Amita Baviskar argue here, in the management of the state's forest estate, the interests of commerce and industry have generally taken precedence over the needs of peasants, pastoralists, and artisans.

The inequality in access is compounded by the legal framework of forest management, which designates everyday activities of villagers—such as fuel and fodder collection, or the harvesting of fruits and medicinal plants—as 'crimes'. The biases in forest policy are a consequence in part of laws inherited from the colonial past. They are intensified by a set of attitudes wherein Forest Department staff—from the lowly forest guard upwards—see themselves as saving or securing the forests from the villages which surround it. Law and institutional tradition thus combine to produce a situation where a public official is placed in opposition to the public—not necessarily a paradox or contradiction under conditions of colonial rule, but certainly an anomaly or anachronism in a republican democracy.

As Kothari and Pathak point out, the exclusion of local communities is perhaps even more intense in National Parks and Sanctuaries than in Reserved Forests. The top-down, centralized, even authoritarian models of forest and wildlife management practiced in India have been criticized for their denial of democracy, in so far as they posit the state against the citizenry; and for their promotion of inequality, in so far as they favour urban-industrial interests as against those of rural folk (this is true also of National Parks, which often exclude local people while welcoming in urban and foreign tourists). But, as several writers argue here, apart from being undemocratic and unjust, these policies are also ineffective and unsustainable. Thus it is held that the forests may be better maintained if local communities are given a greater stake in their management. It is further argued that peasants and tribals have a stock of empirical ecological knowledge that can be valuably deployed in the sustainable management of forests and wilderness areas.

Like the narrative of state enlightenment, the counter-narrative of state exclusion has a long history. I have already mentioned the writings in this regard of Phule, Pant and Elwin. Allow me to reproduce one of my all-time favourite quotes in the forestry field, which dates to 1878, the year in which the colonial state passed the comprehensive piece of legislation by which India's forests are still ruled and governed. This quote was the handiwork of the Poona Sarvajanik Sabha, which—as an organization of middle-class liberals deeply concerned with the plight of the peasantry—was quite possibly India's first non-sectarian and secular NGO. Responding to the Forest Act of 1878, the Sabha insisted that state control of forests was violative both of historical practice and of environmental rationality. For both 'private grantees and village and tribal communities' had 'cherished and maintained these rights [in forests] with the same tenacity with which private property in land is maintained elsewhere'. Rather than the wholesale takeover of forests by the state, the Sabha argued that a more sustainable and just policy would take the Indian villager into confidence of the Indian Government. If the villagers be rewarded and commended for conserving their patches of forest lands, or for making plantations on the same, instead of ejecting them from

the forest land which they possess, or in which they are interested, emulation might be evoked between neighbouring villages. Thus more effective conservation and development of forests in India might be secured and when the villagers have their own patches of forest to attend to Government forests might not be molested. Thus the interests of the villagers as well as the Government can be secured without causing any unnecessary irritation in the minds of the masses of the Indian population.[1]

I discovered this quote more than twenty years ago, in a dusty, crumbling file in the National Archives of India. Some readers will recognize it—for I have used it in the past, too. If I reproduce it again, it is because it still speaks directly to the present, and because it anticipates the credo and charter of the institution which has sponsored this colloquium. For the Rights and Resources Initiative seeks, among other things, to 'increase household and community ownership, control, and benefits from forests and trees'.

## IV

Let me move on to the role of forests and forest products in the economy. In the 1980s, there was a vigorous debate as to whether forests should be managed principally to meet urban and industrial demand or to meet the needs of peasants, pastoralists, artisans and landless people who lived closer to the forest. Looking back at that debate, it seems to be that the critics of the Forest Department missed a great opportunity to promote tree growing by private farmers as a sustainable alternative to industrial forestry on public lands. One of the contributors to this colloquium, N. C. Saxena, was then one of the few voices consistently articulating this alternative. But his words went mostly unheeded among the environmental community—who, because of their distaste for the market, and their suspicion of exotic species, refused to encourage farm forestry. To the contrary, they demonized it as a vast conspiracy fostered by the World Bank and other agencies to make India dependent on foreign aid and foreign advice (Shiva 1988).

In many areas, forests remain crucial to subsistence, as a source of fuel, fodder, building material, and so on. (Sharad Lélé however points out that in some areas this dependence is declining, with alternate sources of energy replacing fuelwood, for example). In retrospect, if there had been a concerted push to divert industrial wood production from state lands to private lands, there would have been all-round gains in ecology, equity, and efficiency—with the restoration of degraded forests previously subject to intensive commercial exploitation; a more assured access to forest produce for local communities; and the generation of income for farmers who came to treat trees as a cash crop like cotton or sugarcane,

for example. Indeed, it may still not be too late to work towards building deeper links between wood processers (i.e. paper and plywood units) and wood producers (i.e. farm households), so as to more widely distribute the gains from forest-based industry.

In his paper, Roberts skillfully outlines the likely impact of globalization on the pattern of consumption and production of wood in India. However, one important consequence of globalization for the forestry sector in India calls for deeper analysis. This is the surge in mining as a consequence of the growing demand of the global economy for iron ore, bauxite, and other minerals which have large and as yet unexploited deposits in India.

The connection between the growth in mining and the depletion of forests is suggested in a table reproduced in the paper by Smriti Das. It has long been believed that irrigation and power projects have accounted for the greatest diversion of forest land to non-forest uses; but it now appears that mining and defence projects have contributed as much. In the past decade, in particular, there has been a massive expansion in mining operations across the central Indian forest belt, notably in the states of Orissa, Jharkhand, and Chattisgarh.

The expansion of mining has exacted a horrific environmental cost. Forests have been cleared; hillsides laid bare; streams polluted. But there has been a social cost as well; namely, the marginalization of the mostly tribal communities who live in and around these mines. They have gained little from mining, since the labour comes from outside the area; to the contrary, they have lost a great deal, such as the access to forests they once depended on, and the depletion of their water sources and the contamination of their land as a consequence of unregulated mining.

The environmental purist would object to mining in *toto*, since it destroys some of the most beautiful and distinctive landscapes of central India, which are home to many endangered species of plants, birds, and animals. The environmental pragmatist, on the other hand, will ask whether mining can be made somewhat sustainable (or at least less damaging), by reducing run-off, recycling materials, etc. On his or her part, the social democrat must ask whether it can be made more inclusive, by involving local communities more actively in the management and working of the mines, and in alloting them a share of the profits.

The law, as it stands, does have ample provision to make local communities partners in these mining projects. A large number of these projects are in areas inhabited by *adivasis*, or, to give them their official name, the Scheduled Tribes. Schedules V and VI of the Indian Constitution do provide for a substantial degree of self-governance in districts where *adivasis* are in a majority. There are clauses protecting tribal rights in land and forests, curbing the activities of money-lenders, and mandating the formation of village and district councils.

These Schedules provide for local councils to share in the royalties from minerals found on tribal land. In practice, however, the *adivasis* do not get to see or spend a rupee from mining, whose profits are shared between the promoters of the mine and the Ministers of the State Government, who are usually non-tribal.

The tribals of the central forest belt, are, without question, the most disadvantaged as well as the most victimized citizens of the Indian Republic. On the one hand, the state has neglected them—thus, the provision of schools, hospitals, water and sanitation is at its most abysmal in tribal areas. Thus, as the demographer Arup Maharatna has shown, in terms of the conventional indicators of social development—percentage above poverty line, rates of literacy, distance to nearest clinic, etc—the *adivasis* are even worse off than the Scheduled Castes or Dalits (Maharatna 2005). On the other hand, the state has more actively dispossessed them—by taking away their forests, by displacing them through dams, and most recently, by subjecting them to the negative externalities of open-cast mining.

Their victimization at the hands of the state is one reason that many tribals have found common ground with the Naxalites, as the Maoist revolutionaries in India are commonly known. Nandini Sundar points out that it is the 'structural violence of forest policy that engenders support for Naxalism'. So does the apathy of the state in general, its failure to provide tribals with decent education and health care, this compounded in recent decades by the dams and mines that have dispossessed the adivasis even further. That said, one must be careful not to romanticize the Naxalites. Although they have fought for better wages for tribal labourers and higher rates for tribal collectors of forest produce, they practice a brutal, unforgiving form of politics that is productive of greater violence still. One can understand why Naxalism has spread in tribal forest areas in recent decades, and yet insist that Naxalism cannot be part of any long-term solution for the tribals or the forests of central India.

The plight of the tribals raises a profound ethical question—must a certain section of society necessarily pay for the sustenance or progress of the rest? Or, to pose the question more directly—will the *adivasi* of central India meet the fate of the Native American and the Australian Aboriginal? The creation of those settler colonies, and the subsequent emergence as industrial and economic powerhouses, was enabled by the dispossession and degradation of the original inhabitants of those vast and beautiful continents. Is India destined to follow that same route to economic prosperity and national strength?

## V

In the three decades since the forestry sector was opened up to rigorous scholarly assessment, there have been some notable and welcome reorientations in forest policy. On the ecological front, the Forest Department has abandoned the promotion of exotic monocultures on public land. (While private farmers must be free to grow species of their own choice, from both a social and environmental point of view it makes far more sense to promote mixed forests of indigenous species on land owned by the state.) On the economic front, the massive subsidies given to forest-based industry, which impeded economic efficiency even as they encouraged the rapacious exploitation of nature, have been withdrawn. On the social front, there have been some, albeit limited, moves towards the democratization of decision-making, as for instance in the programmes of Joint Forest Management. These ecological, economic and social reorientations in forest policy are manifested in a significant change in nomenclature—namely, the re-designation of Minor Forest Produce as Non-Timber Forest Produce. Finally, on the institutional front, there has been some opening out of the Forest Department, with particular state units—most notably, that of West Bengal—willing to trust and work with local communities, and particular individuals displaying a social commitment largely absent in officers of previous generations.

These changes notwithstanding, in one essential respect the forestry debate hasn't moved on beyond the 1980s. As these papers demonstrate, the overall framework of the debate is still determined—or confined—by the opposition of two narratives, one which privileges state control and management of forests, the other which offers the alternative of community control and management.

To be sure, these narratives retain their relevance. The state remains physically in control of the 23 percent of India legally designated as 'forest'. Villages that abut these forests do still have much reason for complaint, and to ask whether under their, so to say community, control, the forests might not be managed with more sensitivity to the ecological and social context. However, the state vs. community opposition obscures changes that have taken place within both state and community. The state is more corrupt now that it was even in the 1980s, with forest officials now far more subject to political manipulation and interference. The community is in most cases more corroded and internally divided than it was in the 1980s.

The growing corruption of the state has facilitated, among other things, the transfer of forest land to mining companies. As Nandini Sundar observes, the mines also take over land used by local (especially tribal) communities, whose customary rights of ownership and use are not always reflected in written legal documents. At the same time, as Smriti Das points out, the absence of strong

tenurial rights inhibits individuals or communities from growing trees and forests on land they claim but to which they do not have certifiable, enforceable rights of usufruct or ownership. Thus, in the political and legal system now prevalent, there remain strong incentives in favour of forest depletion, as well as strong disincentives that inhibit forest regeneration.

What does the future hold for forest policy and management in India? Speaking specifically of national parks, Kothari and Pathak outline four possible scenarios; but it seems to be that their model applies to Reserved Forests as well. In the first scenario, the authoritarian hold of the state will persist; in the second, it will give way to the demands and claims of humans who live in and around forest areas; in the third, there will be a continuing tug-of-war between the state and the local people; in the fourth, the two contending actors will forge a middle path of compromise and co-operation by which the forests and wilderness areas can be managed sustainably and with a sensitivity to the needs of the truly disadvantaged.

In outlining these four possibilities, Kothari and Pathak indicate their own hope that it will be the fourth alternative that shall prevail. That is my preference, too, speaking as a citizen. Speaking as a historian, however, I am obliged to posit a fifth possible scenario—that the pressures of consumerism and economic growth will lead to the extinction of many more species and habitats, and to the further degradation of the tribal people who have lived closest and longest with the forests of India.

## Endnotes

1. Memorial to the Government of India from the Poona Sarvajanik Sabha and the inhabitants of the city and camp of Poona, dated 3 March 1878, in A Proceedings Numbers 43-142, March 1878, Legislative Department Records, National Archives of India, New Delhi.

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# Violent Social Conflicts in India's Forests

## Society, State and the Market

NANDINI SUNDAR

THIS CHAPTER LOOKS AT CONFLICTS over meanings and objectives over forest use and control in and around India's forests, ranging from everyday contestations over forest access among different communities in a village, to violent encounters among the forest department, police and villagers, to battles that are fought out in the court. Civil society responses to these conflicts cover a wide spectrum from advocacy with parliamentary parties, legal intervention, and political mobilisation to armed struggle. Within civil society, even those who believe in lobbying and legal intervention, must be differentiated by class and region, since they bring with them very unequal strengths and unequal access to government. The political clout of associations of retired foresters is, for example, quite different from that of associations of poor peasants. State responses equally vary between negotiation, indifference, and severe repression, depending not just on the interlocutors, but on the political expediency of the moment. This chapter will include a typology of forest conflicts.

While the roots of many conflicts go back to the faulty land and forest settlements of the last hundred years or more, the changing climate of investment and neo-liberal policies in the last two decades has given the question of ownership and access rights over land (both agricultural and forest) added urgency. This

chapter will seek to plot both what is old in the forest question and what has changed, identifying key forces that are driving the forest discourse in particular ways, ongoing and potential conflicts, and the field of play which will determine the likelihood of these being resolved or continuing.

## Defining Conflicts and Defining Violence

Defining what constitutes conflict or violence is itself contested, as are the roots of the conflict, the relevant actors and the possible solutions. While the forest department defines the problem in terms of villagers' use of forests, seeing it as responsible for degradation, villagers define the forest problem in terms of a lack of rights. Almost every patch of forest land is subject to claims between alternative users and uses of the same land.[1] When the discussion moves from everyday contestations on the grounds to legislation and policy, again there are debates over the purpose and outcome of such laws and policies. Some of this is driven by ideology. For example, conservationists have pitched the Forest Rights Act as a problem of tigers vs. tribals, arguing that wildlife needs pristine habitats; while tribal rights activists as well as the Tiger Task Force have argued that there is no reason why one can't see the future in terms of tigers and tribals, and that the basic problem is insecurity of tenure for tribals. While both sides recognise that there is a conflict of interests that underlie the debate around the Act, each side has a different interpretation of the interests. Some of the debate around laws and policies is driven more by institutional differences than serious differences of opinion. In the making of the forest rights act, for instance, there were differences between the Ministry of Environment and Forests (MoEF) and the Ministry of Tribal Affairs; and as I shall show subsequently, the Supreme Court and MoEF have on occasion been at loggerheads, and on occasion entered into alliances, on the composition and working of committees.

When it comes to violent conflicts, such as the war between the Naxalites and the government, while it is indubitable that the conflict overlaps with forest areas, the relevance of the forest per se in increasing conflict is debatable (see Koning et al 2008 who also do not see a direct correlation between forests and armed conflict). According to the government, the reason why the Naxalites are found in the central Indian tribal cum forest belt is because these areas are marked by poor connectivity and thick forests which provide the insurgents with cover. Their solution is to cut down the trees along the main roads (for instance, the two national highways that run through Dantewada district in Chhattisgarh to Andhra Pradesh and Maharastra, have both seen massive road clearing exercises) as well as send in large numbers of paramilitaries whose camps further

deplete the forests. A significant part of displacement as well as forest diversion is for defense establishments, but this is rarely noted even in the civil society discourses around forest loss. In Chhattisgarh, the government has also resorted to a policy of village regrouping – forcibly evacuating people from their villages in the forests and settling them in shanty camps on the main roads, in order to wean them from supporting the insurgents. While the government has officially claimed that they are fleeing from Naxalites, officials have also argued that villagers need to be regrouped to provide them basic services like schools and health care. This is in some sense not very different from getting villagers out of national parks and sanctuaries, and then justifying it in terms of their own development.

From another perspective, the forest is integral to the origins of Naxalism, since it is the exploitation faced by tribals who live in forests that has led to widespread support for Maoist guerrillas. Adivasis lack secure tenure rights and are harassed by forest guards for minor violations. The Naxalites have provided protection against everyday harassment and eviction; redistributed land to compensate for the absence of land reform, and also played a major role in increasing the prices of tendu leaves.

While conflict is not driven by forest resources in the sense that it is often driven by minerals (as in blood diamonds), forest incomes are an important element in the ongoing conflict. In Chhattisgarh for example, while the Naxalites levy 'taxes' on tendu contractors, the leader of the anti-Naxalite campaign, the Salwa Judum, Mahendra Karma, has been charged by the CBI for his role in the Malik Makbuja timber scam.[2] For the government, the forests have a negative value as a cover for guerrillas, and are also an excuse for the failure of government services, while for the villagers it is the structural violence of forest policy that engenders support for Naxalism. For the government, the conflict arises when villagers take up arms against the government – and that alone constitutes violence; for the villagers, the violence begins when the forest guard demands a bribe or the policeman rapes a woman. What for the government is 'business as usual', is for people 'violence as usual'.

In short, when one focuses on conflict and violent social conflict at that, it is important to set it against the backdrop of a continuum of actions, which are more or less violent in their effects. Further, conflict must be understood as both latent and manifest conflict, because while the poor may be dissatisfied with a state of affairs, they can only express it when they feel they have some backing against or escape from the brute consequences of protest. When analysing policy or law, it is inevitable, especially in a plural society, that any policy will involve some adhoc resolution of conflicting interests; the question is which side has the relative advantage, and the extent to which a policy generates further conflict.

In the following section, I provide a brief overview of the history of India's forestry in relation to conflict.

## The Colonial Roots of Conflict and Post-Colonial Continuities

The pre-colonial ecology and economy was not a golden age of equilibrium, as espoused for instance by Shiva (1988). Forests served as defending barriers and consequently obstacles to be cut down and overcome by invading armies, as refuge for peasants fleeing tax collectors, as places where tribal chieftains gathered the strength to raid plains villages; in short, as contested spaces (Sumit Guha 1999). Scarcity of forest produce and fodder was not unknown, and was even an object of plunder by opposing armies. Chetan Singh gives the example of Nadir Shah's army, which included as its loot from the Mughal camp at Karnal, 'corn, grass and wood.' Similarly, during Ahmad Shah Abdali's confrontation with the Marathas at Kunjpura, the shortage of fodder became so severe that from time to time 'one or two thousand of the Maratha horse went out for grass and forage' (Singh 1995:45). Rulers imposed restrictions on peasant access to certain spaces, e.g. the creation of hunting reserves or shikargahs by the Amirs of Sindh; as well as restrictions on the cutting of certain species of trees, e.g. the declaration of teak as a royal tree (Rangarajan 1996).

Notwithstanding this caveat, it is clear that colonial policies and regulations intensified existing scarcities of access, and introduced a fresh set of conflicts that have had a lasting impact. Many of the issues that dog the forests today find their roots in notions of property introduced by the British - whether it be the notion of state right over forests to the exclusion of peasant users, or peasant rights over village grazing lands to the exclusion of nomadic pastoralists (see Bhattacharya 1995: 68). The Forest Act of 1878 classified forests into three types: Reserved, Protected and Village forests. As PUDR (1982) points out, this was the first time that 'public interest' was formulated as a category in opposition to the interests of forest dwellers, and prominence given to the former. 'Public interest' here did not imply a value over and above the individual interests of citizens (e.g. conservation) or even a balance between the conglomerated interests of all those with stakes in the forests (a trade off, for example, between the needs of peasants for timber to build houses and wood for shipbuilding). Instead, it was generally used as a euphemism for the commercial and revenue-maximising interests of the colonial state.

The 1878 act also allowed the state to usurp the right to close off certain categories of forests, created certain classes of offences, and gave forest officials magisterial powers to arrest a person without warrant merely on grounds of suspicion. Much has already been written about peasant and adivasi struggles in the colonial period – both major and minor – in response to the reservation of forests, bans on shifting cultivation, restrictions on access to forest produce, the imposition of grazing dues, etc. (Gadgil and Guha 1992: 146-180; Arnold 1982: 88-142; Hardiman 1996; Sundar 2007). The history of forests in post-independence India has

been equally fraught, with movements like Chipko and Appiko against the felling of local forests by contractors for commercial uses; the agitations against the leasing of wastelands to private industries like Harihar Polyfibres in Karnataka; the uprooting of FD eucalyptus plantations in Tumkur, Karnataka by farmers incensed by the depletion of their water table (Shiva, 1991:147); the tensions between the exclusion mandated by rules regarding national parks and sanctuaries and the needs of fringe villages (Dang 1991, Kothari et al 1996); and the everyday confrontations between headloaders and forest guards. Successive policies such as the introduction of moncultures, social forestry, farm forestry, etc. have each generated their own set of conflicts.

## 1990s Onwards

Successive forest policies have evolved in part as a response to conflict. The 1990 Joint Forest Management (JFM) resolution, for example, was pitched as a way of reversing the long history of conflict between forest staff and villagers. By placing the onus of forest protection on villagers, the forest department hoped to reduce some of the conflict over access; while the villagers saw JFM as a way of gaining incremental benefits – wage labour, some money for village development and also a backing from the state in protecting their own forests (Sundar 2001). However, because JFM had a limited mandate – to afforest degraded lands – not only did it fail to address the livelihood needs of villagers to the extent required, but it also outsourced some of the conflict to villagers themselves, making them responsible for protecting forests against people from other villages or against disadvantaged users from within the village (headloaders, women etc.). Further, given that many of the degraded lands that were sought to be afforested were being cultivated by marginal farmers, JFM involved a process of displacing these farmers (Sundar, Jeffery and Thin, 2001: 183-187). This happened on a large scale in Andhra Pradesh, where podu land (shifting cultivation) was reclaimed by the forest department. Inevitably, this created vast discontent.

While JFM appears to have succeeded in some amount of re-greening of degraded areas, with forest and tree cover going up from 19.49 percent in 1987 to 23.39 percent in 2005, dense forests as a percentage of forest cover have declined from 59.06 percent to 57.19 percent over the same period (Forest Survey of India figures reproduced in Bhattacharya 2009: 11; see also Kishwan, Pandey and Dadhwal 2009). Moreover, JFM has been adjudged a relative failure on the social, institutional and forestry paradigm fronts, in terms of overturning the emphasis on working plans in favour of microplans, or on timber as against NTFPs (Sundar, Jeffery and Thin 2001). Within a decade, the excitement around JFM gave

way to two other processes – the judicialisation of competing claims to the forest, represented by the Godavarman Thirumpulpad forest case; and second, the moblisation around the enactment of what was eventually passed as The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act 2006.

## The Godavarman Case

The Godavarman case originated as a dispute between an estate owner and the forest department in Tamil Nadu (Godavarman Thirumulpad vs Union of India, WP (Civil) 202 of 1995). Since then, over 2000 'interlocutory applications' (separate writs) have been filed, on a variety of issues ranging from the Malik Makbuja scam in Bastar in 1998 to the acquisition of a hill sacred to the Dongria Kondhs in Orissa by a mining company for bauxite to the operation of sawmills in the Northeast, the amount of compensation for diversion of forest land to non-forest uses and so on. In the process of adjudicating, the Court set up its own committees (the Central Empowered Committee) to look into these cases and advise the Court,[3] as well as an ad-hoc Compensatory Afforestation Management and Planning Authority (CAMPA) to decide how the funds collected under compensatory afforestation should be spent. It also battled the Ministry of Environment and Forests (MoEF) over the composition of the Forest Advisory Committee which oversees sanctions for diversion of forest land to non-forest uses under the Forest Conservation Act.

Interim orders by the Supreme Court have involved judicial encroachment on executive or Parliamentary powers, but such institutional conflicts between the various organs of the state may be easily overturned by periodic changes in the balance of power and new alliances. For instance, in July 2009, the MoEF and the Supreme Court came together on how to spend the Rs. 11,400 crores lying with the CAMPA, with Rs. 1000 being released by the Supreme Court for compensatory afforestation and regeneration of an estimated 6 m ha of degraded forests. By doing this, they have bypassed disapproval by a Parliamentary Standing Committee and opposition by legislators in the Rajya Sabha to a Compensatory Afforestation Fund Bill in 2008.

Far more dangerous but more invisible is the judicial encroachment on the various rights that local communities have held under different regional laws. For instance, in directing that all forests in the country, irrespective of ownership should be managed under working plans created by the forest department, the Supreme Court obliterated the variety of tenures under which forests are managed, such as the Chotanagpur Tenancy Act in Jharkhand. In Meghalaya, where

much of the forest is privately owned, the Court's ban on timber felling caused a serious loss in income for many families (Nathan 2000; Nongbri 2000).

While a full history of the Godavarman case remains to be written (see however, Rosencranz and Lele 2008; Dutta 2005), what this brings out is that the Courts will continue to be one of the main arenas in which forest conflicts will be fought in future. However, the battle in the courts will necessarily be accompanied by conflict outside, as the judiciary reinforces executive arrogance towards marginalized communities. In the Vedanta case for example, the lawyer representing the Dongria Kondha was not allowed to speak, with the Court questioning whether he represented the tribals. The role played by the Courts also comes out quite clearly in the entire process leading up to the enactment of the Forest Rights Act (see below).

## The Forest Rights Act

The Forest Rights Act aims to redress the 'historical injustice to the forest dwelling Scheduled Tribes' by recognising their property rights to land, as well as non-timber forest produce, and the community right of control and management which was appropriated by the forest department: "An Act to recognise and vest the forest rights and occupation in forest land in forest dwelling Scheduled Tribes and other traditional forest dwellers who have been residing in such forests for generations but whose rights could not be recorded; to provide for a framework for recording the forest rights so vested and the nature of evidence required for such recognition and vesting in respect of forest land."[4]

The origins of the Act lie in the faulty settlements in place in adivasi areas. While zamindars were compensated for land, including in some cases forest land, which was taken from them, thousands of adivasis were evicted from their homes and villages, and these were absorbed into reserve forests. In many places, lands were never surveyed and later arbitrarily declared forest land, leading to disputes between the revenue and forest department, quite apart from disputes between people and the forest department. According to figures available in Endangered Symbiosis, a report of a public hearing held by the Campaign for Survival and Dignity, the MP Forest Survey 2003 admitted that people's rights had not been settled in 83 percent of land declared forests, something the forest department was legally bound to do by the forest act. In Andhra Pradesh (AP) some 77,661 acres of land under 'reserve forests' were under cultivation by adivasis prior to the enactment of the Forest Conservation Act (FCA) in 1980. A 1987 AP government memo requiring adivasi rights to be recognised over this land was ignored for eight years before it was overruled in 1995 by a new memo which promoted Joint Forest Management on those lands. The land was thus back to being under

forest department control. All this, despite an admission by foresters that there were fundamental problems in the way forest land was originally demarcated in AP (CSD 2003). In Orissa, over 50 percent of the 'forest' areas under revenue department control, several tracts of 'deemed' reserve forests, and lands above a ten degree slope (on which large numbers of adivasi families live and practice shifting cultivation) have never been properly surveyed and settled, thus denying thousands of people, mostly adivasis, property rights (Kumar N.d). As a result of such sleight of hand, the forest department came into the ownership of some 23.57 percent of the land across the country, and acquired the right to evict 'encroachers'. It is also important to note that there is no necessary correlation between the land under forest department ownership and actual forest cover, with communities and individuals often doing a much better job of protecting it than the forest department.

In 1990, the Ministry of Environment and Forests (MoEF) issued a set of six guidelines to deal with disputes related to forest land and forest villages, but these were never implemented. In the meantime, more and more cases concerning forests across the country were drawn into the judicial orbit, joining the 'Godavarman case'. Adivasi rights to property were now caught between the interpretations of the court and the Ministry,[5] and the CEC constituted by the Supreme Court (see above), whose draconian recommendations included banning all future regularisation, even allowing for the possibility of 'excessive use of force, unprovoked firing, and atrocities punishable under the SC/ST Atrocities Act' in the process of eviction. Evictions proceeded apace across the country, involving the burning of adivasi houses and standing crops, destruction by elephants and so on.

It was at this point that the Campaign for Survival and Dignity (henceforth Campaign), was formed as an umbrella organisation of adivasi organisations and concerned individuals. Public mobilisation then compelled the Ministry in October 2002 to acknowledge that all occupants of forest land were not 'encroachers' and to ask states to constitute joint committees of revenue, forest and tribal welfare officials to settle disputed cases in accordance with it's own 1990 circulars. For an entire year, other than in Maharashtra, little action was taken. But given the importance of the issue to the adivasi vote and the fact that elections were due in 2004, land rights to the adivasis soon became an integral part of every party's manifesto. On February 5, just before the elections, the MoEF under the National Democratic Alliance (NDA) suddenly rediscovered the issue, and issued an order de-reserving forest land in order to regularise tribal land holdings upto 1993. This order was stayed by the Supreme Court. After the United Progressive Alliance (UPA) came to power, it asked the Ministry of Tribal Affairs (M0TA) to draft a bill to recognise adivasi and other forest dwellers forest rights, as part of its commitment in its Common Minimum Program. In part, the UPA was also

propelled by the growing visibility of the Naxalites in the country, seeing secure tenure rights as a way of countering the growing discontent among adivasis.[6]

The bill soon ran into trouble, both from wildlife conservationists and the Ministry of Environment & Forests. Conservationists pitched it as a conflict between 'tigers and tribals', predicting the end of all forest cover and wildlife as tribals and vested interests carved up the forests between themselves. The Ministry of Environment and Forests feared loss of control over its domain to the Ministry of Tribal Affairs. As initially drafted, the bill gave the primary power to determine forest rights to the gram sabha or village assembly, invoking for the first time, the use of oral evidence as proof of occupation – doing away with the tyranny of incomplete forest and land records maintained by a rent seeking bureaucracy. The bill was referred to a Parliamentary Committee, many of whose members were adivasi ministers, and here a combination of successful lobbying by the Campaign and several other adivasi or forest dwellers organisations, with help from the Parliamentary Left, ensured that the bill went through and was enacted at the very end of December 2006. In early 2007, a forest rules committee was constituted, with a majority of non-official members, whose recommendations, however, were eventually overruled (it is not clear why) and yet another two-member committee of wildlife conservationists set up.

The Act is being implemented in various states in a bureaucratic campaign mode (like family planning or pulse polio programs) negating the bottom up thrust of the act. Wildlife conservationists and forest officials filed cases against the Act in the Supreme Court and several High Courts. The Campaign for Survival and Dignity, however, continues to be active, unlike many formations which disband after achieving legal victories, with its constituent members organising protests across the country against violations in the implementation of the Act.

The Campaign is also increasingly emphasising the communitarian aspects of the Act which give communities tenure over land under their common occupation (Sec 3 a, i, and Sec 5 especially), as against the common perception that the Act was designed mainly to give individuals land rights. This is important, given that diversion of forest land to industry and hydel projects is not only a serious cause of loss of forest cover, but also a major source of conflict between communities who stand to be displaced without having their rights recognised and the state (see Das 2009, on Vedanta's illegalities with respect to getting forest clearance for its mining operations in Orissa). It also helps to strengthen the link that the Campaign has consistently sought to make between the duty that the Act enjoins on tribal communities to protect their forests and the rights they can expect from it. In response to pressure, the MoEF issued an advisory on 30 July 2009 (F. No. 11-9/1998-FC (pt)) that any diversion of forest land for non-forest purposes could only take place after getting

the consent of the concerned gram sabhas and fulfilling other conditions of the Forest Rights Act, such as the full settling of the rights of those who would be affected.

To summarise, at different points in India's post-colonial history, different issues have become points of conflict. If in the 1970s, the cutting down of forests for commercial use led to Chipko and Appiko, in the 1980s access to fuelwood and fodder drove the social forestry program; in the 1990s, JFM and the conflicts it generated became important. But the issue of tenurial security has remained a perennial one; leading finally to some attempt at a resolution of this conflict through the Forest Rights Act 2006. Diversion of forest land for non-forest purposes or in other words, the acquisition or alienation of resources from village communities, remains a major issue. While the MoEF advisory mentioned above sounds encouraging, the Campaign itself cautiously notes: "The question now is whether the government will take the steps required to ensure compliance with this order and will end the Ministry's track record of violating both the law and its own orders. More than 1,000 final clearances have been given since the Forest Rights Act was notified; will these be reviewed? Will the government attempt to uphold its own order and the law, or will it allow this too to be sabotaged by the forest bureaucracy? The struggle now moves forward to prevent the sabotage and undermining of this new democratic space, as is occurring with the Forest Rights Act; but the fact remains that a victory has been won for the cause of democracy."[7]

Just as the issues have varied, the arenas where these conflicts have played out have also shifted periodically – from the streets to the courts, to the streets back again. Foresters and wildlife enthusiasts, while lacking street power, have greater access to the courts and the bureaucracy. Hence, as the arenas shift, the power of different parties to the conflict shifts accordingly. In the last few years, as the forested tracts of central India have acquired value, not for their forests but for mining, the battle has become intense, with the government moving in large numbers of paramilitary forces (some seven divisions at last count) to quell local resistance – whether by the Naxalites or unarmed villagers as in Posco and Kashipur. Central India (Andhra Pradesh, Orissa, Chhattisgarh, Maharashtra) is being steadily militarised.

Having provided a brief history of the conflicts underlying forest policy in India; let us now turn to a typology of the conflicts.

## Part I: Typologies of Forest Conflict

There are several studies regarding the causes of forest conflict. Koning et al (2008: 19) provide a list based on studies across the world, which includes unclear resource boundaries, decreasing resource stock (scarcity), legal pluralism, competing demands, eco-centric concerns, non-accountable representation/leadership and unwillingness to fulfil environmental obligations on the part of the government or private companies. Their conclusion is that insecure property or tenurial rights is one of the single most important factors of conflict.

This is supported by studies from India. A typology of conflicts in natural resources prepared by Pushpa Sundar (1994) highlights certain crucial issues dealing with poorly defined property or tenurial rights:

1. Conflicts due to contradictions between ownership and user rights, as in the case of reserved or protected forests which are owned by the state but where the local villagers have user rights over some of the products.
2. Conflicts due to a violation of perceived ownership or user rights in a particular natural resource by vested interests in society, by virtue of their dominance. Thus there might be a clash between an industry's desire for profit and people's right to livelihood from the same patch of forest.
3. Conflicts over differences in the nature of responsibility of the different owners/users and their long and short term goals. For instance, the long term goals of conservation of the state may clash with its short term goals of providing raw materials to industries, or with the immediate needs of local users, or with the illegal gains of state employees.
4. Conflicts within local institutions.

Much of the conflict around JFM was concerned with the fourth category – the nature and functioning of institutions. In an early existing description of conflict generated as a result of JFM, Madhu Sarin outlined four major instances: 'within the CI's (community institution) membership, with neighbouring non-members, with other external or commercial interests, and with the state - primarily the forest department.' She went on to note that conflicts within a village may arise due to: 'perceived inequity in the distribution of costs and benefits of forest closure, doubts about fiscal integrity, obstinacy of some members in accepting common rules, and suspicion that the leadership is unduly favouring its own vested party.' Inter village conflicts commonly arise due to 'boundary disputes, denial of forest access, or the usurpation of the rights of a weaker community by a more powerful one.' (Sarin, 1996a:198; see also Sarin 1996b and Sarin et al 1998).

In the following section, I take up some of these issues. This section is meant to be illustrative rather than exhaustive.

## Blurred Tenurial Rights and Legal Pluralism

As mentioned before, the problem of blurred tenurial rights or absence of secure tenure is best manifested in the discussion around 'encroachment' (as in the Orissa and Andhra examples given above in the section on forest rights). There are also tenures given by the forest department (*eksali* or *dali* tenures), sometimes in exchange for work in the forest, which have not been renewed and regularised, leaving forest villagers at the mercy of the forest department. It is as yet too early to see what effect the Forest Rights Act has on these tenures, and there is the added danger that if people's rights are not recognised due to bureaucratic inefficiencies or other problems, in this iteration of the Act, they will then stand to lose all their rights in the future.

Another example where the absence of clear tenure has affected villagers is over the cultivation of *tussar* worms on trees in forest land, which has become a problem for villagers in Jharkhand. Tussar is cultivated primarily on Asan (*Terminalia tomentosa*) and Arjuna (*Terminalia arjuna*), and requires some lopping of trees and spacing. While villagers cultivate tussar on trees in their own land, they also cultivate it on forest land; and there is no explicit prohibition in the Forest Act against doing so. It is recognised by both customary practice (in the Santhal Parganas, families had clearly marked areas called *pahis* within which they cultivated the worms) as well as forest working plans. Indeed, there was even a Tussar forest division in Chaibasa in Jharkhand. In recent years, however, as tussar cultivation has expanded and become a significant source of income with the intervention of an NGO, the forest department has cracked down on the activity in forest land. Villagers now function at the discretion of the forest staff, in the absence of any clear legislation in favour of or against tussar cultivation (Vasan 2004).

In many cases, the absence of clear rights becomes an added problem when it comes to land acquisition for dams and other development projects. In Arunachal Pradesh for example, even though 82 percent of the land is already under forest cover, projects acquiring forest land are required to undertake compensatory afforestation. The target then becomes the land that villagers own, land for which they have no formal ownership papers, but a deep rooted customary right. Priyanka Narain recounts a case of villagers in Bomja village of Tawang district giving 226 hectares of community land to the forest department. While they thought it was only for five years, the forest department had other plans – to convert it into protected forest, in which the tribals rights would be restricted:

> "Since this deed is written in English and the gaonbora also has no education, he depended on the forest officials to translate the document to him during the negotiations.

> "Although it is written there that this land will become a protected forest when we take over, we do not tell the gaonboras that. We do not tell them that they will lose their rights on this land. We are told not to tell them this," said a forest officer in Tawang, who says his conscience weighs heavy on him because he knows the tribals are being cheated, but cannot be named because he will lose his job due to this.
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> "We are told not to notify the land as protected forest immediately because the tribals will protest. We have been told to wait until they forget and do the notification quietly," this officer said. "They think they will get to use these forests and forest produce and will get this land back as well. In reality, they are never going to get their land back."

As Narain notes, "once the reality of the situation sinks in, the government will have a crisis on their hands." (Narain 2008)

In short, the lack of settled rights in both land as well as access to forest products, compounded by the multiplicity of laws that govern forests, and the chicanery employed by forest staff is a recipe for conflict. Even if it is often resolved by ad hoc practices such as bribing, official discretion turning a blind eye to grey practices, the potential for conflict remains. The problem of legal pluralism is manifested not just in terms of an opposition or parallelism between systems of state and non-state 'law' (as in the Arunachal case), but also in the multiple orders of state law, viewed from below. The problem is not just one of legal literacy. Even if people were keen and able to act on their rights, it is extremely difficult for an ordinary person to know what his/her rights are. In some cases government orders contradict particular laws; there are different interpretations of the law from Supreme Court to state government to block level to NGOs, and long dormant laws are occasionally resurrected to suit a particular occasion. A prime example of the problems created by overlapping laws and interpretations is the 1996 interim order of the Supreme Court in the Godavarman case, which entrusts the management of all forests regardless of ownership to the forest department, in complete violation of local laws and tenures.

## Forest Rights and the Selective Sanctioning of Violations

Access to the forest, both for grazing and NTFP collection is another major source of conflict. In Chhattisgarh alone, 200,000 forest cases were filed against adivasis for minor forest offences (taking wood by bullock cart). A significant proportion of those in the jails of central India are there for forest offences, unable to pay even the small amounts of bail required to get them out. In the

meantime, major violations by industry or by government bodies – such as Essar cutting down far more than was sanctioned for its pipeline in Orissa, the Jungle Warfare College in Chhattisgarh illegally occupying forest land and so on – are simply ignored. As mentioned before, in civil war situations especially and when it comes to violations by the security forces (whether in Chhattisgarh, Kashmir or the Northeast), there is absolutely no environmental accountability.

## Institutional Conflicts

Historically, there have been conflicts within and between villages over forests, over boundary disputes in the forest between two villages, over cattle straying into another person's fields or into a plantation and so on. Under JFM, many of these conflicts were exacerbated because one side had state backing, or because the government ignored customary boundaries in favour of its own forest demarcations (Sundar 2001). There were tensions between villages which were protecting their forests under JFM and those which were excluded from their customary usage rights and access; conflicts between villagers and migrants, both temporary migrants like grazers whose well defined routes were taken over by forest protection committees, and longer term immigrants who were often displaced people themselves. In Andhra Pradesh, for example, local villagers have helped the forest department to burn down the huts of refugees from Chhattisgarh, who have settled on forest land. In some cases, where villagers had longstanding traditions of protection, the government appropriated these institutions or insisted on standardising them (Sundar 2001).[8]

JFM also witnessed a number of conflicts over the management and functioning of forest protection committees. Not all these conflicts may have surfaced openly owing to the powerlessness of some groups like women or headloaders, or the immediate interests of landowners in retaining agricultural labour therefore not denying them access to forests.[9] Male dominated committees keen on protecting the forests for timber often ignored the needs of women charged with collecting firewood and fodder; and the lack of female representation also affected the choice of species for plantation and other elements of 'participatory management'.

While it is too early to say what will happen under the Forest Rights Act, it is bound to generate similar conflicts – for instance in determining what constitutes bonafide livelihood needs, disputes between villages regarding land under their control, rules of evidence regarding long term possession, and the danger that non-deserving elements like immigrant traders and officials will usurp benefits meant for scheduled tribes and poor non-tribals, by claiming to be long-term, third generation residents of a village. Should villagers chose to exercise their

rights and duties under Sec 5 of the Act, it is not clear what kind of support they will get from the forest department. The fact that retired forest officers are behind the cases that have been filed against the Act in High courts across the country, indicates some degree of institutional resistance to having the power of the forest department challenged, but it may be equally possible for the department to continue with business as usual, if it succeeds in circumscribing the Act.

## The State of Play

The key trends driving forest policy into the future are likely to continue to work at cross purposes, as are key actors – industry, government, conservationists and poor villagers.

On the one hand, there is a need for forest land to meet industrial demand – both in terms of timber and pulp, as well a need to preserve forest land as carbon sinks. The example above of Arunachal, where community land classified as forest land is being diverted for large hydel projects, as well as compensatory afforestation undertaken on community lands, show that ultimately the losers will be villagers. In Orissa, the destruction of the Niyamgiri forests for bauxite mining is another example where forests will give way before industrialisation. While the Courts have earlier provided some respite, in a large number of recent cases, they have ignored the environmental argument and ruled in favour of industry or large projects (e.g. in the Narmada dam case, the Setu Samudram project where the environmental argument is being overshadowed by the religious one).

The diversion of forest land to industry, mining and hydel projects could have made for an alliance between conservationists and adivasi rights groups. However, for the past few years they have been pitted against each other in the enactment of the forest rights act. The opposition to the Act was primarily driven by the tiger lobby, a group who Ramachandra Guha has characterised as 'wildlife authoritarians'. But even as they argue that villagers must be kept out, they are silent on hotels and tourism activity in national parks and sanctuaries. As the Indian middle class grows, tourism is likely to become a major force in the forests competing with forest residents, even when it comes to 'eco-tourism'. International concerns over climate change may also affect the discourse around the forest, with compensatory afforestation and carbon sinks becoming the new mechanisms for displacing villagers.

The growing assertion of adivasi rights as manifested in the massive mobilisation around the forest rights act as well in the several local struggles around forest evictions, right to access NTFPs etc. (e.g. the Jungle Bachao Andolan in Jharkhand, the Shramik Sanghatna in Madhya Pradesh, the National Federation

of Forest Workers in UP, the Adivasi Mahasabha in Gujarat) is likely to continue. However, given the extreme repression that the state is visiting on tribal areas in the name of fighting Naxalism – a movement primarily of adivasis and dalits – the future looks bleak, militarised, mined and maimed, as communities are internally divided through the appointment of tribal special police officers. The crises of agriculture will also influence the way that struggles in and around the forest get played out, with migration to urban areas perhaps changing the level and form of pressure on the forest.

The government, which is a key agent, is clearly not a unitary entity, and nor are its motives unilinear.[10] For instance, the UPA Government's concern to enact legislation in favour of the property rights of adivasis was partly because of the perception that this would check Naxalism, in part because the Campaign for Survival and Dignity was able to exploit the spaces created by the National Advisory Council headed by Sonia Gandhi, and in part because of enthusiastic and capable officers in the Ministry of Tribal Affairs, who were determined to fulfill the mandate of their ministry. The initial draft of the legislation was put together in a technical support group, which had members of the Campaign, in addition to official representatives.[11] But another government, another time, and perhaps the Act would not have found passage. Equally, conflicts between the Ministry of Environment and Forests and the Ministry of Tribal Affairs which were visible during the run up to the Act, as well as conflicts between the developmental perspective of other ministries and the security perspective of the Home Ministry are likely to continue. But overall, as the government becomes increasingly an agent for the neo liberal privatisation of natural resources – land, water and forest – the security aspects of the state are likely to trump its other aspects, except in the limited form allowed by reservations. Indeed, the police and paramilitary are taking the place of the forest staff as the most ubiquitous agents of the government in many tribal belts.

The future in terms of its larger picture will depend on the relative political strength of civil society groups vis-à-vis one another and vis-à-vis the government. On a more immediate level, in terms of the use of funds in forestry (through the CAMPA), or the nature of decision making in diversion of forest land, the judiciary and executive are likely to continue to flex their respective muscles and test the waters between them. And in the meantime, industry will continue to influence both.

## Endnotes

1. To think of the forests in India today, is to conjure up images of conflict: between paper companies interested in eucalyptus plantations as a source of raw material and peasants interested in fuel and fodder bearing mixed forests; between

multinationals interested in commercialising and patenting the use of medicinal herbs and traditional healers whose knowledge is being exploited; between different silvicultural prescriptions that would manage the forests for timber or for non-timber forest produce; between men who control forest protection committees for forest regeneration and women who bear the burden of this conservation. There are also conflicts between those who see the forests as just a piece of valuable real estate, which needs to be diverted to more productive uses like industry, and villagers who see forests as their homes and sources of livelihood.

2. In Madhya Pradesh, villagers could apply to cut down the trees on their own lands where they interfered with agriculture. Influential politicians and traders bought adivasi land simply in order to cut down the trees on it. They also conspired with the forest department and administration to cut down trees on forest land and pass it off as private tree felling. Large numbers of trees were cut down even as the adivasis were cheated of both their lands and the income from their trees (Sundar 2007: 291).
3. On May 9 2002, the SC set up a Central Empowered Committee (CEC) to monitor its orders in the forest case. With three Ministry officials, two wildlife conservationists, and no representative of forest dwellers, the committee was highly skewed.
4. Preamble to the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act 2006.
5. In February 2002, the Court asked state governments to declare the extent of encroachments. Many states treated this request for statistics as a request for action, an erroneous impression which was strengthened by the MoEF's May 3, 2002 circular calling for a summary eviction of forest encroachments by September 30. It cited the SC, although no eviction orders had yet been issued by the SC.
6. Ministry of Home Affairs, Press Release, April 27 2007, 'Co-ordination Centre meeting on Naxalism held': 'On the developmental front, the States were advised to review their Resettlement and Rehabilitation policies on a priority basis. The need to put special focus on implementation of Backward Regions Grant Fund (BRGF), Panchayat (Extension to Scheduled Areas) Act, 1996 (PESA), NREGP and The Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 was emphasised."
7. http://forestrightsact.com/index.php/Forest-Rights-Act-2006/Scheduled-Tribes-and-Other-Traditional-Forest/Democracy-in-the-Forests-Takes-a-Huge-Stride-Forward.html, accessed 16 August 2009.
8. For example, in the village Kenaloi, Sambhalpur, which was protecting its forests, the forest department asked the villagers to form a Van Samrakshana Samiti under the JFM rules. However, when a new DFO on probation saw the

villagers cutting trees according to their old committee management rules, he immediately confiscated the timber and fined the villagers. According to him, he could have done nothing else, as the cutting was going "right under his eyes." Disgusted, the village decided to have nothing more to do with the JFM scheme.

9. In the village Lalakhedi, in Dewas district of Madhya Pradesh, the formation of the forest protection committee ran into problems because of Congress-BJP divisions within the village. There was also a conflict between the interest of head loaders, who came primarily from the ranks of agricultural labour - Malvis, Chamars and Lodhi Thakurs - and the Sendho Rajputs who dominated the village and who supported forest protection. Yet the Sendhos were reluctant to put an end to headloading as they were dependent on these castes for their agricultural labour. If green revolution technology were to reduce dependence, it is possible that the screws would be tightened on the headloaders in the name of forest protection. i.e. the poor would be denied a variety of common property resources at the same time as they lost their main livelihood - i.e. agricultural labour.
10. A summary of an RTI application filed by Madhu Sarin with the Ministry of Tribal Affairs makes fascinating reading – showing the various steps the Act had to go through, with meetings between the Ministry of Tribal Affairs, the Ministry of Environment and Forests, the Prime Minister's Office, the Law Ministry; interspersed by letters from bodies like the Commission from Denotified Tribes and individual MPs enclosing petitions from different civil society organisations.
11. The Convenor of the Campaign, Pradip Prabhu, a long time lawyer, activist and one of the founders of the Kashtakari Sanghatan in Maharashtra, had successfully won a judgment in the Supreme Court earlier that had enabled them to gain land rights in the area of the Kashtakari Sanghatan's mobilisation, using similar principles.

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3

# India's Changing Political Economy and its Implications for Forest Users

## A Sociological Overview

AMITA BAVISKAR

SINCE 1990, INDIA HAS WITNESSED rapid economic and social transformations. The pace, scale and direction of these changes have major implications for forests and those who depend on them. This note's approach to the question of forest-users' dependence and access is based on the understanding that a 'sectoral' focus on forestry (one that concentrates primarily on forest management, trade and use) needs to be supplemented by an appreciation of the larger political-economic context that critically affects forest-related practices and policies. The shifting contours of this landscape are shaped not only by the dynamics of political power and economic wealth but, equally important, cultural perception. This note analyzes some of the major social and cultural changes that have occurred in India since the 1990s and outlines their potential implications for forest use and management.

### Broad Shifts in Political Economy, 1950-2008

In the period of India's developmental era (1950-1984), Pranab Bardhan described India's political economy as decisively shaped by the power of three

dominant classes: the industrial elite, large and middle landed peasants, and the urban-based service classes. According to Bardhan (1984), Indian economic policy was built on managing the tensions and contradictions of this triumvirate. Thus, protectionist policies towards industry, subsidized inputs for the 'bullock capitalists', and security for the salariat, were the principles governing India's development. Despite electoral democracy, the entrenched regional and social inequalities that marked the Indian polity meant that these classes were the primary beneficiaries of development. For social groups at the bottom, conditions improved slowly and sometimes marginally. The resources required for industrial development were often forcibly extracted, a process described by some commentators as a form of internal colonialism. It is estimated that 30 million people, more than the entire population of Canada, have been displaced since India became independent in 1947 (Fernandes 1991). Of these, almost 75 percent are, by the government's own admission, 'still awaiting rehabilitation'.[1] Much of this resource-extraction occurred in the hills and other forested areas.

Since the 1990s, India has witnessed an acceleration of such 'accumulation by dispossession', to use David Harvey's term (Harvey 2003). The adoption of economic liberalization policies in the last two decades has seen a continuation of the practice of land acquisition by the government, with the greater likelihood of its transfer to private firms. In this period, government policies have been geared to divesting the state of its welfare functions, enabling foreign investment, easing imports, privatizing public sector assets, and dismantling the institutions regulating private firms. Economic policy has been re-oriented to maximize foreign exchange earnings, with concessions and subsidies given to Indian and foreign firms to encourage them to invest in production for export. The logic of liberalization is exemplified in the establishment of new Special Economic Zones (SEZs), a major state initiative started in the year 2000 that has met with strong resistance in some parts of the country.[2]

The turn towards economic liberalization was a product of the social differentiation and economic contradictions that arose in the period of state-led development, as much as a response to changes in global political economy and the rising influence of neo-liberal ideologies. Satish Deshpande (1997) describes the generational shift in the orientation of the service classes from being the mainstay of Nehruvian socialist policies to votaries of globalization. These classes' disenchantment with state-led developmentalism can be related to the rise of the backward castes whose demand for reservations in government jobs challenged the monopoly of the predominantly upper-caste salariat. This propelled the urban upper-castes to champion the cause of the private sector where their privileged access to higher education, social networks and other forms of caste-based symbolic capital, euphemized as 'merit', could continue to give them a

competitive edge, thereby enabling them to maintain their social dominance. Once instituted, policies of economic liberalization have reconfigured the political-economic landscape of the country. Most noticeable has been the decline of the landed peasantry *as an agrarian class*. That is, the dominant castes[3] that exerted a decisive influence in electoral politics and, through that medium, state policy, now no longer look to agriculture as a primary source of income. Although landed property is still valued as economic and social capital, members of this class are increasingly shifting their investment into non-farm activities such as processing and trade which bring higher returns. This blurs their economic identity (objectively and, as I shall go on to discuss, in terms of their subjective consciousness) with the lower end of the mercantile and industrial capitalist class.

The industrial elite have been the chief beneficiaries of economic liberalization. While the high rates of growth of the Indian economy have been concentrated mainly in the service sector, led by Information Technology (IT) and IT-enabled services, they have generated a huge demand for physical infrastructure of all kinds, including power, water, transport, and civil construction. This, together with the rising demand for consumer durables (see below), has accelerated the pace of land-use change in the country, with more agricultural and forest land being converted to industrial use. State policies now overwhelmingly favour the operations of private capital, not only overriding social and environmental concerns, but at times also setting aside the earlier imperative of rent-seeking by maintaining administrative control (the license-permit raj). This reflects the extent to which political power has shifted from the development to the liberalization period.

Much has been written about the political and economic ascendance of the Indian middle classes. As Yogendra Yadav's research shows,[4] the term is misleading: the middle classes are actually elite strata. They exert a political influence far in excess of their numerical strength by virtue of their purchasing power, and their hegemonic power in terms of defining the 'public interest' (Baviskar et al. 2006; Baviskar 2007). This section of Indian society – civil servants, professionals, other white-collar workers, is also a powerful presence as a role model, such that its lifestyle practices and values are emulated by other social aspirants. The confluence of consuming practices, commercial interests and cultural aspirations is most evident in the Indian news media with its mix of 'infotainment' and 'advertorials'. It must be noted that, aspirationally, if not always in actual practice, the middle classes are urban. That is, even the rural rich and residents of small towns imagine themselves as urban, a cultural category where the spatial referent also denotes ideas of modernity, freedom, civilization, improved living, and 'urbanity' as sophistication. This psychic shift (cf Ashis Nandy 2001) has occurred among a larger section of the Indian population than that which has actually been affected by urbanization.

With its underlying logic of betting on the strong, economic liberalization has also exacerbated existing regional disparities. Areas endowed with infrastructural, entrepreneurial and other resources have done well (e.g. coastal Maharashtra) and have attracted more public and private investment, at the expense of those that were already lagging behind (e.g. Vidarbha). Migration between regions has accelerated as a result, with labour joining the list of resources extracted through internal colonialism.

The last twenty years have been marked by the rise of backward castes in different parts of the country who have effectively used coalitional politics to challenge the electoral supremacy of dominant castes. Thus, for instance, the success of Yadav-dominated parties in Uttar Pradesh and Bihar has been enabled by their alliance with other backward castes and Muslims, jeopardizing the power of traditional elites such as Brahmins and Rajputs. While such shifts do not represent any major changes in economic ideology, they do indicate the deep-seated dynamism of the Indian polity and its potential for unsettling entrenched power equations. It must be noted that all political parties in India today, including the communist parties, endorse economic liberalization albeit with different degrees of populist concessions; only the Marxist-Leninist pole hews to a different line. However, the inherent dynamism of the electoral system suggests that the emergence of alternative economic ideologies and arrangements can never be entirely ruled out.

The shifts in Indian political economy since 1990 have also transformed the possibilities for subaltern classes to defend and assert their rights. While electoral politics, especially at the state (provincial/regional) level, continue to provide an avenue for expressing the aspirations of the poor and oppressed, as witnessed in the rise of Dalit-led parties such as the Bahujan Samaj Party, there is also considerable discontent at the failure of the state to deliver development and to make economic growth more inclusive. State measures such as the National Rural Employment Guarantee Act that seeks to ameliorate the effects of job-less growth, and the Recognition of Forest Rights Act that seeks to provide security of tenure for forest cultivators, would not have come about if there had not been pressure from below. At the same time, the field of subaltern resistance and social protest is more beleaguered than ever before. There are more projects that threaten physical and resource-displacement. In addition, the possibility of securing support from the courts, media and middle-class 'reference publics' has diminished considerably. This political-economic scenario provides the context for the more specific processes that I discuss here.

## Decline of Agriculture

Since 1990, Indian agriculture has experienced a prolonged decline, leading many to describe the situation as one of long-term crisis. Various inter-linked explanations are offered: economic liberalization has shifted the terms of trade between agriculture and industry; the lifting of trade barriers has been detrimental to the interests of domestic producers; the rising cost of industrially-manufactured inputs has cut into farmers' profitability; agricultural productivity in several crops has reached a plateau; poor land and water management practices have led to ecological degradation; debt-ridden farmers have no choice in increasingly volatile or depressed markets but to go under. While it is hard to generalize across the diverse agro-ecological-social terrain of the country, it is notable that the crisis is not confined to the apparently more vulnerable areas of dryland agriculture, but is also evident in prosperous areas of irrigated agriculture such as Punjab and Kerala. If there is an emerging pattern in how this overall decline plays out, it seems to be that better-off farmers comprise the only section relatively immune to the crisis. Those with deeper pockets to make capital-intensive investments and greater access to market-related information are better able to bear the risks of high-investment/high-return agriculture (horticulture, floriculture, animal husbandry) and ride the amplified waves of volatile commodity markets.

For landless labourers, small and marginal farmers, agriculture is increasingly less of a livelihood and more of a compulsion. The earlier agrarian system of combining farming, animal husbandry and the collection of forest produce (or fuel and fodder from the village commons), a system that distributed risks and optimized resource use by gainfully combining private and publicly-owned assets, is no longer viable in many places. With the rural population growing in absolute numbers (despite the relative shift towards urbanization), agricultural land is more scarce than ever and less capable of meeting the basic food needs of farming households. When confronted with the overall decline of agriculture, farming households have no choice but to migrate in search of other work, the NREGA notwithstanding. An increasing proportion of household income for small and marginal farmers is now derived from wage labour (as opposed to self-cultivation and livestock-rearing) in dryland and other agricultural areas.

The decline in agriculture has not only compelled mass migration out of the rural sector seasonally as well as round-the-year, it has also crystallized and consolidated a profound cultural shift which has been gradually unfolding in India since the onset of modernization. This cultural change might be termed agrarian India's 'loss of nerve'.[5] The moral core of peasant economy – its normative sense of itself as the right or the good life – is now dead. Many small peasants observe that there is no future in farming any more. By most accounts, the teleology of

modern development as industrialization and urbanization has triumphed. The unlamented death of the peasant is merely the future foretold. The hegemonic power of urban India is most apparent among the younger generation, especially those who have been through some formal education, who associate agriculture with all the attributes of backwardness (Gupta 1998).

These transformations in the political, economic and cultural place of agriculture in the life of the nation as well as in the lives of its poorest citizens, affect forest-users in various ways that may be mutually reinforcing or, at times, contradictory. These effects vary across regions, making generalizations difficult, if not impossible. However, certain broad trends can be discerned. The biggest change is migration which may simply make it physically impossible for villagers to engage in forest-related activities. Given that forests tend to be distributed over hilly terrain or close to areas where agriculture is usually rain-fed, the decline in agricultural incomes may drive villagers out of the area in search of work. This may reduce the extent to which villagers harvest forest produce. It may also mean that community-based bodies such as Joint Forest Management (JFM) committees that protect forests and supervise the distribution of forest products become unviable. In the Kulu valley in Himachal Pradesh, for instance, a shift away from land-based livelihoods towards tourism and trade has made well-to-do local villagers increasingly disinterested in community management of forests.[6] In other cases, the loss of agricultural produce may be offset by an increased dependence on forest-based resources. Data recently released by the National Statistical Survey Organization shows that increasing numbers of the poor, especially those belonging to the Scheduled Castes and Scheduled Tribes, are self-employed 'entrepreneurs'. Given the paucity of capital in this social group, 'entrepreneurship' is likely to take the form of small-scale vending, especially of forest produce such as fuel wood. If forest resources remain accessible, increased desperation among the poor may lead to over-harvesting and degradation.

## Changes in Land Use

One of the biggest direct effects of economic liberalization on forests in India has been the acquisition and conversion of agricultural and forest land to industrial, urban and other uses. After 1980, new regulations and judicial orders had slowed the pace of forest conversion by making denotification more difficult. Since the year 2000, however, the scale of conversion has been accelerating every year. Although a 2002 Supreme Court order attempted to tighten controls on the conversion of land designated as forest to revenue land, the government managed to find a way around it by retaining the forest classification yet allowing the land to

be used for non-forest purposes. According to government sources quoted by N. C. Saxena, 9.8 lakh hectares of forest land have been diverted for development projects since 1980. Dams and mining projects head the list.[7] A study by ActionAid estimates that a total of 4.87 lakh hectares of land (private and public, including forest) has been acquired in four states alone (Orissa, Andhra Pradesh, Chhattisgarh and Jharkhand) for projects of various kinds since 1995 (ActionAid 2008). These states have large concentrations of Scheduled Tribe populations who have long-standing ties to forests and who have gained the least from industrial and urban development. Thus, these changes in land use have a disproportionately adverse effect on already vulnerable forest-dependent people.

While land acquisition has throughout been a key instrument of state policy for promoting industrial development, the social and economic discourse around it has changed since liberalization. With the growth of corporate power and the notion that 'what is good for business is good for the nation',[8] the claim that land acquisition serves a 'public purpose' is now no longer considered necessary. This is exemplified in the proliferation of Special Economic Zones (SEZ) where the standard legal safeguards that protect public interest stand suspended. A SEZ 'is a specially demarcated area of land, owned and operated by a private developer… [w]ith the intent of increasing exports, ...utilising a large number of concessions – tax exemptions, guaranteed infrastructure and the relaxation of labour and environmental [regulations]'.[9] Real estate developers and builders from India and abroad have rushed to invest in SEZs, leading to sky-rocketing land prices. While SEZs represent only a small area in relation to the overall scale of land under agriculture, their significance lies in the profound social transformation that they have attempted to undertake, viz. the conversion of agricultural land from a cultural asset to a commodity, with authorization by the state (Polanyi 1944).[10] In the case of forests too, the Supreme Court-approved process of assigning a monetary value to forests (net present value) has facilitated their incorporation into the calculus of commodity exchange, thereby easing denotification and conversion, and denying the environmental and social values that local populations attach to them.

While there have been strong protests against compulsory land acquisition by the government for a number of projects, in the case of some SEZs, where corporate firms have offered land-owners prices conspicuously higher than the market rate (e.g. Haryana, Tamil Nadu), and where the viability of agriculture has been diminishing, many farmers have been willing to sell their land. It must be emphasized, however, that land acquisition and forest denotification have generally been achieved by suppressing resistance by local populations and other concerned citizens. Opposition has often been overruled by the courts, which have been largely consistent in favouring industrial development over social and

environmental concerns. The recent judgements in the Niyamgiri and Posco mining cases in Orissa illustrate this orientation. Given that executive and judicial authorities have congruent positions on the matter and do not hesitate to use physical force and intimidation to dispossess land-owners and forest-users, resistance requires more tenacity, ingenuity and agility than ever before.

One major consequence of the changes in land use practices will be reduced access to forests for the poor. This will affect the 2.3 million marginal workers employed in forest-based industry,[11] as well as several million others who depend on forests for produce that they do not sell but collect for their own use. In economic terms, the population that relies on forests for a living resembles an inverted T – a very large base of poor people, with a much smaller number of officials, traders and manufacturers. The shrinking of forests will therefore primarily affect a population that is already socially and economically deprived, making their survival that much harder.

## The Growth of Urban India

Economic liberalization has created increased incomes primarily in urban areas which have also become magnets attracting rural people in search of a better life. With their economic and numeric power, cities now command political attention on an unprecedented scale. Their demand for resources such as electricity and water overrides the requirements of rural claimants, including the farmers who were once a part of the privileged power elite. Urban India is also the locus of extreme inequality and the modes of hyper-consumption favoured by the rich – malls, multiplexes and restaurants, as well as affluent homes, private vehicles and other consumer durables – create ecological footprints that extend far into the countryside. This appetite for resources – water, electricity, cement, steel, brick, timber, paper, and the commercial opportunities inherent in feeding it, are both growing unchecked. The diversion of rural resources for infrastructure projects that serve urban populations has now accelerated, with the government easing the transfer of forests, water and land for catering to urban consumers.

With the growth of urban India, not only are forests likely to shrink further, but those that remain will bear the increased burden of competing claims. The compulsion to provide urban and industrial infrastructure is likely to result in a reduction in the area under forest cover. At the same time, rising demand for forest products such as timber and paper has already placed greater pressure on remaining forests. While some of this demand may be met through imports[12] and agro-forestry on privately-owned land, there is likely to be greater political acceptance of state-corporate partnerships around production forestry. There have

been periodic proposals that degraded forests and other 'wastelands' be handed over to industry to enable more 'productive' use. The government's recently-announced National Biofuel Policy represents one more such initiative, all the more powerful because it is backed by international corporate interests. Such measures are bound to reduce poor people's access to basic subsistence derived from forests, and have already attracted considerable criticism.[13]

The empowerment of the 'middle class' and its sense of entitlement vis-à-vis other social classes have created a particular orientation to the environment that may be described as 'bourgeois environmentalism' (Baviskar 2007). Unlike the 'environmentalism of the poor' (Guha and Martinez-Alier 1998) which brought a social justice lens to bear upon issues of resource distribution and ecological sustainability, bourgeois environmentalism is preoccupied with ecological anxieties primarily perceived as 'quality of life' issues. Among these, concerns about health and safety, order and aesthetics predominate over the question of livelihoods and social justice. The pursuit of bourgeois environmentalist goals has been detrimental to the interests of the working classes in urban India, who have been displaced from jobs and homes by middle class-led campaigns against air and water pollution (Baviskar 2003). The interests of this class are likely to have a similar effect on rural populations that depend on forests. One, the expansion of leisure-related consumption by this class has brought about an increased interest in wildlife tourism, raising the demand for protected areas that are exclusive enclaves for recreation (and research), rather than areas that also meet local resource needs. Two, bourgeois environmentalists see themselves as 'ecological nationalists' (Cederlof and Sivaramakrishnan 2006), upholding the public interest by protecting 'pristine' environments and flagship species such as the tiger. This conservationist attitude is generally accompanied by support for forest management policies that exclude local populations. This class also tends to value techno-managerial expertise over more democratic decision-making. Thus it is endorses 'professional management' – a euphemism for authoritarian conservation at the expense of poor forest-users. It must be noted that bourgeois environmentalism receives widespread support from the courts and media, creating an atmosphere of tacit tolerance for the eviction of forest-dwellers.

With conflicts over land becoming more charged than ever due to the intensified demand for land, expanding the network of Protected Areas (national parks and wildlife sanctuaries) has become politically unfeasible. This has increased the stakes around existing Protected Areas, with bourgeois environmentalists determined to hold on at all costs to these enclaves. Bourgeois environmentalists' demand for 'inviolate' areas, or zones of exclusion, also stems from the feeling that the Recognition of Forest Rights Act was a major blow to the cause of conservation. In this view, taking a firm stance against further 'encroachments' by forest-dwellers is

essential to prevent more forest loss in the future. More stringent policing of Protected Areas is likely to lead to greater pressure on buffer areas such as Reserved and Protected Forests (RF and PF) for subsistence. In a situation where degraded PF are also being eyed by industrial firms for agro-forestry (paper and pulp or biodiesel), the prospect of greater conflict over these forests is bound to escalate.

## Failures of the Developmental State

Finally, the fate of forests in large parts of central and north-east India cannot be detached from ongoing political struggles against enduring economic and social exploitation. The persistence of regional inequalities and patterns of internal colonialism led to demands for regional autonomy, resulting in the formation of the states of Chhattisgarh, Jharkhand and Uttaranchal (later renamed Uttarakhand) in the year 2000. However, decentralization has not succeeded in fulfilling aspirations for development and dignity, especially in Chhattisgarh and Jharkhand. These states, together with adjoining areas of Andhra Pradesh, Orissa, Maharashtra and Madhya Pradesh, have seen the expansion of Naxalite activity, with armed Maoist groups countering state power in the region (Chakravarti 2007). Large tracts of forests are reported to be either under the control of Naxalites or marked by their presence such that forest management by the state stands suspended. While this may mean a moratorium on development projects that destroy forests and displace people, it may also deny people access to forms of collective mobilization that may improve their lives in other ways, such as through the NREGA. Where Naxalite influence has been tackled by state counter-insurgency operations including the recruitment and arming of civilians (e.g. Salwa Judum in Chhattisgarh) and the relocation of villages, forest users bear the brunt of disrupted lives and livelihoods.

In the north-eastern hill states, long-standing movements for independence exist alongside more widespread opposition to military presence, especially the arbitrary and brutal exercise of force through laws such as the Armed Forces Special Powers Act. Under such circumstances, any pretence that forest management is a techno-managerial exercise ceases. Forests and forest users are entirely at the mercy of corrupt and criminalized armed forces, both state and non-state. In areas of north-eastern India that are not marked by violent struggles, there is increased pressure to undertake development projects, especially the construction of dams to meet the power needs of the Indian economy. At present, more than 160 large dams are planned in this region. Related infrastructural expansion such as roads and the influx of migrant workers into the region is likely to place additional pressure on forest resources and those who depend on them.

## Integration with International Markets and Regulatory Regimes

One of the key structural features of economic liberalization has been the closer alignment of the Indian economy with the rest of the world. The globalization of the Indian economy has made the future of forests much more dependent on international market trends. For instance, global energy markets, as much as local power equations, will determine whether biofuels become a viable land use strategy for degraded forests. This is a departure from the period of national development when forest management was far more insulated from the international economy. The terms of global integration have been the subject of detailed negotiations, since they have major implications for the future of the Indian economy. Compliance with the requirements of transnational regulatory regimes such as the World Trade Organization and the International Protocol on Climate Change have a great deal of bearing on the management of Indian forests. For instance, Indian forests are likely to be re-valorized in the light of their function as carbon sinks. Existing forests may be valued for holding carbon stock; new forests may be valued for their role in carbon sequestration; or the government may be able to demand compensation for reducing deforestation.[14] Such re-signification of forests is likely to result in the reconfiguration of management regimes and patterns of investment, with attendant consequences for all parties: state agencies, different industries, and poor forest-users. At this stage, one can only note the importance of these ongoing transformations, without being able to forecast their direction or relationship to other social processes.

The cumulative impact of the changes discussed above – the decline of agriculture, the transformation of land use practices, the growth of the urban economy and the middle class, the failures of the developmental state, integration with global economy – are difficult to predict. However, they do suggest that forest users will face increasingly challenging conditions in the future. How they deal with these changes, collectively and individually, will shape the future of India's forests.

## Endnotes

1. See draft National Policy for Rehabilitation.
2. While small Export Processing Zones have existed in India since the 1960s (Kandla Free Trade Zone was set up in 1965, followed by six others: Santa Cruz, NOIDA in 1985, Cochin, Vishakhapatnam, Madras, Falta in West Bengal), approval for hundreds of such projects across the country has only been granted since 2000.

3. M. N. Srinivas defined a dominant caste as one that is numerically significant, economically well-off, and relatively high-ranking in terms of the ritual hierarchy of Hinduism. As the land-owning elite, most dominant castes are influential in local politics and are able to federate their local power upwards into regional electoral politics. Thus, the Kammas and the Reddys in Andhra Pradesh, the Jats in western UP, the Marathas of Maharashtra, are dominant castes who also play a decisive role in state politics.
4. According to Yadav's research at Lokniti, Centre for the Study of Developing Societies, the 'middle class' represents neither the mean nor median income in India. It is actually an elite stratum of approximately 60 million people, most belonging to the upper castes.
5. The phrase is borrowed from Verrier Elwin (1939) who used it to describe the loss of cultural identity among the Baiga adivasis in central India when they were forced by the colonial government to stop shifting cultivation and settle down.
6. In this case, however, poor migrant workers from Nepal have stepped into the breach. They are employed by local traders to perform the arduous labour of collecting high-altitude medicinal plants. The absence of resident villagers' involvement means that rules devised to regulate plant extraction and ensure its sustainability are generally not enforced. I cite this example also to indicate the multi-layered character of forest dependence in different parts of India. The complex social and economic relationships around forests make it impossible to generalize about the effects of agricultural decline on forest use.
7. The paper by Smriti Das provides data on the diversion of forest land for hydro projects, mining, commercial plantations and Special Economic Zones.
8. Cf. 'What's good for General Motors is good for the United States of America'.
9. 'War Zones: The Present and Future of India's SEZs' by Aseem Srivastava. *Himal*. July 2007. http://www.himalmag.com/2007/july/analysis_sez_india.htm, accessed on July 9, 2007. Also see Srivastava (2007).
10. The point about the transaction being state-authorized is important, since informal/illegal land transfers especially on the urban periphery are a long-standing phenomena.
11. Source: Census of India 2001: B18ST Table.
12. In recent years, the growing prosperity of sections of the Indian economy has allowed the country to emulate industrialized nations who have protected their own forests by transferring the burden of extraction overseas. Under economic liberalization, the lifting of import tariffs for paper and pulp allowed these to be sourced from South-East Asia, thereby reducing pressure on Indian forests. However, if this supply becomes more costly in coming years, it may lead to renewed pressure on Indian resources.

13. Most recently, the Rajasthan government proposed that common lands be handed over to industry for growing jatropha to be used as a biofuel. Collective mobilization by people's organizations scuttled this initiative. However, the lease of forests to industry used to be a long-standing practice in states such as Karnataka. It should also be noted that while the inroads made by private firms into forestry have been the focus of criticism (including by the Planning Commission's advisory group, ref. N. C. Saxena), much less attention has been paid to the working of state-owned forest corporations which are likely to be equally commercially-oriented.
14. See Nitin Sethi's paper for an analysis of the impact of climate change negotiations on Indian forest management.

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4

# Conservation and Rights in India

## Are We Moving Towards Any Kind of Harmony?

ASHISH KOTHARI
NEEMA PATHAK

ECOSYSTEM-DWELLERS OF ALL KINDS IN INDIA – wild plants and animals, adivasi and non-adivasi peasants, fishers, and pastoralists – are in serious crisis. The forces of rapid economic growth, cultural and demographic changes, and political expediency, are all responsible for the widespread decimation of natural ecosystems and hundreds of species, as also for the uprooting and dispossession of millions of people. Development and economic policies and programmes appear to be in direct conflict with policies and programmes enacted for safeguarding species, ecosystems and local people. Adding to the complications, policies and programmes meant to safeguard the interests of wildlife on the one hand and ecosystem people on the other, also seem to be in conflict with each other. There is a desperate search for alternatives, ways to bring the interests of conservation and people's livelihood rights together, so that a united front can be put up against the forces threatening to engulf them both. A series of on-ground initiatives, coupled with a number of recent policy pronouncements, have provided the hope that this may well be possible. This paper assesses how realistic this hope is.

We briefly recount the historical, socio-political and economic context of the conservation and human rights interface. This includes the conflicts engendered by conservation policy and paths of development, and attempts at resolving these conflicts. We then look at the most recent policy measures that have a bearing on

this situation, as also briefly at some on-ground initiatives. We examine the role of different actors in influencing or shaping conservation and human rights policies. Finally, we offer tentative projections on the shape of the conservation and rights interface in India in the next few decades, providing some possible scenarios.

Some sections are developed very briefly here. This is because more detailed treatment of these is easily available elsewhere, for which we provide some references.

## What Historical and Socio-Political Aspects of Conservation Are Relevant in Today's Context?

It is believed by many scholars and historians that the oldest forms of conservation in India are not the ones ascribed to rulers like Ashoka.[1] Adivasi and other communities have practiced conservation in various forms for several thousand years: sacred spaces (groves, ponds, rivers, even entire landscapes), sacred or culturally important species (langur *Semnopithecus* spp., *ficus* spp., elephant *Elephas maximus*, nilgai *Boselaphus tragocamelus*, to name a few), deliberate restraints on the harvesting of plants and animals, conservation of water catchments, protection of nesting or roosting animal populations, and so on. Many of these traditional 'community conserved areas and species' continue until today (though many have also disappeared), and have been added to by a range of more recent initiatives responding to water and resource scarcities, external threats by development projects, conservation concerns, political self-empowerment and other motivations.[2]

Royal protection too is ancient, with the conservation edicts of Ashoka and the protection of hunting reserves by a number of rulers being well-known.[3] During colonial times the government significantly extended its control over forests and other ecosystems, and expanded the number and size of areas set aside for conservation. It was however mostly after independence that a major thrust was provided to state-sponsored conservation, especially with the promulgation of the Wild Life (Protection) Act in 1972. The number and spread of protected areas, meant specifically for the conservation of wildlife, significantly increased (from about 100 in the early 1970s to 657 in 2008)[4]. This, along with prohibition on hunting and trade in several threatened species across the country, were the most important steps in slowing down the pace of decimation of India's wildlife.

However, the takeover of forests (and other common property resources) by the state, expanded greatly in colonial and post-independence times, has also had a number of serious negative consequences. These are briefly reviewed in the context of protected areas below.

## What Have Been the Impacts of Official Wildlife Conservation Policy and Practice on People, and on Conservation Itself?

Unfortunately official forest and conservation policies ignored two very important aspects that, if taken into account, would have led these policies in a very different direction. Firstly, they did not take on board the long-standing conservation traditions and practices of local communities (and thereby lost an opportunity to enhance, support, and revive community conserved areas and species). Secondly, they ignored the significant economic and cultural dependence of people on the ecosystems and species sought to be conserved in protected areas (and thereby set the stage for alienation of local people, and conflicts between them and official conservation agencies).

Until 2002, the Wild Life Protection Act provided for two kinds of Protected Areas (PAs), Wildlife Sanctuaries (WLS) and National Parks (NP). While by law certain human uses can be allowed in a WLS, no human use is allowed in a NP. Two more categories were added in the amendment to the Act in 2002: Conservation Reserves and Community Reserves. As of 2008, nearly 5 percent of India's territory is covered by 657 PAs (99 NPs, 513 WLSs, 41 Conservation Reserves and 4 Community Reserves).[5] As stated earlier, such designation has saved many ecologically critical areas and threatened wildlife species from being wiped out by dams, mining, cities, and agricultural expansion. What is important however is that this nearly 5 percent of area is also inhabited by people, some of them ancient adivasi or tribal communities. Studies conducted by the Indian Institute of Public Administration in the mid-1980s, updated by the Centre for Equity Studies in the late 1990s, indicate human population inside PAs to be between 2.5 to 3 million.[6] Most of these people belong to communities that have lived in these areas *before* the protected areas were notified. These people (and many million more who live in regions adjacent to the protected areas) consider such areas as their home, and are dependent on local resources for fuel, fodder, medicines, non-timber forest produce, fish and other aquatic produce, livelihoods, water, cultural sustenance, and myriad other critical functions. Although located in areas often remote from urban markets, they have not remained away from the market economy. Cash income, even if bare minimum, is essential for these people. Collection of non-timber forest produce or aquatic resources contributes to more than 50 percent of each household's cash earnings in many of these areas. These subsistence or small-scale market-based activities are often recorded in government documents as rights or concessions, but many are also not recorded and hence considered illegal. In Orissa, villages and cultivated lands that have existed for generations are treated as illegal occupants or "encroachments" because they were never surveyed and did not enter into the government records;

in Andhra Pradesh, lands lying fallow under traditional shifting cultivation practices were declared Reserve Forests without an enquiry into existing customary rights.[7] On the other hand, increasing human populations, lack or alternative livelihoods, displacements from their original homes because of development projects or other reasons have also ensured that many ecosystem dependent people have now become illegal occupants of lands on which they critically depend.

As per the WLPA, before any PA is finally notified, a process of settlement of rights needs to be carried out, and either the livelihoods and habitation rights are allowed (in the case of sanctuaries) or acquired by providing compensation or alternatives. A number of reasons (e.g. badly kept land records, or unrecorded rights of people who have inhabited these areas for generations) have prevented completion of this process in most states in the country. This meant that a majority of PAs in the country have until recently remained *intended* PAs rather than *finally notified* ones. In 1996, World Wide Fund for Nature (WWF-India) filed a plea in the Supreme Court asking all state governments to implement the Wild Life Act, including the process of settlement of rights. The Court ordered states to do this within a year; the consequences of which were complex. Many state governments quickly complied with the order without any comprehensive assessments of rights, hence depriving thousands of people of their due rights; or conversely they allowed all rights in PAs (as in Rajasthan) without assessing their impacts on the ecosystem; or in still others they recommended that large parts of PAs be denotified as the process of settling rights there would be nearly impossible. These recommendations led to numerous conflicts on ground, and many have remained unaccepted by the state governments until date, over 10 years after the initial court orders.

In some states efforts have been made towards rehabilitation of villages from inside the PA to other areas. Though a couple of these efforts have involved a relatively successful rehabilitation process, most have invited extreme criticism for the shoddy manner in which they have been carried out.[8] The fate of the people living inside the PAs has therefore remained undecided for several decades now. Living under a constant uncertainly of not knowing whether and for how long would they be living in the area, and constant harassment over collection of forest or aquatic produce, these situations have bred serious contempt against PAs among the local people.

Given the experience with the ground realities of the settlement of rights process as well as the social and financial complexities involved in rehabilitation of villages, there is an increasing realization that human habitation in WLS and NP in India is a reality unlikely to change. Although this is clearly an understanding among the actual practitioners on ground whether government officials or non government agencies, this reality has not reached the policy makers (and a handful of conservationists influencing them). On the contrary, in 2002, an

amended Wild Life Act brought in much more severe restrictions. It mandated state governments to "provide alternatives" for all resource use activities as soon as the intention was declared to notify an area a sanctuary (thereby assuming that no rights could continue inside the protected area, which actually contradicted another provision within the same act which explicitly did provide for such continuation!). It also prohibited any form of extraction of resources for commercial use. This was necessary to stop industrial level extraction (e.g. of bamboo), but ended up bringing under its purview subsistence livelihood local activities such as removal of grasses, medicinal plants, and other NTFP for small-scale sale, as described in the account below.

In recent times the Ministry of Environment and Forests and the Supreme Court of India have played a major role in further complicating this relationship between PAs and local people. In 2003, the Ministry of Environment and Forests (MoEF) declared:

> "The Supreme Court has passed an order on 14.2.2000 restraining removal of dead, diseased, dying or wind-fallen trees, drift wood and grasses etc. from any national park or Game Sanctuary….In view of this, rights and concessions cannot be enjoyed in the Protected Areas (PAs)."[9]

In February 2000, the Supreme Court had indeed passed such an order. But it had done so in the context of a proposal by the Karnataka and Uttar Pradesh governments to allow the removal of timber from PAs under the guise of it being dead, dying and diseased. The Court had as its intention, the stoppage of some activities that were obviously destructive and intended for commercial profit. But the MoEF interpreted this to ask for stoppage of all activities, including resource uses for survival and livelihood by local communities.

Matters were made worse when the Central Empowered Committee (CEC) of the Supreme Court, in a letter dated July 2, 2004 to senior administrative and forest officials of all states and union territories, stated the following:

> "A number of instances have come to the notice of the Central Empowered Committee where felling of trees/ bamboo, digging of canals, mining, underground mining, collection of sand/boulders …cutting of grass, collection of minor forest produce, grazing, construction, widening of roads etc. have been allowed to be undertaken in protected areas without obtaining permission from the Hon'ble Supreme Court on the plea that these activities are part of the management plans. …You are requested to ensure strict compliance of the Hon'ble Supreme Court's order so that none of the above prohibited activities are allowed to be undertaken in protected areas."

After the above-mentioned circulars many states (Orissa, Karnataka, Rajasthan, Maharashtra, Madhya Pradesh, among others), stopped the extraction of NTFP from PAs with immediate effect. For hundreds of thousands of people who have no other source of monetary income this came as a big blow. Overnight contractors (including government corporations) pulled out their collection centers. The Government did not provide any alternative to this sudden loss of livelihoods, threatening already impoverished and marginalized communities with further displacement and dispossession.

Vasundhara, an NGO from Orissa reports that tens of thousands of people inside the state's PAs, most of them adivasi, are faced with unemployment, destitution, and even starvation. Detailed studies done in PAs like Satkosia Gorge Sanctuary and Sunabeda Sanctuary, reveal an alarming state of affairs, with mass out-migration having begun in search of jobs and sustenance.[10] Grass removal from protected areas like Kumbalgarh Sanctuary and Keoladeo (Bharatpur) National Park in Rajasthan has reportedly stopped, with serious consequences for villagers, especially those critically dependent on animal husbandry. These steps have resulted in inevitable rise in trauma, hostility, resentment, desperation, and conflict.

A belief that wildlife can be protected in such circumstances is more likely to be a delusion than reality. Moves towards political decentralisation are gaining ground in India. Local communities are everywhere beginning to organise and empower themselves. Protests against conservation policies in general and PAs in particular are gaining ground. In these situations there are always political leaders waiting to take advantage of such discontent. Demands for doing away with PAs, or with unpopular wildlife restrictions, are on the rise. Acts of subversion, of deliberate violation of conservation laws, and of quiet collaboration with poachers and timber thieves, are already quite evident. Demands such as those by Naxal groups (ultra leftist armed groups particularly active in some eastern, central and southern states) to abolish forest acts seen as draconian, spurred by the socially unjust way in which such laws have been implemented, are also on the rise. How can inadequately staffed and funded Forest Department, charged with protecting India's wildlife, possibly cope with this? Never mind issues of human rights and social justice … even from a purely conservation point of view, these recent moves appear suicidal.

Even the direct ecological impact of some of these steps can be negative in some situations. Kumbalgarh Sanctuary in Rajasthan has reportedly already been affected by severe fire because grass has not been cut. Keoladeo (Bharatpur) National Park, also in Rajasthan, had several years back actually introduced grass cutting to stop the wetlands from turning into grasslands (a threat that arose as a result of a previous mistaken decision to stop buffalo grazing); if this is now stopped, what will become of the wetlands that harbour one of the world's

greatest waterbird spectacles? Blanket bans such as this are not even based on sound ecological sense, since they mistakenly assume that all ecosystems and species everywhere respond in the same way to all human activities. This is of course not to imply that all human activities are compatible with conservation; on the contrary, many are not or may not be, but this is precisely why a uniform approach of any kind is scientifically dubious.

Ashoka Trust for Research in Ecology and Environment (ATREE), Bangalore, and other organisations have shown that at least in the case of three medicinal plants or NTFP in the Biligiri Sanctuary (Karnataka), collection by the local adivasis is not ecologically detrimental; this would be the case for many (but certainly not all) resource uses by local populations across India's protected areas, so there simply is no justification for making such a blanket prohibition. A ban on extraction was issued in Biligiri in 2004, reportedly because Karnataka officials want a Tiger Reserve status for this sanctuary (and using the relevant provisions of the WLPA as described above), though there is actually nothing in any law that requires tiger reserves to be free of human resource use. The ban order was questioned by the then DCF in charge of the Sanctuary, stating in no uncertain terms that this would create suffering and hostility and make conservation difficult; but he was over-ruled, and in 2006, the ban was actually strictly imposed. Several thousand Soliga adivasis have been suffering loss of livelihoods and income as a result of this; and in a related incident, severe forest fires in 2007 were left unattended to by the adivasis who would otherwise have helped the wildlife authorities to douse them.[11]

## What is the Development Context Influencing Conservation Today?

Ironically enough, the very government that has taken such draconian steps against some of India's poorest communities in the name of conservation, has no compunctions in giving up ecologically critical areas for so-called 'development' projects. In November 2004, for instance, it gave clearance for the construction of the Lower Subansiri project in Arunachal Pradesh, despite strong evidence that this project will destroy crucial and irreplaceable wildlife habitat[12]. In October 2004, 40 organisations from across India signed an Open Letter to the MoEF, expressing dismay at the Ministry's continuing to sign away wildlife habitats to such projects, on the basis of flimsy and often fraudulent environmental impact assessments.[13] Many PAs from where traditional communities are being moved out, are being opened up for large-scale commercial tourism, called "ecotourism," as if adding the prefix "eco" will magically transform a destructive activity into a benign one!

An indication of the short shrift being given to the environment, in the current era of globalization, is the increase in the number of 'development' projects given environmental clearance, and increase in the rate of diversion of forest lands for non-forest purposes. Documents obtained by Kalpavriksh from the MoEF by using the Right to Information Act, reveal that of all the forest land diversion that has occurred since 1981 (when a system for central government permission for such diversion was put into place), over 55 percent (totaling about 6 lakh hectares) has been after 2001. Over 70 percent of forest land cleared for mining since 1981, has been in the period 1997-2007.

## What Measures Are Being Taken to Address Conflicts Between Conservation Areas/Wildlife and People?

As the problems related to local community alienation from PAs have become difficult to ignore, the government has responded with ambitious *ecodevelopment* programmes. In these programmes, people's needs are sought to be met through ecologically sensitive developmental inputs. Since 1990 this has been a central government aided scheme, meant for state governments to use for villages around PAs. By and large these have not been used for villages inside PAs, the assumption being that such villages have to be moved out anyway. During 1997-2002, the Government of India also got substantial assistance from the GEF/World Bank, for ecodevelopment in 7 prominent PAs. Independent evaluations suggest that this project met with mixed success. In some PAs such as Periyar Tiger Reserve (Kerala), it was successful in turning a conflict situation around into one of positive cooperation and providing enhanced livelihood thereby helping reduce poverty in several villages on the periphery of the Reserve. However, in many others such as Nagarahole National Park (Karnataka) and Pench National Park (Maharashtra) it either failed or created new tensions.[14]

One key conceptual problem with 'ecodevelopment' is that **it still treats local communities and conservation as being incompatible**. Hence the primary focus is on 'diverting' local 'pressures' through provision of alternatives. In most cases, the alternatives themselves are very much mainstream rural development projects, with no clear logic on how they would lead to be better conservation or indeed more enhanced sustained livelihoods. In almost no known case, has 'ecodevelopment' created a greater involvement of local people in the management planning and decision-making of the PA. The model of 'ecodevelopment' prevalent in India is not one which takes people's access to natural resources as a matter of customary right, nor is it one which moves the country towards a new paradigm of conservation. Such new paradigms are being now accepted

worldwide (and indeed are required to be adopted by India as part of its commitment to implement the Programme of Work on Protected Areas of the Convention on Biological Diversity),[15] but India is far from getting close to them in official policy and practice.

One policy-level move towards this was, however, taken in the making of the National Wildlife Action Plan (NWAP) 2002, and in the process of formulating a National Biodiversity Strategy and Action Plan (NBSAP). The NWAP explicitly recognizes the need to involve local people in conservation including PA management, and suggests some steps towards this such as PA level committees including local community representatives. The final technical report of the NBSAP goes further, advocating a central role for communities in management of conservation sites, respect to their customary rights, integration of livelihood security and poverty eradication with conservation, recognition of their own conservation practices and community-protected sites, building on traditional knowledge relevant for conservation, and so on.[16] Unfortunately the final National Biodiversity Action Plan released by the Ministry of Environment and Forests in 2008, contains very little of this orientation.[17]

More recently, the National Environment Policy (NEP 2006), in its preamble also stresses the need to recognize the vital role that natural resources play in providing livelihood and life support ecological services. It acknowledges that "sustainable development concerns in the sense of enhancements of human well-being, broadly conceived, are a recurring theme in India's development philosophy." **The dominant theme of this policy is that while conservation of environmental resources is necessary to secure livelihoods and well-being of all, the most secure basis for conservation is to ensure that people dependent on particular resources obtain better livelihood from the act of conservation, than from degradation of resources.** Thus it clearly acknowledges the close link between peoples' livelihoods and conservation prerogatives. In the case of protected areas, it states: "Conservation of wildlife, accordingly, involves the protection of entire ecosystems. However, in several cases, delineation of and restricting access to such Protected Areas (PAs), as well as disturbances by humans in these areas have led to man-animal conflicts. While physical barriers and better policing may temporarily reduce such conflict, it is also necessary to address their underlying causes. These may largely arise from the non-involvement of relevant stakeholders in identification and delineation of PAs, as well as the loss of traditional entitlements of local people, especially tribals, over the PAs." In its goals, it therefore talks about "participation of local communities," and the need to "harmonize ecological and physical features with needs of socio-economic development."

The NWAP and the NEP are, however, as yet at a conceptual level, with implementation still to begin. The NBSAP in its final form was not even accepted by

the government, which instead produced a significantly watered down NBAP that has no detailed recommendations on this issue. There are therefore very few official moves towards actual changes on the ground, especially in protected areas, towards a new paradigm of conservation that holds livelihood and survival rights as central.

On the other hand there are numerous people's initiatives towards integrating conservation and livelihood. Most prominent are the hundreds, perhaps thousands of examples of community conserved areas (see Box 1). These still cover only a small proportion of India's countryside, but are significant in themselves and for the potential they represent.

### Box 1. Community conserved areas in India[18]

Sacred sites and species were once extremely widespread across India, according to one estimate covering perhaps about 10 percent of many regions.[19] These included forest groves, village tanks, grasslands, and individual species such as those named. Unfortunately, the forces of commercialization, cultural change, population increase, and development projects have destroyed many of these sites. But though considerably less in number and coverage, they are still common; researchers estimate that there may still be between 100,000 and 150,000.[20] Many of the sacred groves have preserved remnant populations of rare and endemic species, sometimes in their original and undisturbed form, that have been wiped out elsewhere. In general such areas are quite small (sometimes only a handful of trees), but there are also large ones like the Mawphlang Sacred Grove in Meghalaya which covers 75 ha. In fact researchers from the North East Hill University have recorded 79 sacred groves in Meghalaya, ranging in size from .01 to 1200 ha, of which about 40 range between 50ha to 400 ha.[21] Interestingly, in some parts of India, communities have designated new forest areas as sacred in order to protect them. For example in Uttaranchal in the late 1990s, a number of village communities devoted parts of their forests to the goddess until such time that the forests are completely regenerated.

Dozens of heronries (roosting and nesting sites of migratory and local birds, particularly water birds) are being protected by communities that live around them. Trees in or near village ponds are often the favourite nesting and roosting sites for pelicans, storks, herons, egrets, ibises, and other waterbirds. Well-known examples include Kokkare Bellur in Karnataka; Nellapattu, Vedurapattu, and Veerapuram in Andhra Pradesh;

Chittarangudi and Vedanthangal in Tamil Nadu, and many others (some of which have become officially protected sanctuaries). Many of these harbour globally threatened species like the Spottedbilled pelican.

Wintering waterbird populations also find a safe haven in many wetlands within or adjacent to villages whose residents zealously guard them. Mangalajodi village in Orissa, on the edge of the Chilika lagoon, harbours several hundred thousand migratory ducks and waders. From being a village full of bird catchers (with substantial income coming from selling these birds), the residents are now offering complete protection against hunting and other disturbances. In Uttar Pradesh, Amakhera village of Aligarh district is home to a large number of migratory birds, which the villagers are careful not to disturb even while withdrawing irrigation and drinking water. Patna Lake in Etah District of the same state, can support upto 100,000 water birds in a favorable season. The lake was declared a wildlife sanctuary in 1991 but has been protected for centuries by the locals as a sacred site. Sareli village in Kheri District of Uttar Pradesh supports a nesting population of over 1000 Openbill storks, considered harbingers of a good monsoon. As they feed on snails, villagers also consider them useful in controlling the spread of diseases.[22]

In Orissa, Andhra Pradesh, and other states, tens of thousands hectares have been regenerated and/or protected by village communities. This is usually on their own (including in many cases by setting up all-women forest protection teams as at Dengejheri village in Orissa), or occasionally through government-supported programmes like joint forest management. The biodiversity value of these forests is considerable, including several threatened mammal and bird species. In some parts of Orissa, elephants are reported to be frequenting the community conserved forests, having moved in here from their earlier ranges that are disrupted by highways and railway lines and industries. In Orissa alone, there are believed to be more than 10,000 village forest protection committees. In the Ranpur block near Bhubaneshwar, 180 conserving villages (many of them adivasi settlements) have together created a federation. This is to enable combining their initiatives at a landscape level, to maximize harmony and reduce conflicts, and to provide a unified organization to dialogue with the government or outsiders.

In Nagaland, several dozen villages have over the last decade or two, conserved natural ecosystems as forest or wildlife reserves, the latter dedicated exclusively or predominantly to wildlife conservation. One of the biggest is the Khonoma Tragopan and Wildlife Sanctuary, spread over 20

sq km, where hunting and resource extraction is completely prohibited; in another 50 sq km or so, very minimal resource use for home use only is allowed. Amongst the earliest initiatives were the forest and wildlife reserves set up by Luzophuhu village in Phek district, and the Ghoshu Bird Sanctuary declared by Gikhiye village in Zonheboto district, both in the 1980s. Many of these are recognized as Important Bird Areas. Given the indiscriminate hunting that this state has witnessed in the last 3 decades, these efforts are crucial in giving Nagaland's unique biodiversity a renewed lease on life.

In Uttaranchal, some of the state's best forests are under the management of Van Panchayats (VP) set up several decades back, mostly in the Kumaon area (though by no means are all VPs well conserved).[23] Some of these are very large, for example Makku VP that covers roughly 2000ha. Of the 2240 sq km stretch of Gori Ganga River Basin, 1439 sq km is under the management of the village VP. This area forms an important corridor between, Nandadevi Biosphere Reeserve and Askot Wildlife Sactuary, which are critically important for highland biodiversity. In addition, villages such as Jardhargaon, Lasiyal and Nahin Kalan in Tehri Garhwal district, influenced by the Chipko movement, have regenerated and protected hundreds of ha. of forests and helped renew populations of leopard, bear, and other species.

In Bongaigaon district of Assam, the villagers of Shankar Ghola are protecting a few hundred hectares of forest which contains, amongst other things, a troupe of the highly threatened Golden langur. At Khichan village (Rajasthan), villagers provide safety and food to the wintering Demoiselle cranes, which flock there in huge numbers of up to 10,000. Several hundred thousand rupees are spent by the residents on this, without a grudge or grumble. In Goa, Kerala, and Orissa, important nesting sites for sea turtles such as Galjibag and Rushikulya beaches, have been protected through the action of local fisherfolk.

With help from the NGO Tarun Bharat Sangh (TBS), several dozen villages in Alwar district (Rajasthan), have reconstructed the water regime, regenerated forests, and helped revive populations of wild herbivores, birds, and other wildlife. Bhaonta-Kolyala villages have even declared a "public wildlife sanctuary," over 1200 ha. In 1800 hectares of deciduous forest, Gond adivasis of Mendha (Lekha), Gadchiroli district (Maharashtra), have warded off a paper mill from destroying the bamboo stocks, stopped the practice of lighting forest fires, and moved towards sustainable extraction of non-timber forest produce.

Quite a few sites conserved by communities have been recognized to be of such wildlife value that they have been declared wildlife sanctuaries or national parks by state governments. In Punjab, lands belonging to the Bishnoi with considerable blackbuck and chinkara population, have been declared the Abohar Sanctuary. Several traditionally community managed heronries in southern India, such as Nellapattu, Vedanthangal, and Chittarangudi, are now wildlife sanctuaries. Many grassland areas which had traditional pastoralism that sustained threatened bird populations, have been declared bustard sanctuaries (such as Karera in Madhya Pradesh). In some cases this has helped to stave off outside threats, but in several cases, it has transferred the responsibility of conservation away from villagers to government agencies who do not always have the resources or the zeal to carry out their duty, as a result of which the areas have suffered neglect and decline. In the case of Karera it even led to the complete disappearance of the Great Indian bustard. In most cases the declaration of the sanctuary led to significant restrictions on the people and consequent conflicts with the local people.

The range of *mechanisms* used by communities in CCAs is fascinating. At virtually all sites, the community has formed *rules and regulations*, and penalties for anyone violating these. At some places the *penalties* differ depending on the nature of the violation, or even on the class of the offender, with poorer people being fined less! Usually also, there is an *institutional mechanism* set up to protect the area, such as forest protection committees, youth groups, wildlife protection groups, women's committees, or even gram sabhas (village assembly) as a whole. *Security of tenure* of the land/resources being conserved, or the confidence that the community could continue with its initiative irrespective of the legal ownership of the land, is key to a successful initiative. A strong *leadership* from within the community, and often a catalytic or supportive role by government agencies or civil society organisations from outside is crucial to successful conservation.

But CCAs also face a host of problems. One of the greatest is that India has not, until recently, recognized these efforts and has had a very inadequate supportive policy environment. A number of legal provisions do provide some space to give backing to CCAs, but all of them have limitations. For instance, the Forest Act of 1927 provided for the handing over of Reserve Forests to communities to manage as Village Forests, but this provision has hardly ever been used. In 2003 a category of "community reserves" was added to the Wild Life (Protection) Act, and could have helped provide much-needed legal backing to CCAs. Unfortunately, it is very restrictive, as it is allowed only on "community or private"

lands (it appears that this does not include government lands, though clarity is needed on this), whereas most common lands where CCAs are located, are on government lands. The Biological Diversity Act 2002 could provide some support if its category of "Biodiversity Heritage Sites" is appropriately defined (detailed guidelines to this effect are under finalisation at the time of writing). Additionally, the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act 2006, could provide powerful legal backing to forest CCAs as it gives a right to people to protect forests as "community forests," but this will depend on the implementation mechanism (as of mid-2009, very few communities have claimed community forest rights, and only a handful of these claims have yet been granted; see below).

Administrative programmes such as Joint Forest Management (JFM) schemes or Ecodevelopment Schemes are usually the only avenues available to government functionaries or communities to give governmental support to CCAs. However, these schemes have severe limitations: they may not be applicable to many CCAs; or the conserving communities may not wish to bring their areas under these schemes as it entails greater government control. In several instances the imposition of these schemes has resulted in the breakdown of previously well functioning community initiatives, especially where parallel institutional structures have been set up by the government. There is hope that a new scheme for wildlife conservation outside PAs, in the 11th 5 Year Plan, will provide sensitive support, if the guidelines prepared by a committee set up by the MoEF (to be notified at the time of writing) are adhered to.

Appropriate legal and policy support is urgently needed, especially for the many CCAs that are threatened by mining, hydro-electricity and irrigation projects, urban expansion, industrialisation, Special Economic Zones, and other so-called 'development' projects. The locally sustained economies of CCAs are not seen as contributing to the economic security of the country. For example, several forests conserved by communities in Orissa have been destroyed or are threatened by the furious pace of industrialization that the state government has imposed on its citizens.[24] Despite a widespread community forestry movement in states like Orissa there is still no state level policy to facilitate or support these initiatives. These forests are either reserved forests under the Forest Department's control, or disputed forests which can be claimed by the government at any point in time.

The conserving communities are highly influenced by processes outside of the community or the village, including the neo-liberal economic policies and open market systems. Most communities are now dependent on the markets and money. However, the markets with which these communities interface are often highly exploitative. Government policies often end up supporting the exploitation. For example many villages surrounded by an abundance of NTFP,

would like to develop a sustainable market for these produce or items made from them. However, tendu patta (*Disopyros melanoxylon*), Mahua (*Madhuca indica*) and other NTFP that they collect have been nationalised by the government and cannot be sold in the open market. This makes collectors dependent on the government approved contractors or government run purchasing centres. Neither of these give the collectors desired prices. In most cases this stranglehold has continued despite the Panchayat (Extension to Scheduled Areas) Act 1996, which provided for tribal ownership of NTFP; the next few years will tell if yet another legislation enabling communities to claim NTFP (and other forest) rights, the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act 2006, will achieve the breakthrough.

Wider market forces and 'modern' lifestyles are changing aspirations and rendering traditional values less effective amongst the youth, and also not replacing these with effective new conservation ethics. The modern system of education does not inculcate a respect for local values, and undermines the knowledge systems that formed the basis for traditional conservation. The youth are getting more and more isolated from local realities and drifting away, threatening the human and institutional base of many CCAs. Often a great amount of effort and time is spent by the villagers in protection and patrolling of the forests. This is at the cost of wages that they could have earned. 'Remoteness' of the areas does not bring about other employment opportunities easily. In some cases because of appropriate support, the livelihoods of local people have been improved and strengthened. But in many cases the communities are still struggling to achieve this, and the youth in particular face serious employment challenges. It is only in a few CCAs that the youth are at the forefront of conservation and sustainable livelihood initiatives, but these few are signs of hope.

In order to overcome many of the above constraints, CCAs need a number of supportive actions. Some policy level support has come in the form of recommendations in the National Wildlife Action Plan (NWAP) and the final report of the National Biodiversity Strategy and Action Plan (NBSAP), and a new programme to support CCAs as part of the wildlife scheme in the 11th 5-Year Plan.[25] However, these are mostly still on paper, and need to be translated into actual action. These efforts also need to be taken into account by the conservation laws and policies to define their future course of action.

## What Measures Are Being Taken to Tackle Threats by 'Development'?

Faced with severe natural resource related conflicts, and threatened by 'development' policies and projects, social movements towards regaining control over

lands and common property have been gaining strength for several decades now. Human rights groups fighting against injustices are also beginning to talk about local people being politically empowered not only to secure livelihoods but also to protect and conserve their surrounding natural resources. There are very many instances of natural ecosystems and wildlife populations having been saved by local communities from certain destruction. As examples, several big dams that would have submerged huge areas of forest or other ecosystems have been stopped by people's movements. This includes proposed dams like the Bhopalpatnam-Ichhampalli in Maharashtra and Chhattisgarh, which would have submerged a major part of the Indravati Tiger Reserve, Bodhghat in Chhattisgarh, and Rathong Chu in Sikkim. Many such movements have saved areas that are equal in size if not sometimes bigger than official protected areas.

Giving strength to these movements is the practice of community based conservation (Box 1). Additionally, many civil society organizations have taken the battle to courts, or to political forums, though mostly with little success in the case of big industrial or infrastructure projects. One strong presence (though not consistent) has been the Centrally Empowered Committee (CEC), established on 17 September 2002 through a Gazette Notification issued by the Ministry of Environment and Forests, under the directions of the Supreme Court dated 9-5-2002 and 9-9-2002 in W.P. 202/95 and 171/96. The CEC was constituted to look into violations of forest related laws and processes. It has investigated and often given clear advice against destructive projects to the Supreme Court (though it has been less sensitive to people's livelihood concerns, see the next section).[26]

Advocates of community rights assert that laws like the Forest Rights Act can be powerful tools against destructive projects. Though it is too early to gauge the conservation impact of this Act, a significant new initiative that could strengthen community struggles against deforestation is a circular issued by the Ministry of Environment and Forests, dated 30 July 2009. This requires state governments to provide proof, while applying for diversion of forest land under the Forest Conservation Act, that they have complied with provisions of the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act 2006 (see next section for details of this Act). This includes having received consent from the relevant communities for the proposed diversion.

Meanwhile some battles against destructive development are being strengthened by collaborations between local communities and civil society organizations. In the case of the struggle against proposed mining by the multinational corporation Vedanta, in the Niyamgiri hills of Orissa (home to Dongaria Kondh adivasis who consider the forested hills as sacred), conservation and social action groups in Orissa and Delhi have helped the adivasis with legal battles and expert studies to show the biodiversity value of the area. Civil society organizations in

Delhi, Pune, and elsewhere are providing crucial technical and advocacy support to local community groups in several states of north-east India, and in the western Himalaya, where governments are proposing a massive number of large river valley projects with grave ecological and livelihood consequences.

## What Are the Most Recent Policy and Legal Measures Influencing the Situation?

As a result of social movements against injustice towards forest dwelling communities caused by forest and conservation policies, the year 2006 saw two legislative developments that have created the potential of democratizing forest and conservation management and providing greater benefits to local communities. However, their implementation faces many complex issues of social and political dynamics and local capacities, and some concerns about their impacts on conservation itself.

The passage of the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 (in short referred to as the Forest Rights Act) is an important and welcome step towards reversing historical marginalization of the tribal (indigenous) and other forest-dwelling people of India. This Act mandates the vesting of 14 kinds of rights over forest land and forest produce on two categories of communities: scheduled tribes (i.e. indigenous people who are listed in a schedule of the Indian constitution), and "other traditional forest-dwellers" defined as those living in forests for at least 3 generations.

The provisions of the Forest Rights Act relevant to PAs are of special interest. The Act specifies that all rights need to be identified and established regardless of the status of the forest, including inside PAs. Furthermore, it mandates a process for determining "critical wildlife habitats" inside PAs, and assessment of whether people's activities within such habitats can be in consonance with conservation. If "irreversible damage" is established, communities can be relocated with their informed consent, and after ensuring the readiness of relocation and rehabilitation. Gram sabhas (village assemblies) have also been empowered to protect wildlife and biodiversity, and to keep destructive activities out of the forests in which they are given rights.

While the Act is certainly a significant step towards democratizing conservation practice and extending long-denied rights to livelihood of communities dwelling inside forests, it has also caused serious concern about its potential impact on conservation itself. In the context of PAs, for instance, it is not clear if the rights (e.g. to forest resources) could over-ride the steps necessary to achieve conservation, if no limits based on ecological criteria are set for the extraction

of resources. Specific conservation responsibilities along with authority have not been specified in relation to rights-holders, though gram sabhas of which they are a part are empowered to ensure conservation, and are supposed to set up committees for this purpose. The precise relationship with the WLPA 1972 (which governs PAs) is unclear, leading to possible confusion on the ground on what action can be taken if a right granted under the Act violates a provision of the WLPA. One major concern is related to Section 3(2) of the Act, which states that "not withstanding anything contained in the Forest (Conservation) Act, 1980, the Central Government shall provide for diversion of forest land for…" development activities, specifying a list of 13 development activities, for each of which one ha of land (without felling more than 75 trees) can be diverted. This could cause fragmentation in deep forests, or be misused to create major infrastructure by vested interests. On the other hand, activists also argue, with some justification, that the provision of community rights to manage and protect forests, and to safeguard habitat, along with greater tenurial security, could be powerful bases for enhancing community based conservation. Unfortunately, implementation as of early 2009, has mostly been of individual land rights, with very few claims relating to community forests having been made or admitted.[27]

In 2008, a number of petitions were filed in the Supreme Court and several High Courts, challenging the Forest Rights Act as being constitutionally ultra vires or in other ways detrimental to the environment and people of India. Some High Courts have issued interim orders specifying that granting of pattas or felling of trees will require the Courts' permission, until the matter is disposed; as of mid-2009, however, at least two of these (Andhra Pradesh and Orissa) had already lifted their restrictions.

Interestingly, the second legislative measure is within the WLPA itself. In late 2006, the Wild Life (Amendment) Act was passed, setting up a National Tiger Conservation Authority. This was in response to a long-standing demand from conservation groups, and made urgent by the disappearance of tigers from one of India's well-known tiger reserves, Sariska (Rajasthan). The Amendment brought in processes for notification and management of Tiger Reserves (which makes them a 5th category of PA under the WLPA), and the setting up of a Wildlife Crime Bureau. It has specified (similar to the Forest Rights Act mentioned above) that "inviolate" areas need to be determined in a participatory manner, and that relocation from such areas needs to happen only with the informed consent of communities. Areas of concern pointed out by conservationists include the dropping of a number of provisions of the WLPA from being operative inside Tiger Reserves (though it has been clarified by the NTCA that this is not so and all provisions still apply), and the somewhat loose language used (e.g. the rights of "local people" where this term is not defined) with regard to forest rights. In

late 2006, a legal challenge was mounted by some conservation organizations against such provisions; as of early 2009, this had not resulted in any orders staying the operation of the amendment.

The above developments also need to be placed in the context of some other legal and policy measures that are potentially powerful tools for democratizing governance and making governments more accountable to both conservation needs and people's livelihood rights and needs. These include the Right to Information (RTI) Act, and the National Rural Employment Guarantee Act (NREGA). Many civil society organizations are already making good use of the RTI to obtain information related to conservation and environment, that was previously difficult to obtain. Kalpavriksh, for instance, has filed over 100 applications for information on a range of subjects related to environmental clearance of development projects, biodiversity access approvals, critical wildlife habitats, and so on; it has also obtained significant orders from the Chief Information Commissioner directing the disclosure of policy documents even when under formulation. Grassroots organizations are also attempting to combine the NREGA with other laws and programmes, to regenerate land and water resources.

Interesting possibilities exist of combining various laws and schemes, to optimize the integration of conservation and livelihoods. For instance, a community could claim rights to forest resources and management under the Forest Rights Act or the powers to manage forests under the Forest Act, set up a conservation committee under the same Act or a Biodiversity Management Committee for village level planning under the Biological Diversity Act, declare its area a Biodiversity Heritage Site under the same Act, apply to the MoEF for funds under its scheme on conservation outside protected areas, and use the NREGA to generate livelihoods linked to conserving and using the forest. Some initial work towards such combined usage has been done in a few villages in Maharashtra and other states.[28]

## Who Has Been and Is Shaping Conservation Policy and Practice?

Until very recently, formal conservation policy and practice in India has mostly been shaped by a small minority of politically or economically influential people, within and outside the government.[29] Conservationists (some of them former hunters, and/or from royal families, others serious naturalists from research backgrounds; some senior bureaucrats in relevant departments, others from civil society organisations) close to Mrs. Indira Gandhi were instrumental in utilizing her own proclivity towards conservation, to push through a radical series of measures in the 1970s, including the WLPA and Project Tiger. The dominance of the Con-

gress as a political party in that period also ensured that these measures were accepted by state governments without much explicit resistance.

There has been a sea-change in this situation in the last decade or so. Changes in centre-state politics brought about by the increasing ascendancy of other political parties, the growing power of state governments, and the lack of interest in conservation issues amongst a series of prime ministers after Mrs. Gandhi, have been amongst the key factors in weakening central diktats on conservation. Simultaneously the shift to a globalised economy has further diluted the focus on conservation, as described above. But equally important, a range of civil society actors have forced their entry into the conservation policy making domain, and/or into on-ground processes. These include communities in areas where they have organized themselves or been helped by NGOs, social activists of various hues, independent researchers and academics, environmental groups with an unconventional view of conservation, and political parties (in particular the Left). These actors have brought the social issues of conservation much more to the fore than ever before, and are increasingly forcing the establishment to not only take cognizance of such issues but to reflect them in policy. The enactment of PESA in 1996, inclusion of two new categories of PAs in the 2002 amendment of the WLPA, both with much greater (though still very inadequate) role of communities, the National Wildlife Action Plan and the Final Technical Report of the National Biodiversity Strategy and Action Plan, provisions relating to rights and consent in tiger reserves in the 2006 amendment to the WLPA, and the promulgation of the Forest Rights Act in 2006, are examples of their influence.

Undoubtedly too this influence has been aided by officials within the conservation bureaucracy who think differently from their more conventional colleagues. Many such officers are now more aware of the ground realities and would like to move towards resolving some of the local conflicts for a greater good of conservation. Much feedback has also gone from ground staff which is stuck with having to implement provisions of WLPA but not being able to do so because of people's opposition. A number of such officials have shown different ways of doing things on the ground (e.g. in promoting tribal livelihoods linked to Periyar Tiger Reserve in Kerala, or providing employment options to grazier communities in conservation areas of Sikkim), and have articulated policy level changes with more conviction. Additionally, other wings of government, such as the Tribal Affairs Ministry at the centre in the case of Forest Rights Act, have also taken more pro-active role in deciding conservation policy.

Another critical influence has been that of the judiciary. The Supreme Court has a 3 decade old history of active interest in environmental matters (starting with some of the earliest public interest litigations such as those on mining in the Doon Valley), but this interest has become decidedly more pro-active and

far-reaching in its impacts in the first few years of this millennium. Two cases in particular have impacted conservation and rights issues across the country: the T.N. Godavarman Thirumulkpad Vs Union of India (WP 202 of 1995) and the Centre for Environmental Law (CEL), WWF vs Union of India (WP 337 of 1995). Virtually every aspect of forestry and wildlife in India, and virtually every bit of forest land in the country, has come under the purview of the Court through these cases, to the extent that some legal analysts consider it a case of the judiciary far over-stepping its constitutional limits.[30] The Court has often shown a strongly conservationist bent of mind, which has been useful in putting a check on destructive practices and projects; but simultaneously it has also often been biased against the livelihood concerns of people dependent on forests and other ecosystems. It will be interesting to see what view it takes on the petitions filed by NGOs against the Forest Rights Act.

For the moment, the interplay of these various forces in the conservation-rights arena, is extremely chaotic. On the one hand actors with a predominantly social agenda have gained much greater influence. On the other hand conventional conservationists have retained some of their stronghold on conservation policy. The former's role is witnessed in WLPA 2006 and Forest Rights Act; the latter's in the continued resistance to more democratic forms of PA management, the rush to notify Tiger Reserves without due consultative process, or the stalling of the Rules to be notified under the Forest Rights Act for several months. The latter have had a powerful official ally in the Centrally Empowered Committee (CEC), mentioned above. Peopled by a small handful of very strong conservationists, the CEC has played a significant role in stalling or stopping a number of destructive 'development' projects in sensitive ecosystems (and indeed has become one of the few remaining effective points of environmental resistance within the system), but it (like the Supreme Court) has also been clearly biased against the livelihood interests and rights of people dependent on such ecosystems (for instance in its advice to evict fisherfolk and remove all traces of settlement in Jambudwip island of the Sundarbans in West Bengal, in 2003).

Conservation policy-making is currently like a tug of war between those fighting for social justice, and those straining to retain exclusionary conservation. Decisions swing back and forth, and often the final decision is a messy attempt at compromise which no-one is happy with….but which everyone also uses to their own advantage. In all this, both genuine democratic functioning as also decision-making based on sound knowledge are casualties. Witness for instance the attempt by the MoEF to rush through a process of identifying and declaring 'critical tiger habitats' (under the WLPA 2006), and listing the number of villages that will need to be relocated from these. This (and the somewhat slower identification of 'critical wildlife habitats' under the FRA 2006), is reportedly happening in the

absence of a number of steps that are supposed to be taken, including the establishment of people's rights, the fresh notification of tiger reserves, public consultations on what should be critical habitats, and processes of seeking consent from affected communities. Guidelines issued by the MoEF to state governments, for this purpose, also contain a number of other serious deficiencies (see for instance, the critique by a number of organizations under the banner of Future of Conservation in India network, http://www.atree.org/cth_cwh.html). Fortunately at least in the case of 'critical wildlife habitats', states are going slow, so there is an opportunity to influence them into using due knowledge-based and democratic processes.

Several organizations that are alarmed by the increasing polarization between conservationists and human rights activists, and by the ad hoc and haphazard manner of decision-making that has characterized conservation policy in the last few years, have attempted to start a process of working out a middle path.[31] Starting with a national workshop on "Future of Conservation in India" in early 2006, followed up with another national workshop in early 2007, these groups have a key goal of trying to foster dialogues towards mutual understanding and joint action, and to work together towards a more knowledge-based, equitable, and democratic approach to conservation (see statements and reports from these workshops, at www.kalpavriksh.org). In response to what they see as both threats and opportunities from the recent legal changes, they have issued detailed notes on the suggested process for identifying critical wildlife habitats, for moving towards co-existence in areas where wildlife and people will continue to live together, and for a just process of relocation in areas where inviolate wildlife areas need to be created (see notes at www.kalpavriksh.org, and http://www.atree.org/cth_cwh.html). In 2008 they organized a national workshop on critical wildlife and tiger habitats, and made detailed recommendations to the centre and states on following knowledge-based, democratic processes. Unfortunately, though, these groups have not yet built the advocacy strength and presence in the corridors of power, to be influential in conservation decision-making.

A number of organizations and people are also working on the ground, towards more inclusive forms of conservation. For instance, the Nature Conservation Foundation, Snow Leopard Trust, and Snow Leopard Conservancy, work with communities in Himachal Pradesh and Jammu and Kashmir (Ladakh), for conservation of various species.[32] Samrakshan is working with the Garo community in Meghalaya, on elephant conservation.[33] The Bombay Natural History Society is working with fishing communities in the Lakshadweep Islands, towards community-based lagoon conservation.[34] In parts of north-east India, WWF-India, Wildlife Trust of India, Aaranyak, Nature's Foster, and others are helping build community capacity to conserve threatened primates such as the Golden langur and Hoolock gibbon.

In all this, the influence of international agencies and processes is as yet unclear. Major multilateral or bilateral donors have been including more human rights and social justice components in their funding guidelines and policies, though this is not always necessarily reflected in the projects they fund. An example of this is the Government of India's proposal for funding from the Global Environment Facility (GEF) for a project on "Biodiversity Conservation and Rural Livelihood Improvement in Forested Landscapes." In its project document (contained in the World Bank's Project Appraisal Document of March 2006), there is the usual rhetoric of participatory conservation and so on, but the operational components are more or less business as usual, with the Forest Department retaining all powers, and issues of rights within protected areas being sidestepped.[35] This has been pointed out to the Bank, including in terms of the ways in which a conventional approach would not be in line with the Bank's own policies, but there has been little sign of the Bank reconsidering … or if there is such reconsideration, the Bank has not been transparent enough to indicate this to the critics.

One international influence that could have made quite a difference is that of the CBD's Programme of Work on Protected Areas, which clearly commits countries to more inclusive, participatory, power-sharing approaches (see Box 2). Civil society attempts at trying to get information from the MoEF on how it is considering implementing this POW, however, have not succeeded,[36] and there are few signs of policy rethinking based on the POW within official wildlife circles; if there is some move towards more democratic and inclusive policies, it is because of social activism from outside, resulting in progressive legislative changes in 2006. In its 3rd national report to the CBD, the Government of India is silent on progress relating to governance aspects of protected areas; in its 4th national report (submitted in May 2009), it has the following to say:

> "Several Provincial (State) Governments have developed enabling legal provisions to facilitate the process and allow some benefits to be shared at the site level. However, no Federal (Central) legal framework is currently in place for equitable sharing of costs and benefits arising from the establishment and management of PAs across the country. No assessments at a countrywide scale have been made of the economic and socio-cultural costs and benefits of PAs, particularly for indigenous and local communities. Recently, the GOI has enacted the Forest Rights Act, 2006 for empowering the tribal communities and other forest dwellers and protecting their access and use of forest resources. However, the impact of this legislation is yet to be observed…"

> "Besides this, at the site level, PA managers engage and ensure participation of local communities in the management of PAs in various ways. Site-specific eco-development programmes involving local communities and aimed at generating livelihoods for conservation are now initiated in almost all PAs of the country. However, more requires to be done in this respect."

The last line (about "more" needing to be done) is a classic understatement. In fact there are virtually no instances where local communities are involved in the management of PAs, other than as labour for fire-fighting, anti-poaching activities, etc. There is no formal institutional structure for this; as mentioned above, the only one approximating this, Sanctuary Advisory Committees, have not been established anywhere.

### Box 2. Community Based Conservation: The International Context

The imperative of moving towards participatory conservation has been underlined by a number of recent international events: the World Parks Congress (Durban, 2003), the Seventh Conference of Parties of the Convention on Biological Diversity (Kuala Lumpur, 2004), and the World Conservation Congresses of 2004 (Bangkok) and 2008 (Barcelona).

The World Parks Congress, held in Durban in September 2003, was the fifth of such congresses, organised every 10 years by the World Conservation Union (IUCN). It was by and large the biggest ever gathering of conservationists, with over 5000 participants. Amongst its major outputs were the Durban Accord and Action Plan, the Message to the Convention on Biological Diversity, and over 30 Recommendations on specific topics. All these outputs strongly stressed the need to centrally involve indigenous peoples and local communities in conservation, including respecting their customary and territorial rights, and their right to a central role in decision-making. The biggest breakthrough was the recognition of community conserved areas (CCAs) as valid and important form of conservation. The Durban Action Plan and a specific recommendation on CCAs, highlighted the need to incorporate and support CCAs as part of national PA systems (see www.iucn.org/themes/wcpa/wpc2003 for copies of these documents).

The Seventh Conference of Parties to the Convention on Biological Diversity, held in Kuala Lumpur in February 2004, had 'protected areas' as one of its main topics. Since the CBD is a legally binding instrument, its outputs are of great significance for all countries. One of its main outputs

was a detailed and ambitious Programme of Work (POW) on Protected Areas. A crucial element of the POW related to "Governance, Participation, Equity, and Benefit-sharing," under which actions explicitly urge countries to move towards participatory conservation with recognition of indigenous/local community rights. As in the case of the World Parks Congress, the POW also made a major breakthrough in committing countries to identify, recognise, and support CCAs (see www.biodiv.org, to download the POW).

Due to these and other processes, all countries that are party to the Biodiversity Convention, including India, are now committed to:

- Conserving a fully representative set of wildlife habitats;
- Ensuring community participation at all stages of PA planning, establishment, governance, and management;
- Giving full recognition to rights and responsibilities of communities;
- Promoting various PA governance types including community conserved areas;
- Developing policies with full participation of communities;
- Ensuring prior informed consent before any relocation.

In both the above processes, a key role was played by the theme group on Indigenous and Local Communities, Equity, and Protected Areas (TILCEPA, www.tilcepa.org, currently renamed the Strategic Direction on Governance, Equity, and Livelihoods in Relation to Protected Areas). TILCEPA is a group of two commissions of the World Conservation Union (IUCN), the World Commission on Protected Areas (WCPA) and the Commission on Environmental, Economic, and Social Policy (CEESP). TILCEPA coordinated the Communities and Equity cross-cut theme at the World Parks Congress, which included several case studies and analytical inputs on CCAs. Of great significance was its role in facilitating the participation of community representatives from CCA sites from different parts of the world. TILCEPA members were also a part of an expert group set up by the CBD Secretariat, to make inputs to the draft Programme of Work for discussion at the Kuala Lumpur COP. It is because of their involvement that a separate section on "Governance, Participation, Equity, and Benefit-sharing" was added. This section included specific action points on CCAs.

In February 2004, the MoEF committed the Government of India to an ambitious target under the Convention of Biological Diversity (CBD):

moving towards full participation of adivasis and other local communities in the management of wildlife conservation, and in receiving benefits from such conservation, by 2008. However, their recent circulars and orders violate all these provisions of the international agreement, to which India is legally bound.

Globally, implementation of the governance and equity parts of the CBD Programme of Work on Protected Areas has been poor, as noted by the CBD Secretariat and by governments meeting at the 9th Conference of Parties in Bonn, May 2008. The Indian performance on these elements has been very inadequate, with no signs of governance changes in the making of policies or the management of protected areas (though this may happen indirectly as a result of the Forest Rights Act 2006. In 2008, however, there has been a move to recognize and support community conserved areas through a scheme in the 11th 5-Year Plan.

## How Will the Conservation and Rights Equation Look in 2025?

Given the complex interplay of actors and influences discussed above, there are at least five scenarios for the future:

1. ***The empire strikes back:*** the renewed ascendancy of the conventional conservation paradigm, resulting in more exclusion of people and livelihoods issues, greater conflicts, but perhaps also better short-term ability to resist the forces of destructive 'development'. The haste with which tiger reserves have been notified under the WLPA 2006, clearly in response to the tiger crisis but also in some cases in reported violation of the consultation and rights related provisions of both the WLPA and the FRA, is a sign that this paradigm is by no means a thing of the past. However, it is very unlikely that conventional conservation can last long, in the face of growing resistance and hostility from local communities, and the inexorable trend towards greater decentralization.
2. ***Human rights to the fore:*** a dominant role of human rights and social justice oriented approaches, resulting in conservation policy and practice becoming subservient to human interests, with mixed results on the ground including better conservation where communities are oriented towards this, and degradation where short-term economic and political interests are able to dominate. In some cases the articulation and implementation of the FRA is an example of this, in others it is a continuation of past land rights move-

ments. For instance some political parties and some people's movements have openly encouraged new encroachment into forests (fortunately not, so far, on a very large scale), such as at Kawal Sanctuary in Andhra Pradesh (reportedly incited by the CPI(M)), in Udaipur region of Rajasthan (as reported by the NGO Seva Mandir), and parts of western Maharashtra in the Narmada basin (as reported by local activists). However, the fact that this trend is not widespread, suggests that a narrow human rights approach is also not likely to continue for long.

3. ***An indefinite tug-of-war:*** a continued situation of human rights and conservation groups fighting against each other, being able to influence the government and on-ground processes in different directions, resulting in messy, direction-less policy and practice, and continued conflict. We expect this to be situation for at least the next few years, because diverse influences are continuing to work strongly on the government, and the government itself is unable or unwilling to take any dominant line. This in itself may not necessarily be detrimental, so long as those with diverse viewpoints increasingly realize the need to arrive at some common positions; this will hopefully then lead to the last situation below.
4. ***'Development' destroys us all:*** given the current path of economic growth 'at all costs', continued loss of substantial areas of conservation importance, as also of importance to the livelihoods of tens of millions of people. Unless the 2008-09 economic crisis puts a stop to the rapid expansion of industry and commerce in India, this trend will continue for the next few years. More and more protected areas, or community conserved areas, or other parts of the landscape that are biodiversity-rich, and more and more sites crucial for local biodiversity-based livelihoods, will be given up for dams, mining, ports, expressways, cities, sports and tourism facilities, and so on. We feel that this (along with scenario 3 above) will be the most likely scenario for the next decade or more.
5. ***Forging the middle path:*** a gradual paradigm shift to inclusive conservation that privileges both wildlife protection and people's livelihoods, resulting in strengthening both, building a larger public constituency for conservation, and in the long run, greater ability to resist the destructive forces of unbridled economic growth and globalization while pointing to alternative forms of 'development'. This would then have to take into consideration planning at landscape (and seascape) level where natural resources and biodiversity outside of PAs are managed and used as effectively as the PAs are conserved. That will bring a much larger area in the country under appropriate management providing larger spaces for wildlife as well as ecosystem dependent people. Our hope and expectation is that in the long run, it is this scenario that will prevail. Some initial moves towards this are visible in the very many

community-led natural resource initiatives, and the fewer but nevertheless significant official efforts at convergence of conservation and livelihoods, mentioned in various parts of the text above. But these are scattered and sporadic, and it will require many years, perhaps decades, for them to converge into a national (and global) alternative.

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5

# Forest Policy in India

## Key Trends and Key Drivers

N. C. SAXENA

FORESTS ARE NOT SPREAD EVENLY in India, but concentrated in the North east, the Himalayas and Shivalik ranges, the central belt, strips along the Western Ghats and other hill areas, and in patches of coastal mangroves. More than 50 percent of forests are located in the central plateau, which is the poorest region in India with low agricultural productivity, poor soils and a heavy concentration of tribals. India's forests have, generally speaking, not been uninhabited wildernesses. Even in the remote forests, tribals have either been living traditionally or were brought and settled by the forest department during the colonial period to ensure availability of labour for forest operations.

In addition to the usual environmental functions (watershed protection, groundwater recharging, prevention of soil and water runoff, wildlife refuge), forests in India serve important subsistence functions (as the source of fuelwood, food, fodder and income) for almost 100 million forest dwellers (Lynch 1992), half of them tribals.

## Deforestation and Degradation

The causes of deforestation and degradation of forest resources in India are numerous and vary regionally. Large-scale commercial deforestation to meet the raw material needs of an expanding industry at subsidised prices has continued in the post-colonial era in much the same way as it did during the colonial period. The rapid expansion of agricultural production also converted large areas of forestland to non-forest uses. In substantial parts of the tribal belts, especially in northeastern[1] and central India, reduced fallows in shifting cultivation systems resulting from population pressure have led to deforestation.

India's large and growing livestock population too degrades forests. More than half of the livestock population (some 270 million) grazes in the forests. Livestock increased from 292 million heads in 1951 to 450 million in the mid-1990s (Mukherji 1994). Fodder production has not kept pace with the increase, and the fodder requirement for 2000 was projected at 844 million tons, compared with an availability of 504 million tons.

Finally, forest fires affect 3.5 million ha in India every year. Though several states have schemes to prevent forest fires, poor funding and even poorer delivery hampers their implementation.

Even when Forest Department (FD) has the legal right over forest lands in most states, villagers' present access to forest lands and development of forest goods and services is mediated by a complex web of rights, notifications, legislation, regulations, management arrangements, institutional influences and markets. This tends to weaken FD's control over forests, and converts them into open access lands.

Between 1970 and 1985—the period of plantation forestry—dense forest cover declined from 46 to 36 m ha (FSI 1988), thus reducing livelihood options for these and other forest-dependent rural poor. Since then the process of further deforestation has been halted, and the dense cover has been range bound between 36 and 38 m ha. This stabilisation could be because of the general ban on green felling which many Indian states have clamped on since the mid-eighties. The relative contribution of forests to State revenues, similar to land revenue, has been falling dramatically since Independence, because of expansion of economic activity outside land. This has enabled the states to forego incomes from logging. Other factors, such as liberalised wood imports, reduction in poverty, and the success of farm forestry in regions of progressive agriculture have contributed to reducing the pressure on forests. Finally, the success of participatory policies, known as Joint Forest Management (JFM), introduced in many states since the early 1990's has also led to improvement in the forest cover in some places.

## Evolution of Forest Policy in Independent India

There have been three forest policy pronouncements in India since Independence: the 1952 Forest Policy, The National Commission on Agriculture (GOI 1976) and the 1988 Forest Policy. The broad distinctions in the three policies are shown in Table 1.

**Table 1: Three Phases in Forest Policy**

| | Period | Main Focus |
|---|---|---|
| 1. | 1952-1976 | Forests for timber and industry, neglect of village commons |
| 2. | 1976-1988 | Commercial forestry to continue with greater vigour on forest lands, but more funds for social and farm forestry on non-forest and private lands to meet people's demands |
| 3. | From 1988 onwards | Joint Forest Management, and radical shift from the earlier revenue orientation, conservation as a priority |

### Forces Which Shaped the Above Policies

Three sets of factors have been at work in shaping the above policies. First, development until the mid-seventies was associated in the minds of planners with creating surplus from rural areas and its utilisation for value addition through industry. Hence, output from forest lands was heavily subsidised to be used as raw material for industries. The impact of such policies on forests or forest dwellers was not considered to be serious, as the resource was thought to be inexhaustible. Second, tribals and other forest dwellers, with little voice or means to communicate were remote from decision-making, and politically their interests were not articulated. Third, foresters were trained to raise trees for timber. Other intermediate and non-wood products were not valued, as indicated by their usual description as 'minor products', leading to adoption of technologies that discouraged their production. The combination of these forces led to perpetuation of a timber and revenue oriented policy that harmed both the environment and the people, but was argued to be meeting the goals of the nation-state.

Policy decisions during 1950-90, which have supported industrial plantations on forest lands, have not been able to stop the degradation of India's natural forests. There was also no incentive for industries to invest in regeneration. The unsustainable exploitation of forest raw material dried up the sources of supply

much sooner than expected by the forest industries themselves, and pushed the frontiers of exploitation into ever more remote areas (Gadgil, 1989: 15-18).

Further, this exploitation occurred at the cost of local needs and broader conservation functions of the forests. To raise new plantations, natural forests were clear-felled even in ecologically sensitive regions, such as steep slopes. Such clear felling and lack of proper regeneration led to landslides, soil erosion, and siltation of rivers, reservoirs and tanks downstream. Local people were deprived of their biomass supply, and were also hit by reduction in employment in the informal sector that depended on NTFPs.

The reasons for indifferent progress of plantations on village lands during the 1970's and 1980's are much more complex and diverse. Social forestry was used only as an adjective to turn on the channels of money. Officials and contractors ran the show. Once the channels of money dried up, the plantations disintegrated. Despite rhetoric to the contrary, village lands, in actual practice, produced commercial polewood or urban fuelwood, and did not meet the subsistence needs of the poor. The poor were at times displaced from common 'wastelands' that once provided biomass (Hobley et al. 1996).

In a mixed economy, where both government and private sectors work, it is generally the government sector that looks after the infrastructural or welfare needs of the people, whereas the market needs are met by the private sector. Thus, health, education, and roads, etc., which are non-commercial programmes, come in India under the domain of the Government, whereas the private sector has been primarily responsible for commercial production. It was strange that in forestry this distribution of responsibility was not being followed, and the reverse was being attempted. Forest lands were to meet the commercial needs of the economy and farm lands were to produce 'fuelwood and fodder'. This conceptual weakness - corrected in the 1988 Policy - was perhaps one of the main reasons for the failure of the social forestry phase.

## The 1988 Forest Policy

The new forest policy announced in 1988 is radically different from the two previous policies. According to this, forests are not to be commercially exploited for industries, but they are to conserve soil and the environment, and meet the subsistence requirements of the local people. The policy gives higher priority to environmental stability than to earning revenue. Derivation of direct economic benefit from forests has been subordinated to the objective of ensuring environmental stability and maintenance of ecological balance. It discourages monocultures and prefers mixed forests. The focus has shifted from 'commerce', and

'investment' to ecology and satisfying the minimum needs[2] of the people, providing fuelwood and fodder, and strengthening the tribal-forest linkages. Para 4.3.4.3 of the new policy reads as follows:

> "The life of tribals and other poor living within and near forest revolves around forests. The rights and concessions enjoyed by them should be fully protected. Their domestic requirements of fuelwood, fodder, minor forest produce, and construction timber should be the first charge on forest produce."

The 1988 policy thus marked an important change. It advises industry to establish a direct relationship with farmers who can grow the raw material if supported by industry with inputs including credit, technical advice and transport services. As these linkages may take time, in the interim, it suggested that import of wood and wood products should be liberalised, but the practice of supply of forest produce to industry at concessional prices should cease.[3]

A government circular in June 1990 to all states and Union Territories provided guidelines for the 'involvement of village communities and voluntary agencies in the regeneration of degraded forests'. For the first time, the circular specifies the rights of communities to forest lands, giving them usufructs for grasses and other non-timber forest products, as well as a portion of the proceeds (ranging from 20 to 100 percent) from the sale of trees. The circular exhorts state forest departments to take advantage of the expertise of committed non-governmental organisations (NGOs) for building up community participation in the protection and development of degraded forestlands.

Several state governments have passed enabling resolutions to carry out the intent of the guidelines. They have also started joint forest management programmes. Although the national coverage of joint forest management is reported to be quite extensive (14 m ha out of a total of 26 m ha of degraded forests), the quality of protection and its sustainability is not satisfactory.

## Factors Behind Indifferent Progress in JFM

### Rights of Non-Protecting People

The legal and organisational framework for joint management remains weak and controversial. First, the old rights and privileges of the people (usually established in the colonial period) have continued in most degraded forests, and often such rights include free access to expensive timber. Privileges without corresponding responsibility are counter-productive. Second, often more than one village have

their rights in the same forest, with the result that it becomes difficult to promote village protection committees. Third, a large number of new settlers in a village (they may be the poorest) have no traditional rights in forests, as their ancestors did not live in the village at the time of forest settlement. They get deprived of benefits, and are compelled to obtain these illegally. Fourth, sometimes people living several kilometres away from forest have customary rights in forests.

Thus, a forest patch does not have a well-defined and recognised user-group, and may admit the rights of the entire population of that region or the entire forest area. This type of 'right-regime', which makes forests open-access lands, is not conducive to successful protection, as rights of contiguous villages protecting forests may come in conflict with those of distant villages, not protecting but still having rights to enjoy usufruct.

Therefore, at least in JFM areas, use rights should be reviewed in order to put them in harmony with the *'care and share philosophy'* which is the basis of JFM. Even in unclassed forests, where no previous settlement has been done, the task is not simple due to the practice of use by a large class of stakeholders. Elsewhere, old settlement rights may have to be modified with a view to make these amenable to formation of viable VFCs. This is easier said than done, as changing customary or legal rights would be perceived as an unpopular step and may face political hurdles. Such a policy can be made acceptable if it is accompanied by other pro-people changes in technology, nature of species, secure rights over produce, etc.

## Inter-Village Disputes

Most VFCs want their forest tract boundaries to be formally demarcated. Rough agreements between villages over these boundaries may be sufficient when the resource is degraded, but once valuable products are regenerated, conflicts will ensue in the absence of formal notification. Often forest maps are not available which delays formalisation of boundaries. This is not a simple exercise, since natural, administrative and customary boundaries do not coincide. In practice, under existing customary use, different boundaries apply to different products, e.g. grazing and fuelwood. Boundary disputes between neighbouring VFCs are likely to increase as harvesting approaches.

## Unclear Benefits

While Joint Forest Management has protected degraded forestland, the concept was not, until recently, applied to reserved forestland under rich forest cover. The

major issue in luxuriant forest is what returns can be guaranteed to the communities to generate sustained interest in protection. Logging is banned in these areas, so communities cannot expect a share of the final harvest. If the forests are in good condition, nearby communities probably have already been getting the benefits from the non-timber forest products. So, what is the added advantage of an agreement to protect these areas? The joint forest management strategy has so far given such issues insufficient attention.

## VFCs and Panchayats

Another legal problem concerns the status of VFCs versus the village panchayats, which may cover a larger area than controlled by VFCs. The state government resolutions recommend VFCs as functional groups. However, these committees have no legal and statutory basis, and it may be difficult for them to manage resources on a long term basis. Their relationships with the statutory village panchayats will need to be sharply defined.

The 1989 West Bengal GR stated that the local panchayat land management committee shall select beneficiaries for constituting the VFC. This indicated that the panchayat, which is outside the user group, would determine who could and who could not participate. Although in 1990, the West Bengal Government allowed every member in the village to be a member of the management group, the hold of the panchayat remained strong. The Orissa order prescribed that the lady Deputy Chief of the local panchayat will be the head of the VFC, but the panchayats are not working well and her stewardship is not seen as legitimate by the indigenous VFCs.

Experience over the last 20 years from Indian social forestry programmes indicates that in many cases panchayats had difficulties effectively managing community woodlots due to their inherent political nature and often diverse constituencies. Panchayats are political organisations based on electoral system, whereas conflict can be quite harmful for the effective functioning of VFCs. Protection can work only if there is almost unanimity and consensus amongst the user group.

Unlike panchayats, powers to the VFC are not given under any law, which may affect their powers to check free-riding in the longer run. Thus, most successful VFCs charge fees for collection of forest produce, although this practice is technically against the Forest Act. The illegality can be removed if the allotment of forest land to the VFCs is done under section 28 of the Forest Act. At present it is done administratively.

Due to the increasing importance of panchayats in decision making in India many field activists feel that community forest management must take place at

the smallest possible level of those who actually use the resource. This would require statutory changes in the current panchayat laws.

There is also some concern that if JFM groups were absorbed by village panchayat, vested interests might exert control over decision making. Since small user communities may consist of less powerful groups, they may lose authority to the elite if the management becomes a direct adjunct of the panchayat. VFCs are recognised only by the Forest Department, all other government departments recognise panchayats making them much more powerful than the VFCs. On the whole, there is need to clarify the relationship of local forest management groups to panchayats; simply subsuming them as part of the panchayat would almost certainly threaten their effectiveness.

## Gender Issues

Almost 85 percent of rural women in India still derive their livelihoods from land and water based activities. The use and management of natural resources, such as forests and groundwater can easily be made more gender friendly through suitable policy changes. Here in fact there may not be much of a contradiction in the interests of poor women with other poor class of people – poor men and children – who would like to use the common resource for maximizing its livelihood value. There is not much difference between the needs of women and poor men, the underlying conflict is between the needs of the poor on the one hand, and those of commerce and industry on the other; or as in groundwater between rich farmers and poor families.

Protection of a degraded area under JFM often increases women's drudgery, as they have to travel greater distances to collect their daily requirements of fuelwood and fodder (Sarin et al. 1996). Despite its good intentions, community forest management has often burdened women with additional hardships, or concentrated it on the shoulders of younger women. Women also had to switch over to inferior fuels like leaves, husk, weeds and bushes.

Forced inclusion of women through legislation has not led to genuine participation. Participation of women is cosmetic and symbolic, it is however better where NGOs or a gender sensitive government official were active. Given the sex-segregated and hierarchical nature of Indian society, separate women's organisations and staff are needed to work among women, to instill confidence in them, so that they can fight for their rights. Therefore, whenever there is recruitment, more women need to be recruited in the relevant Departments.

The two objectives that need to be kept in mind in relation to the role of women are (1) reducing their drudgery and burden and (2) giving them a voice

in planning and management. As the availability of gatherable biomass and water gets augmented locally through the kind of reorientation that has been suggested, the burden of bringing these subsistence products from distant places will gradually diminish and perhaps disappear in due course. As for 'voice', this is best ensured by mandating adequate representation for women in all the institutions (panchayats, WUAs, consultative committees, 'river parliaments', etc) that are set up for natural resource management at various levels.

## Unresolved Policy Issues in Forestry

### Involvement of Industry in Forest Lands

According to the nine-fold land classification, out of 304 million ha of land in India for which records are available, 55 m ha is classified as fallows, culturable wastes, pastures, and groves. Besides, about 25 m ha of forest land is degraded with tree density less than 40 percent. These lands produce biomass much below their potential. A substantial part of this land may be suitable for growing grasses, shrubs or trees, but not for crops. The Planning Commission had set up a Group to examine whether involving industry in their reclamation is desirable.

#### Non-Forest Barren Lands

The Group recommended the involvement of industry (including companies and farmers/other individuals) in reclamation of non-forest barren wastelands, such as desert lands of Rajasthan, Bhal lands of Gujarat, ravines of M.P. and saline lands of U.P. The total area of such lands is estimated as 20 million ha. Despite the initial high cost of reclamation these lands have the advantage of being available in contiguous patches and hence amenable to economies of scale. Besides, these degraded lands do not support the livelihood needs of the poor, and therefore handing them over to industry does not exacerbate social tensions.

#### Degraded Forests and Common Lands

The Group however did not favour creation of private tenure on village commons or degraded forests. These lands are in any case highly dispersed as these are close to the villages. The ecological implications of plantations on such lands need to be taken into consideration.

The industrial sector has argued that it would make these 'unproductive' or so-called degraded lands productive through captive plantations. However, if productivity is defined in terms of subsistence value, such forests are a vital source of living for the poor. Such lands may have a low tree density, but satisfy the fuelwood, fodder and livelihood needs of about 100 million people. As such, alienation of forests will surely result in hardships and oppression for the local communities who have historically depended on such lands for meeting their basic needs. In fact, these lands are degraded because they suffer from extreme biotic pressure, and require neither capital investment, nor higher technology, but protection and recuperation, which can be done only by working with the people, where industry has neither expertise nor patience.

According to the industry's own admission, their requirement can easily be met from 2 million ha of degraded land. As against this there is 141 m ha of cultivated land and 20 m ha of farmer owned uncultivated wasteland. These lands have the potential of producing pulpwood, especially in view of the fact that both eucalyptus and bamboo are short rotation crops and eminently suitable for farm sector. In fact the bogey of raw material crunch is no longer valid, given the vast expansion in farm forestry programme. If the industry produces its own raw material, who would farmers sell to? Where is their market, if not industry? 60 percent of farm land is owned by rich and affluent farmers, who are market oriented, and can be trusted to fulfil the requirements of industry.

Thus the claim of the industry that it would create additionality of production is not true, as any afforestation by them will be at the cost of tree planting efforts by farmers on privately owned degraded lands, tubewell enclosures, and homesteads, where the social cost of production is minimal, as these lands are of no use for cultivation. The argument that farm forestry would compromise food security is irrelevant, in the face of empirical historical evidence of significant tree plantation by farmers on lands which were not suitable for agriculture. Farmers exploit their own family labour (which is unpaid), and therefore can produce wood cheaper than industry. Farmers harvest their trees during the lean agricultural season and thus are able to achieve further saving in costs by spreading family labour inputs more evenly throughout the year. In fact the government policy of subsidising bamboo production on forest lands for supplies to industry acts as a deterrent to cheaper production on homesteads. The present proposal of the industry means getting land almost free of capital cost, thus involving subsidy worth several thousand crores. In the light of new liberalisation policies of the government, such subsidies on non-merit goods are highly undesirable.

Finally, the introduction of Panchayat Act in tribal areas, where most forests are located, will render leases to industries of forest lands illegal and

unconstitutional, as the spirit of the Act is in favour of local ownership and control over natural resources.

Therefore the Planning Commission concluded that the proposal of the industry to allow them to use government forests for industrial plantations is thus against two groups of people; lakhs of farmers who would be deprived of a market for agroforestry, and millions of voiceless forest dwellers who would be denied access to NTFPs and other biomass that they gather.

## Policy on NTFPs

From the people's point of view, crown-based trees are important for usufruct, but forests still remain largely stem-based. Timber is a product of the dead tree, whereas NTFPs come from living trees allowing the stem to perform its various environmental functions. Moreover, gathering is more labour intensive than mechanised clear-felling. Local people living in the forests possess necessary knowledge and skills for sustainable harvesting. Lastly, NTFPs generate recurrent and seasonal as opposed to one-time incomes, making its extraction more attractive to the poor. Thus if access to NTFPs can be assured, standing trees can generate more income and employment than the same areas cleared for timber, and also maintain land's natural bio-diversity.

Increased production of NTFPs must however be accompanied with greater discipline in its use, as new opportunities for livelihood promotion may also lead to serious threats of unsustainable and irresponsible NTFP harvesting. Such restraint is almost impossible to achieve without consultation with the people. For instance, the widespread shift to use of forest sweepings[4] to meet domestic fuel needs has a negative effect on regeneration and nutrient recycling essential for maintaining soil productivity. When this issue of ecological effect of sweeping leaves from the forest floor was discussed with the VFC members in West Bengal, they candidly admitted to the adverse effect, but requested for alternate energy devices. This would need provision by the project of solar cookers and gas plants based on cowdung which do not require cash inputs to run them. The challenge for FD is to devise policies that strike correct balance between livelihoods of collectors and sustainability of NTFP harvesting.

The other big issue concerns the legal framework for marketing of NTFPs. The nationalisation of NTFP commodities, done in different states in various years from 1960s to the end of 1970s, presumably with the intention of helping the poor, has continued despite the 1988 policy and has affected the interests of forest gatherers adversely. Nationalisation reduces the number of legal buyers, chokes the free flow of goods, and delays payment to the gatherers as government

agencies find it difficult to make prompt payment. This results in contractors entering from the back door, but they must now operate with higher margins required to cover uncertain and delayed payments by government agencies, as well as to make police and other authorities ignore their illegal activities. All this reduces the tribals' collection and incomes.

Nationalisation of NTFPs has created an excellent opportunity for a few private traders (some of them in the garb of being sub-agents of government bodies) and mills to exploit the gatherers. At the same time, practical considerations show that the government is incapable of effectively administering complete control and do the buying and selling of NTFPs by itself. It is better for the government to facilitate private trade and to act as a watchdog rather than try to eliminate it. Monopoly purchase by the government requires sustained political support and excellent bureaucratic machinery. It is difficult to ensure these over a long period and hence nationalisation has often increased the exploitation of the poor.

The government should give up some of its functions to the market rather than try to do every thing itself. For instance, retail sale of fuelwood and bamboo can easily be done by the open market. There is no need for having controls under the excise laws on mahua flowers. Its processing and sale can be easily left to free market operations.

We suggest that for marketing NTFPs, the government should not have a monopoly nor create such a monopoly for traders and mills. The solution is to denationalise NTFPs gradually, starting with mahua flowers and sal seeds, so as to encourage healthy competition. Encouraging the setting up of processing units within the tribal areas is also to be recommended, a suggestion that has generally been missed in the projects. In fact, the forest department should be set targets for setting up of such units by tribals and local groups, so that the role of the department becomes that of a facilitator, and not of a regulator.

## National Parks and the Tiger Task Force

To understand the dilemma of wildlife conservation in India today, the disparity in the demands of two sections of our society – an urban privileged elite and a marginalised poor – needs attention. We need a strong broad based coalition between livelihoods and conservation – the exclusivist approach on either side will not work. Roughly three million people are dependent on forest resources inside parks. For them their livelihood resources and how they get affected by wildlife conservation is most important. The environmental concerns must go 'beyond pretty trees and tigers'.

At the same time it would be simplistic and downright disastrous to argue that a society or nation should take populist decisions only on the basis of the agreement of a large number of park inhabitants, ignoring long term interests. Conservation may be one such issue, the impact and benefits of which may not be visible tangibly in the present, wherein an "enlightened" section of society may suggest more sustainable solutions. However, in a democracy one cannot totally ignore the interests of the majority.

The Tiger Task Force report has tried to reconcile the interests of the two groups by advocating an intermediate path in which the silent majority is also made a stakeholder in the protection of the park. Coexistence appears a better model although in some cases inviolate spaces may be needed.

A recent study on Madhav National Park (Madhya Pradesh) concludes, "Park policy ignores locally-embedded ability to protect biodiversity and willingness to be educated to that end. Consequently, site-specific strategies are required that build not solely upon biology or economics but combine these concerns with sensitivity to the lower strata of people that live around the park" (Beazley 2006).

Whether this radical paradigm shift suggested by the task force report will result in a decisive transformation in official conservation discourse or lead to different conservation policies and practices is difficult to predict. However, what needs to be noted is the broader context in which this task force report has arrived. The disappearance of tigers from Sariska, a reserve that has spent more money per tiger and per sq km and has more personnel per sq km and more protection camps per sq km than most reserves, has raised precisely this challenge. In response to this, the analysis and recommendations of the Tiger Task Force report represent an agenda for attempting to meet the conflicting demands of these different publics as much as for coexistence of people and tigers.

The five-member Tiger Task Force's report had made several recommendations to strengthen the institutional framework for protecting tigers in India. The most significant of them is to convert the Project Tiger directorate into an authority with administrative autonomy. Project Tiger is supposed to be a high-profile project of MOeF, but it has been beset with numerous roadblocks. Officers had to make several rounds of a ministry office to get a proposal vetted. Then state governments had to be pushed and cajoled into implementing the project's proposals. Hopefully greater autonomy will increase its effectiveness.

## National Forest Commission

While many recommendations of the National Forest Commission given in March 2006, such as 'there should be no restriction and regulation on the fell-

ing and removal of other trees planted on private holdings' have been generally welcomed, others have raised a great deal of controversy. In particular, there has been a heated debate on the following recommendations:

- Under the Land Ceiling Act, no land ceiling shall be imposed on land under plantation of forest tree species. This will motivate the corporate sector and big farmers to invest in plantations.
- A policy should be formulated to regulate inter-state movement of livestock to enable the States to control grazing pressure on eco-sensitive areas.
- The sale of fuelwood head loads from forests by individual sellers must stop.
- In the interest of the survival of the land, people, forests and the practice of shifting cultivation itself, jhum be regulated to a more sustainable level.
- The National Forest Commission is of the considered opinion that the proposed Scheduled Tribes (Recognition of Forest Rights) Act would be harmful to the interests of forests and to the ecological security of the country. It would be in open conflict with the rulings of the Supreme Court. Another legislation, therefore, needs to be framed providing the forest dwelling communities a right to a share from the forest produce on an ecologically sustainable basis and Ministry of Environment and Forests could be asked to do the needful, after taking into account the inputs of the State Governments as recommended by the Sarkaria Commission as a subject under the concurrent list. The proposed legislation should not apply to national parks and sanctuaries, which are the last havens of hope for the nation's forests, wildlife, wilderness and biodiversity.

As there has been a great deal of apprehension about the Scheduled Tribes (Recognition of Forest Rights) Act, we discuss it in some detail below.

## The Scheduled Tribes (Recognition of Forest Rights) Act, 2006

### Are There Differences with MOEF?

The Act passed in December 2006 is a comprehensive legislation that gives due recognition to the forest rights of communities. These rights have always been recognised by the Ministry of E&F (MOEF). The Ministry in its several affidavits and orders has always held that:

- Land which is under the rightful occupation of the people has been wrongly entered as forests in government records;
- Forest settlement is not complete; and
- In some cases possession of the people over forest lands is so old that it is administratively not possible to dislodge them.

Incredibly, the Ministry that is said to be opposing the Act, had itself stated in its affidavit to the Supreme Court in July 2004 that its order of February 5, 2004 was 'based on the recognition that the historical injustice done to the Adivasi forest dwellers through non-recognition of their traditional rights must be finally rectified'. Precisely what the Act says. So the question of decimating forests by recognising this right just does not arise.

## Why a New Act?

One may argue that if there was no disagreement between the Tribal Development Ministry and the MoEF, what was the need for a new law? Why couldn't action be taken under the existing laws and orders? The need for a new law arose because of Supreme Court's intervention. Besides staying regularisation of even eligible pre-1980 encroachments and de-reservation of forest land or protected areas (irrespective of whether these have been finally notified after due settlement of rights), the Supreme Court has also banned the 'removal of dead, diseased, dying or wind fallen trees, drift wood and grasses, etc' from all national park and wildlife sanctuaries. This was interpreted by the MoEF as a direction to evict encroachers, although there is no express order of the Supreme Court to evict. On 3 May 2002, the Inspector General of Forests instructed state governments 'to evict the ineligible encroachers and all post-1980 encroachers from forest lands in a time bound manner'.

The MoEF order created havoc. Diverse coercive means were employed, from setting fire to houses or destroying standing crops to molesting women, trampling people's dwellings with elephants, and even firing. These atrocities are a grim reminder of similar agonies that have been the lot of adivasis in India for the last 200 years. History – ruthless and unrepentant – seems to be only repeating itself.

It was in this context that in response to lobbying by a broad-based campaign against evictions, that at a high level meeting on January 19, 2005, the Prime Minister decided that a new Act should be drafted and tabled in the budget session of Parliament.

## Will it Result in Large-Scale Reduction of Forests?

Some opponents of the Act claim that it intends to distribute land to each forest dweller in the country. This creates a fear that entire forests will then get wiped out. In reality, the Act only seeks to recognise what is already there, i.e., to give land rights to people who have been cultivating forest land for generations, of-

ten in circumstances where the forest was 'reserved' without due settlement of traditional land rights. According to MOEF, the total area of forest land under 'encroachment' (whether by adivasi or other communities) is 13 lakh hectares. This is less than 2 percent of the recorded forest area in the country. Seen in this light, the potential adverse impact of the Act on the forest cover is quite limited.

## Are Forest Dwellers Responsible for Deforestation and Land Denudation?

Amidst the sound and fury raised by urban wildlife protestors against the recognition of forest dwellers rights, what is being forgotten is that it is not the poor but diverse industrial-commercial interests and mega projects, and declining governance within the Forest Department that have been primarily responsible for the destruction of our forests. The Minister for Environment and Forests stated in Parliament that 9.8 lakh ha have been diverted for 11,282 'development projects' since 1980. This area is almost as large as the same ministry's estimate of the total forest land area under 'encroachment' (13.4 lakh ha).

## What Will Be the Medium to Long Term Impact of the Act on Sustainability and Tree Cover?

If implemented, the Act should finally break the decades old bureaucratic deadlock preventing the recognition of peoples' rights and make official forest land records more reflective of ground reality. The Act links rights to responsibilities. Hunting is not permitted. It is clearly said that all rights may only be exercised for bonafide livelihood needs and not for commercial purposes. Only such forest dwellers who have been living there for at least three generations (75 years) would earn a right. They will also be responsible for protection, conservation and regeneration of forests. Forest right holders will ensure that no activity is carried out that adversely affects wildlife, forest and biodiversity in the local area. They will make certain that catchment areas and water sources are adequately protected. Any violation of these provisions will be punishable and just two offences will lead to the de-recognition of these rights. There is thus a powerful combination of livelihood and conservationist perspectives in the Act.

## What About the Impact of the Act on National Parks?

One of the positive aspects of the Act in its current form is the inclusion of national parks and sanctuaries within its purview, and its acceptance of the increasingly influential view that the policy of excluding peoples from forests is an unsuitable conservation strategy that must be abandoned in favour of a strategy that is 'integrationist' rather than 'exclusionist'. The recent Tiger Task Force Report (TTF) also endorses this view.

Certain species such as tigers, rhinos, and elephants are vulnerable to pressures from human land use. Even this point of view can be accommodated within the present Act, as it grants forest rights to the Peoples in core areas of National Parks and Sanctuaries provided they are relocated within five years. If relocation does not take place within the prescribed time period, the holder would get permanent right over forest land. Therefore the GOI and States should come up with a liberal, just, transparent and open relocation policy so that Peoples are better off after shifting away from the parks. However, the present policies are woefully inadequate.

It is unfortunate that in the answer to the Lok Sabha Starred Question no. 265, whether any rehabilitation package has been provided for the forest dwellers, the Minister answered in 2005 that 'Rehabilitation package for the evicted ineligible encroachers, if any, needs to be provided by the concerned State/Union Territory Government', thus absolving GOI of any such responsibility. GOI must not only provide funds but also firm guidelines on relocation, the implementation of which should be carefully monitored by GOI.

The strength of the Act is that it is trying to convert an existing reality (bemoaned by the critics) into an opportunity. It aims at making the people who live near the forest (seen as a problem by some) also responsible for its protection. If it is true that some locals are in league with the timber mafia, the Act suggests that it is only the local communities themselves who can stop them.

Overall, it is hoped that while implementing the Act the Government will ensure integration of conservation and livelihood security. It could do this by explicitly mandating collaborative arrangements between communities and government agencies with help from NGOs, and by putting into place an integrated system of rights and responsibilities, or powers and duties, that would safeguard against misuse by either the community or the government. It may also mandate a national statutory body to examine state and site-specific processes of settlement, and to ensure that any new encroachments are immediately detected and acted upon.

There are other crucial problems with the Act. For instance, section 13 provides that the Act shall be 'in addition, and not in derogation of provisions of any other Act for the time being in force.' There is some doublespeak here. While the Act claims to rectify the 'historical injustice' done by 'colonial legislation',

section 13 can effectively nullify the positive provisions of the Act through the very colonial legislation that the Act is supposed to rectify. Some other issues that need attention are:

1. Words such as 'unsustainability' have been used without being defined or articulating the responsibility for determining unsustainability.
2. A new category called 'Community Forest Resource' has been created without being defined and assigning legality. This will create enormous conflicts regarding jurisdiction as most areas where rights of different kinds are granted would be in areas under Forest Department.
3. Most serious is the lack of clarity regarding which legislation applies to offences made by 'right holders'. Many of the areas where the Act will be applicable will also fall under the jurisdiction of the Forest Department, since the Forest Conservation Act, Indian Forest Act and the Wildlife Protection Act are also applicable to these areas. How do the responsibilities and penalties under this Act relate to the ones under FCA and WLPA? This lack of clarity will lead to chaos with loss to both forest dwellers and wildlife. Predictably, such chaos can be misused by many to exploit forests in the name of forest communities.
4. The Act mentions that forest dwellers would be relocated from core areas of National Parks and Sanctuaries with due compensation. However, the Act does not clarify exactly what kind of compensation would be offered to them, what recourse they would have if such compensation is not satisfactory or is altogether denied.

Overall, it is hoped that the Technical Support Group constituted under the Chairmanship of Shri S.R. Sankaran (IAS retd) for framing Rules under the Act in February 2007 would look into these issues and ensure integration of conservation and livelihood security. It could do this by explicitly mandating collaborative arrangements between communities and government agencies with help from NGOs, and by putting into place an integrated system of rights and responsibilities, or powers and duties, that would safeguard against misuse by either the community or the government. It may also mandate a national statutory body to examine state and site-specific processes of settlement, and to ensure that any new encroachments are immediately detected and acted upon.

## Forests and MDGs

As is well known, Goal 7 and Target 9 in the Millennium Development Goals relate to environment. These are:

*Goal 7: Ensure environmental sustainability.*

*Target 9: Integrate the principles of sustainable development into country policies and programs, and reverse the loss of environmental resources.*

Government of India has also specified developmental policies and priorities that reflect the concerns expressed in the millennium development goals. These Indian targets have been compiled from the Government of India's Tenth Plan document and India Vision 2020. They reflect India's commitment to Rio Declaration (1992) on Agenda-21 at the UN Conference on Environment and Development, Millennium Declaration at the UN Millennium Summit, Johannesburg Declaration at the World Summit on Sustainable Development (2002), and the Delhi Declaration (2002) at the Eighth Conference of Parties.

Many of the national targets are more ambitious than the MDGs, such as achieving 25 percent forest cover by 2007 and 33 percent by 2012. Looking at the stagnation in the forest cover in the last ten years, this target is not likely to be achieved. In fact, the singular focus on monitoring only tree/ forest cover on forest lands harbouring diverse ecosystems has converted forest management into a tree plantation works programme which has little co-relation with conserving diverse ecosystems, their biodiversity, customary land use or ecosystem based livelihoods.

Some of the key parameters to assess the efficacy of forests management in contributing to ecological security are the crown density and growing stocks, biodiversity, health of forest floor vegetation, soil and soil moisture, hydrology and subsurface recharge, faunal habitats, carbon sinks and sequestration, etc. The State of the Forest Report (SFR) needs to be made more comprehensive to develop, and report on, indicators for measuring health of the natural ecosystems and draw attention to the changes indexed to their natural composition and potential productivity.

## Summing Up

Development is an outcome of efficient institutions rather than the other way around. The focus, therefore, must be shifted from maximising the quantity of development funding to maximising of development outcomes and effectiveness of public service delivery.

Unfortunately state governments have hardly taken any ameliorative action in removing the constraints of policy, and initiating measures on the lines suggested in this paper. Such indifference could be because of many reasons. Firstly, state governments treat JFM as just another programme, which they think can be implemented without making any changes in other sectoral programmes. JFM however requires a paradigm shift and will be successful only when radical changes are introduced in

rights and privileges over forests, policies and laws pertaining to NTFPs, Working Plans, and silvicultural arrangements, etc. Secondly, field officials are willing to entrust protection to the communities, but hesitate in involving them in management and control of government forests. Unless serious efforts are made to trust the communities with control functions, peoples' efforts in protection may not be sustained for long. Thirdly, government resolutions tend to over-prescribe what communities may or may not do, leaving little flexibility for them to adjust to local situation.

Fourthly, the main support to JFM has come so far from environmentalists, academicians, NGOs, and the donors in India. While their support is crucial in documenting the dynamics of community behaviour in different ecological conditions and throwing up of policy issues, the hold of this class of people on instruments of policy formulation is rather weak. In addition to forest bureaucracy which is often hostile to the idea of empowering the people, politicians too have not put communities high on their agenda. They see greater political advantage in espousing schemes which bring individual benefits.

In defense of FD, one could say that in most places communities are weak and devolution may result in further deforestation. Secondly FD's own capacity to discriminate between a weak community, where they should play an interventionist role to build their capacity, and another village where community is capable and FD should withdraw, is also weak. Placing this kind of power with the field administration in government needs all round improvement in governance and trust.

To sum up, effective management by the local people cannot be taken as an automatic outcome of the transfer of resource to them, it is a process that needs support from donors and civil society, at least in the initial stages, so as to build the capacity of the local people. One should also acknowledge that improved livelihoods and enhanced conservation are not necessarily coincidental. Opportunities for win-win solutions can be limited, and in many cases there are trade-offs between the two goals. Therefore, the challenge is to discover such options that complement the two objectives of reducing poverty and conserve natural resources, establish their feasibility through field projects, and upscale them through networking and advocacy.

The Government now is considering a change in the definition of forest, which might facilitate diversion of non-reserved forests for other uses, a move that is being criticised by the civil society as being motivated by the industrial lobby. Ultimately it is not clear which voice will predominate, although many argue that the forest communities are losing out after the liberalisation era began in 1991. They are forced into an uneasy existence with market forces or formal state institutions often leading to loss of livelihoods, land alienation and displacement. In many districts of central India the victims have responded with anger and violence directed against the state.

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## Endnotes

1. According to FSI (1999), cumulative area in the north-eastern states of shifting cultivation (1987 to 1997) was 1.73 m ha.
2. With a low productivity of 0.7 cubic meters per ha, India's forests are not good enough to satisfy both commercial and livelihood needs of the people, and hence it was necessary to give primacy to subsistence needs.
3. Although subsidies have declined since 1988, these are still substantial on bamboo, especially in Maharashtra, AP and Orissa.
4. This practice is more common in eastern India where leaves are an important source of fuel, especially for parboiling rice.

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# Economics Incentives for Forest Management

## Products in Hand or Services in the Bush?

SHARACHCHANDRA LÉLÉ

IT WOULD NOT BE AN exaggeration to say that the major focus of the debate on forest policy in India since the 1980s has been on whether and how to transfer control over forests to local communities. Interestingly, both the proponents of such transfer or decentralisation and its opponents have assumed that rural communities are substantially dependent on forests for incomes and livelihoods. The proponents of greater devolution have cited the substantial evidence of forest dependence that has emerged from various studies to argue that access to common pool resources including forests is vital for rural livelihoods. The assumption that rural communities or "forest-fringe" communities are forest dependent, and hence they are eagerly awaiting the transfer of forest management to their hands has been what I call the 'zero-th' assumption in the series of assumptions on which the concept of Joint Forest Management programme rests (Lélé 2001b). The Tribal Forest Rights Act, in seeking to facilitate individual hamlets taking over rights and responsibilities over individual forest tracts, makes the same assumption—that once their tenure over agricultural land and dwelling space becomes secure, forest-dwelling communities are waiting to take control and start managing 'forests as forests'.[1] Interestingly, the opponents of decentralisation, primarily the forest bureaucracy, have also indirectly supported this proposition

by always citing the 'pressure of population on forests in the form of grazing and firewood collection as the major reason for forest degradation.

Yet, taking a step back and looking at the larger context of the Indian rural economy, one wonders whether this assumption needs to be re-examined. The larger context is that the forest sector's contribution to the national GDP is tiny (1.1 percent in 2001) and declining decade by decade (World Bank 2006, chap.2). The larger context is also that the only heavily forested regions of the country which are not also impoverished, such as the Western Ghats, are those where in many portions forests have been replaced by plantation crops such as coffee, tea and rubber.[2] The still larger context is one of continuous intensification in the agricultural sector, of conversion of rainfed agriculture into canal- and bore-well-irrigated agriculture, thereby leading to increased cropping intensities and shifts towards commercial crops. It is one where rural development programmes almost exclusively focus on intensifying agriculture and also on developing non-land based activities. The even larger context is one of a national economy growing at nine percent per annum, the growth driven almost entirely by the industrial and service sector and leading to rapid urbanisation.

This is not to say that rural communities in forest-fringe areas or 'forest dwellers' (to use a more recent but somewhat fuzzier term) are not forest-dependent (although this is another fuzzy term). Nor is it to argue that the off-site "environmental" benefits of forests are insignificant, whether in economic terms or otherwise. But in a situation where on the one hand the transaction costs of collectively managing forests, even at a local level, are often quite high, and on the other hand, the economic returns from alternative uses of forest lands, such as horticulture or quarrying, are increasing as well, one should ask whether the returns to local communities from managing forests as forests will sufficiently outweigh these transaction and opportunity costs.

At another level, while the JFM programme has lost steam, the question of whether it is worthwhile for some larger aggregate of society to retain 'forests as forests' is cropping up repeatedly, again in an era of rapid 'economic growth' wherein the pressure to convert forests to non-forest (mining, dams, bio-fuel plantations) is rapidly growing. While the Supreme Court has supposedly put a high premium on such conversion by insisting on a payment of "NPV" (net present value) of Rs.5 to Rs.9 lakhs per ha of forest converted (see Anonymous 2005), the dramatic increase in the number of cases and extent of land actually cleared after paying this premium shows that the economic value of alternative uses is often being thought to be higher. In this economistic ambience, many donors, bureaucrats and even civil society people are championing the idea of 'payments for ecosystem services' (PES) as the solution to all problems. The World Bank has set up an experimental Global Forest Carbon Partnership Fund, and is

expecting that $500 million will flow through this fund over the next five years as payments to communities and governments in tropical countries that are willing to take on forest conservation.

It is in this context that I am exploring the question of economic incentives for forest management in India. Where and under what conditions are local communities or their representatives likely to get enough economic returns—whether from tangible products or intangible services—that they will be willing to (and able to) manage "forests as forests"? Is it really the case that the assumptions underpinning the earlier decentralisation paradigm need drastic revision? Is it really possible that we can jump from an unsuccessfully implemented decentralisation programme to a PES programme? I begin by discussing briefly the nature of direct and indirect benefits that society derives from forests, the manner in which they are produced and relate to each other, and the manner in which they are distributed spatially. This helps nuance the idea of 'forests as forests' and better identify the nature of the incentive problem: returns from what, for whom, and why relevant. I then try to summarise what seem to be emerging trends in the answers to these questions for different direct and indirect benefits. Finally, I examine the institutional conditions under which such returns can actually be captured, and the implications for forest policy in the country.

## The Nature of Forest Ecosystem Benefits

Society derives various material and non-material benefits from forests. These may be broadly classified into directly harvestable products and indirectly provided services.[3] The directly harvestable products include:

- Timber and softwood
- Firewood, grass and other grazing material
- Other non-timber forest products (NTFPs) including fruit, nuts, bark, leaves, gum, etc.

The indirect services primarily consist of:

- Watershed services (hydrological regulation and soil conservation)
- Carbon sequestration
- Biodiversity conservation
- Pollination services and micro-climate regulation for agriculture

These products and services are represented in the columns of Table 1.

However, the term 'society derives' hides one key feature, viz., that the benefits are not at all homogenously or uniformly distributed across society, nor are

they only captured (or even capturable) by just forest-dwelling communities. Different communities or individuals derive different parts or types of these benefits. And these communities are at different physical and social distances[4] from the forest. One simple classification of beneficiaries, that may be relevant to the question of forest management, is 'local' versus 'off-site' beneficiaries—those who can engage directly in forest management and those who cannot. Or one may prefer a 3-level classification—local, regional and global—which is the classification used in Table 1, using 3 different colours. Of course, the term 'local' may also hide too much difference. However, we will use a 3-level classification here for illustrative purposes and take up the question of local-level difference in the next section.

**Table 1. Tradeoffs Between Benefits and Beneficiaries from 'Forest' and 'Non-Forest' Ecosystems**

| | | | FOREST ECOSYSTEM PRODUCT or SERVICE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Timber | Fuel-wood | Leaf manure | Fodder | "Minor" Produce | Hydrological regulation | Soil Conser-vation | Bio-diversity | Carbon seques-tered |
| LAND USE TYPE | "Forest" | Dense "natural" forest | 0 | ++ | ++ | 0 | +++ | +++ | +++ | +++ | +++ |
| | | Dense lopped forest | + | +++ | +++ | + | ++ | ++? | ++ | ++ | ++ |
| | | Open tree savanna | 0 | ++ | ++ | ++ | + | +? | ++ | + | + |
| | | Pure grassland | 0 | 0 | 0 | +++ | 0 | +++? | ++ | + | + |
| | | Timber plantation | +++ | + | + | 0 | 0 | + | + | + | +++ |
| | "Non-forest" | *Coffee plantation* | + | + | + | 0 | 0 | ++? | ++? | + | ++ |
| | | *Terraced paddy* | 0 | 0 | 0 | ++ | 0 | +? | +? | ? | 0 |
| | | *Slope (dry crop) cult.* | 0 | 0 | 0 | + | 0 | 0? | - | ? | 0 |
| | | *Barren land* | 0 | 0 | 0 | 0 | 0 | - | - | 0 | 0 |

Note: The dark gray colour corresponds to 'local' beneficiaries; light gray to regional, and medium gray to global. The land use types and colouring pattern above represent a typical situation in the Western Ghats forests of India (see Lélé, 1994 for details). Note also that 'carbon sequestered' is a stock benefit, not the same as the instantaneous rate of carbon sequestration, which would perhaps be highest for timber plantations.

There is some correlation between the location of the beneficiary and the type of benefit, although it is modified by social arrangements. All products are harvested 'locally', i.e., in the forest, and then consumed either locally or elsewhere. Whether local communities benefit from this harvest or not depends on the configuration of forest rights and other arrangements. For instance, most forest-fringe communities in India (excepting some in the north-east) have not had rights over timber, softwood or many of the valuable NTFPs. But, in theory, it would be fairly easy for local communities to be given all timber rights and for them to capture the economic returns from timber sale to regional economies.[5] Similarly, while some services such as pollination, micro-climate regulation and groundwater recharge do benefit the agricultural communities on the forest fringe, a significant portion of the watershed service benefit may flow to off-site beneficiaries, in this case communities living downstream in the river basin. And of course the climate change mitigation benefits of carbon sequestration accrue to the entire global community. The beneficiaries of biodiversity conservation are much more diffuse, because the benefits themselves are fuzzy. The aesthetic and cultural values from biodiversity conservation may be derived by outsiders, but only when they come to the forest, in which case local communities or forest managers may be able to obtain some benefit by extracting a toll.[6] However, the 'existence value' of biodiversity flows to only those who care about it in the first place, which is a fuzzy set of beneficiaries.

Not only do different benefits accrue to different communities, but the benefits are also never simultaneously maximised—there are always tradeoffs. These tradeoffs are illustrated in Table 1.[7] Maximising biodiversity conservation requires reducing or eliminating timber extraction, and maximising fodder production may require reducing tree biodiversity and even firewood availability. Note also that even socalled 'non-forest' landuses usually generate some magnitude of some of the benefits that forests generate. And certainly non-forest landuses generate other subsistence benefits (food from agriculture) or monetary ones (money from golf courses). And since different benefits accrue to different beneficiaries, we come to the crux of the forest management problem: What forest management regimes and indeed what boundary between forest and non-forest uses would be a) workable and b) constitute a fair balance[8] between the needs of different benefits and beneficiaries? (see Lélé and Srinidhi 1998 for an elaboration).

Answering the questions of both workability and fairness has been attempted by economists. While my focus is on the workability question, it is becoming increasingly clear that normative decisions are being taken using an economic calculus. For instance, the Supreme Court's decision to impose NPV payments, although meant to be a charge imposed after a decision about conversion is taken, is in practice amounting to a 'pay and convert' approach (Kohli 2008). Similarly,

states with large forest areas are now making strong demands for higher allocation or special allocation of funds to compensate them for providing ecosystem services to downstream states or the nation at large. Understanding the logic and limits of both types of arguments is therefore necessary. This will require us to make a detour into the concepts of economic value and incentives and how they may relate to forest policy and management today.

## Conceptualising Economic 'Value' and 'Incentives'

In the previous section, we talked about some broad variations in magnitudes of benefits without invoking monetary units per se. Why does the discussion often veer towards thinking of these benefits in economic terms? What is to be gained by imposing an economic lens? In the absence of an economic denominator, it is of course hard to see which forest management regime is 'superior', i.e., socially more desirable, because units of fuelwood cannot be compared with units of fodder, NTFPs or hydrological regulation. Economics provides a way of adding and subtracting, of making 'on the whole'-type arguments.

Whether imposing such a lens is empirically reasonable and normatively acceptable is of course a matter of debate. But even within economics, there is not one economic lens but at least two different lenses (or two shades of the same tint): one of micro-economic analysis and one of welfare economics. And these relate to two different ways of approaching the forest problem. In one approach, the idea is to understand what drives the decisions of forest users. It essentially argues that forest users will do what is economically beneficial for them, which means that they will add the economic returns from different benefits that accrue to them (columns of the same colour in Table 1) to come up the aggregate returns from each landuse regime, and then compare across regimes to choose the one most economically beneficial to them. This is a descriptive approach, which, however, has implications for forest management policy: if local forest users are to have a greater say in how the forest is to be used, then they will choose those uses that most benefit themselves, i.e., maximise local benefits—e.g., either by choosing forest management regimes that prioritise firewood and grazing or by converting the landuse to a more beneficial type such as horticulture or agriculture (or quarrying).[9] If, as the matrix suggests, there is divergence or mismatch between the interests of local and offsite beneficiaries, then offsite benefits will reduce (the workability question). Or, to put it simply, if people are not sufficiently forest dependent, they will prefer to manage the land for non-forest purposes. If this seen as societally unacceptable (the fairness question), then society would have to figure out ways in which the incentives for managing the land as forests and

within that for managing it in ways that generate significant offsite benefits can be increased. That is, ways in which offsite benefits of forests can be 'internalised' by the local beneficiaries. From this emerges the argument for both increasing the local users' share in forest produce (e.g., granting them 50 percent share in returns from timber—an approach adopted under the Joint Forest Management programme)—and for setting up markets in which local forest users can 'sell' ecosystem services to offsite beneficiaries (an approach being advocated more recently under the acronym PES or "payments for ecosystem services.")

In the second approach, the idea is compare benefits to 'society at large' from different ways of managing the forest (and of setting up the forest boundary), which requires aggregation across all columns. This means first estimating the 'value' of several indirect, sometimes intangible and fuzzy services, and then aggregation across very different beneficiary groups, a risky proposition at best.[10] In this case, there is a much stronger prescriptive element, a position that societies *should* make decisions about forest conversion and management using such aggregate economic valuation. This aggregate economic valuation approach also underpins the Supreme Court's idea of imposing some large Net Present Value (NPV) charge when forest is converted to non-forest and the upstream states' demand for compensation from downstream states for ecosystem services provided (the last 4 columns in the matrix). There is no discussion here about whether the state (to whom the compensation goes in both cases) is an appropriate representative of local forest users who actually face the opportunity cost of not managing forest lands in their own interest, how the compensation will actually reach the local user, or whether such monetary compensation should be equivalent to the opportunity cost incurred or the benefits provided. This suggests that 'returns' and 'value' cannot be separated from the institutional context, a point that we will return to below.

## Tangible Products: Declining Dependence or Under-Estimation?

The earlier discussions, up to and including the discussion on structuring JFM, focused on the direct benefits, i.e., tangible forest products that local communities derive from forests and other common lands. Since the publication of Jodha's pathbreaking empirical studies on the role and condition of Common Property Land Resources (CPLRs) in semi-arid India (Jodha 1986; Jodha 1990), a large number of studies have tried to assess the level of direct material 'dependence' that rural communities have forests and other common lands (Beck and Ghosh 2000; Chopra and Dasgupta 2008; Menon and Vadivelu 2006; Nadkarni *et al.* 1989; Narain *et al.* 2008, Gupta, and many others; Reddy and Chakra-

varty 1999).[11] The common message of these studies was that collection of produce from CPLRs including forest lands contributed significantly to the imputed incomes of rural households, the contribution ranging from 10 to 40 percent depending largely on the agro-ecological context (with the contribution being greater in forested areas).[12]

At the same time, most of these studies also pointed out that there was a lot of variation in forest dependence across economic classes within the village. It was generally found that the relative contribution to imputed income was higher for poorer households, but the absolute value of produce collected from CPLRs may or may not vary much by class. Much depended upon the manner in which access to CPLRs is given—for instance, in the Western Ghats many portions of forested lands are (by law) under individual control of the richer or landed households. Much also depended upon the kinds of rights ceded in the CPLRs by the state and the complementarity between the produce harvested and the returns from agriculture (e.g. Nadkarni *et al.* 1989).

Nevertheless, the assumption of a generally high forest dependence in forested areas and the particularly high dependence of the poor has been the bedrock of the feasibility and also desirability argument for decentralised management. If the poor are more dependent on forests, then surely regenerating forests will be not only environmentally beneficial but also a pro-poor measure? And surely, these poor in particular and rural communities in general would participate enthusiastically in this regeneration and management?[13]

In recent years, however, some research is beginning to throw doubt on this easy assumption and inference. First, the way in which past studies have imputed economic value to forest products that are not marketed that might have led to overestimation.[14] Second, empirical evidence from decentralised management as actually implemented shows a limited increase in incomes in many places (Ravindranath *et al.* 2000).

Third, the dependence of local communities on forests and other common lands seems to be declining as a result of conventional development processes. The empirical evidence for such a decline is as yet sketchy, partly due to differences in methods. Jodha himself highlighted the decline in dependence from the 1950s to 1980s, although he emphasized the 'push' effect of declining CPLRs as the main reason. However, Kiran Kumar *et al.* (2008) compared dependence in a village with canal irrigation with a village without, and showed that CPLR dependence was much higher in the latter. Lélé (2001a) shows that in the Western Ghats of Karnataka, dependence on forests is much lower where large tracts of forests have been converted into coffee and other plantations. The NSSO 54th round data of 1998 show shifts away from public and common lands to dependence on resources from privately owned but seasonally open-access lands when

one goes from less agriculturally developed regions to regions like Punjab and Haryana. Sarkar has pointed to the shift to LPG for cooking even in the heavily forest-dependent villages of the middle Himalaya (Sarkar 2008). Field observations indicate a lack of interest in managing common lands in the heavily developed agricultural tracts. The intuitive explanation for these observations is fairly straightforward. Conventional agricultural development includes the introduction of irrigation, fertilizers, high-yielding varieties, introduction of cross-breed cows and if possible mechanisation. This leads to intensification of cropping, increased availability of crop residue for grazing and/or fuel on the one hand and the reduction in the livestock population and especially in the livestock involved in open grazing. In extreme cases, mining or quarrying may give cash incomes that allow the purchase of products or services that were earlier collected or obtained from the forest. Menon and Lobo have highlighted a shift in labour to mining and quarrying, which destroys common lands but provides more lucrative wage opportunities (Menon and Lobo 2008).

In the words of economists, many forest products may be 'inferior goods'—goods that will get consumed when incomes are low (and so alternatives are unaffordable) but which are abandoned as soon as incomes rise. Certainly it appears that firewood, grazed biomass and perhaps even leaf manure are in that category today. Their collection is labour intensive and seen as giving low returns. In the absence of technologies that can simplify their use or increase their use efficiency, and in the presence of policies such as LPG subsidies, electricity subsidies, support for 'modern' animal husbandry and fertilizer subsidies, these traditional products are abandoned by the users at the first opportunity. As Byron and Arnold say, "activities based on low-value, labor-intensive forest products and processes will usually decline, while those based on higher-valued products in demand in the markets should increase (Byron and Arnold 1999)."

Fourth, related to the characteristic of high-volume but low-value goods such as firewood and other features of CPLRs, there is an emerging argument that while forests can function as safety nets and help in poverty avoidance or mitigation, they cannot form the basis for poverty elimination, i.e., for *lifting* people out of poverty "by functioning as a source of savings, investment, accumulation, asset building, and lasting [and substantial] increases in income and well-being" (Sunderlin *et al.* 2005). The markets for products that can be harvested in large quantities over large areas are limited while the high-value products may be generally scarce and patchy in their distribution. "If external constraints were removed, people would prefer other activities over NTFP collection" is the argument (Belcher *et al.* 2005).

A fifth argument has been with us for a while, that there is too much variation in both the type and extent of dependence across different groups within

most rural communities, and this 'heterogeneity' in dependence will increase divergence in objectives and increase the transaction costs of collective management. Paradoxically, while the the poor are more dependent than the rich, they also have much greater constraints on their time and may not be able to spare the time to get involved in day-to-day management. Most 'involvement' of the poor that is observed in JFM programmes so far has been for the sake of wage labour opportunities that the heavily-funded programmes have generated temporarily.

Finally, a sixth argument amplifies this heterogeneity effect, coupling it with questions of power. As long as forests are unproductive, collection involves hard labour and generates low-value goods, the elite in the village are happy to be non-dependent on the forest. But the moment forests regenerate, collection costs go down, and high-value goods are accessible (for instance by getting a right to timber), the elite declare themselves to be 'forest-dependent', having as much right to get involved in JFM committees as others, and in doing so, skim off the profits (the 'resource rent') leaving the forest-dependent labourers in the same situation as before. Several examples of this were documented in the joint forest management programme in Karnataka. In Uttara Kannada district of the Western Ghats, a VFC president declared that the marketing of *Garcinia gummi-gutta*, which had been hitherto handled individually by the NTFP collectors, must now happen through the VFC, and in the process he skimmed off all the profits. In two 'successful JFM' villages in the eastern plains of Karnataka, the village elite controlled the VFC and simply took a share in the royalties from auctioning the NTFP collection rights to outsiders, leaving the NTFP collectors in their own village in the same condition as before. In another even more applauded village, the forest department's approach of using older eucalyptus plantations has incentives resulted in the fuelwood headloading families having to leave the village (see Lélé *et al*. 2005 for details).

Is it then time to abandon the notion of local communities managing forests because of their dependence on forest produce? One may argue that the question is ill-posed because one could say that local communities have a right to manage forests that they are surrounded by, and the decision to give them the power to manage these forests should not be contingent on whether they are dependent or not. Nevertheless, it is likely they will not take on the task of forest management until they can see forests as drivers of development. And certainly statements like "communities can increase forest incomes five-fold by 2020 – from under Rs 200,000 each year to more than Rs 1 million for a typical community … using existing technology and management and without compromising forest sustainability" (World Bank 2006) are naïve or simplistic. But to conclude that forests cannot be potential drivers of rural development might be premature, not so much because current numbers are right or wrong, but because, as Norgaard

(1989) pointed out, valuation based on prices that obtain under the current distribution of property rights is akin to driving by looking into the rear-view mirror. Estimates of how much sustainable income forests can generate under decentralization cannot be based upon prices and conditions obtained under either pre-decentralization or faulty or incomplete decentralization. A re-examination of the evidence indicates several problems.

First, the evidence from the 1980s and early 1990s usually corresponds to situations where the CPLRs has been open-access and subject to degrading pressure for several decades, and therefore quite far from producing at its maximum. Second, and more important, even under JFM or other such policies,[15] the rights[16] to the economically most valuable forest products—timber, softwood, *tendu* leaf, bamboo—have never been clearly handed over to local communities. In most JFM situations, only open canopy forests or grazing lands were taken up for tree planting, thereby imposing heavy costs on graziers and firewood collectors, and these plantations have not matured yet, and in any case the entire process of determining when and what to harvest and then actually harvesting and selling it has been controlled and conducted by the forest departments at their own discretion (Sundar *et al.* 2001; Verma 2008). Even in the best case of West Bengal, the share in the final harvest of sal produce has not been transferred to the forest protection committees in many cases (Banerjee 2007). Rights transferred on paper are thus not translated into real incomes. Many ex-ante studies calculated that the returns from JFM would be substantial (e.g., Hill and Shields 1998), but their calculations have gone awry mainly because JFM never got implemented in the way they visualised.

The case of NTFPs is similar.[17] The most valuable NTFPs—*tendu* leaf, sal seed, *mahua* and bamboo—were supposedly 'nationalised' to protect the interests of the (mostly tribal) collectors, but in practice this protected the revenue interests of the states. Even the relatively radical NTFP policy introduced recently in Orissa leaves the most valuable produce (*tendu* leaf) outside its purview. Even in the case of products to which full rights were conceded, the institutional arrangements through which these rights could be exercised and incomes realized have been dismal failures. Cooperative societies supposedly set up to improve the prices that tribal collectors get ended up becoming grazing grounds for government officials (Lélé and Rao 1996). The movement towards reducing the margins retained by the state or its various agencies and intermediary corporations has been slow and haphazard.

The high potential for increased income from forest products can be seen from the rare cases where rights are unambiguously and substantially transferred and associated institutions have functioned to some extent. For instance, the Soligas of B.R.Hills of Karnataka had (until recently) exclusive NTFP harvesting

rights to large patches of forest, and these NTFPs have to be sold through their own co-operative societies called LAMPS. In one LAMPS, when the community could be mobilised and pressure brought upon its office-bearers to conduct auctions transparently and manage accounts honestly, the returns to Soliga NTFP collectors were typically 50 percent higher than when the society is malfunctioning—with no change in access conditions, technologies of processing, or market conditions (Lélé *et al*. 2004). Another example is the traditional individually controlled woodlots in coastal Karnataka, which are playing a 'banking' function while also providing inputs to agriculture (Srinidhi and Lélé 1999). A third larger-scale but more controversial example is of course of the timber rights that various villages, clans and individuals in the north-eastern states enjoyed until recently. While there was mixed evidence as to the long-term sustainability of the logging regimes followed, it is clear that the returns had been very substantial for quite some time (Nathan 2000). Instead of improving the regulation for sustainability and offsite impacts, the Supreme Court's 1996 decision to clamp down completely on logging has had serious livelihood impacts (Nongbri 2001) and subsequent relaxation through centrally approved working plans has not really addressed the core issues.

These cases of success as well as the failures cited above also highlight the almost inextricable link between economics and institutions that most economic analyses tend to ignore. Unambiguous transfer of rights to all products, transparent and hands-off setting of sustainability regulations (rather than micro-managing what villagers do on a day-to-day basis as JFM currently does), clear and statutorily protected tenure boundaries after an open and sensitive enquiry into pre-existing customary rights and needs, clear separation of the regulatory role of the forest department from its role as policing support and as technical support, separation of the regulatory functions from the profit-making functions of institutions within the community itself, and strictly supportive roles for the state in product marketing constitute some of the pre-conditions for an honest trial for produce-based forestry. The STOFDA 2006 is an important step in this direction in that it addresses some basic issues of tenure security and identification of forests that communities are willing to manage, but much more needs to be done (Joint Committee 2010).

## Ecosystem Services: Goldrush or Pipedream?

In a workshop organised by the Indian Institute of Public Administration in 1997,[18] Madhav Gadgil, one of the doyens of people-oriented forest ecology in India, made a presentation in which he argued that we were entering a new era

in terms of the relationship between local communities and biodiversity conservation. Whereas in the past rural communities had conserved biodiversity for mostly cultural reasons, including notions of 'sacredness', the modern era had shifted to a more materialistic perspective, and therefore rural communities would conserve biodiversity only if it made economic sense for them to do so. On the basis of this proposition, and further assuming that economic returns to these communities from the direct use of biodiverse ecosystems around them would be insufficient, Gadgil argued for setting up a system of fiscal transfers to rural communities in proportion to the biodiversity they conserve. This proposal he had already made in an article in EPW in 1994 itself (Gadgil and Rao 1994). To the best of my knowledge, this constitutes the first proposal in India for what is now a major buzzword: PES.

While Gadgil proposed payments for biodiversity conservation, recent discussions have focused more on payments for watershed services and carbon sequestration. PES around carbon sequestration seems to be likely to materialise very soon in some countries, as mentioned earlier, and are being attempted on an experimental basis in India as well (e.g., Satyanarayana 2004). The advantage PES for carbon has over the other services is that, relatively speaking, the 'service delivered' is well-defined, physically easy to measure and has a huge market and a relatively clear price (with Western countries hoping to outsource their emission reductions). Many analysts are championing its cause, hoping that it will be the silver bullet to the problems of environmental conservation and rural development at the same time.[19]

But an institutional analysis of carbon-based PES shows significant weaknesses. First, while the increase in carbon storage from forest growth is a relatively well understood phenomenon, the signing, monitoring and enforcement of any contracts between offsite 'buyers' and local 'suppliers' will involve huge costs that might make the proposition unattractive in the end. Second, institutional economics tells us that the opportunity cost as measured through surveys of 'what people harvest and what market value it has today' often significantly lower than 'what people are willing to accept to give it up' (Vatn 2005). The reasons have to do with the institutional setting again. In the former case people are collecting produce largely on sufferance. In the latter case, they are given the right of refusal, in this case refusal to stop harvesting, which is a stronger rights regime.

Third, and most importantly, markets only work when property rights are well defined and secure. The major problem in the Indian forest sector has been *precisely* that (as discussed in the previous section) the rights of local communities have not been well-defined or secure. The failure of JFM has not been only due to its low income potential but also, as mentioned above, because it does not adequately address the core issue of forest rights and institutional arrangements. Fourth, as the matrix

in Table 1 shows, there is a serious ecological divergence between the permanent sequestration of carbon and the production and use of biomass for firewood, grazing, fodder, and manure. And as mentioned earlier, there are significant differences within local communities regarding dependence on these products, with the local elite much less dependent than the poor or the women. Even if the poor get compensated in cash for not touching the sequestered carbon, the question remains as to what will they use for fuel? Will they buy LPG with that cash, thereby nullifying the carbon benefits of forest-based sequestration? Much more likely in a highly stratified Indian rural community is the scenario where the elite coerce the poor to stop using firewood and corner much of the cash that comes to the village, thereby leaving the poor even worse off, as has precisely happened in JFM.

The case of watershed services is even more complicated, because the physical relationship between different types of forest management upstream and the range of 'watershed services' downstream is itself much more poorly understood than that between forest growth and carbon sequestration (see question marks in Table 1). Indeed, there is a major and as yet unresolved debate in the forest hydrology literature as to whether the presence of forests in the catchment increases or reduces water availability downstream.[20] Our attempt to understand this question indicated that the impact is very context-, technology- and institution-specific. In one case, upstream forest regeneration would reduce inflows into irrigation tanks immediately downstream of the catchment, reducing the probability of irrigated summer paddy cultivation significantly and therefore reduction in agricultural incomes and employment. This is contrary to the conventional wisdom of forests providing *positive* hydrological services to (all) downstream communities. Similarly, the flood control and siltation avoidance benefits that forests in the Himalayas were assumed to provide to people living in the Gangetic floodplains have now been questioned extensively (CSE 1992). Of course, specific cases such as of protection of forests in reservoir catchments benefiting water quality for Simla town water users (Vikram Dayal, personal communication) can certainly be identified, but generalisations are not possible.[21]

Second, unlike the case of carbon sequestration, where the beneficiaries are global and the actual 'buyers' are the higher-income countries who cannot be said to have had any historical right to pollute the atmosphere, the potential 'buyers' in the watershed services case are different. They are necessarily going to be based in South Asia, in downstream rural communities whose incomes may not be much higher than those of the potential recipients of the payments and/or who may argue that they have a historical right to the flows in the stream or river and cannot be now asked to pay for these flows. The problem with the PES approach is that it bypasses questions of what is the distribution of rights between upstream and downstream or local and offsite beneficiaries of a service,

and implicitly takes a position that 'those who are close to the forest are effectively the owners'. This may come as a refreshing anti-dote to the longstanding position that denies the forest rights of local communities altogether, but swinging the pendulum unthinkingly to the other extreme is unlikely to be societally acceptable or fair. Water rights are a historically complicated and controversial subject in India, and an ad-hoc approach to inserting PES for watershed services will only add to the mess.

The case of biodiversity conservation 'service' is even more complicated in some ways but perhaps amenable to some alternative approaches as well. The approach that Gadgil proposed involved payments that would come from the state, in return for the public good called biodiversity. The payments were supposed to be in proportion to the incremental amount of biodiversity conserved. But what is the economic value to wider society from biodiversity or wildlife conservation in a national park? This is not something that can really be estimated, the enormous attempts of environmental economists notwithstanding. One may argue that a fully market-based approach does not require us to know *a priori* what the value is: the value will emerge in the market. But as in all other cases, unless local communities have some reliable estimates or guarantees, they will not invest in the difficult and lengthy task of biodiversity conservation. And again, for prices to emerge in a market, property rights have to be well-defined. So do local communities 'own' the biodiversity in the forests around them? If so, can they destroy that diversity if the payments are not enough? Or the communities there on sufferance, and the payment is more like a token donation to a potential thief? What is to prevent them from taking the donation and then continuing to destroy wildlife (if that is what they wanted to do in the first place)? If this means that policing is still required, then how do we address the fact that policing has historically been of limited effectiveness in wildlife areas? That the Sariska forests were intact but the tigers were missing? All the monitoring issues that are already rampant in protected area management come to the fore here. Not surprisingly, there do not seem to be any real payment-based approaches to biodiversity conservation being tested in the field in India. What we have instead are 'compensation' or 'financial subsidy' type approaches that try in various ways to reduce the hardship of those displaced by protected areas, including the World Bank's so-called "Eco-development" project. None of these projects have made much headway, again partly because they do not manage to deliver even the limited compensation into the hands of the neediest, nor provide long-term improvements in livelihoods.

Interestingly, an alternative approach that focuses on the more tangible manifestation of wildlife and biodiversity is the granting of shares in revenues from tourism. In the case of Nepal, as with community forestry, there is legislatively

mandated sharing of tourism revenues. While the results are far from perfect (see Straede and Helles 2000 for the case of Royal Chitwan National Park), it is truly puzzling why no attempts at revenue sharing have been made in India. Rather than removing and rehabilitating villagers from the protected area back into some agricultural context, why were the villagers not given the right to control and manage eco-tourism? Why is it that tourism is either managed by the state agencies or large businessmen and entrepreneurs from neighbouring towns, with local households simply providing wage labour in both cases? This goes back to the highly differentiated social context and the challenge that is poses to any institutional innovation. Without denying this challenge, one can argue that tourism is at least much more tangible an activity and a 'buyer' than receiving grants from an distant central government for outputs that cannot be measured.

## CAMPA: Return to the Dark Ages

Over the past two and a half decades, while activists, academics and donors were analysing and debating different approaches to decentralised management of forests and more recently as the usefulness of PES as a way of adding to the economic stake of local communities, the Supreme Court and the forest bureaucracy have gone in a rather different direction. They have focused on the fiscal arrangements for forestry, and have come up with a series of measures that are mind-boggling in their scope but also their flimsy basis and blissful ignorance of the ongoing debates. The bureaucracy was always sceptical of JFM and wanted to revert to its simplistic, heavily-funded 'afforestation or tree planting' model of forestry. It therefore continued to draw up "National Forestry Action Plans" that are long on spending and short on community involvement and completely silent on tenurial issues. Subsequently, they have paid lip-service to community involvement by setting up Forest Development Agencies as supposedly federations of the JFM committees, through which funds will be channelled for tree planting.

In parallel, the Supreme Court in its wisdom decided to provide an economistic twist to it the Forest Conservation Act. When forest is converted to non-forest through the procedures laid down in this Act, the applicant was required to pay for 'compensatory afforestation'. The Court decided that this was inadequate and that the applicant must pay the 'full net present value (NPV)' of the forest. In the process, the Court did several things. First, it effectively pushed a governance decision (about the broad question of whether converting forests into non-forests in a particular location was societally acceptable) into more of an economic decision. It again did not recognise that forests have multiple stakeholders at different scales, that the local stakeholders have historically been given short shrift

while the loss of forests often hurts them the most, that the lack of clearly defined rights for different stakeholders and ways of democratically balancing between them has been the core problem of forestry in India, and specifically the inability of a local community to say no to forest conversion applications received from mining and industry was the bigger problem with the FCA, not the inadequate amount paid for compensatory afforestation.

Second, in laying down a tentative value of 5-9 lakh Rs/ha as the NPV that was supposedly derived from some study in Himachal Pradesh, it not only accepted the welfare economic paradigm mentioned in section 0 wherein 'values' can be measured by some external, objective agency, but also swallowed the deficient economics underpinning these studies and the flawed concept of "Total Economic Value." The notion of total economic value of forests floated by economists (I think initially as a pedagogic device) inadvertently suggests that the different values (direct use values, indirect use values, existence values) can be added up to get the total value. But as the matrix in Table 1 shows, the relationships between the values or benefits are not all complementary. When certain kinds of benefits increase, others often decrease. Unfortunately, the study referred to by the Court[22] have added up all values,[23] made strong assumptions about current use patterns being sustainable, used market prices to impute value of firewood and grazing in remote areas, and most problematic of all, used a completely erroneous value of Rs. 5.2 lakh/ha of forest cover as the annual value of watershed services, to end up with a total annual economic value of Rs.7.43 lakh/ha.[24]

Third, by asking that these payments be deposited into a central fund to be used only for afforestation, the Court strengthened the idea that the 'loss' that occurs existing model of forestry as a simple tree-planting oriented activity that just requires money to be thrown at it. While clearly there are areas which require investment in order to regenerate, it is also clear that unless they are coupled with robust local institutions that will plan, protect and use the regenerated forest in the long run, the investments will be little more than an employment programme and a source of corruption, like most other government schemes.

After setting a tentative figure of Rs. 5-9 lakh/ha, the Court did set up a committee headed by Kanchan Chopra to recommend better figures. The Chopra committee's report (Chopra *et al.* 2006) tried to make several improvements in the methodology. It made major improvements to the figures used, recommended changing the relative proportions of different benefits depending upon the type of forest, and further recommended that the NPV collected should be split into three funds (Central, state and local) to compensate losses to different levels of stakeholders. Unfortunately, the Court in its wisdom rejected at least two key recommendations—the variations by forest type and the need for a local fund. And the Court asked the central government to then put its orders into law, to which

the government has responded alacritously by drafting the CAMPA (Compensatory Afforestsation Fund Management and Planning Authority) bill that will further strengthen the conventional model of forestry. The 11th Finance Commission has endorsed the idea of transfer payments to states with higher forest areas, the funds for CAMPA (unspent amounts from the compensatory afforestation and NPV charges) have already crossed Rs.10,000 crores, and the government is hoping to scale this up to Rs.25,000 crores by linking up with EU carbon markets (Nitin Sethi, pers.comm.), and route all the money through the FDAs into a massive "GREEN INDIA" programme. After two and a half decades of pushing for decentralisation, of giving incentives to local communities, of trying to come to terms with the multiplicity of meanings of 'forest', it appears that we have now come a full circle.

## Concluding Remarks

Debates on the economics of forestry in India have moved in different and sometimes disconnected ways. After decades of financial analysis of plantations and forest-based industries, the focus shifted in the 1990s to the question of tangible economic returns for communities participating in decentralised forest management programmes. When the programmes stagnated and the returns proved elusive, policy wonks proposed PES from carbon and watershed services as the panacea. In the meantime, with the Supreme Court getting involved in major decisions about forest management and conversion, we see a return to a more centralised and fiscal approach that is oblivious to the previous debates. The two debates are linked only by the mercenary use by the state of institutions set up in the decentralised forest management as simply channels to spend public funds on tree planting.

As long as the focus is simply on pouring money into tree pits and nurseries, one may as well forget the question of incentives and go home. At some point, however, the debate will come back to a more meaningful level: whether it is because forest rights committees set up under the STOFDA demand greater economic rights or whether donors try to link carbon funds with rural poverty alleviation objectives. At that point, the question of economic returns will return to the fore. When it does, I would argue that focusing on increasing incomes from tangible forest products might be more fruitful an approach than focusing on intangible and ambiguous ecosystem services and their 'markets'. I have also tried to demonstrate above both approaches have to any way confront the subtleties *within* the simple notions of "forests" and "forest-dependent communities" and also engage with the question of institutional arrangements that critically shape

the very realization and the distribution of benefits—whether from products or from services. Clarifying and re-distributing forest tenure without radical changes in the institutional arrangements will mean that national, economic incentives and investments will get misdirected and misappropriated.

At another level, the dilemma seems to be whether forest management should be thought of as a question of livelihood enhancement or enhancing net economic welfare, or one of environmental governance. Those subscribing to the former focus on market development, prices, costs, etc. Those subscribing to the latter focus on the distribution of rights between beneficiaries, the assignment of responsibilities and environmental and social conditionalities, etc. Perhaps the answer is that it is not either/or: it is the development of equitable and sustainable livelihoods within a wider setting of environmentally sound and fair governance, and an even wider belief in an environmentally and socially just society. Unless such visions take root and permeate our institutions, economic calculations and valuations will not translate into meaningful change on the ground—for ecologies or livelihoods.

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## Endnotes

1. By 'forests as forests', I mean a range of land management options that stop short of intensive cultivation, that are sustainable in the sense of being long-lasting, and that provide some minimum offsite environmental services (see the next section).
2. Interestingly, much of these plantation areas continue to be clubbed under 'forest cover' in the Forest Survey of India's State of Forest reports.
3. I stick to a more conventional economic separation of products and services, avoiding the nomenclature of the Millennium Ecosystem Assessment wherein all benefits are termed as ecosystem "services."
4. Where social distance refers to the degree of access or lack of it, in spite of physical proximity.
5. What fraction of the 'final' price is actually captured by the rights-holder is always a complicated question depending upon the nature of the market, the product, the entrepreneurial skills of the rights-holders, and so on.
6. Because tourism is a 'toll' good, to use a term from public economics (Fisher 1981).
7. The signs in the table are only indicative and the question marks highlight areas of ambiguity, which we will discuss in the following sections.
8. This is not to say that ensuring sustainability of a particular forest management regime (row in the matrix), say a timber plantation, is a trivial task. But much of the battle over management appears to be about whether the objective should be timber (as the forest department may want) or grazing (that a local community may want) and therefore over the choice of landuse itself.
9. Typically, in decentralised forest management initiatives, local communities are not given the right to change the landuse, but if the opportunity cost is too high, this may result in very high pressures for encroachment, or loss of interest, undermining the community management setup.
10. This is not to say that the micro-economic approach involves no aggregation. In theory, micro-economics treats each individual or household as separate and seeks to characterise their individual assessments or behaviour. In practice, it often ends up making statements about differences across reasonably discernible groups: landless versus landed, men versus women, pastoral versus farming households, and so on. But I would argue that this level of aggregation is inevitable in any approach, economics or otherwise. On the other hand, aggregating across very different and distant beneficiaries involves a qualitatively different aggregation.
11. The National Sample Survey Organization even devoted its 54th round to assessing the role of CPLRs.
12. The only result which is at variance with the claim of 'generally significant dependence' (say >10 percent) is the large-sample NSSO study, which puts

the contribution of CPLRs at only 3 percent. Menon and Vadivelu (2006) point out that the NSSO data do not include the contribution of grazing (as against fodder collection). But this may not add more than 1 per cent point or so, leaving the large gap until 10 percent unexplained.

13. For instance, Lise (2000, factors influencing) shows that participation in JFM is higher in families that are more forest dependent.
14. Many studies simply use market prices of the forest product as the marginal value of the product to the collecting household. This method overestimates the value in two ways. First, it ignores the opportunity cost of labour for harvesting and transport to the market, which may be low in rural areas but not zero (Godoy *et al.* 1993). Second, it assumes that the household would have purchased the product from the market at that price, which is often not the case.
15. Such as the socalled 'tribal-oriented' NTFP policies of the last several decades or even the more radical recent Orissa NTFP policy (RCDC 2006).
16. Note that we mean harvesting rights along with conditionalities such as sustainable management.
17. See Lélé *et al.* (2010) for details.
18. "UNESCO Regional Workshop on Community-based Conservation: Policy and Practice," held on February 9-11, 1997, New Delhi
19. Our calculations in the case of B.R.Hills (Lélé *et al.* 2001) also indicated that the magnitude of climate change mitigation benefits, if valued at the price in carbon markets, would swamp the opportunity cost of grazing, firewood and NTFPs. But this analysis did not factor in the transaction costs of actually making the transfer payments, because it was more focused on identifying the benefit-cost distribution per se.
20. See Bonell and Bruijnzeel (2004) and also Krishnaswamy *et al.* (2006).
21. Also, the costs of measuring actually what additional hydrological service was received when upstream vegetation was regenerated are as yet quite high. Right now, downstream users do not even have basic data on flows in their streams and rivers, as these data are either not collected, or collected and not analysed and not shared with the public (Lélé *et al.* 2007).
22. The main source of the Court's figures appears to have been a study on the Himachal Pradesh Forest sector commissioned by IIED (Verma 2000).
23. For instance, the study assumes that the standing stock of the forest is increasing when calculating carbon sequestration, but also assumes that a large amount is harvested and used as firewood and timber.
24. Note that this is an annual value, for which the NPV, at a discount rate of 5 percent, would amount to much more. It is not clear how the Court arrived at 5-9 lakhs as the NPV—it may be that the Court did not distinguish between per year and discounted NPV.

7

# Globalization and its Implications for the Indian Forest Sector

DON G. ROBERTS
CIBC World Markets, Inc.

THE OBJECTIVE OF THIS PAPER is to examine the following six issues:

1. Shift in the global footprint of growth in the forest products industry;
2. Globalization of environmental standards;
3. Globalization of fibre markets;
4. Globalization of trade in forest products;
5. Globalization of capital markets; and
6. Outlook and issues in the Indian forest products industry.

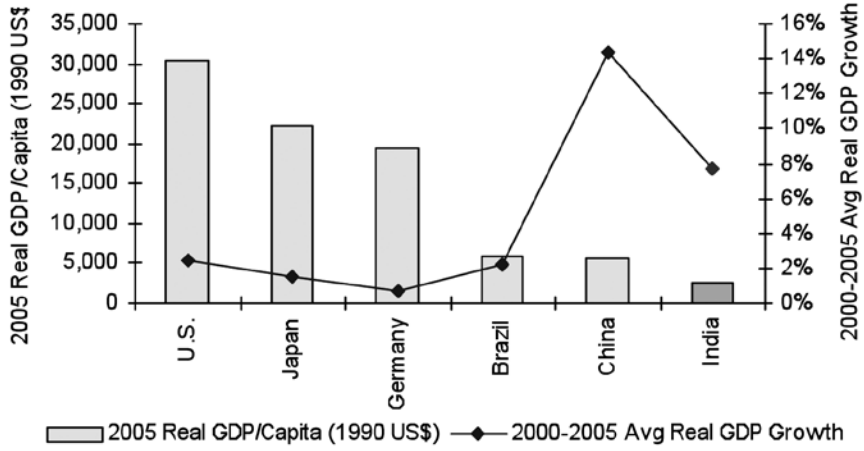
The recurring theme is globalization, and the forces that will shape the Indian forest sector between now and 2020.

## Shift in Global Growth

As illustrated in Exhibit 1, the fastest economic growth is generally occurring in the countries with the lowest GDP/capita. Although there will be meaningful cyclical variation, we expect this general relationship to continue over the next 10-15 years.

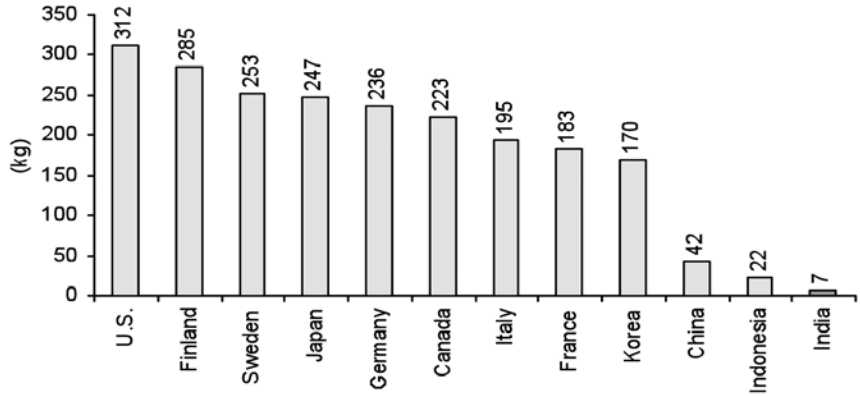
Despite its significant middle class, India's per capita consumption of paper and paperboard remains among the lowest of the major countries in the world. It registered only 7 kg as recently as of 2004. By comparison, Indonesia's per capita consumption is 3 times larger, China's is 6 times larger, and the United States' is 45 times larger. (See Exhibit 2) However, over just the three year period from 2004 to 2007, India's per capita consumption of paper & paperboard grew to 8.3 kg – an increase of 18 percent.

**Exhibit 1. Real GDP/Capita & Avg. Real GDP Growth**




Source: The Conference Board and Gronigen Growth and Develpment Centre, Total Economy Database, January 2007

**Exhibit 2. Per Capita Consumption of Paper & Board (2004)**

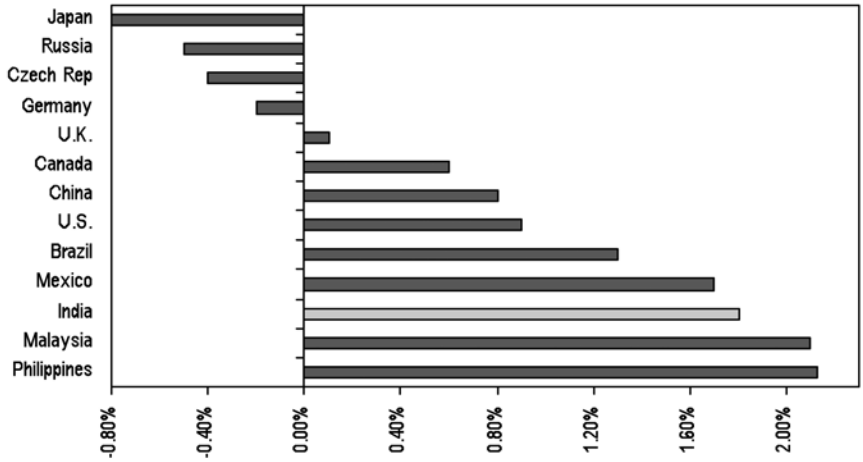



Source: Pulp & Paper Intl.

Given the expected economic growth in India and low starting base, it is possible to generate very significant expected increases in the country's paper and paperboard consumption over the next decade. Even if India's per capita consumption just rose to roughly the current level in China, its absolute consumption would rise by approximately 35 million tons. To put this increase into context, it represents roughly a five-fold increase over the current level.

It is also possible to argue that India's per capita growth in consumption of paper & paperboard will actually grow faster than that in neighboring China. One reason for this is that over the next decade it is estimated that the rate of growth in India's working age population will be roughly double the rate experienced in China. (See Exhibit 3)

**Exhibit 3. Projected Annual Growth ( percent) of Working Age Population Between 2003–2005**



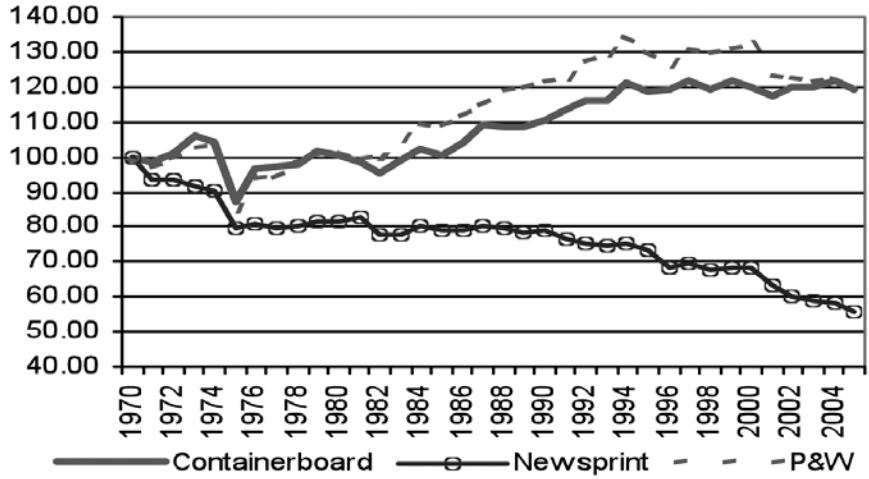

Source: McKinsey & Co., Emerging Global Labor Market.

However, in assessing the future growth in consumption, it is important to not simply extrapolate historical trends. As indicated in Exhibit 4, at the global level the "intensity of consumption" of paper consumption has been changing over time. For example,

- The Consumption of Newsprint per unit of Real GDP has fallen by roughly one-half since 1970.
- After increasing through the 1980s, the Consumption of Printing & Writing Papers per unit of Real GDP plateaued through much of the 1990s before starting to decline in 2000.

- The Consumption of Containerboard per unit of Real GDP rose until the mid-1990s, and has since leveled off.

**Exhibit 4. Global Consumption Per Unit of Real GDP**

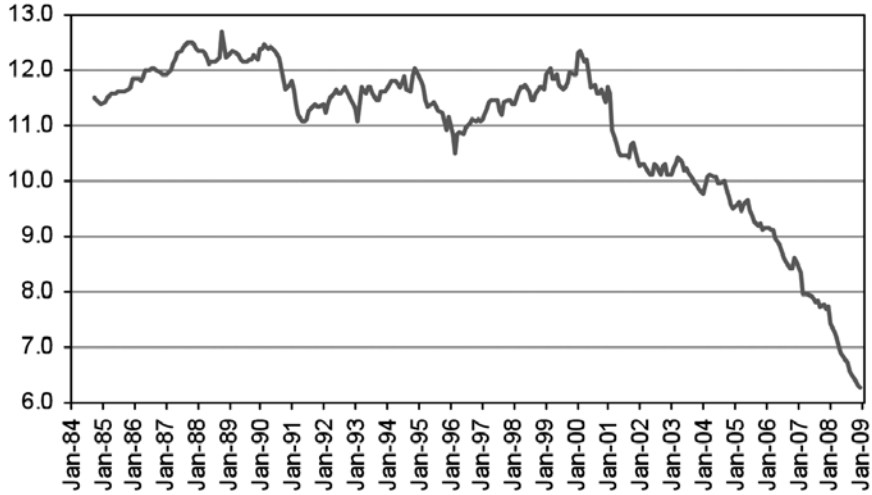



It appears that electronic communication is having a meaningful impact on the consumption of communication papers. On the other hand, the consumption of paper for packaging is more closely associated with overall economic activity.

Up to now, the declines in "intensity of consumption" largely reflect developments in North America. This is most dramatically illustrated by the data in Exhibit 5 which documents a 35 percent drop in newsprint consumption in the U.S. from early 2000 to mid-2007. Given the U.S. economy grew by roughly 3 percent per year over this period, this drop in consumption is a clear sign of a structural change in the demand for newsprint. In our view, we think other paper grades will eventually follow this trend, and that other countries will eventually follow the United States. Having said that, over the past five years, newsprint has been the fasted growing paper grade in India.

Changes in the supply-side of the market have been almost as dramatic as changes on the demand-side. Arguably the biggest "supply shock" has been the dramatic expansion of processing capacity in China. In terms of changes in global paper and paperboard capacity, China accounted for roughly 90 percent of the net increase over the period 2000-2008. This reflects not only dramatic expansion in China, but also a number of closures in North America and (to a lesser extent) Europe.

**Exhibit 5. Total U.S. Newsprint Consumption (million tonnes)**




Source: PPPC and CIBC World Markets Inc.

Focusing on the Indian paper market, the national industry produced about 7.6 million tons of paper & packaging in 2008, based on a total installed capacity of roughly 9.3 million tons. The mix of fiber used to produce this volume is roughly 35 percent wood fiber, 45 percent recovered paper and 20 percent agro-residue.

Last year, India's consumption totaled about 8.9 million tons, with the rough segmented breakdown as follows:

- Packaging paper – 40 percent
- Printing & Writing paper – 40 percent
- Newsprint – 15 percent
- Specialty Papers & Others – 5 percent

In recent years the aggregate demand for paper & paperboard in India has been growing at an annual rate in the 6-7 percent range. However, this masks significant differences in growth rates across the individual grades. Over the five year period 2002-2007, the CAGR in demand was 13 percent for newsprint, 11 percent for containerboard, 9 percent for cartonboard, 5 percent for printing & writing paper, and only 1 percent for the remaining grades.

Given reasonable levels of economic growth and per capita consumption, we expect India's consumption to hit roughly 14 million tons by 2015. In our view, this will necessitate a growing trend in the import of pulp & paper products.

Despite this impressive expansion, both the rate of growth and the base level of paper & paperboard consumption have been lower in India than in China.

China has also been the driving force behind changes in both the production and consumption of solidwood products.

- In the case of plywood, Chinese capacity has increased roughly 10 fold since the mid-1990s. China is now the largest producer of plywood in the world (most of which is made from hardwood species), and currently exports about 20 percent of its production.
- In the case of Medium Density Fiberboard (MDF), Chinese capacity has increased roughly 8 fold since the mid-1990s. China has once again become the largest producer in the world. It is also a significant indirect exporter; mostly in the form of furniture.

## Globalization of Environmental Standards

Better communication is a force for the convergence of environmental standards around the world. Poor environmental performance is increasingly difficult to hide, and opportunities for improvement are more easily identified. Corporate reputations are also increasingly fragile.

We expect developing nations to increasingly adopt environmental standards which are comparable to those in North America and Europe. This is partly due to greater expectations and demands from the local population and governments regarding a clean environment. A clean environment is often perceived as a "luxury good," and countries like Brazil, Russia, India and China will be increasingly able to afford it over time.

The globalization of environmental standards is also being increasingly supported by legislation in the developed countries. For example, in late 2008 the U.S. Congress passed the Lacey Act giving the U.S. Justice Department the power to fine, and even jail, individuals and companies who traffic in illegally harvested wood products.

This type of legislation is less relevant for India than it is for other countries which are net exporters of forest products. However, it still has implications for India because of the impact on international trade flows. The most salient points to note regarding this type of legislation are:

- By July 2009, all timber products entering the U.S. market must be certified by entities approved by the U.S. government. The European Union is considering its own version of the Lacey Act.

- Given the U.S. and European moves, over 50 percent of Chinese forest product exports will soon be exposed to this type of legislation. Third party certification is increasingly becoming a necessary condition for wood products to compete in the global market.
- To the extent the legislation discourages Chinese exports into North America and Europe, we expect the shipments to be re-directed to other markets like India.

While we think there is a trend toward the globalization of environmental standards, the path is uneven both over time and across nations. For example:, the current financial crisis may well cause governments to "go-easy" on raising their environmental standards when industry is already under significant stress. A somewhat typical government position is also revealed in the following quote from Gennady Pocherevin, Minister of Natural Resources for the Government of Khabarovsk Territory – one of the largest forestry regions in Russia.

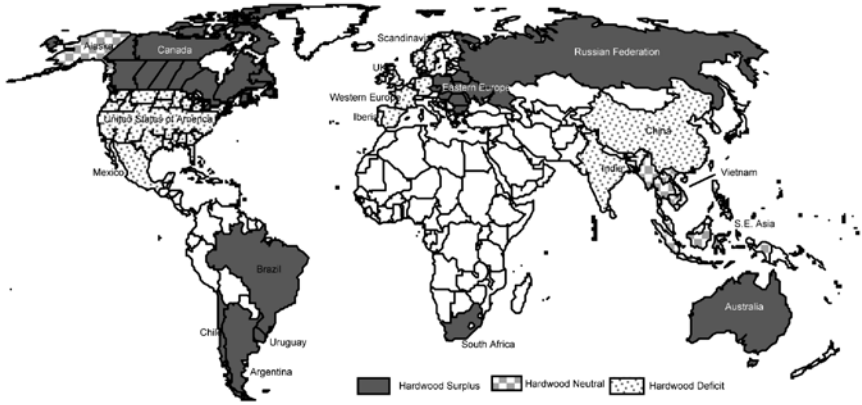
> "Ecology is part of the economy. Money spent on the environment depends on development of the industry."

In our view, the greatest potential return from environmental activism remains in the developing world.

## Globalization of Fibre Markets

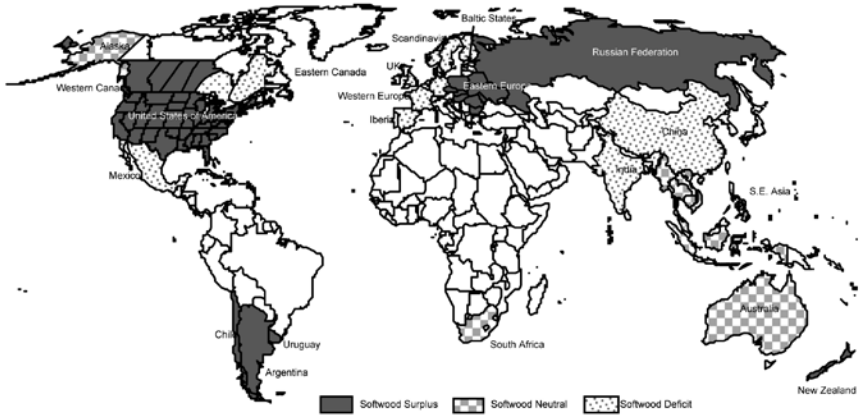
In general, wood fiber is not located where the economic growth and rising demand for paper & forest products is greatest. This fact is illustrated in Exhibits 6 and 7 which indicate the regions of the world which have either surpluses or deficits of hardwood and softwood, respectively.

**Exhibit 6. Location of Global Hardwood Fiber**




Source: JP Management Consulting, CIBC World

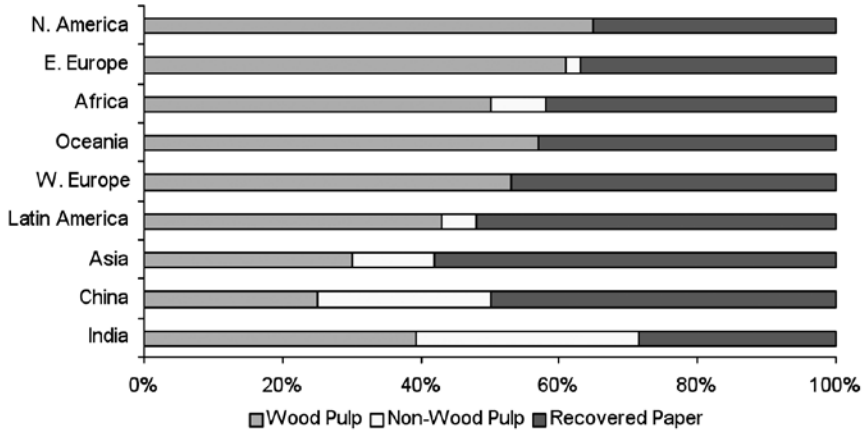
**Exhibit 7. Location of Global Softwood Fiber**




Source: JP Management Consulting, CIBC World

A fact not always appreciated by some observers is that wood fiber is not the only (or even dominant) form of fiber used by the paper and paperboard industry. Recovered paper is an increasingly important source of fiber for the global industry. Non-wood fibers like wheat and rice straw also play a meaningful role in many countries in Asia and Africa. (See Exhibit 8) While rising wood prices provide an incentive to increase the relative use of non-wood fiber, rising demand for higher quality paper products provides an incentive to reduce the relative use of non-wood fiber.

**Exhibit 8. Paper and Paperboard Furnish by Region**

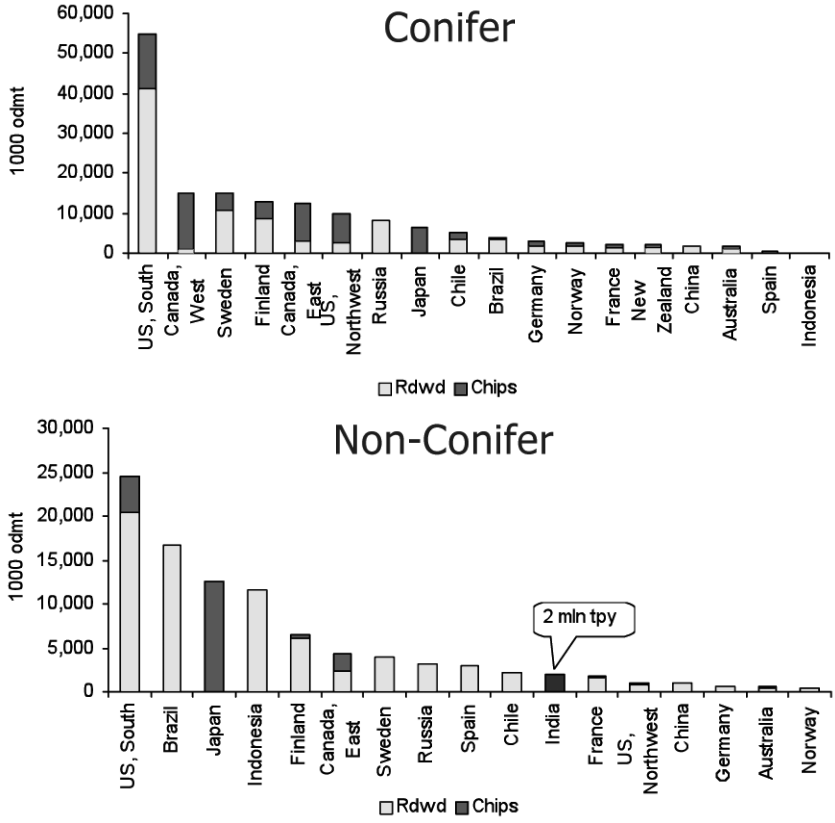



Source: JP Management Consulting

At the global level, India is a very small consumer of wood for paper & paperboard. As documented in Exhibit 9, the Southern U.S. is by far the most dominant regional consumer of pulpwood in the world. Its annual consumption of non-coniferous pulpwood is more than 10 times greater than that of all of India.

Note that China is now the second largest producer of paper & paperboard in the global industry. Although its direct consumption of pulpwood is relatively small due to its heavy use of recovered paper and non-wood fiber, we expect China's demand for pulpwood to rise significantly over the next 5-10 years.

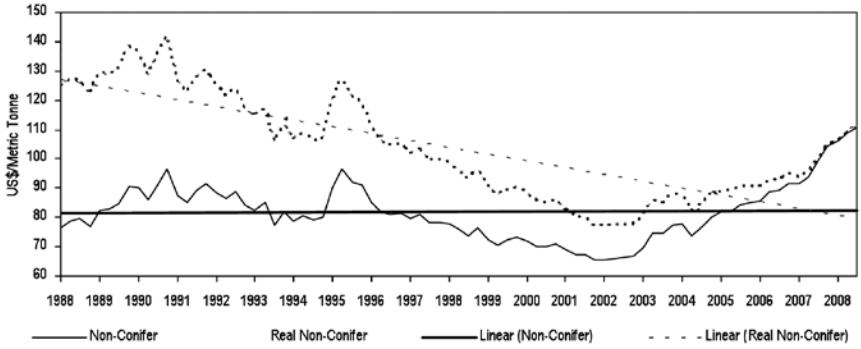
**Exhibit 9. Estimated Pulpwood Consumption by Region (2004)**




Source: Wood Resources International

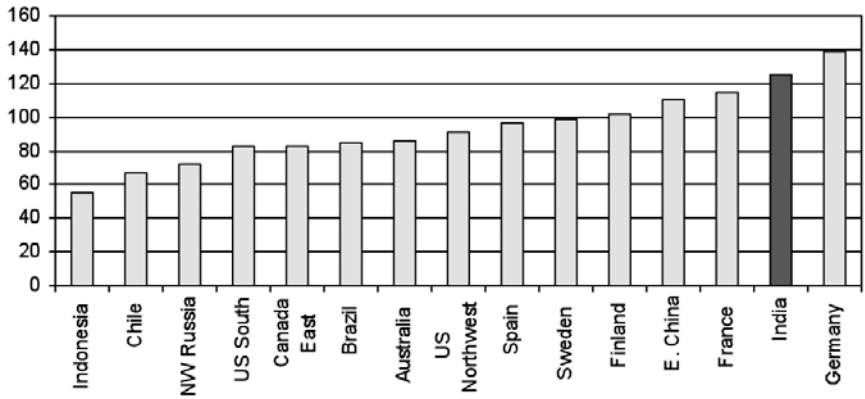
A key challenge faced by India's paper industry is the fact that it faces some of the highest wood costs in the world. As revealed in Exhibit 10, as of late 2006, only Germany pays higher prices for non-conifer pulpwood. The lowest regional prices are in Indonesia, which are less than one-half those prevailing in India. This suggests that India has a fundamental disadvantage in the production of paper in general, and the commodity grades in particular. Despite this fact, as documented later in this paper, the Indian paper industry in general has been able to overcome this disadvantage and has generated above average financial returns.

**Exhibit 11. Global Average Prices for Non-Conifer Pulpwood**




Source: WRI and CIBC World Markets Inc.

**Exhibit 10. Average Delivered Non-Conifer Roundwood Prices for Q4/06 (US$/ODMT)**




Source: Wood Resources International, CIBC World Markets

Exhibit 10 provides a snapshot of regional pulpwood prices in the fourth quarter of 2006, while Exhibit 11 documents the changes in the global average price of non-conifer pulpwood over time. The two key points to note from Exhibit 11 are:

- Real pulpwood prices have been on a secular downward trend over at least the last 20 years. This is true for both coniferous and non-coniferous pulp logs.
- The average global price of non-coniferous roundwood rose steadily from 2003 to 2008, before declining in early 2009 due to the global financial crisis. Mainly because of depreciating currencies since the latter half of last year, prices have recently fallen the most in Brazil, Sweden and Oceania (when measured in $US).

With regard to the second point, it can be debated whether this is simply a cyclical rebound, or the start of a longer term trend. In our view, it is the latter.

At the global level, the perception of wood fiber scarcity changes over time. For example, from 1985-1995 the conventional view was that wood was scarce. The perception changed to one of relative abundance from 1995-2007. In 2008, the perception appears to have shifted back to relative scarcity.

We think the market is likely at an inflection point regarding the long-term trend in wood prices. A combination of the following five "shocks" will likely shift the perception from relative abundance to relative scarcity of wood fiber:

(A) Continuing growth in Asia's wood deficit;
(B) Increase in Russia's log export tax;
(C) Reduction in the supply of illegal logs;
(D) Insect infestation in Western Canada; and
(E) Growth of the bio-energy sector.

## (A) Asia's Fibre Deficit

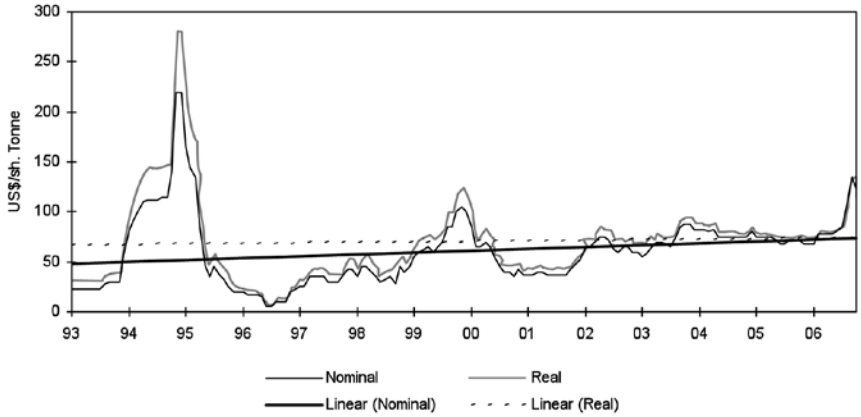
Regarding the first shock, it is almost impossible to exaggerate China's importance to the global forest products markets. The dramatic expansion of that country's processing capacity has been made possible due to very large and increasing imports of fiber. China is now the world's largest importer of logs, wood pulp and recovered paper.

When the imports of wood products and pulp are expressed in roundwood equivalents (i.e., RWE), it is revealed that China's timber deficit has increased more than eight fold since 1997, and currently stands at roughly 80 million $m^3$. Some pundits forecast that this deficit will double by 2020 to roughly 160 $m^3$. To put this number into context, Canada's annual timber harvest is roughly 200 million $m^3$.

China's domestic supply of timber has been constrained by government bans on the logging of natural forests in large regions of the country, which is reflective of an increasing emphasis on the provision of environmental services for the forests. This has caused an increase in the country's dependence on plantation forests and imported logs. Due to the combination of changes in the domestic harvest and log imports, the percentage of wood imports out of total wood fiber consumption in China has increased from 13 percent in 1989 to 27 percent in 1998 and 40 percent in 2006.

While China has over 53 million plantations (the most in the world), less than half that amount is considered "industrial plantations" and only 6 million ha are considered "fast growing high yielding plantations." Furthermore, even many of the "fast growing" plantations generate low yields by international standards.

**Exhibit 12. Old Newspaper Prices (U.S)**




Source: Pulp & Paper Week, CIBC World Markets.

Given its relatively low consumption of paper and alternative uses for waste-paper, the growth of China's paper & packaging industry has largely been fed with recovered paper imported from abroad.

China normally buys over 60 percent of the U.S.'s exports of recovered paper– up from 34 percent five years ago. (India is the fifth largest importer of recovered paper from the U.S., with its volumes comprising only about 5 percent of the total) However, the inexpensive waste paper in the U.S. is already being recovered, and the U.S.'s supply of key grades like Old Newsprint is actually falling. (As indicated above, there has been a 35 percent decline in N. American newsprint consumption since 2000.)

Due to a dramatic reduction in Chinese demand associated with the current economic slowdown, recovered paper prices have fallen precipitously in recent months. After averaging $66/ton last year, the price of Old Newspapers on the U.S. West Coast has fallen to an unsustainably low $3/ton. However, it is important to not confuse the cyclical and secular changes in recovered paper prices.

In contrast to the historical data on global real price of pulpwood, the global price of recovered paper has been on a secular upward trend. (See Exhibit 12) Prices in real terms as of mid 2007 were as high as they have been since the dramatic price spike in 1995. Although we expect significant volatility, we also expect the secular trend in real recovered paper prices to continue to rise. This is primarily due to the combination of inelastic supply in North America and increasing demand in Asia.

## (B) Russia's Log Export Tax

Although much of it is currently uneconomic, Russia contains over 20 percent of the world's timber resource, and has more forest cover than Canada and Brazil combined. This fact makes it all the more surprising that in 2006 Russia was a net importer of paper and processed wood products.

In February 2007 the Russian government announced a series of increases in its existing tax on exported logs. The rate increased from 6.5 percent in 2006 to 25 percent in 2008. In January 2009 the tax was supposed to rise to 80 percent for softwood logs and 50 percent for hardwood logs. However, in November 2008 the Russian government announced that it postponed until January 2010.

Given the magnitude of the increase up to a 80 percent rate, and the fact Russia is the world's largest exporter of logs with roughly 40 percent of the total, this initiative has global implications. If actually implemented, it will put upward pressure on the world price of logs. China, which sources roughly 65 percent of its log imports from Russia, is particularly vulnerable.

The exact timing and extent of the ultimate increase in Russia's export tax is currently unclear. In our view, it is still a matter of when (not whether) another large increase will be implemented. If anything, the recent dramatic fall in energy prices underscores the need for Russia to diversify its economy – which is the underlying motivation for the log export tax.

Data collected by the Federal Russian Forestry Agency shows the following: :

- At the national level, the current harvest of 132 million $m^3$ is far smaller than the Allowable Annual Cut of 564 million $m^3$.
- The economically available harvest is 250 million $m^3$. This implies a potential incremental increase of 120 million $m^3$, or roughly 90 percent more than the current harvest.
- There is a large disparity between the economically available harvest and the installed processing capacity. This percentage ranges from a low of 2 percent in the Russian Far East to a high of 38 percent in the North-West. From a public policy perspective, this is a politically sensitive variable.

Since a key objective of raising the log export tax is to stimulate the domestic processing of logs, we expect that a significant proportion of the logs that have been exported will eventually find their way back into the international market in the form of processed forest products.

We had initially thought there would be a 5-7 year window before the necessary investments in processing capacity would be made by the Russian Oligarchs. However, the current financial crisis has had a devastating impact on the financial empires of the Oligarchs which were largely built with borrowed money. As

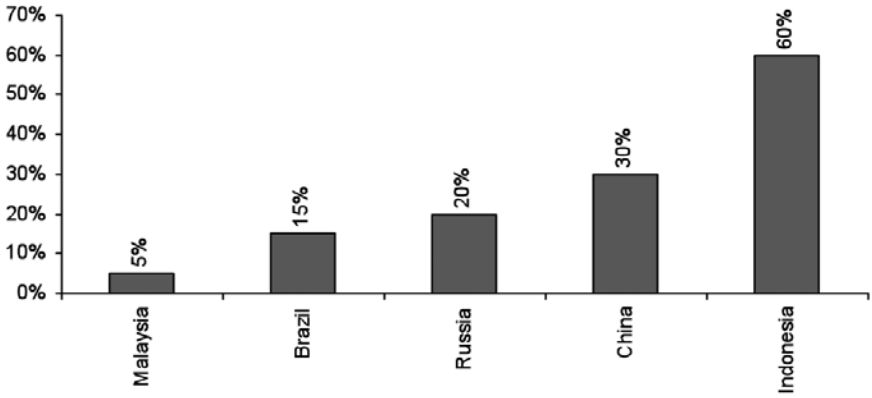
a result, we now think it will likely be more like 10-12 years before meaningful volumes of processed Russian wood products begin to enter the international market.

## (C) Reduction in Illegal Logging

The World Resources Institute (WRI) estimates that roughly 10 percent of global logging is illegal. One can reasonably expect this to be a higher percentage of the higher-quality timber that goes into making higher valued products like plywood.

Exhibit 13 summarizes estimates of the percent of log production that is illegally harvested for five of the countries where it is deemed to be most prevalent.

**Exhibit 13. Estimated Percent of Log Production Illegally Harvested**




Source: Seneca Creek Associated, Wood Resources International.

By its very nature, it is difficult to measure the degree of illegal logging. For example, the Russian government estimates that 10 percent to 15 percent of its annual harvest is illegal, while some NGOs put the number closer to 30 percent. However, if WRI"s estimates are reasonably accurate, they identify one of the likely factors causing the secular decline in real logs prices documented earlier in Exhibit 10. The World Bank estimates that illegal logging causes over a $10 billion loss in global market value of forest products due to lower prices, and about 5 billion in lost government revenue.

However, almost by definition, illegal logging is unsustainable. Aside from having to face depressed log prices, legitimate enterprises have less of an incentive to plant when the fruits of their labor may be stolen. (It can be safely assumed that illegal loggers will not take the time to remain at the scene of the crime in

order to replant.) As a result, even without government action to reduce the level of illegal logging, the supply of logs will eventually diminish because most of the accessible forests have already been logged. Unfortunately, this already appears to be the case in some countries like Myanmar – there simply isn't much left to cut.

The good news is that governments in some of the countries with the highest level of illegal logging are starting to take action. For example:

- Since the beginning of 2007, in Indonesia there have been police raids in numerous places, including in Riau and Jambi on Sumatra, to control harvest activities and the usage of illegal wood by a number of pulp & paper companies. The investigation by the police has included the Governor of Riau and four district heads. Some of the large paper mills in Indonesia have reduced production, and several are even considering importing pulp.
- The bulk of the illegal logging in Russia is done by small enterprises, many of which are also involved in legal logging. Partly in order to reduce the extent of illegal harvesting, the Russian government is actively forcing the consolidation of the Russian logging industry. The high log export tax discussed above may also serve to decrease the level of illegal harvesting. Due to the resulting lower log prices within Russia, the incentive to harvest logs for the domestic market will decline. While the tax increase will raise the international price of logs, it is much easier for the government to control the border traffic in logs than it is to monitor harvesting in the vast domestic forest. While we expect some "leakage" to continue in Russia, we also think the absolute level of illegal logging in Russia will decline. Anecdotal evidence supporting this view is already coming from selected Chinese log importers who are complaining that it is becoming more difficult to obtain less expensive illegal logs from Russia.

Although we expect illegal harvesting to continue to contribute to the global supply of logs, we also think it will be at a lower level in the future than it has been in the past.

## (D) Insect Infestation in Western Canada

Due to warmer than historical winters, the worst insect infestation in North American recorded history is occurring in Western Canada. The outbreak of the Mountain Pine Beetle is arguably one of the more concrete signs of global warming. It started in the B.C. Interior, and has now spread into Alberta.

The area affected has increased from 4.5 million ha in 2004 to an estimated 13 million in 2007. Roughly 40 percent of the trees in the B.C. Interior are pine, and an estimated 80 percent of the pine trees are now dead. While this results in a temporary increase in log supply due to salvage harvesting, it will ultimately result in a reduction in the sustainable harvest.

Conventional wisdom is that the region's Allowable Annual cut will be reduced by 25 percent to 35 percent in eight to ten years. However, the decrease in the economic harvest will likely be sooner and greater than that suggested by conventional wisdom. The worst case likely involves a 50 percent decline in about five years.

This "shock" has global implications since the B.C. Interior region supplies over 20 percent of the lumber consumed in North America, which is by far the largest lumber market in the world. Although the insect has already gained a foothold in Alberta, it is still not clear to what extent the Mountain Pine Beetle infestation will expand in this neighboring province.

## (E) Growth of the Bio-Energy Sector

Growth in global energy demand is now being driven mainly by economic growth in Asia, and this is expected to support a secular rise in real energy prices. Despite the recent decline in incentives due to the current financial crisis, we expect the bio-energy sector to experience significant growth over the next several decades. In our view, this should lead to the convergence of the markets for fuel, food and fiber (eg., wood).

There are a number of underlying forces driving the convergence of the fuel, food and fiber markets, and they all can be viewed in terms of "security." Although the relative importance of the forms of security varies by country, the concerns relate to:

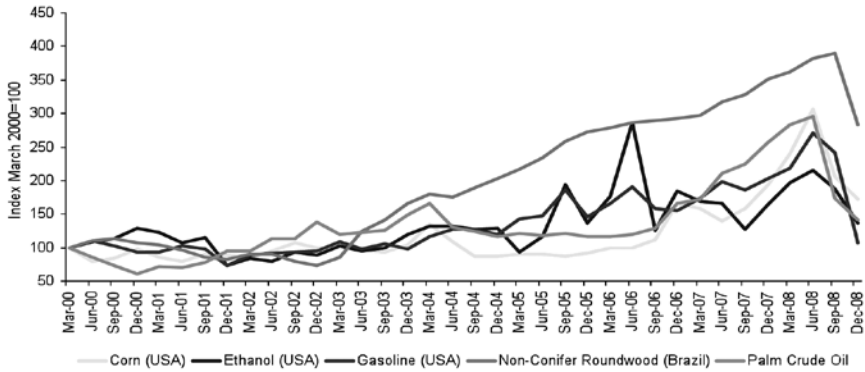
- Economic Security (i.e., protection against the rising real price of oil):
- Environmental Security (i.e., amelioration of climate change);
- National Security (i.e., decreasing North American and European dependence on the Middle East/Russia for fossil fuels); and,
- Political Security (i.e., greater rural development, and increased support from the rural population).

The convergence will occur in the sense that over time the primary feedstocks for these three markets will tend to trade on the basis of their energy equivalency. Prior to the current economic slowdown, key fuel, food and fiber prices were on an upward trend. Exhibit 14 illustrates the movement in (domestic) prices since 2000 for gasoline, ethanol and corn in the United States, non-conifer pulp wood

in Brazil and palm oil in Malaysia. Even though we use prices in the domestic currency, it still shows that pulpwood prices in Brazil and palm oil prices in Malaysia experienced the greatest increase among the commodities in question.

As expected, all of the commodity prices have fallen since late 2008. However, this is consistent with the notion that the feedstocks should trade on the basis of their energy equivalency.

**Exhibit 14. Food, Fuel and Fibre Prices: (Q1/00 to Q4/08)**




Source: Bloomberg, WRI, CIBC World Markets Inc.

Both the OECD and FAO also say that structural changes in the biofuel industry could mean high prices for the next decade, with cereals, sugar and oilseed and vegetable oils all affected. Furthermore, the International Food Policy Research Institute estimates that prices for corn and oil seeds could rise by 23 percent and 43 percent, respectively, by 2020, on the back of expected increases in demand for their use as biofuel.

The greater the upward pressure from energy prices on food prices, the greater the incentive to substitute toward cheaper feedstocks like wood. Our expectation is that with biofuel production spreading, the world price for oil will become a support price for farm and lower quality forest products.

One further sign that convergence is occurring is the number and nature of strategic alliances that are being formed between companies in different industries, but with a focus on biofuels.

An example at one level is the alliance between the Chilean forestry company Arauco and Tokyo Electric Power Company. Arauco is supplying wood waste from sustainable pine plantations as fuel for electricity generation. Compared with Chile's existing generation mix of hydro, coal and diesel, this is expected to save about 300,000 tons per year of carbon dioxide for 21 years. Under

the terms of the UN's Clean Development Mechanism, the Tokyo utility is buying credits to offset its own emissions of greenhouse gases.

At another level are the alliances on Research & Development. In most cases these R&D initiatives involve oil or chemical companies with "feedstock companies." Examples of this include the following:

- Stora Enso/Neste Oil and UPM-Kymmene/Andritz with a focus on Fisher-Tropsche fuels;
- Weyerhaeuser/Chevron with a focus on cellulosic ethanol;
- Royal Dutch Shell/Petro Canada/Iogen with a focus on cellulosic ethanol;
- Royal Dutch Shell/Choren with a focus on Fisher-Tropsche fuels;
- British Petroleum/Dupont Chemicals/Associated British Foods (ABF) with a focus on bio-butonol;
- British Petroleum/D1 Oils with a focus on bio-diesel; and,
- Conoco Phillips/Tyson Foods with a focus on bio-diesel.

Note that the intended feedstocks and types of biofuel vary depending on the alliance in question. While those involving Stora Enso, UPM-Kymmene and Weyerhaueser tend to emphasize wood (and grasses in the case of Weyerhaeuser) as the feedstock; D1 Oils emphasizes soya beans, palm oil and jatropha; and Tyson Foods and ABF emphasize animal fat and sugar beets, respectively.

The four key variables driving the economics of biofuel production are:

1. the price of oil (the main substitute);
2. the cost of the feedstock (50 percent-80 percent of the variable costs);
3. the conversion technology; and,
4. regulations which stimulate demand.

At present, all four of these variables are in a state of flux.

Casual observation suggests that when crude oil prices fall below $60/barrel, interest in building biofuel plants falters in most countries (except for Brazil), and that it is sparked when oil hits $70/barrel and above. Given the shape of the global cost curve for oil, a "normalized" oil price in the $60-80/barrel range seems reasonable.

The Apec Energy Working Group assessed the cost competitiveness of alternative biofuels under different oil price scenarios. Given feedstock prices as of early 2007, its summary conclusions are:

- Ethanol from sugar cane in Brazil is cost competitive at crude prices of $28-$50/barrel;
- Biodiesel from palm oil in Malaysia and Indonesia is cost competitive with crude oil above $41/barrel and $44/barrel respectively. In the same countries, biodiesel from jatropha can compete with crude at prices of $50-$68/barrel;

- Ethanol from corn in the US is cost competitive at crude prices of $50-$68/barrel; and,
- Biofuels from a wide variety of cellulosic feedstocks would be cost competitive with crude oil prices of $80-$100 barrel.

Cellulosic ethanol technologies are evolving on two tracks:

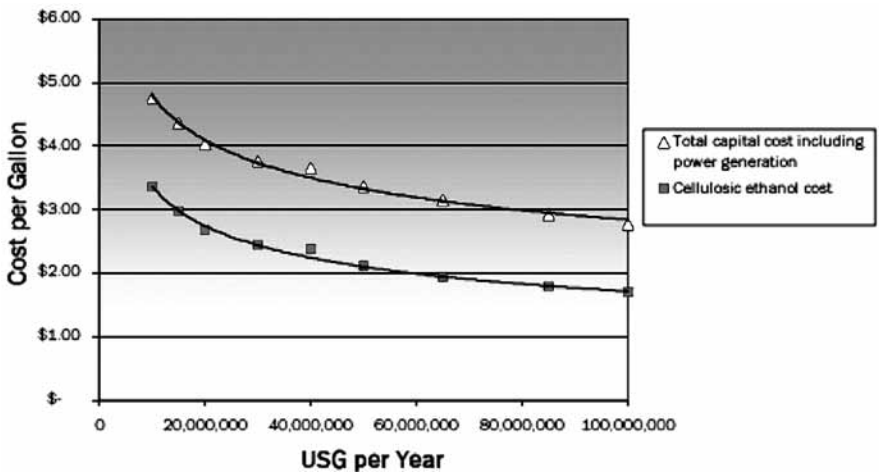
1. Biological processes such as enzymatic digestion which break the tough molecular bonds of plant matter into fermentable sugars.
2. The application of heat to convert cellulose into gas from which it can be transformed into a number of fuel products including ethanol, synthetic gasoline and renewable diesel.

This paper focuses primarily on the first track.

While cellulosic feedstocks are much more abundant and cheaper than grains, the processing technologies are still more expensive. However, processing costs are declining. According to the U.S. Department of Energy, the cost of cellulosic ethanol dropped from roughly $5.50/gallon in 2001 to $2.25/gallon in 2005. Costs have continued to decline since then as investment in R&D grows and some of the best minds in science are focusing on the issue.

As illustrated in Exhibit 15, economies of scale also appear to be critical in improving the cost competitiveness of cellulosic ethanol.

**Exhibit 15. Estimated Scale Economies for Hardwood-based Cellulosic Ethanol**



We are aware of two commercial demonstration plants in Spain and China which are already producing cellulosic ethanol. These plants have an annual capacity in the range of 10 million gallons, and total unit costs estimated to be above $3.00/gallon. However:

- Given existing technologies, it is estimated that a world scale 100 million gallon (380 million litres) plant could achieve total unit costs as low as $1.70/gallon, and variable costs in the range of $1.25-$1.35/gallon (assuming no carbon credits).
- By comparison, starch-based ethanol plants generally have total unit costs of around $1.45/gallon, and variable costs in the range of $1.55-$1.75/gallon.
- The key message is that, although not yet constructed, large scale cellulosic ethanol plants may be competitive with existing starch-based plants. Although the capital costs are still higher, the variable costs may actually be lower. Furthermore, subsidies on capital exist in many jurisdictions. (It may also be possible to lower capital costs by utilizing abandoned infrastructure (e.g., that associated with closed pulp mills).)
- Our sense is that such plants may be able to afford to pay as much as $40/m$^3$ for wood.

Two key challenges associated with building "world scale" cellulosic ethanol plants are:

- Demonstrating that the existing technologies within the plant can truly be scaled-up to the size required to achieve competitive costs.
- Meeting the materials handling challenge required to satisfy the plant's consumption of large volumes of fiber.

The second point should not be underestimated. A world-scale 380 million litre plant would consume roughly 2.4 million m$^3$ of wood per year (i.e., 1.2 million dry tons or 2.4 million green tons). This is as much wood as that consumed by a good size pulp mill.

Our understanding is that the first world scale plant will likely be constructed in the state of Georgia in the United States.

If not used strictly for domestic use, economies of scale are also important for biofuel plants to be viable in developing countries. For example, one South African producer wanted to export 15,000 m$^3$/year of ethanol to Germany. As the typical capacity of a tanker is about 60,000 m$^3$, the producer would have to store the ethanol for up to four years before it could afford to export it.

Wood is only one of a number of types of cellulosic biomass that can be used to produce energy. However, wood does have the following relative advantages.

- Longer storage life and lower storage costs.
- Higher bulk density (lower transportation costs).
- Higher sugar content.
- Less intensive use of water and fertilizers
- Established collection systems.

The first attribute has implications for the ability to achieve the desired economies of scale discussed above. In contrast to wood, both sugar cane and palm oil – the leading feedstocks for ethanol and bio-diesel, respectively - both need to be processed within 24 hours of harvesting in order to avoid deterioration in their energy content. As a result, the associated processing plants tend to be of a smaller scale due to the time required in getting the feedstock from the harvest site to the processing plant.

The bottom-line is that the development of the bio-energy sector is expected to have an impact on both the demand and supply for wood fiber. (The use of bio-energy crops other than wood (e.g., palm oil, jatropha) may affect the supply of wood through increased competition for the available land base.) Both changes are expected to place upward pressure on the price of wood.

In summary, we expect an increasing global demand for wood due to:

- The growing wood fiber deficit in Asia; and,
- The emerging bio-energy sector.

We also expect a decreasing global supply of wood due to:

- The implementation of the Russian export tax on logs;
- A reduction in the supply of illegal logs; and,
- Reduced timber harvests in Western Canada due to insect infestations.

In combination, the above five factors are expected to support an upward trend in the real price of wood fiber.

## Globalization of Trade in Forest Products

Since 2000 there has been more than a 40 percent increase in the value of global trade in forest products. However, there is concern that in response to the current economic crisis governments will react defensively and erect barriers to trade.

While this is certainly a threat worth monitoring, we think key politicians and policy makers have learned the negative lesson associated with these types of moves in the 1930s.

In fact, the crisis has caused ocean freight rates to fall precipitously in response to reduced demand and lower fuel prices. As a result, the effective cost of international trade has decreased substantially in recent months. One measure of ocean freight rates is the Handy-Size Freight Index, which has fallen from its peak of more than 3500 in May 2008 to roughly 250 as of January 2009.

We expect the positive trend in international trade in forest products to continue through 2020 in response to:

- Overall economic growth;
- Growing fiber deficits in the fastest growing regions;
- Improving transportation infrastructure; and,
- Reductions in tariff and non-tariff barriers to trade.

The first two reasons are discussed above. In our view, improvements in transportation infrastructure are one of the least documented reasons for the expansion in trade. Globally, it is estimated that roughly $700 billion/year is being invested in ports, roads, railways, etc. The United States accounts for approximately $180 billion/year.

China has made significant headway in improving its transportation infrastructure. The country already possesses nine of the world's top 50 ports. However, further improvements are to come. China will invest $50 billion in additional port infrastructure over the next five years, including 22 new inter-modal terminals.

India's infrastructure improvements are largely still to come:

- Indian ports have a typical turnaround time of 3-5 days. While this is better than the 9 days in 1990, it is still far worse than the 4-6 hours in Singapore and Hong Kong.
- Among India's 12 major ports, Kandla handles just over 50 percent of the total log imports. It is also worth noting that there are no woodchip unloading or storage facilities currently in place at any of the ports.

However, China will continue to have an advantage over India in the importation of feedstock because of low back-haul rates. The reality is that China primarily exports goods, while India mainly exports services. As a result, there is the potential for more empty ships returning to China than India, and this causes a reduction in the relative cost of inbound transportation for China.

In terms of land transportation, India's poor road system and unreliable railways make transport of high volume/low value products such as paper and wood

**Exhibit 16. Indian Exports & Imports of Paper & Forest Products**


Source: FAO

very inefficient. However, India is investing over $11 billion on highway improvements (e.g., Golden Quadrilateral Highway, North/South Corridor, East/West Corridor). The stimulative impact of these mega-projects could be similar to that experienced by the American economy when the Inter-State Highway System was built in the mid-1950s.

As indicated in Exhibit 16, India's trade in paper & forest products has blossomed over the past 10 years. Since 1995, imports are up approximately five fold, and exports are up roughly seven fold (with the later starting from a very low base).

We expect India's imports of paper & forest products to remain robust over the next decade and its trade deficit in this sector to widen. This is due to India's fast growing economy, declining trade barriers, strong currency and concerns over domestic deforestation. Regarding tariff changes, they have fallen from a high of 140 percent in 1990 to 12.5 percent in 2006.

In terms of its mix of imports, roughly two-thirds is in the form of pulp & paper products, and the remaining one-third is in the form of solid wood products. The pulp & paper imports are dominated by newsprint and pulp, while the solid wood imports are dominated by logs.

After the United States, India is the second largest importer of newsprint in the world. While this newsprint has historically been supplied by mills in N. America and Europe, new Chinese mills are rapidly gaining market share. The

domestic market for newsprint has been penetrated more by imports than have the markets for the other grades of paper because the buyers are more concentrated and the distribution channels are far less complex.

Teak and sheesham are the major domestic species consumed in the Indian solidwood industry.

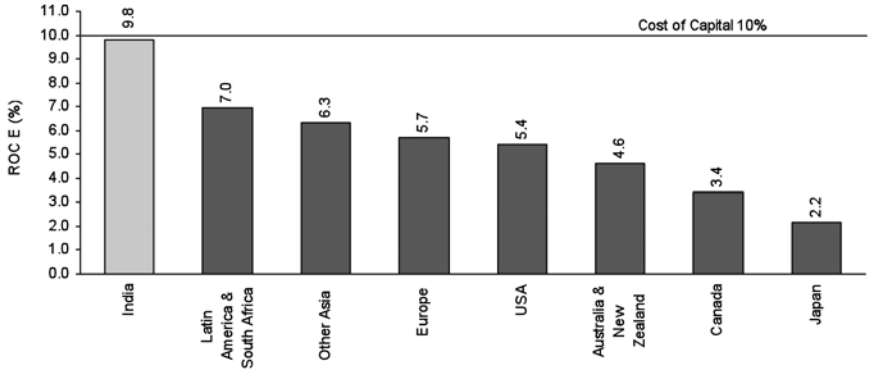
Hardwood logs account for roughly 90 percent of the solidwood imports, with about 65 percent currently sourced from Asia and 25 percent from West Africa. With on-going demand growth and changes in supply conditions off-shore, India is being forced to diversify its sources of log imports. India's historical major supply regions (e.g., Malaysia, Myanmar, Indonesia and Cote d'Ivoire), are in decline. On the other hand, Gabon, New Zealand and other countries are growing in significance.

In conclusion, markets for paper and forest products are becoming more global in nature. However, one of the implications of markets becoming more integrated is that domestic producers can suffer "collateral damage" from trade disputes involving third parties. For example, in early 2007 the U.S. announced anti-dumping duties on coated paper from China and Indonesia at rates up to roughly 100 percent. The targeted companies can be expected to re-direct shipments to non-U.S. markets. This should cause downward price pressure in markets like India. Similar shifts in trade patterns have historically resulted from Chinese anti-dumping duties on N. American and S. Korean newsprint producers.

## Globalization of Capital Markets

An important implication of globalization in the capital markets is that investment funds will flow to those regions and countries which offer the highest financial returns. As a result, it is useful to start by documenting the Return on Capital Employed (ROCE) generated by the paper and forest products industry around the world.

**Exhibit 17. Return on Capital Employed (ROCE) in the Paper & Forest Products Industry, by Region: Eight-year Average (1998–2005)**




Source: PricewaterhouseCoopers, CIBC World Markets.

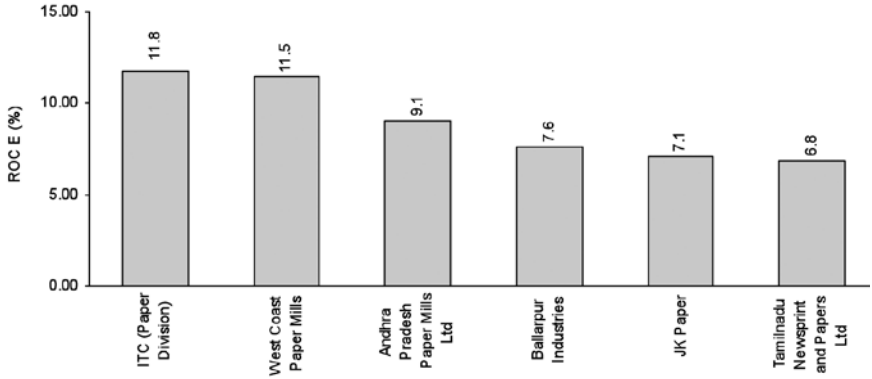
The average ROCE by the various national industries over the period 1998-2005 are documented in Exhibit 17. The key points to note are:

- As expected, the financial returns have historically been lower in the developed nations than in the emerging economies. This result is consistent with the general observation of disinvestment in the paper & forest product industries in countries like Japan, Canada, and the United States; while seeing net investment in countries in Asia and South America.
- Surprisingly, despite having some of the highest wood and energy costs in the world, the Indian industry has generated the highest average national ROCE in our sample. Aside from the fact the Indian industry is less capital intensive, we think key reasons for this result are that the Indian industry enjoys strong growth in domestic demand in addition to a degree of protection from foreign competition. Although the industry has historically benefited from relatively high import tariffs, this form of protection has been declining. Going forward, a degree of protection is expected to continue due to India's:
  - Poor transportation system;
  - Fragmented distribution channels; and,
  - Grade mix that varies from the international norm.

All of these factors will continue to support a degree of pricing power on the part of the domestic paper & forest products industry. This should allow them to pass on cost increases and generate a superior ROCE for a period of time.

- Despite having a relatively high ROCE, the Indian industry should be seen as "the best of a bad bunch." With the average cost of capital estimated to be roughly 10 percent, even the Indian industry as a whole has been unable to generate an acceptable financial return. Having said that, depending on the time frame, the data in Exhibit 18 suggests that some individual Indian companies have been able to beat their cost of capital.

**Exhibit 18. Indian Paper Companies, ROCE: Four-year Average (2002–2005)**

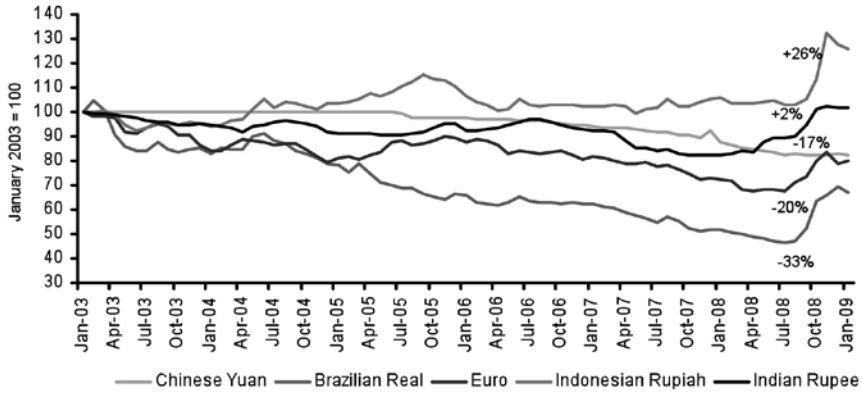



Source: PricewaterhouseCoopers, Company Reports, CIBC World Markets.

Given that capital is increasingly able to flow (and fund growth) anywhere in the world, it is useful to examine the relative size of India's paper companies. Ballarpur is by far India's largest paper company, but it is not even among the top 100 in the world in terms of sales. (See Exhibit 19)

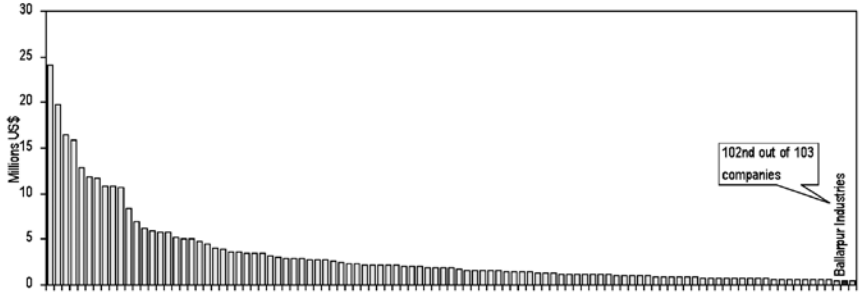
While "bigger" is not always "better," at the firm level there are arguably economies of scale in Research & Development, marketing and access to capital markets. We expect the Indian paper companies to have better access to the international capital markets over time, and to aggressively pursue growth.

**Exhibit 20. Exchange Rates To The U.S. Dollar**




Source: Bloomberg, CIBC World Markets.

**Exhibit 19. Top Public Companies in the Global Paper & Forest Products Industry (2005 Net Sales)**




Source: PricewaterhouseCoopers, CIBC World Markets.

One of the manifestations of an increasingly globalized capital market is volatility in exchange rates. Exhibit 20 illustrates the changes in a range of currencies against the U.S. dollar since the beginning of 2003. A fall in the index represents an appreciation of the currency against the U.S. dollar, which makes it more difficult for the country's forest product exports (but better for the imports).

- Relatively speaking, the Indian Rupee/U.S. dollar exchange rate has actually been quite stable in recent years.
- With the exception of the Indonesian rupiah, essentially all of the currencies in Exhibit 20 strengthened against the U.S. dollar over the period 2003-mid 2008. This resulted in a decline in the relative cost position of the forest products in these countries. However, forest product exporters in Indonesia benefited from an improvement in their competitive position due to the currency moves.

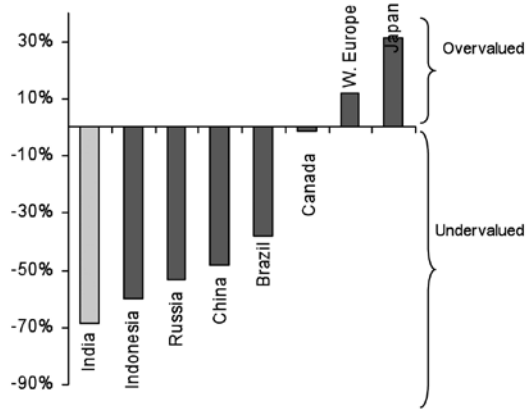
- With the exception of the Chinese yuan (and Japanese yen), all of the major currencies weakened sharply with the onset of the current financial crisis. This improved their cost competitiveness relative to the U.S. industry.
- Despite the recent depreciation of the Brazilian real, it is the competitiveness of the Brazilian forest exporters which has been most negatively impacted by currency moves over the past six years.

While historical changes in exchange rates provide insight into how the competitive position of a country has changed in the past, it is arguably more interesting to examine how the exchange rate is going to change in the future. However, it is notoriously difficult to forecast future exchange rates.

One approach to estimating the long-run exchange rate is the Purchasing Power Parity concept. (We emphasize that this concept provides better insight into the direction and relative changes among currencies than it does in the absolute change that can be expected. The concept also implicitly that the countries in question pursue stable monetary policies). Based on the analysis summarized in Exhibit 21, over time we expect the following

- The Indian, Indonesian and Russian currencies are likely to appreciate the most against the U.S. dollar.
- The Chinese and Brazilian currencies are also expected to subject to upward pressure, but to a lesser extent.
- The Canadian dollar appears to be correctly valued, while the Euro and Yen appear to be overvalued, and thus they may be expected to weaken over time.

**Exhibit 21. Percent Change From The Current To The PPP Implied Exchange Rate (2008)**




Source: International Monetary Fund, CIBC World Markets.

Given the expectation of appreciating currencies for most of the developing countries,

- For India and China, it makes it cheaper to:
  - Import fiber (e.g., logs, recovered paper, pulp) and processed products; and,
  - Invest in plantations and processing plants off-shore.
- For Brazil, Russia and Indonesia, it makes it more difficult to export (e.g., pulp, paper, solidwood products).

In isolation, a stronger currency takes pressure off of the domestic forest resource (and local wood prices), and puts more pressure on the forest resource.

Provided monetary policies remain stable, we expect the Indian Rupee to strengthen against not only the U.S. dollar, but also the currencies of Russia, Brazil, Europe, Japan and Canada. In our view, this should be an important factor in determining where Indian companies allocate their capital.

## Outlook and Issues in the Indian Forest Products Sector

### Outlook for the Indian Industry

We think the current slowdown in the global economy will last through late 2010/early 2011, and that India will not be immune to the downturn. Given its relatively weak fiscal position, the Indian government will not be able to provide the kind of massive stimulus package which is currently being developed in China, the United States and the European Union. Many of the aggressive investment plans announced by companies in the Indian forest products industry will have to be postponed or significantly modified.

As in India, the financial crisis is causing mayhem throughout the global industry. This may create a "silver-lining" for Indian forest companies because:

- It is adding fury to the perfect storm which has moved to Europe after hitting Canada;
- It is revealing that the Chinese forest industry is much more dependent on direct and indirect exports markets than thought by the Chinese investors; and,
- It is exposing the "weak underbelly" of the Russian oligarchs who had financed their empires with excessive debt.

The net result is that, due to the crisis, international competition may be less than generally thought due to greater capacity closures and fewer capacity

additions – at least for a period. This should result in higher than expected commodity prices in 2011-2015.

However, it is important to not confuse the cyclical and secular outlooks. On a trend basis, we think India will experience robust growth in its consumption and production of forest products over the next 10-15 years. For example, aggregate consumption of paper and paperboard could well increase from less than 9 million tons in 2008 to over 14 million tonnes in 2015 - more than a 55 percent increase in just seven years.

## Key Issues and Implications

- Given the rising demand for fiber and limited domestic forest resource, we expect wood fiber in India to become increasingly scarce and for this to be reflected in rising prices.
  - This pressure will be reinforced by the higher relative growth in the demand for higher quality products (e.g., coated paper), which in turn generally use wood as opposed to recovered paper or agro-residues.
  - We expect wood prices to also rise at a global level, but for the increases to be greatest in those regions which currently enjoy the lowest costs. As a result, we expect a narrowing in the difference between the low cost and high cost fiber regions. In other words, India's relative disadvantage in wood costs is likely to decline over time.
- We expect continuing changes in how the Indian companies source their fiber.
  - Given the increasing emphasis on producing environmental services from public lands, we expect a continuation in the trend for the industry to become less dependent on government sources for their wood. However, companies are likely to try to enter into more long-term agreements with state governments to gain access to alternative fibers (e.g., bamboo). This is already occurring in places like Maharshtra and Orissa.
  - Since captive plantations are actively discouraged by the government, we expect a continuing desire to shift towards farm forestry. Due to the lack of productive land and competition with the food and bio-fuel sectors, this will primarily involve partnerships with farmers to use unproductive & marginal land to grow tress for pulp.
- India will likely be one of the countries most affected by the convergence of the fuel, food and fiber markets discussed above.
  - In our view, three of the key reasons for this are that India has: (a) a larger than normal percent of the population working in agriculture; (b) a large percentage of the land base that is either wasteland or marginally

productive; (c) a significant numbers of people living in the marginal forest lands, many of whom lack property rights.

- The potential for bio-energy is arguably largest in tropical countries since they generally enjoy higher crop yields and have lower land and labor costs. This is a potential opportunity for nations which have a natural biological advantage, but have not been able to realize it in traditional agriculture due to trade restrictions in the developed world.
- The secular rise in energy prices is expected to raise the absolute prices of food and wood, and to also trigger changes in land-use patterns. The marginal agricultural land and wastelands are likely to experience some of the greatest changes. Given the anticipated changes in relative prices, we think these lands will tend to emphasize the production of either food or bio-energy crops instead of wood.
- The biggest "winners" from the conversion of the three markets are expected to be the owners of the feedstock, and especially the underlying land. Since the production of biofuels (and food) will generally be sold into a competitive market, over time we expect any "abnormal" profits to be reflected in higher prices for the feedstock. This in turn will ultimately be capitalized into the value of the land (the input in most inelastic supply). It will also be more valuable to control the land than the feedstock since there is an option value to switching land use. (While policy makers may be concerned with "elite capture," it may be prudent to first ensure the creation of wealth, and then focus on how it should be distributed.)
- To the extent the prices of lower quality wood fiber rise, some of the biggest "losers" are expected to be the current consumers of this fiber. This includes: (1) some pulp & paper companies that make extensive use of wood residues as an energy source; and (2) non-structural panel producers that use this product as their main source of fiber.
- Forests and marginal agricultural land are often the "homes of last resort" for the rural poor. Since the persons who occupy these lands often lack property rights, the shifts to bio-fuel production and more intensive agriculture could result in their displacement. However, if steps are taken to ensure these people participate in the growing and processing of bio-fuels, this threat may be turned into an opportunity.
- In general, a biofuels industry that is focused more on the local market is more likely to benefit the rural community. It is also less vulnerable to external exploitation and market fluctuations.

- As documented above, India has historically generated the highest Return on Capital Employed (ROCE) in the global paper & forest products industry. While we still expect better than average returns, we also expect the relative out- performance to be less impressive going forward. This is due to:
  - Rising cost of fiber (logs, recovered paper, agro-residues);
  - Rising cost of energy (affecting both production and distribution); and,
  - Increasing competition from lower-cost imports.

  The increasing competition from lower-cost imports is expected to be in response to:
  - Larger, more scale-efficient plants being constructed in other countries;
  - Continuing reduction in tariff & non-tariff trade barriers;
  - Improvements in transportation infrastructure, which facilitates imports; and,
  - A relative strengthening in the Indian Rupee.
- As has occurred throughout the western economies (and is in the process of occurring in China), we expect a consolidation of the highly fragmented Indian industry – especially in the paper and packaging segment. This is expected as companies strive to attain economies of scale in order to boost their ROCE, and because the smaller plants tend to be older and much more polluting. As it stands, roughly 90 percent of the paper mills in India have a capacity of less than 50,000 tpy. The ten largest paper & paperboard companies in India constitute only about one-third of the industry's production. In contrast, the top five companies in the developed markets generally account for about 70 percent of the capacity.
- We expect changes in the pattern of Foreign Direct Investment (FDI).
  - There may be some "in-bound" FDI to gain access to the domestic market and/or better understanding of the distribution channels. For example, the joint venture between SCA and Godrej for tissue paper.
  - However, we expect more "out-bound" FDI as Indian companies attempt to secure lower cost fiber off-shore. Some examples of this which have already occurred are: (a) Ballarpur's acquisition of a timber plantation and pulp mill in Malaysia; and (b) investment's by the Aditya Birla Group in Thailand, Indonesia, Laos, China and Canada.
- Indian processors must decide on a "buy" vs. "build" strategy as they source fiber in the international market. In our view,
  - If security of fiber supply is a concern, then they should acquire assets instead of buying on the market.
  - For timber plantations, the most promising geographic target is arguably eastern Africa. This is due to its combination of location, relatively low establishment and production costs, and historical trading relationships.

It is also one of the few regions in which Chinese importers do not have a freight advantage over their Indian counterparts.

- When acquiring foreign assets in the pulp & paper segment, better financial returns are likely to be obtained by a strategy emphasizing the acquisition of existing assets than the construction of new ones. This segment of the industry is very capital intensive, and investors have seldom been able to earn an acceptable financial return. A rule-of-thumb is "*the third owner generates the best return*."

8

# Pressure for Conversion of Forestland to Non-Forest Uses in India

SMRITI DAS

INDIA SHARES RICH DIVERSITY IN ecology along with a multicultural and diverse socio-economic backdrop that characterizes its landscape. While the country shares 2.5 percent of the world's geographical area and 1.8 percent of its forest area, it also supports 16 percent of the world's population and 18 percent of the domestic cattle population. The pattern of land use in the diverse landscape depicts competing usage in two sectors: agriculture (46.1 percent) and forestry (22.6 percent). Yet, both these sectors have not fared as well as the sectors like industries and services in the country. The economic growth pattern (which has remained close to 9 percent in last few years and over 7 percent in previous decade) has been supported by market reforms, huge inflow of FDI, rising foreign exchange reserve, flourishing capital market and a number of other factors. However, the trend of growth has been favourable to a few sectors while constraining the overall natural resource base of the country. Rapid growths in industry and services and resultant urbanization along with other demands have also put India in tight place in the energy market. Thus, overall the growth phenomenon is facing significant challenge of achieving the goals of 'sustainable development'.

This paper is placed in this backdrop of constrained natural resources, specifically forest/forestland in the country. The concern for depleting forest resource

deepens in the backdrop of 'development pressure' and the trend of diversion of forestland for non-forest use. From 1952 to 1980, approximately 4.3 million ha of forestland were diverted for non-forest use. Most of this diversion was for agriculture, which found impetus in the policy framework that was oriented towards enhancing food production and later on agriculture modernization. The diversion for hydel power projects was also significant in this period, which found policy support in the modernizing logic of the nation state and resulted in grandiose designs for the construction of large dams. The trend of diversion in the period from 1980 to 2008 may appear smaller in magnitude when compared to the earlier period. However, diversions in both the periods are not comparable due to differences in the developmental context. In the post 1980 period, the diversion of forestland for development projects has been to the extent of more than 0.7 million ha[1]. Of this, the major diversions have been for defense, irrigation, mining and hydroelectric projects. There are further diversions in recent years for mining and other industrial projects that have been approved under the Forest Conservation Act, 1980.

The local stakeholders, rights and livelihood protection groups, political parties, environmental lobbyists and others have often challenged the official enthusiasm for such projects. For instance, the logic of cheap hydropower is challenged vis-à-vis its social and environmental costs. The impact of large dam construction and consequent distributive injustice has been articulated as, "…exploitation of resources for the benefit of one group at the expense of another" (Williams, 1986).[2] The diversion of land/forestland for these "development" projects finds support in various policy initiatives (for instance the forest policy, industrial policy, the mining policy, SEZ policy and so on) that serve to further the neo-liberal agenda of the state. Paradoxically, while many of these diversions are appended with logic of 'national need' and 'sustainable development', the conventional policy making process (including its implementation) and the institutional structure itself does not allow adequate scope to ensure its basic objectives.

The quantum and nature of demand on forestland and the consequent diversion of forestland for non-forest use pose issues that are larger than the regular debates of growth, sustainability and rights. The increasing under development projects are indicative of the inherent biases/weaknesses of the policy making process. The sequence of actions/decisions in this process involves actors that are unequal in terms of interests, endowments and perspectives. The consequence of such diversity of stakes and contested positions is seen in the degradation of forest resource in the country. The consequences also indicate that there has not been enough learning from the past experience. On the one hand, rationality pervaded in the form of quantification and models were applied to problems that were political in nature. These outcomes were incomprehensible for the people

that were affected. On the other hand, where conflict of interest was too obvious, the ambiguity in goals resulted in scope for manipulation by those that were at the helm of affairs and 'powerful'.[3] The paper here proposes that the political outcomes that benefit one group at the cost of the other and enhance the accumulation possibilities of one at the cost of the other, is a result of wrong strategic choices that were made. Although the paper does not delve into the process by which these choices were made, it certainly examines the context in which they were made, the strategies for reconciliation of demands, and the implications of such choices for various stakeholders.

Within the backdrop of diminishing resources, conflicting demands and unequal endowments, this paper tries to:

- Identify the pressure on forestland for conversion to non-forest use (specifically conversion for hydel power projects, mining activities and the recent phenomena of biofuel plantations).
- Identifying the drivers of these changes through particular case studies based on the three categories that are mentioned above.
- The above also includes assessing the manner in which this is being implemented and its implications for the forest and the dependent communities.
- Anticipate the implications of the enhancing pressure on forestland and resource governance.

The arguments presented in this paper do not confine to any particular theoretical framework, though these are informed by literature on political economy, political ecology and also the literature on management of commons. This choice is deliberate as to provide flexibility to incorporate views of different stakeholders and varied perspectives of looking at the resource. The study is based on secondary literature. However, many of the observations and the case study on mining project in Orissa are based on a study done by the author prior to this paper.

The paper is divided into three sections. The first section deals with the pressure of development projects on forestland. This provides a general overview of the trend of conversion of forestland for non-forest use, especially in the context of hydel power projects, mining projects and biofuel plantations. The second section is based on cases in the three categories that identify the drivers of these changes. It also includes a critical review of the process of conversions and its implications for forest resource and dependent communities. The choice of the cases and the selection of the region for study are based on the relevance of these projects with reference to the issue of conversion and associated impacts. Thus for the hydel power project the case of Lower Subansiri in Arunachal Pradesh is selected, the mining case is in Orissa and the implication of the biofuel policy is assessed in the context of Rajasthan. The third section anticipates future trends

and draws implications for resource governance in general and forest governance in particular. This section also includes a brief discussion on the institutional framework, which includes the policies that pertain to environmental clearances.

The paper concludes with discussion on the current trend and the future trends in the context of the cases discussed and in light of the given policy and implementation framework in the country. In the current 'development' context the planning process is moving with twin objective of growth and equity. However, given the nature of demands, priorities and the power of the stakeholders, the second objective is diluted to result in a 'distorted' growth model. While the paper emphasizes needs such as: (a) "limits to growth" based on principles of "restraint" and judicious use of resource" and (b) coordination between the policies that promote development projects and those that regulate environmental impacts and complimentarity in the goals of the two; it also goes ahead to emphasize the need of a robust and democratic governance structure that enhances two way accountability (of the state and people).

## Pressure on Forestland From Development Projects

The pressure on forestland is numerous and so is the diversity of data depending on the position taken. Most of the state centric accounts of the pressure on forestland inadvertently blame the increasing human and cattle population for the enhanced pressure. As per the National Forestry Action Programme of India (MoEF), the main pressures over forestland are identified as shifting cultivation, fuel wood, grazing, forest fire, and diversion of forestland. The statistics presented is corroborated by several studies, for instance the World Bank case study of India (Kumar et al, 2000).[4] The tendency to generalize often has led even to repetition of problems that may have assumed less severe proportions than the newer modes of resource use and extraction. What would the extraction of fuel wood and small timber weigh against clear felling of forest for mining project on an ecologically sensitive area (Niyamgiri Hill in the state of Orissa in India) that is source of water for two rivers, constitutes elephant corridor and also is the residence of hill tribes? Where and how does one prioritize growth against principles of sustainable development?

### Diversion of Forestland Until 1980[5]

The large-scale commercial deforestation that started in the colonial period continued in order to meet the industrial demands as well as for urbanization. The National Commission on Agriculture reported that from 1950 to 1976, approximately

4.3 million hectare forestland was diverted for non-forestry use. Most of this diversion was for the purpose of agriculture that followed the Government's 'grow more food' policy. About 2.6 million hectare of forestland was converted to agriculture (GoI, 2006).[6] Approximately 0.5 million ha of forestland was diverted for river valley projects consequent to the modernization principle. A large area was also diverted for industries and townships (0.134 million ha), infrastructure development (0.061 ha) and miscellaneous uses (1.008 million ha).[7]

Until 1976, forestland was in the State List and state governments were responsible for management of forests, including decisions related to diversion for development projects and other uses. In 1976, the Central Government issued guidelines to States to consult the Government of India prior to diversion of land more than 10 ha for non-forest use. The details of the legislation would be dealt with in detail in the section on Institutional Framework.

## Diversion of Forestland After 1980

The Forest Conservation Act made the approval of Central Government necessary for diversion of forestland for any non-forest purpose. Comparing the diversion of forestland in the period prior to the Act and until date (2008), it appears that the diversion of forestland was checked by the legislation. However, the interpretation of these figures requires greater insight into the nature of diversions and the relevant social and ecological impacts. In this section we observe the pattern of diversion and also follow the necessary arguments that have accompanied these patterns. The following table depicts the diversion of forestland for non-forest use, including development projects.

The maximum diversion of forestland, according to the table, has been for the reason of regularization of encroachment in different states (approximately 32 percent of the total diversion). However, considering the fact that the new legislation in the country (STOFDA)[8] recognizes that the people staying on these lands had rights that were curtailed and hence should be restored back to them, I will exclude the land diverted for regularization from this list. The diversion without this category (until June 2008) was 776882.52 ha. The next highest diversion is under the category "others" (16.18 percent of total diversion). However, it is unclear as to what constitutes this category and for what purpose these lands are diverted. In absence of clear categorization, I would assume that many industrial projects and SEZs would also be covered in this category. Excluding the extent of forest diverted for defense use, the diversion for mining, hydel and irrigation projects constitute almost equal magnitude and the percentage is quite

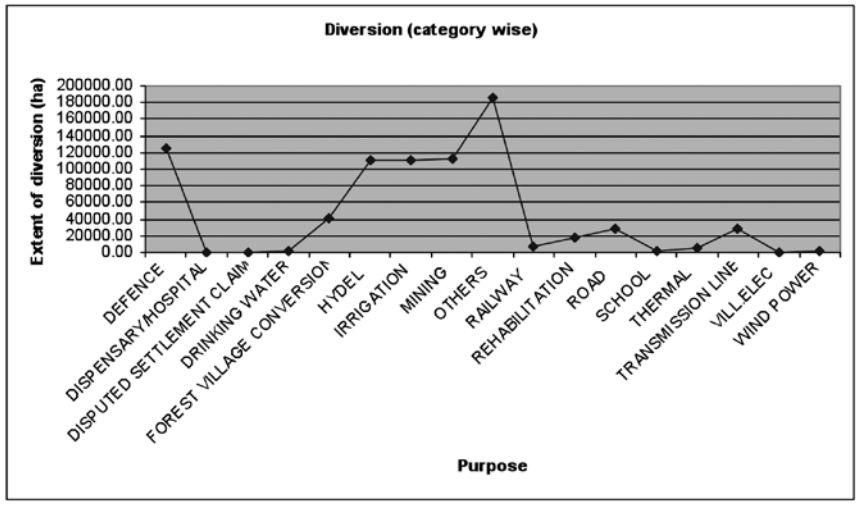
significant (approximately 29 percent for mining and hydel projects and 14.27 percent for irrigation projects).

**Table 1: Diversion of Forestland (category wise)**

| Category | Area (In Hectares) | percent Of Total Diversion | percent Of total diversion (excluding encroachment) |
|---|---|---|---|
| Defense | 124966.60 | 10.91 | 16.09 |
| Dispensary/Hospital | 105.80 | 0.01 | 0.01 |
| Disputed Settlement Claims | 0.00 | 0.00 | 0.00 |
| Drinking Water | 1800.82 | 0.16 | 0.23 |
| Encroachment | 368414.98 | 32.17 | - |
| Forest Village Conversion | 40986.81 | 3.58 | 5.28 |
| Hydel | 111257.45 | 9.71 | 14.32 |
| Irrigation | 110835.40 | 9.68 | 14.27 |
| Mining | 112918.73 | 9.86 | 14.53 |
| Others | 185331.01 | 16.18 | 23.86 |
| Railway | 7042.42 | 0.61 | 0.91 |
| Rehabilitation | 17058.41 | 1.49 | 2.20 |
| Road | 28038.34 | 2.45 | 3.61 |
| School | 2539.91 | 0.22 | 0.33 |
| Thermal | 4491.74 | 0.39 | 0.58 |
| Transmission Line | 27734.98 | 2.42 | 3.57 |
| Village Electrification | 172.59 | 0.02 | 0.02 |
| Wind Power | 1601.51 | 0.14 | 0.21 |
| **Total** | **1145297.50** | **100.00** | |
| **Total (excluding encroachment)** | **776882.52** | **-** | |

Source: Ministry of Environment and Forest, 2008[9]

**Figure 1: Diversion of Forestland for Non-Forest Use**




Source: Based on data provided by the MoEF in July 2008

Further disaggregation of the data shows that maximum diversion took place from 2001 to 2008 (until the point data was available, i.e., until June 2008). Approximately 55 percent of the total diversion of forestland occurred from 2001 to 2008. The maximum diversion in 2006 was under the category "others," where the purpose of diversion is unclear. In 1989, maximum forestland was diverted for the purpose of hydel power project. Even in absence of accurate and reliable data, one can assume that a large portion of forestland was diverted for construction of big dams on River Narmada.[10] The Narmada Sagar project itself involved diversion of over 90000 ha, out of which 40332 ha was forestland. This environmental cost of loss of forests was assessed at Rupees 30923 crores (NBA vs Union of India). The population to be affected by this single project was estimated as approximately 1.3 lakhs. The project had installed capacity of 1000 MW, apart from irrigation benefits. The diversion for hydel projects was also high in 1987 and 2004. The diversion of forestland was relatively high in 2001, again depicting high diversion for "others" category. A major portion of diversion in 2004 was for hydel project and for forest village conversion and also under the unknown category ("others"). There has also been large-scale diversion for defense purposes, highest in the year 2007. The table below depicts the year wise data on forestland diversion. It considers the aggregate figures. For the sake of clarity, the table also depicts two situations (data with and without the category encroachment). This follows the claim of the forest department that a huge area of forestland was lost in regularization of encroachment! The last column of the table depicts the

discrepancy in data that has become a usual trend with multiple sources of data. At the same time it also indicates unreliability of data generated by various state agencies. The diversion details as shown in the Forest and Wildlife Statistics, 2004, reports the cumulative encroachment until 2004 as 954839.026 ha. On the other hand information from MoEF (accessed until 2008 through RTI) shows the area diverted as 926997.77 ha, which accounts for a difference of 27841.256 ha.

Considering the fact that these diversions are in different agroecological zones, there can be no generalization based on the cumulative diversion except the fact that the diversion of forestland for hydel projects and mining projects has been significantly high. When the nature of diversion is compared with the small-scale diversion for other purpose like school, rehabilitation, drinking water etc., the difference generates from the nature of change in the use of land and the externalities created. Mining projects, for instance, would include massive destruction of forests and water sources along with social and economic implications for the communities residing in these areas. The scale of destruction depends on the characteristic of the area, and the nature of operations (underground or open cast mining).

The analysis of these diversions could be enriched with disaggregated data for diversion in different states (allocation based on category and year).[11] However, except for two states (Chattisgarh and Sikkim), the data was not available and hence no comprehensive picture could be drawn. In Chattisgarh, the total forestland diverted from 1980 to 2003 was 17166.501 ha, of which 67.22 percent (or 11539.913 ha) was diverted for mining.[12] The total forest area in the state is 59772.389 sq kms, of which approximately 43 percent is Reserve Forest. While the diversion of forest in the abovementioned period may appear as a very small percent of the total forest area, the importance of such diversion lies in (a) the status of forestland diverted and thereby the ecological impact, (b) the nature of livelihood dependence and impact thereby and (c) other impacts/externalities. In Madhya Pradesh, the total diversion of forestland under the Forest Conservation Act from 1980 to 1996 was 3790.35 sq kms or 379035 ha, including land diverted for regularization of encroachment (Forestry Statistics, 1996). In Sikkim, a total of 874.94 ha of forestland was diverted from 1980 to 2005, most of it being diverted for construction of roads/railway and hydel projects.[13] In Orissa, 295 projects were approved, diverting 331.36 sq kms of forestland.[14] Some sources state that 27479.65 ha of forestland was diverted from January 1989 to December 2006, out of which 11242.08 ha were cleared for 115 mining projects in the state (which is approximately 40 percent). About 7375 ha of forestland was diverted for irrigation projects while 2551 ha of forestland was diverted for industrial projects.[15] The recorded forest area in Orissa is 58136.907 sq kms, i.e., 37.33 percent of the land area. (SFR, 2005) The relationship between the mining activities and

the forest cover in the state would be elucidated in the next section, which deals with specific cases.

**Table 2: Diversion of Forestland for Non-Forest Use (yearwise data)**

| Year | Diversion (in Ha) (MoEF, 2008) | Diversion as percent of total (without encroachment) | Diversion (with encroachment) | Diversion as percent of total (with encroachment) | Diversion (Forest and Wildlife Statistics, 2004) |
|---|---|---|---|---|---|
| **1981** | 1328.97 | 0.17 | 1328.97 | 0.12 | 1331.7 |
| **1982** | 3499.22 | 0.45 | 3499.22 | 0.31 | 3674.32 |
| **1983** | 5053.19 | 0.65 | 5080.59 | 0.44 | 5100.51 |
| **1984** | 9341.75 | 1.20 | 9341.75 | 0.82 | 9348.9 |
| **1985** | 7358.19 | 0.95 | 7358.19 | 0.64 | 7676.83 |
| **1986** | 9185.1 | 1.18 | 9185.1 | 0.8 | 9310.45 |
| **1987** | 26178.53 | 3.37 | 26178.53 | 2.29 | 25925.97 |
| **1988** | 17539.2 | 2.26 | 18906.2 | 1.65 | 4868.71 |
| **1989** | 66660.28 | **8.58** | 66660.28 | 5.82 | 66768.09 |
| **1990** | 23141.33 | 2.98 | 127015.3 | **11.09** | 127361.79 |
| **1991** | 5002.94 | 0.64 | 5002.94 | 0.44 | 5065.35 |
| **1992** | 8259.6 | 1.06 | 21678.89 | 1.89 | 21756.77 |
| **1993** | 15998.7 | 2.06 | 15998.7 | 1.4 | 16182.51 |
| **1994** | 14916.83 | 1.92 | 14916.83 | 1.3 | 59962.02 |
| **1995** | 22871.08 | 2.94 | 51459.24 | 4.49 | 51428.98 |
| **1996** | 16934.51 | 2.18 | 31783.34 | 2.78 | 32862.55 |
| **1997** | 23038.24 | 2.97 | 23038.24 | 2.01 | 24738.43 |
| **1998** | 15072.37 | 1.94 | 15072.37 | 1.32 | 18425.21 |
| **1999** | 44294.31 | 5.70 | 44294.31 | 3.87 | 45784.41 |
| **2000** | 18923.51 | 2.44 | 18923.51 | 1.65 | 22386.43 |
| **2001** | 62150.06 | **8.00** | 265670.2 | **23.2** | 267897.61 |
| **2002** | 48724.52 | 6.27 | 48724.52 | 4.25 | 51172.31 |
| **2003** | 34675.24 | 4.46 | 34675.24 | 3.03 | 42729.68 |
| **2004** | 61,205.31 | **7.88** | 61,205.31 | 5.34 | 33,079.49 |
| **2005** | 36168.39 | 4.66 | 36168.39 | 3.16 | - |
| **2006** | 107677.64 | **13.86** | 109598.95 | **9.57** | - |
| **2007** | 62149.58 | **8.00** | 62784.35 | 5.48 | - |
| **2008** | 9533.93 | 1.23 | 9748.04 | 0.85 | - |
| **Total** | **776882.52** | | **1145297.5** | | |

Source: Data from MoEF and from Forest and Wildlife Statistics, 2004

The table below presents data from another source that depicts the state wise destruction of forest area for development projects in India from 1980 to 2003. Although the data depicted in the table does not match with the MoEF information stated above, it broadly represents the extent of diversion at the state level, which might help in disaggregating the larger picture and assessing the intensity/pressure.

**Table 3: State-Wise Diversion of Forest Area for Developmental Projects in India (1980-2003)**

| States/UTs | Approved Cases During 1980-2003 | |
|---|---|---|
| | Number of Cases | Area Diverted (In Hectares) |
| Assam | 134 | 6300.871 |
| Arunachal Pradesh | 103 | 44291.167 |
| Andhra Pradesh | 301 | 17062.802 |
| Andaman & Nicobar Islands | 65 | 2432.039 |
| Bihar | 143 | 7135.941 |
| Chandigarh | 14 | 34.479 |
| Chhatisgarh | 63 | 1972.850 |
| Dadra & Nagar Haveli | 143 | 264.583 |
| Daman & Diu | 0 | 0.000 |
| Delhi | 3 | 3.965 |
| Goa | 68 | 1309.534 |
| Gujarat | 830 | 55977.361 |
| Haryana | 359 | 7980.507 |
| Himachal Pradesh | 576 | 9860.271 |
| Jammu & Kashmir | 8 | 1500.085 |
| Jharkhand | 31 | 1444.892 |
| Karnataka | 446 | 36519.132 |
| Kerala | 182 | 40729.082 |
| Manipur | 18 | 986.849 |
| Meghalaya | 79 | 495.179 |
| Madhya Pradesh | 886 | 372658.178 |
| Mizoram | 25 | 28276.933 |
| Maharashtra | 1274 | 79932.454 |
| Nagaland | 0 | 0.000 |
| Punjab | 570 | 10059.523 |
| Orissa | 326 | 29377.785 |
| Sikkim | 159 | 1488.740 |
| Rajasthan | 447 | 16735.836 |
| Tamil Nadu | 344 | 4504.810 |
| Tripura | 179 | 5711.788 |
| West Bengal | 69 | 3377.042 |
| Uttar Pradesh | 858 | 75907.598 |
| Uttaranchal | 1655 | 8459.716 |
| **India** | **10358** | **872791.991** |

Source: Rajya Sabha Unstarred Question No. 395, dated 05.12.2003.[16]

The data presented above may appear incoherent if assessed with the objective of drawing a pattern for diversion of forestland diversion. However, if we assess the recent data on the projects offered 'forest clearance' by the MoEF and draw its link with the recent emphasis of government on maintaining high rate of growth for the economy (a clear neo-liberal agenda) one can see clear indications of the pressure on forestland. In the months of July and August 2008 itself, final forest clearance has been granted to 35 projects including an area of 4544.396 ha, while 16 projects have achieved 'in principle' clearance for an area of 1746.1455 ha. The corresponding figures are lower for hydel projects in the same period (at 14.8595 ha and 10.415 ha respectively), but the earlier approvals and the approvals for the large projects that are indicated, especially in the Northern region and the North Eastern region (under the Prime Minister's 50000 MW scheme) already indicate high pressure on these geologically fragile and ecologically rich but sensitive areas.

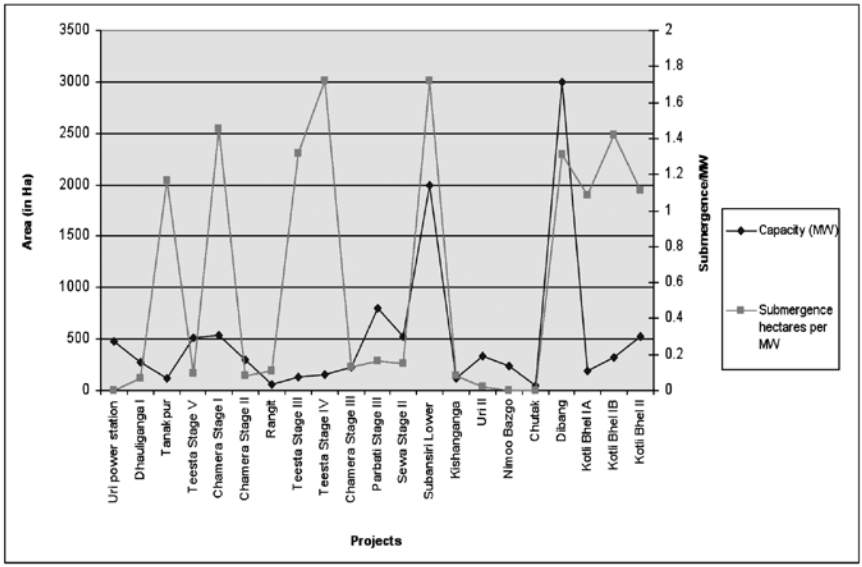
The trend of diversion for mining indicates that there has been increased and continuous diversion since 1987. For hydel projects, the trend began much earlier in late 1980s, which again reoccurred in late 1990s and early period of the next decade. It is expected that the diversion for hydel project will increase, more in areas that are planning reservoir based schemes.

In spite of the fact stated earlier, that the diversion of forestland for these activities cannot be uniform and the impact would vary depending on the geographical area and the nature of forest and related dependence, there has been a tendency to generalize the diversion and submergence caused by hydel power projects. Answering the question of land submergence, NHPC states, "Submergence of land, thereby loss of flora and fauna and large scale displacement, due to the hydropower projects is sometimes exaggerated…. 12 projects contributing 6231 MW of power required submergence of only 4850 ha of land i.e. the area of submergence per MW is only 0.78 ha." When this data was plotted on chart, it was clear that there was no uniform pattern of submergence for hydel power projects. Hence, such data on submergence per MW (megawatt) of power can only be misleading. The figure below shows the trend and the non-uniform pattern of submergence per megawatt.

Such inconsistency in the use of statistical data, especially in the context of policy formulation (and implementation, for instance in the clearances) has not just been evident but has also led to faulty policies enhancing the pressure on forestland and threatening the dependent livelihood in several regions. This is exemplified in the recent withdrawal of the National Mission on Biodiesel and the approval of the National Biofuel Policy in India by the Cabinet. Some of the sources state that the mission was left midway in apprehension of large-scale land acquisition by the energy majors. Following the launch of the mission various

energy majors like D1 Oils, BP, IOC, Reliance and others had invested in acquiring land for biofuel plantation, especially in states like Chattisgarh, Madhya Pradesh and Andhra Pradesh.[17]

**Figure 2: Correlation Between Generation Capacity and Submergence (ha of forestland submerged per MW)**




The point to be emphasized here is that both the National Mission on Biodiesel and the National Biofuel Policy have identified 'wasteland' as the 'panacea' for growing fuel crops and thus fuel substitution in wake of the energy crisis. The kind of estimation that went behind the National Mission of 2003 provoked enormous criticism from various quarters. The Mission intended to cover 13.4 million ha of land with Jatropha curcas, which included forest area, agricultural land, agroforestry practice, culturable fallow, wasteland under IWDP (Integrated Watershed Development Programme) and other poverty alleviation programmes and other public land. It also included 4 million ha of wasteland in addition to the above.[18] The manner in which 73.51 percent of the total wasteland in different states was projected for jatropha plantation was probably based on the assumption that wastelands are unused category of land.[19] On the contrary, if we see the categories of land termed as wasteland, it includes both forest and non-forest category of land (approximately 23 percent of the wasteland was in the forest category as per 2001-02 data).[20] Moreover, the communities to meet their livelihood needs, grazing and other purposes use most of these lands.

The above description clearly shows that there is increasing pressure on forestland and diversions, with the enabling argument of demographic and development pressure on states, are becoming common. The worst sufferers in many of these cases are the poor, besides the environmental impact of these projects. While we have already seen the decline in the forest cover and an indication of what is to come in the projects in pipeline, the displacement caused by the development projects is high. While all the successive five year plans in India have laid importance on industrialization and economic growth, we find that mining itself has displaced 2.55 million people in India between 1950 and 1990.[21] The subsequent figures would be higher because the intensity of mining activity increased after the economic reforms. Dam induced displacement in India is estimated close to 40 million, where most are not resettled (Saxena).[22] A review by the World Bank posited an average number of 13000 by each new large dam that was constructed (Cernea, 1996).

The believers in this highly capital intensive model of growth consider these impacts as 'given' and the prime concern is to reduce the intensity of the natural and social impoverishment. Thus we find a plethora of policies and institutional mechanisms like: the Rehabilitation and Resettlement Policy, the system of Compensatory Afforestation, the concept of Net Present Value and likewise to monitor that the impact of the externalities are reduced. Although there have been improvements and changes in the methodology and resulting policies, the overall impact of these mechanisms and policies are less than satisfactory (which we will subsequently examine in this paper also). The status of compensatory afforestation in various states depicts the situation in the forestry sector. From 1980 to 2004, a total of 10807 cases were approved for diversion of an area of 954839.026 ha. The stipulated area for compensatory afforestation was 964542.48 ha. The achievement against this target was only 71224.85 ha (Forest and Wildlife Statistics, India, 2004) – a dismal 7.38 percent!

## Conversion of Forestland for Non-Forest Use: Case Studies on Hydro, Mining and Biofuel

The cases discussed in this section pertain to diversion of forestland for hydropower project, mining project and biofuel plantation programme. These three cases can be clubbed into two categories. While in the first two cases, the quantum and nature of diversion is clear, in the third case the diversion of forestland cannot be seen in isolation with the surrounding forest or commonland.[23] This is because there may not be apparent diversion of 'legal' category of 'forest' that requires 'clearance' under the Forest Conservation Act, 1980. But the land that

is diverted may be other categories of forest or, forest 'wasteland' or nonetheless, lands that have been catering to the livelihood needs of the neighbouring communities, which in turn may enhance the pressure on whatever forest remains. Thus I want to emphasize on the 'land use' pattern in actual sense and not its legal connotation. One may like to indulge, and rightfully so, in questioning the very manner in which forest is defined but the scope of the paper limits this discussion.

The cases in the first category, hydro and the mining projects, are therefore placed within the backdrop of the local context, followed by actual discussion on the changes and the patterns. The biofuel case, on the other hand, moves from the national to micro study, since the experiments with the idea are still on.

## Pressure on Forestland from Hydropower Development: Case from North East India

To study the pressure on forestland from diversion for hydropower project the study illustrates the case of Lower Subansiri, followed by a general discussion on hydropower development and stating the reason for perceived change in policy. The reason for emphasis on the North Eastern region has been high forest cover and biodiversity in these areas, high dependence of the local population on the forest for livelihood, large scale diversion of land and forest and associated displacement. Most important consideration for selection of these cases was the relevance of these cases in current debates.

### Context of the North East

In order to understand the problem at hand, it is important that we understand the context within which the projects have been developed. Essentially these also form the basis of most of the argument that is presented by the state in order to justify its model of development.

**Development context (socio-economic context):** The northeastern states are marked by a basic needs and resource deficit, and depend largely on the Centre for development funding and assistance. (Shukla Commission Report, 1997) The annual per capita income of the region as a whole is Rs. 6,625, compared to the national per capita income of Rs 10,254 (Rao, 2007).[24] The region is marked by high incidence of poverty (34.28 percent below poverty line). The population density in the northeastern states is generally low. The region has an interesting sociocultural, ethnic, and linguistic diversity, with more than 200 dominant tribes and many sub-tribes that reflect the complex social structure.

Agriculture is the mainstay of the economy of northeast India, where more than 80 percent of the total population is rural. *Jhum* (shifting) cultivation is the

predominant land use system in the upland areas of Manipur, Meghalaya, Mizoram, and Nagaland. Due to anthropogenic activities such as loss of traditional *jhum* land to commercial tree plantations and population pressure, the land available for cultivation has declined and *jhum* is unable to meet the needs of most households. Timber logging was a supplementary source of livelihood for many, but after the ban on green felling by the Supreme Court in 1996 there has been drastic decline in the per capita income of the states in this region, particularly Nagaland and Arunachal Pradesh (Chawii, 2007).[25] The youth are migrating to urban areas causing shortage of labour for the agricultural practices in the hilly region. Tapping of additional sources of income based on local agricultural crops (cash crops and horticultural crops) becomes difficult due to poor market access and lack of value addition opportunities. There is low industrial growth in the area.

**Resource context:** The region has high natural resource endowment in terms of forest and water along with large reserve of petroleum and gas. Industrial raw materials such as coal, hydrocarbons and other mineral resources are abundantly available (Chawii, 2007). Unsustainable extraction of timber for local industries and export markets has disrupted forest ecosystems in states such as Meghalaya and Arunachal Pradesh, resulting in tremendous loss of biodiversity. Fragile hilly slopes have been extensively used for unsustainable agriculture, mining, and cash crops (Ibid). Most often the policies have not prioritized the needs of the people at the local level. In absence of applied research and extension services there is unsustainable land use. Moreover, loss of traditional methods in resource management and lack of appropriate institutional arrangements have had adverse effects on people's control over the resources on which they depend for their sustenance (Karki 2001).[26]

Natural disasters like flood and earthquakes are common in the region. This is one of the six most seismically active regions of the world. In the last 100 years as many as 18 large earthquakes have been recorded, two of which – in 1897 and 1950 – were among the most powerful (Rao, 2006). The area is marked by low connectivity to the mainland and lack of infrastructure in terms of services and transport.

**Forest status and communities' relation with the forest:** North East region has 163799 square kilometers of forest, which is about 25 percent of the total forest cover in the country (FSI, 2000). Forest area constitutes almost 64 percent of the total area as against 19.4 percent in the country. The forests are of great value to the people in these states as they depend on it for fuel, non-timber products, and domestic timber and as part of the agricultural system, besides the environmental services like hydrological functions and biodiversity conservation. There is no clear-cut distinction between the forest and the agricultural land like other parts of the country.

Historically, the northeastern states have had considerable autonomy in the management of forest. The autonomy of the scheduled tracts was ensured through

various legislations. The 6th amendment to the Constitution recognized the special rights of most indigenous hill communities. At least two thirds of the regions forests are officially under the legal authority of autonomous district councils and controlled and managed by the rural people. Community forest management in this region needs to be interpreted quite differently than in other parts of India, as it reflects "community ownership" and control over forests.

The State Forest Departments have emerged in the North East only after 1970s. However, over the past few decades there has been a greater attempt by the state to control the forest resources in the region through institutional maneuvering. There has been a lack of amendment in the legal regime following the change in geographical boundary of the state. There are variations in the definition of forest produce in different states of northeast, creating confusion when the products are taken outside the boundary. Much of the forest in the northeast is categorized as "unclassified" (Poffenberger, 2007).[27] The state forest departments, which control the reserve and the protected forest, have been showing reluctance to let the unclassified forest reflect community claim. The implication of the new Forest Rights Act (2006) is not clear in the context of the northeastern states. State representation in courts in the context of forest cases has been silent over the issue of community participation in management or community rights over the natural resources in the state. The rights of the communities are not well represented in judicial hearings or decisions pertaining to forests. The policies have often ignored the linkages between agriculture and forest in the northeast.

**Energy/power context:** The Brahmaputra-Barak (joining Brahmaputra in Bangladesh) river system has high hydropower potential. Research indicates that the hydropower potential of this river system is 41.55 percent of the total hydropower potential of the country (34920 out of 84044 megawatts) (Rao, 2006).[28] In a study by CEA in 1978-87, the hydro power potential of the basin (Brahmaputra basin) was assessed as 34920 MW at 60 percent load factor with probable installed capacity of 66065 MW, while 140 schemes were identified for the same (CEA). The status of development of hydropower is way behind its capacity. Compared to the national level potential development of approximately 26 percent, the hydro potential developed and under development is only to the extent of less than 4 percent.

The energy demand in the region is quite low at 192-kilowatt hour per person.[29] Yet the status of power supply is lower than the national average of 84 percent.[30] (World Bank, 2007: 60).[31] Industrial consumption at 1200 gigawatt-hours is less than one percent of the country. Based on the low energy demand of the northeast, it is considered more feasible than the northern power region for meeting the growing power demand of the country.[32]

Within this backdrop, hydropower development in the northeast is justified on following grounds:

- Meeting power demands (especially peaking power)
- Development benefits in the region through infrastructure development and spin off effect
- Economic development
- Meeting local energy demands
- Benefit from free power to the state, where surplus could also be traded[33]
- The impacts of run of the river schemes are manageable

### Hydropower Status in the Northeastern Region

Under the 50000 MW hydropower initiative launched by the Prime Minister of India in 2003, the regional distribution of schemes allocated largest number to the northeastern region (72 out of total 162 schemes for which the preliminary feasibility report were prepared) with an installed capacity of 31925 MW (out of all India capacity of 47,970 MW). Out of this, the largest number of schemes (42) was in Arunachal Pradesh, with installed capacity of 27,293 MW. The northeastern power region also has lower tariffs compared to other regions, which makes it economical to import power from this region for the others.[34] In terms of demand, Arunachal Pradesh has an estimated peak demand of less than 200 MW by 2016-2017. Hence, there is also a concern regarding encouraging growth of power demand in the region, which would create employment opportunities and economic activity beneficial for the region.

According to a study, the hydropower potential of the northeastern region is based on major storage developments in the Siang or Dihang, Subansiri, Lohit and Dibang river basins. However, there were problems related to submergence and reluctance of the Government of Arunachal Pradesh to permit the implementation of these schemes. As a result a cascade of dams was designed to minimize submergence. The projects identified on the Subansiri are Lower (2000 MW), Middle (1600 MW) and Upper Subansiri (2000 MW). While the work on the Lower Subansiri is ongoing, the fate of the other two are unknown following the court order that bars construction of any storage scheme upstream of the Lower Subansiri hydroelectric project.

Despite the potential of economic development and growth, why has there been resistance to the construction of many of the projects in the northeastern region? As much as the reason lies in the commonly apprehended effects like displacement and related consequences, impact on river ecosystem, loss of

livelihood and cultural heritage; there are local specificities, which have failed to make the project attractive to the original inhabitants of these areas in many cases. In others, massive inequity and lack of involvement of the people in decision-making has resulted in such resistance.

**The Lower Subansiri project in Arunachal Pradesh:** Lower Subansiri is a 2000 MW hydropower project at Gerukamukh on river Subansiri in Arunachal Pradesh. The Project is located near North Lakhimpur on the border of Assam and Arunachal Pradesh. The estimated annual energy generation from the Project is 7421 MU in a 90 percent dependable year. (NHPC)[35] River Subansiri is one of the principal tributaries of River Brahmaputra. The river has a total catchment area of about 37000 sq km. The catchment area intercepted upto the proposed dam is approximately 34900 square kilometers out of which 40 percent (14000 sq km) lies in Tibet and the rest 60 percent lies in India. Except for the upper reaches, most of the catchment in India is forested. In 2001, the Central Electricity Authority (CEA) identified 22 projects in the Subansiri basin with an installed capacity of 15191 MW (CSE).[36]

The project proposes to tap the hydro potential of the lower reaches of River Subansiri. The left bank of the dam would be in Assam while the right bank in Arunachal, which would also face maximum submergence. The 116 metres high dam would submerge 3436 ha of forestland. Total forest diverted for the project is 4039.3 ha (data from EIA/EMP report prepared by WAPCOS).[37] The EIA report states that the catchment area is highly mountainous and is covered with dense forest above the dam site. It also states that the major land use category is dense mixed forest, which account for nearly 60 percent of the submergence area. Dense scrubs and grasses account for about 16 percent and the rest of the area accounts for river beds/water bodies/rocky areas, etc (EIA report, pg-43).

The proposed dam is located in Lower Subansiri district of Arunachal Pradesh. The average density of population is 10 persons per sq km. The Schedule Tribes constitute over 90 percent of the population. The major tribal groups in the area are Apatani, Mishi and Hill Miri. Literacy rate is quite low at approximately 25 percent, lower among the female population. Agriculture is the mainstay of the population, while shifting cultivation is the principal method of cultivation. Some cultivable lands of two villages (Siberite and Gengi) on the left bank of the river are also falling in the submergence area.

The EIA report prepared for the project also states that the water quality of River Subansiri is good, considering the fact that there is very low pollution loading due to agro-chemicals and none due to industries. Thus there are no major sources of pollution in the river prior to the project. There are also no reported incidences of any major epidemic due to water borne diseases.

**The impact of the dam:** This section highlights the status of forest and wildlife, avifauna and other aquatic life, seismicity and other technical factors and socio-economic impacts. The objective is to see the consistency in the reports that have been prepared to indicate the impact of the project. It also accounts for the kind of pressure the dam would create on the forests.

*Forest and Wildlife:* The dam site and the submergence zone fall in the eastern Himalayas, which is an important part of Indo-Myanmar biodiversity hotspot and houses two endemic bird areas. These areas are part of contiguous forests comprising Kaoi, Dulung and Subansiri Reserve Forests in Assam and Tale Valley Sanctuary, Tale Reserve Forest and Panir Reserve Forest of Arunachal Pradesh. In total, 160 plant species were observed in a study, within which 3 rare/endangered species were also found. These were *Bambusa masterssi*, *Cyathia spinulosa* and *Heritiera accuminata*. Although the project talks of *ex situ* conservation of these species, an important in situ conservation area, particularly of *Bambusa mastersii* will be affected by the submergence (Vagholikar and Ahmed, 2003).[38]

On aspects of biodiversity and conservation, the observation made in the EIA report is that most of the forests face concurrent anthropogenic disturbance of varying magnitude. The patches of undisturbed primary forests are found in inaccessible areas, where big trees of primary species are found. This generalization by the state indicates that there is huge pressure on forestland from the local people through shifting cultivation, fuelwood collection and grazing. The degradation of the forest is also attributed to this cause. However, the pressure on forest from the project (destruction of forest for construction and other operations) and the settlement of huge migratory population on forest and biodiversity is not seen as intense. The report estimates a loss of two hectares of forest every year to meet the fuelwood requirements of the lower staff. The proponents justify the project by stating that only a very small proportion of the total forest area is being acquired and hence no major impacts are anticipated. One might be intrigued to know the manner in which the net present value (NPV) accommodates these variable streams of benefits and the value of the resource lost in these projects.

About wildlife, the EIA report states that at present there is no major wildlife observed in the project area. It also negates any adverse impact of human interference in absence of significant wildlife in the region. However, according to Dr. Anwaruddin Choudhary (well known naturalist from the north east) there are a number of rare and endangered species that have been recorded in the dam site and its vicinity in last decade.[39]

"The area is very rich indeed and is part of a large contiguous forest habitat covering Tale wildlife sanctuary and Tale, Panir and Drupong Reserve Forests in Arunachal Pradesh and Subansiri, Dulung, Kakoi and Ranga Reserve Forests in

Assam. Presence of 15000+ people will definitely have adverse effect on the wildlife and vegetation of the area."[40]

While the EIA report denies disturbance to the elephant corridor, Dr Choudhary also clarifies, "the presence of 15000+ workers and their camps at Gerukamukh will seriously hamper elephant movement. From Dulungmukh the animals cross the river Subansiri and move along the southern edge of Gerukamukh housing complex. Infact, the housing complex located there since the 1980s and the subsequent road construction have already disturbed the elephants although they still maintained their movement…. This belt of Assam-Arunachal Pradesh has more than 500 elephants and consequent disturbance will be disastrous." The area is also likely to be rich in amphibians and reptiles (Vagholikar and Ahmed, 2003).

The EIA report is criticized by experts for understating the level of impact in various degrees often through incorrect information. Thus in the context of Tale Valley Sanctuary, the statement in the EIA report that "the animals in the sanctuary are not dependent on river Sipu and no animal is reported to come down to the banks of River Sipu to drink water" is negated. It is said that the local hunters often snare a variety of mammals when they come to the river to drink. It is also stated that the proponents themselves countered their argument in the Interlocutory Application in the Supreme Court which said, "rise in water level in the river on the boundary 'wall' of the sanctuary will be beneficial to the wildlife due to availability of drinking water" (Vagholikar and Ahmed, 2003).

*Avifauna and aquatic life:* Although the area has a large bird population, the impact on avifauna is negated on the basis of "small amount of acquisition." The EIA report has been criticized for understating the number of species and containing wrong information.

In the context of aquatic life, the EIA report highlights that there would be significant impact due to alternation in habitat. Among the aquatic animals, fish life would be most affected. Migratory species like *mahseers* and snow trouts are likely to be adversely affected. With regard to fishing activity, the EIA report states that fisheries are not well developed in the project area and there are no fish landing centers in the project area. It is stated that during the investigation, there was no major fishing activity in the project area. However, it is admitted that the construction activities would affect migration of fishes. To minimize the loss of fish catch due to desiccation, the corrective measure being suggested was to maintain minimum flow of water in the river.

Several reports and studies qualify the impact on aquatic life due to the project. According to Bikul Goswami (an aquaculturist and amateur naturalist based in Assam), "the proposed dam will have detrimental impacts on the riverine and the *beel* (wetlands) fisheries downstream as the water flow regime will be affected. The seasonal inundation of the *beels* by the river, which helps in the nutrient

cycle of the local aquatic ecosystem will be affected" (Vagholikar and Ahmed, 2003). The impacts are confirmed by observations from Dr Sanchita Baruah and Dr S P Biswas of Dibrugarh University in Assam, while discussing the impact of flood control devices on the fauna of the Brahmaputra drainage system. They say, "it is expected that the absence of high intensity floods due to the construction of upstream dams will definitely affect the 'auto stocking' of the lakes. Thus the lakes might not be adequately stocked by riverine species. The profuse premonsoon growth of aquatic weeds will also not be 'flushed out' due to inadequate flooding of the *beels*. The impoundment will also bring about drastic changes in the nutrient composition of the bottom soil influencing the diversity of benthos and other aquatic biota."

*Seismicity and other technical factors:* The project area is highly prone to landslides due to geophysical environment that is marked by steep slopes and gorges and high intensity rainfall. Landslides can cause increased sedimentation load, resulting in formation of landslide dams, which can have serious impact on hydrological structures both upstream and downstream. The paper by Vagholikar et al. emphasizes this aspect by saying that usually when seismicity is discussed in relation to the dams, the only factors are reservoir induced seismicity and direct damage to the dam structure due to an earthquake. They emphasize on the need to look at other geophysical factors and impacts. The earthquakes of 1897 and 1950 caused landslides on the hill slopes including blockage of river courses, flash flood due to sudden bursting of landslide induced temporary dams, raising of riverbeds due to temporary siltation, fissuring and sand venting, subsidence or elevation of existing river and lake bottoms and margins and creation of new water bodies and waterfalls due to faulting. After the 1950 earthquake, extensive landslides blocked the Subansiri and the bursting of this natural dam after several days caused devastating floods downstream. A large amount of sediment generated by the landslides was brought downstream, raising the riverbed considerably. The Subansiri and several of its tributaries changed their course at several places, forming new channels (Vagholikar and Ahmed, 2003).[41]

Several other organizations have identified a range of problems stating that major knowledge gap exists on risks due to factors such as: hydrological impact of seismic activity, impact of climate change on the glacial activity, and have not been attempted to be addressed in this project! (CSE).[42] The flood moderation claims by NHPC are also questioned after the Supreme Court's order restricting construction of any dam in the upstream of the river, since the flood control was to be achieved by integrated operation of Upper Subansiri, Middle Subansiri and Lower Subansiri (ibid).

It is also said that the EIA report does not adequately address the ecological impacts (such as impact on microhabitat of aquatic flora and fauna) of the quarries

targeted for extraction of clay material for construction purposes. Based on the analysis of the EIA report, it is also pointed that "in this part of the Eastern Himalayas, the erodibility of the catchment is not just dependent on the status of the catchment forest but is largely influenced by the tremendous geophysical forces in the region, irrespective of the status of the surrounding forests" (Kalpavriksh and SANDRP, 2005: 45). In fact, the use of Universal Soil Loss Equation is itself criticized on grounds of its applicability in Brahmaputra river system, which is characterized by high sedimentation load and is located in fragile zone (ibid).

*Socio-economic impact:* In the proposed project land is to be acquired from two villages, namely Gengi and Siberite. The cultivable lands of these two villages fall in the submergence area. About 38 families inhabit these two villages, which have 32 households. The houses also own individual granaries. The tribal group that resides in these villages is called Gallong and is a sub-group of major tribal group called Adi. The average family size among the affected population is 8.6 persons per household.

Cultivation is the primary occupation, which is practiced in the form of shifting cultivation as well as terrace rice cultivation and wet rice cultivation near the riverbed. Besides cultivation, they also collect food items through hunting, fishing and are engaged in collection of wild fruits, nuts, vegetables, etc. The most commonly grown crops are paddy, maize and millets. Other crops grown are Soya bean, brinjal, pumpkin, sweet potatoes etc. The forestlands that are used for shifting cultivation are mainly used as common property and used by the entire village. Besides they are also used for hunting, collection of food items and other household needs like small timber. Besides cultivation, these tribes also rear animals like cows, pigs, poultry, dogs and *mithun*. The villages are devoid of most infrastructure facilities. Besides the commonland that is owned by the village council and used for shifting cultivation, the villages also have individual land and land owned by the village clan. The land used for wet rice cultivation is flat land mostly adjacent to the house. The land owned by the clan is used for worship of deity.

The project report (EIA) has data on the land holding pattern of the villages but doubts that these are exaggerated. It states that since the occupation of land is based on traditional rights there are no revenue records and hence limited scope to assess exact land holding. Based on the survey they have stated a total holding of 960.11 ha in the two villages, where 399.7 ha (41.63 percent) are stated to be under wet rice and terrace rice cultivation.

In order to compensate the villages for the cultivable land and for the loss of livelihood, the Rehabilitation and Resettlement measures include relocation of families (since they would lose their cultivable land) and compensation for the land lost due to submergence. Each Project Affected Family (PAF) was to

be provided with homestead land (200 sq meters) and lump sum of Rs 2.5 lakhs as grant/subsidy/assistance to cover land development cost and other inputs, including livestock maintenance. The land allotted in lieu of the lost agricultural land was up to one ha per family. Some other infrastructure facilities like school, drinking water, health centre, roads were also to be developed.

The compensation package extended to the inhabitants has been widely criticized for not taking into account the dependence on the common land for various purposes as stated above. Thus the grant of one ha land in compensation for their traditional holdings (which accounted to 960 ha for 38 families) is considered inadequate. Moreover, it is also said that other sources of livelihood are not accounted at all. There would be considerable impact on livelihood in the downstream due to impact on river and wetlands (*beels*). These wetlands are crucial for sustaining livelihood through fisheries and wet rice cultivation for a substantial population (especially for the *Mishing* tribe).

### EIA Report and Environmental Public Hearing for Lower Subansiri Project

The EIA report for the Lower Subansiri project that was prepared by WAPCOS and the Environmental Public Hearing process are both criticized widely. The former for inadequately accommodating the socio-economic, environmental and other impacts (some of the points are stated above) and the latter for not following the process laid out for such hearings, and thus not meeting the objective of such consultation with the affected people.

An expert committee of the Indian Board of Wildlife (IBWL) in September 2002 questioned the quality of the EIA and asked for accurate, detailed, scientific information from reputed sources. The MoEF[43] commissioned the Zoological Society of India and the Botanical Society of India to do an additional study. However, the study was conducted only in the Tale Sanctuary as opposed to the complete impact zone. Members opposed the quality of the report and urged that clearance should not be granted. An application was put in the Supreme Court in 2003. IBWL said that MoEF had revealed to the non-official members of the IBWL that in case Lower Subansiri project was not cleared, reconstituted IBWL would clear it in 6 weeks. Thus IBWL cleared the project under severe pressure. When IBWL was reconstituted as National Board of Wildlife as per amended Wildlife Act, 1972, all members who had opposed the project were dropped. Since 2004, NHPC is said to have received all necessary clearances.[44]

The process of environmental hearing was considered inadequate and flawed. The projects affected families were not informed about the date of hearing beforehand (as required by law). The presentation about the project and its details were done in Hindi and English and not the local language. The executive summary

was considered inadequate with only technical details and no information on environmental and social impacts of the project. The public hearing panel was also not adequately informed about the date of hearing. Neither were they provided with sufficient information regarding the project in advance. The denial of any construction on site at the hearing, when actually the construction was ongoing, was interpreted as 'lying' at the hearing. The answers to the queries were also considered inadequate. It is also said that the project authorities misused their authority and got the participants to sign a resolution saying that there was no opposition to the project from the people there as it had no environmental impact.

Further, it was also reported that NHPC had indulged in defying court orders. It had disturbed the elephant corridor through ancillary construction increasing the possibility of human-wildlife conflict. In May 2004, huge pile of muck and debris was dumped in the river despite the court order barring dumping of excavated material in river or National Park/Sanctuary.

Spurred by the action on the project and the intensity of the impacts, people and various democratic organizations mobilized against such action in the Subansiri valley of Assam and Arunachal Pradesh, and formed the "Subansiri Valley Indigenous People's Forum." They demanded second public hearing on the Subansiri Lower dam (for "demonstrable acceptance" of the dam) on the same grounds on which the public hearing was criticized (see above). It was also alleged that important citizens, NGOs etc, who have expert knowledge about impacts of big dams and are concerned about preservation of biodiversity and environment, were not informed.

### Environment, Forest and Wildlife Clearances for the Project

The project received stage I site clearance in November 2000 and stage II site clearance in July 2001. MoEF withdrew the clearance when it came to their notice that part of Tale Valley Sanctuary was being submerged. However, the clearance was reissued in December 2001 to allow investigations and other preliminary work even as the Supreme Court clearance was pending (despite the fact that clearance of Supreme Court was necessary following Supreme Court order of November 2000 in the WWF case). The environmental public hearings followed initial clearances. The legal violation by the project developers was evident because construction had started even before the clearances were issued.

The project required permission under section 29 of the Wildlife (Protection) Act of 1972 since a part of the Tale Valley Sanctuary was to be submerged. Based on aerial survey of the sanctuary in December 2001 (and report submitted by the officials of the wildlife wing of Arunachal Pradesh, State Forest Research Institute and NHPC) the Department of Environment and Forests, Itanagar,

communicated to the MoEF that impact on "wildlife will be insignificant and on the contrary, the presence of water in the reservoir may facilitate avifauna." (Vagholikar and Ahmed, 2003). Based on various discussions and deliberations, the Supreme Court, on 9th May 2002, granted exemption to the project from its interim stay of November 2000, restricting dereservation of protected areas.

In the meanwhile, resistance to the project continued on various grounds ranging from poor environmental assessment to socioeconomic implications and development planning in the northeastern region of the country. As discussed earlier, the Indian Board of Wildlife was not satisfied with the project document and in its analysis about impact on biodiversity. What followed the detailed impact study on biodiversity by the Zoological and Botanical Survey of India is already discussed in this paper.

The project was granted stage I forest clearance in June 2003 and environmental clearance in July 2003. The forest clearance was granted under certain conditions some of which include: compensatory afforestation over degraded forestland twice in extent of the area diverted, penal compensatory afforestation for the forestland diverted for road, ascertainment of the rights of the people over the forestland diverted and alternatives to be provided thereby, quarrying to be done in submergence area only, half percent of the project cost to be transferred to state forest department for carrying out forestry/wildlife activities in addition to compensatory afforestation, catchment area treatment plan to be recasted in consultation with the state forest department. The environmental clearance was granted with condition of strict compliance of various terms and conditions some of which are stated hereby. Specific conditions laid out were regarding: formation of monitoring committee for implementation of R and R plan (including a woman representative), catchment area of 1663 ha to be treated in three years, minimum flow of water to be maintained in the lean season in the pools immediately downstream of the dam, baseline data on coliform to be collected and monitored, identification of orchids before submergence, hatchery to be created in the vicinity of the reservoir, local aquatic fauna to be identified scientifically and documented. It also suggested comprehensive one-year study on biodiversity and habitat conservation with reference to the submergence area and efforts to employ local people in both skilled and semiskilled category. The general conditions included among other things, the formation of a multidisciplinary committee to oversee the effective implementation of the safeguard measures, and six monthly monitoring reports to be submitted to the ministry and its regional office.

These clearances were however challenged in the Supreme Court in August 2003. Some of the conditions that were left out were reinstated in the April 2004 order of the Supreme Court in 2004 following the decision on intervention application filed against the environmental clearance by a former member of the Indian

Board for Wildlife, Dr L M Nath. The application stated that MoEF should not have granted stage I environmental clearance as it involves destruction of wildlife and its habitat of the Tale Valley Sanctuary. It also mentioned serious difference of opinion among the members of the IBWL when the project was discussed. Two members (Bittu Sehgal and the then Additional Director General of Forests (Wildlife)) gave their reports raising serious objections against the project (the fate of the objection and subsequent study has been discussed several times before in this paper). The application also stated that over 40 percent of the catchment area falls outside India (in Tibet) and it has not been taken into account while planning the project. Further, it also pointed out at the objective of public hearing not being followed through distorted processes. The matter was finally disposed off by the Supreme Court in April 2004 with several conditions, some of the significant ones being:

- The legal status of the sanctuary land that is 42 ha will remain unchanged and will continue to be a part of the sanctuary.
- There would be no construction of dam upstream of the Subansiri river in future.
- The NHPC will also ensure that there is no siltation down the Subansiri River during the construction phase. The spillage and diversion channels will be maintained as fish ladder.
- Under no circumstances, the excavated material will be dumped either in the river or any part of the National Park/Sanctuary or the surrounding forest.

It also talked about funds for relocation and resettlement of the people from inside the National Park/Sanctuary, adequate arrangement of fuel supply to the staff and workers engaged in the construction.[45]

The diversion of forestland for the project was approved in October 2004, stating that the state government had complied with the desired conditions stipulated for in-principle approval. The user agency also deposited a sum of Rupees 300 crore with the Supreme Court towards net present value of diverted forestland. The forestland was diverted in favour of NHPC subject to fulfillment of certain conditions, some of which are:

- Legal status of forest shall remain unchanged
- Compensatory afforestation to be undertaken on non-forestland at project cost
- Felling of trees only in areas where it will obstruct project construction and that too under the supervision of State Forest Department
- Site for construction of colonies where minimum felling of trees would be required
- Free water availability for forestry and allied activities
- Reclamation of quarry sites as per reclamation plan at the project cost
- Efforts for protection of the environment at project cost
- Steps to minimize biotic pressure on nearby forests

### The Status of Other Hydro Projects in the Northeast

As stated earlier in this paper, the hydropower projects in the Northeastern region are seen as an economic source of energy and are justified by the government in terms of meeting the future power demands of the country. In return this region can progress economically through infrastructure and increased availability of electricity. In the paper by VVK Rao, which serves as one of the background papers on the World Bank study "Development and Growth in the North East India: The Natural Resources, Water and Environment Nexus," there is emphasis on the need to address the cost side of the equation. The implication being that as long as losses remain uncompensated the development of hydro power will remain disruptive, fueling division and protest and thus deterring the investment needed to unleash growth and job creation. As far as the status of the hydropower development is concerned, the issue grows larger in proportion to simple cost benefit calculation or compensation packages. The issue points to questions of political economy of development. Who benefits from these development projects and at whose and what cost?

There has been serious resistance in the northeast against this model of development. The result is seen in the progress of several projects. The public hearing for the 3000 MW Dibang project schedule on 20th August 2008 was cancelled for the fourth time following protest by the people's movement in Dibang Valley.

### Performance of Hydel Power Projects

A review of the performance of hydropower generation however does not present a very encouraging picture to date. The planwise hydro capacity targets and achievement in the 8th, 9th and 10th plan have been: 26.15 percent, 46.23 percent and 54.79 percent, which is actually a decline from earlier plan periods. An overview of the status of the projects under execution shows that most of the hydropower projects are delayed thereby imposing high escalation in cost of the project. In April 2008, a study by the Parliamentary Standing Committee showed that the increase in project costs due to delays varied from 400 percent at the lowest to a maximum of 2500 percent.[46] There have been problems of various sorts that have led to such delays. The Hydropower Policy of 2008 has classified these as: technical (such as inadequate geological investigations, outdated tunneling methods), financial (such as non-availability of long term financing and viability of tariff) and managerial (inadequate contract management expertise). One of the India's largest hydropower companies, NHPC, is finding it difficult to meet its target of 10000 MW by 2012 due to contractor problems and manpower issues.[47] The delays have become rather a norm in hydropower projects, irrespective of being executed in the central, state or private sector.

Although the new hydropower policy has introduced a penalty for such delay,[48] it probably addresses only a part of the problem while leaving the fundamental question unaddressed. It does not get into the complexities of solving the issues of ecological unsustainability and social displacement and rehabilitation and resettlement issues. The example of this is evident in most of the big dams that have faced resistance and consequent delay. The consequence of high dams can best be exemplified in the Himalayan Rivers, as in the Tehri dam. The dam was proposed on the River Bhagirathi in Garhwal Himalaya and approved by the Planning Commission in 1972. It received administrative clearance in 1976 but was opposed by the Anti-Tehri Dam Committee due to massive displacement. Following the massive landslide dam burst on the Kanodiagad River in Upper Bhagirathi catchment, when fresh studies reviewed the aspects of ecological sustainability and environmental impact of the proposed dam, there were negative opinions about the project. The concerns related to rehabilitation of the people, siltation of reservoirs and seismicity. The cash compensation offered in the foothill areas of Himalayas was unsatisfactory and availability of land was limited. The Environmental Appraisal Committee commented, "Initially, the project authorities had proposed to acquire forestland for rehabilitation purposes. However, with the promulgation of the Forest Conservation Act, 1980, forestlands earmarked for the project are no longer available. Therefore, an important aspect of satisfactory rehabilitation is to identify enough land with capability to sustain agricultural operations so that all the oustees can opt for land of their own choice… The Committee notes with regret that rehabilitation norms adopted by the Tehri hydro Development Corporation are not in consonance with the national thinking and strike at the root of the traditional joint family system" (EAC, 1990).[49]

The displacements through large dam projects have thus resulted in flood of development refugees (Bandopadhyaya and Gyawali, 1994). These people further enhance the pressure on forest through 'illegal' means or live in dire conditions eking out meager living as squatters (ibid). The studies also noted wrong calculations of siltation inflating the life expectancy calculations of the dam. Infact, the initial calculations on the economic life of Tehri dam was based on observed siltation rate of the Bhakra dam, which was situated amidst different settings. There was absence of systematic data collection for the site and the 1979 data on the same was deliberately concealed because the silt load was extraordinary (ibid: 19). There was serious opposition to the project in view of proximity to area of intense seismic activity.[50] There was uncertainty regarding the safety of the people living below the proposed dam. Projects such as Tehri brought forth the concern with inadequate understanding of hydro ecology of the Himalayan Rivers.

The trend of dam development depicts a period of growth and decline that is peaking again with the argument of global energy crisis and demand. The

hydropower initiative has accelerated since 2001 and there is considerable emphasis on tapping the potential in the North East. The tentative capacity addition planned for the northeast during the 11th five-year plan is 4655 MW while the estimate for 12th plan is an ambitious 24361 MW (including Sikkim). Although the percent of storage and ROR[51] schemes is not clear for these projects, data from some sources show that most of these are storage projects.[52] In Arunachal Pradesh, 13 projects with installed capacity of 22180 MW is likely to submerge 26371.42 ha of land, of which the proportion of forestland is not clear.

Interpretations based on performance of hydropower also indicate a declining trend in the electricity generation from hydropower projects. The reasons for this downward trend could be: silting of reservoirs, ageing of dams and machines, over development of river basins and so on (Thakkar, 2007).[53] The action in response to such issues such as siltation, pricing for peaking power consumption, adequacy of environmental impact studies, and management of environmental impacts is negligible. There has been no serious action by the MoEF against lack of compliance by project authorities (Kothari, 1998).[54] Ensuing these observations, there can be several questions on bureaucratic efficiency, political decision-making, and judicial effectiveness. Amidst all the political makeover and institutional complexity, the observation in the report of the Government of India (1999)[55] stands tall, "Environmental concerns continue to be regarded as disagreeable external imposition and they have not become part of the project planning from the start, despite many guidelines and instructions to that effect." As a result personalized interests of few actors continue to sway political decision-making. Things have not changed much from the earliest times of the Bhakra Dam in India, which had serious environmental impacts in terms of land and forest submergence, displacement, siltation of dam, health impact and other downstream impacts. The beneficiaries of these projects continue to be very different from those that suffer the effect of displacement and loss of livelihood.

In Arunachal Pradesh, the protesting group of students from All Idu Mishmi Student's Union state, "Arunachal does not need all this power. Dams are going to destroy the area and not bring any development…It is being done suddenly, without involving the locals, who will lose their land and livelihood. They don't even have a degree to find a job."[56] There are further complications in these regions that have different land tenure system than the rest of the country. While on the one hand, people/communities enjoyed traditional rights over land and forest, the pressure of land acquisition (not just for the project but also for compensatory afforestation) has brought troubles for the local inhabitants who often do not possess land records. The tribals are reported to being cheated (provided false information and promises) in order to acquire land for development, and they toil as labourers in their own field.[57]

While the environmentalists and the locally affected population are crying foul over the policy and its implementation, the electricity authority and the project developers have been showing concern over delay in getting MoEF clearance and payment of NPV (net present value), which can make hydro power costly. The policy pronouncements in the recent past have been encouraging private investment while finding ways to ease the delays in clearance. The anti-dam movement has faced challenge from the mobilization of pro-dam actors constituted of more powerful group of rich farmers, middle classes, technical, professional and bureaucratic elites linked to big dam building, private sector companies as well as politicians who are dependent on these groups for political survival and success (Khagram, 2004: 62-63). They have found supporters in transnational professional associations, donor agencies, multinational corporations and non-resident Indians (ibid). The adoption of neoliberal economic policies and related privatization and liberalization of power and water sectors also posed a setback (ibid).

## Pressure on Forest from Mining Projects in India

India is endowed with vast mineral resources. It is the world's largest producer of mica blocks and mica splittings, ranks second in chromite production, third in production of coal and lignite, second in barites, fourth in iron ore, fifth in bauxite and crude steel, seventh in manganese ore and eighth in aluminum. (Ministry of Mines, 2008)[58] Most of the contribution to the mineral production has been by the public sector. However, in recent years there has been privatization of these undertakings in a phased manner following the Government's strategy to withdraw from non-strategic sectors.

Policies like the Mines and Minerals (Development and Regulation) Act, 1957, (MMDR) and the Mines Act, 1952, together with the rules and regulations framed under them, govern this sector. The MMDR was amended four times between 1957 and 1999, first enhancing and then relaxing government control. Gradually there was considerable devolution of authority from Centre to states. With time there has also been relaxation in foreign direct investment (from 50 percent in 1993 to 100 percent in 2006). The relevant rules in force under the MMDR Act are the Mineral Concession Rules, 1960, and the Mineral Conservation and Development Rules, 1988. The Mineral Conservation and Development Rules, 1988 lays down guidelines for ensuring mining on a scientific basis, while at the same time, conserving the environment. The National Mineral Policy was enunciated in the year 1993.

In this section, we would first take an overview of the mineral status of the country and then move on to see the relation between mining and environment.

The section on policies would briefly comment on the policies and the fate of such decisions where the stakeholders are unequal. The two case studies on mining in Orissa highlight the violations in terms of environment and the rights of the communities, especially in the tribal dominated regions, which are also the most forested regions. The cases are analyzed by showing the prioritization in decisions related to development projects and the role of the stakeholders in cases where the development cost and benefit are unevenly distributed.

### Overview of the Mineral Status of the Country and States

The aggregate production of minerals in the country in 1999-2000 was 550 million tonnes, more than 80 percent of which was from open cast mines. The mining leases during this period covered about 0.7 million ha, which is close to 0.21 percent of the total landmass of the country (TERI, 2001).[59] From the 1970s to the 1990s, there was a significant leap in the status of recoverable reserves and this led to significant impetus on mineral and mining industry in the five-year plans. Domestic and foreign investment was already pushed through the National Mineral Policy of 1993. The leading states in terms of mining lease included Madhya Pradesh, Rajasthan, Gujarat, Andhra Pradesh, Bihar, Orissa and Karnataka.

Orissa became the leading producer of bauxite contributing almost 42 percent by the end of 1990s. The state was also a leading producer of chromite, contributing as much as 99 percent of the production. Major deposits of copper ore were located in Madhya Pradesh, Rajasthan and Bihar. Reserves of diamond were found in Madhya Pradesh, Andhra Pradesh and also in Orissa (TERI, 2001). Boosting large reserves of iron, Orissa has the country's maximum reserves of Hematite at 33 percent (followed by Jharkhand and Chattisgarh), while magnetite deposits are abundant in the southern region especially Karnataka. Orissa also dominated the production of manganese ore at 35 percent of the total production, followed by Maharashtra and Madhya Pradesh (CSE, 2008).[60] The largest reserves of lead and zinc ore are in Rajasthan (almost 90 percent). There has been an upward trend in the mineral production by several other states in last few years. Karnataka has almost doubled its production to Rs 2117 crores in 2004-2005. Goa increased its production by 67 percent. Similar but slightly lower trends were seen in Madhya Pradesh and Orissa. Orissa is said to have one-third of total value of metallic minerals, while it also had significant contribution to the fuel mineral production (ibid, 2008).

India is largely self sufficient in terms of production of most of the minerals. In last few years, India has imported non-coking coal along with few other minerals. In 2003-2004, India imported Rs 13060 crore worth of ores and minerals, the highest share being that of petroleum crude. In the same period, India exported

minerals worth Rs 49911 crores. In terms of contribution to the exchequer, the main source of revenue is the royalty from the mineral extraction in the states. Dead rent and other taxes and fees constitute only a small component of the total revenue. The table below shows the royalty accrual for states with significant mining activities. As is evident, states like Andhra Pradesh, Jharkhand, Chattisgarh, Madhya Pradesh and Orissa are the leading states in terms of royalty collection from mining activities.

**Table 4: Royalty from Mining in Different States**

| Royalty Accruals on Minerals in States with Significant Mining Activities (RS crore) | | | |
|---|---|---|---|
| | Total Royalty Collection | | |
| State | 2002–2003 | 2003–2004 | 2004–2005 |
| Chattisgarh | 552.36 | 637.17 | 694.61 |
| Jharkhand | 797.65 | 900.16 | 916.2 |
| Karnataka | 83.89 | 143.62 | 210.94 |
| Madhya Pradesh | 590.69 | 646.71 | 733.72 |
| Orissa | 440.57 | 547.2 | 663.61 |
| Rajasthan | 399.68 | 457.96 | 589.79 |
| Maharashtra | 400.69 | 475.92 | 568.24 |
| Gujarat | 172.63 | 217.90 | 238.95 |
| Kerala | 1.63 | 10.45 | 12.61 |
| Goa | 14.81 | 17.87 | 17.44 |
| Tamil Nadu | 297.34 | 324.5 | 324.82 |
| Andhra Pradesh | 769.93 | 766.56 | 864.53 |
| Uttaranchal | 22.55 | 30.65 | 35.6 |
| Uttar Pradesh | 262.42 | 254.18 | 291.94 |
| Haryana | 118.08 | 76.77 | 92.50 |
| Assam | 9.36 | 12.64 | 13.36 |

Source: Department of Mining and Geology, various state governments.

### Mining and Environment

Forest-minerals-poverty nexus: Statistics show that high forest cover characterizes the mineral rich states in India. The forest cover in these areas is higher than the national average of 20.63 percent. To cite a few examples, Chattisgarh has a forest cover of 41.42 percent, Jharkhand has 28.5 percent forest cover, Orissa has 31.06 percent and Madhya Pradesh has 24.79 percent forest cover (SFR, 2003). The correlation would be higher if the figures are disaggregated at district level based on mineral abundance and forest cover. Unfortunately, these are also the areas marked by low performance on indicators of human development. Singhbhum West in Jharkhand has a mineral lease area of 17978 ha[61] and leads in the production of Iron Ore and Manganese. The area under forest cover in the district is 38.47 and is a tribal dominated district. The district ranks 6th of the 22 districts in the state and has a literacy rate of 50.17 percent. Despite the industrial growth, 45.74 percent of the population is still below the poverty line. Keonjhar district of Orissa has 33715 ha of major mineral lease area and is the biggest iron ore producer in the state. The district is tribal dominated and has 38.97 percent of total geographical area under forest cover. Yet the district ranks 24th among the 30 districts of Orissa on the human development index. The literacy rate is 59.75 percent while 61.92 percent of the population is still below poverty line. Koraput, which is the top producer of bauxite in the state of Orissa ranks still lower on the human development index. Of the 30 districts, it ranks 27th and has 78.65 percent of its population below the poverty line. The region is tribal dominated and the major mineral lease area in the district is 7396.27 ha. Dantewada district in Chattisgarh, which is the biggest producer of iron ore in the district, has 2973.44 ha under lease for major minerals. The area under forest cover is 64.24 percent and the district is tribal dominated. It ranks 9th among the 16 districts of the state and has a literacy rate of 30.2 percent. (CSE, 2008) There are many such examples from the major mineral producing states that stand contrary to the claims of development through industrialization in these areas. Although the paper does not include identification of factors responsible for this nexus within its scope, a preliminary understanding certainly indicates that attractiveness of these areas for mining lies not just in the rich mineral reserves (which of course is the prime factor) but also factors like:

- Weak state marred by financial dependency on Centre and international aid
- Weak tenurial status in terms of land and institutional arrangement that make land acquisition cheap along with low labour cost

Mining induced displacement in these areas has further impoverished the population that is politically weak and powerless. There are various estimates about

the numbers that are displaced by mining and related activities. By conservative estimates, mining itself has displaced 2.55 million people in India between 1950 and 1990 (IGNOU, 2001).[62] The figure is said to have increased since the practice of open cast mining in the 1970s. There has been enormous difficulty in successfully rehabilitating formerly sustainable communities dismantled by mining (Pandey, 1998; Fernandes, 1994; Mathur and Marsden, 1998; World Bank 2001).[63] Mining induced displacement is also accompanied by the resettlement effect, which implies "loss of physical and non-physical assets, including homes, communities, productive land, income-earning assets and sources, subsistence, resources, cultural sites, social structures, networks and ties, cultural identity, and mutual help mechanisms" (ADB, 1998).[64] The potential risks associated with displacement are common to all instances of mining induced displacement also. The risks identified by various scholars are: landlessness, homelessness, marginalization, food insecurity, loss of common lands and resources, increased health risk, social disarticulation, loss of civil and human rights, disruption of formal educational activities and loss of access to basic public services.[65] In order to reduce the impoverishment risk, several measures have been proposed. Resettlement plan forms one such organizational step to reach the goal. The resettlement plan includes social preparation, impoverishment risk assessment and identification of vulnerable groups (Downing, 2002). Based on these analyses, entitlements are defined in the form of compensation, income restoration and so on (ibid). The aim of rehabilitation is to ensure that the groups are not worse off than they were before displacement. The goal of acquisition of asset by the project owners can be through forced appropriation or through compensation and benefit sharing. Most often, the goal of rehabilitation ends in mere bargaining in the form of compensation.

Although there are several possibilities of avoiding further impoverishment of those displaced, the displacements from mining sites have often resulted in "development refugees," who pay the cost of these development objectives. The tribal population that inhabits the mineral rich and forested areas most often represents this group of "development refugees." The ecological decline results in virtual destruction of their livelihood base.

**Impact of mining:** The location of minerals and hence the mining industries in the interior regions and therefore economically backward and well-forested areas has led to justification of these industries for regional development and creation of employment besides adding revenue to the exchequer. But as is widely recognized, there are contradictory tendencies between the support of production system for a larger economy and demand for regional development that have led to unhealthy relationships between income generation and reinvestment for development (Joshi et al, 1988).[66] This relationship has often led to resource degeneration as well as socio-economic problems like technological advancement leading to local

unemployment and influx of skilled labour from outside. The debate on the ecological impact of mining is not recent. The impact of coal mining was exemplified in a study in 1982 saying that, "by 2000, the country will be annually producing 200 MT of coal so that over next 20 years about 2200 MT will be mined. Assuming the depth of overburden in the opencast mines to be about 100m, the amount of debris from about 100 sq kms of area that will be removed would be 8800 million $m^3$ produced at the rate of $4m^3$ per tonne of coal mined" (Ghose, 1982).[67] The disposal of this huge volume of debris would be a problem along with additional 100 sq kms that will be disturbed by ancillary activities. The point that is being made here is that as the area of mining expands, the intensity of environmental impact increases proportionately causing damage to the land and forest, water, air quality, aesthetic damage and associated socio-economic impact for the communities.

Often the policies have recognized the environmental impact of mining. It is also mentioned (like in the High Level Committee report on National Mineral Policy in India) that managing this impact requires dealing with a number of issues like handling of immense quantities of waste, acid drainage, environmental impact assessment, designing environment management plans, effective mine closure planning and restoration of ecological balance. Irreversibility of many such losses (for example, biodiversity) is also recognized. The Convention on Biological Diversity provides the mineral sector with a sound basis for taking appropriate steps for preserving and enhancing biodiversity in its area of operation and engaging in constructive dialogue and partnership with the biodiversity community. However, the mining sector in India (including the industry and the state) is still far from making these goals of sustainable development realizable.

### The Policy Perspective: Interface of Unequal Stakeholders

A number of laws and policies govern the functioning of the mining industry and the exploration of minerals. We would focus on those that relate specifically to environment in general and forest in particular. There are apparent contradictions in the principles that are stated in the policies and those that are operationalized. In principle, the Mineral Concession Rules, 1960, the Mineral Conservation and Development Rules, 1988 lay considerable stress on conservation of environment. However, the ambiguity in the legislations by use of qualifiers and open-ended nature leaves enough room for interpretation (or misinterpretation). For example, on mine restoration it is said, "wherever possible the waste rock, overburden etc shall be backfilled into the mine excavations with a view to restoring the land to its original use as far as possible." This leaves ample scope for mine owners and regulator to treat each mine as a special case and evade any responsibility (CSE, 2008: 279).

With respect to environment, the National Mineral Policy, 2008, states that a significant part of the mineral reserves are in the forested areas. Thus the policy articulates the need to design sustainable development framework that takes care of biodiversity issues and ensures that suitable measures are taken for restoration of the ecological balance. It also expresses concern for the interest of the tribal population. At the same time the extent of emphasis on private investment and the changing role of the state to facilitation and regulation is a cause of concern. While on the one hand sustainable development framework is talked about, on the other hand the section on conservation and mineral development specifies that "conservation shall not be construed in the restrictive sense of abstinence from consumption or preservation for use in the distant future but as a positive concept leading to augmentation of reserve base through improvement in mining methods, beneficiation and utilization of low grade ore and rejects and recovery of associated minerals." (National Mineral Policy, 2008)

The Policy also lays down the guiding principle (with regard to ecological considerations) as "miner shall leave the mining area in better ecological shape than he found it." Thus it states that mining shall not be taken up in ecologically fragile and biologically rich areas and, strip mining should be avoided or permitted only when accompanied by comprehensive time-bound reclamation programme. Thus every mining lease would be granted only with proper environment management plan that adequately addresses environmental concerns.[68] These remain only in principle unless they are followed in the environmental decisions that are taken. These principles are grossly violated as will be discussed in the cases that follow. Meanwhile, the compliance of mines to these laws is low (as is seen in IBM's inspection report where there are many cases of violation).[69]

The environmental impact notification (EIA) notification issued under the Environment Protection Act (1986) has remained a formality and is highly suspect in terms of quality. As pointed out by the critics, compensation and mitigation are catch phrases in any EIA report. Unfortunately, development projects continue to adversely impact the environment. According to the FCA, all mining, including underground mining, requires prior approval of the Central Government (MoEF). However, clearance under the FCA has been seen as a major hindrance in the progress and timely completion and attractiveness of the project. The High Level Committee (which reviewed the National Mineral Policy) suggested that conditionality for environmental clearance may be spelt out in advance and a prospector who meets the conditionality must be assured of clearance eventually (Report of the High Level Committee on National Mineral Policy). It also underestimated the impact of mining activity by saying that mining leaves the land in better condition. Prior to the recommendation, the company could get license only after ecological impact was thoroughly studied (at least

in principle). The Committee's other recommendations regarding public hearing and other relaxations raise questions regarding the principle/practice dilemma. It recommended relaxation of public hearing for area less than 50 ha. It also said that the hearing should be restricted to issues raised in the EIA report. It further restricted outsiders from participating in the public hearings. Several such recommendations have not just diluted the intent of the legislation but the compliance to these would also question the role of the state in safeguarding the environment.

The report also stated that the FCA had resulted in decline in diversion of forestland for non-forest use. Of late, the mining industry has also been finding this restrictive and tilted towards conservation. The industry has also expressed concern over the definition of forest (dictionary definition as followed after the Supreme Court order on Godavarman case) saying that it leaves scope for lot of subjective interpretation by the forest officers regarding status of the land to be diverted. However, the decline in the area of diversion cannot be generalized for decline in the intensity of mining activity. The trend of mining in last decade has been upward and many of the projects are opposed on the basis of environmental and socio-economic impact.

Besides the state and the industry, the other stakeholders in the mining sector are the displaced and those adversely affected by the project. Lack of entitlement and various other social and political factors often limit their inclusion in the decision regardless of the existing 'institutional space'. Thus the principle of stakeholder engagement that is pronounced in mining clearance procedures and even the Panchayat Extension to Schedule Areas Act (1996) stands violated. Lack of compliance even to the standard principles forces them to become 'development refugees'. Failure to attain the principles of resettlement and rehabilitation (that aims at not leaving the affected/displaced population worse off if not in a better condition) is often evident through various accounts. The Indian Government estimated that more than 30 million people have been displaced since independence, three fourths of which are still awaiting resettlement and rehabilitation (Mahapatra, 1999, Berne Declaration 1996, Fernandes, 1994).[70]

Review of the environmental legislations have only revealed that, "preoccupation is mainly with two concerns, namely, compensation for diversion in various forms, including compensating afforestation, and the need for EIA studies prior to grant of environmental clearances" (Report of the High Level Committee on National Mineral Policy). The discussion regarding the effectiveness of such engagement with the compensation and whether at all methods and techniques like compensatory afforestation, payment of net present value and cost benefit analysis are relevant in the context of depleting resource, vulnerability of the affected communities and the principles of sustainable development, will be taken up later. However, at this stage it can be said that whose priorities are

reflected with what intensity and implemented is largely dependent on the relative position of the stakeholder and the 'power' entailed thereby.

## Pressure on Forest from Mining Projects in Orissa

**Context of Orissa:**

*Development (socio-economic) context:* Orissa is one of the major states in India with a population of 36.71 million in 2001. The population distribution in the state shows significant variation, as does the other development indicators. There is spatial concentration of the population in the coastal districts. The coastal districts also rank high in terms of literacy, health and human development (HDI) and gender development index (GDI)[71] (Orissa HDR, 2004).[72] The districts with the lowest HDI and GDI values fall in one contiguous belt in the south and southwest part of the state, where there is a concentration of tribal population. About 23 per cent of the population is Schedule Tribe, mostly concentrated in the northwestern and southwestern districts of the state. They have a heavy dependence on forests for their livelihood. The processes of modernization have largely marginalized them in economic terms, threatening their livelihood security.

Orissa is the poorest State of the Indian Union with 47.15 percent of the population below poverty line. The poverty incidence among STs and SCs is well above other groups even in Southern Orissa. The poverty ratio in southern and northern NSS regions of Orissa increased between 1993–94 and 1999–2000, and since almost 75 percent of the state's poor belong to these regions, this influenced the overall poverty ratio. While rural poverty in Coastal Orissa was 32 percent, it was 50 percent in Northern Orissa (in itself very heterogeneous), and a staggering 87 percent in Southern Orissa (Haan, 2004).

Lack of economic growth in the state is reflected in the annual per capita SDP growth of 2.3 percent between 1993/94 and 1999/2000, well below the Indian average of about 3.5 percent (Deaton and Drèze 2002).[73] Relative per capita income of Orissa declined vis-à-vis all other low-income states during the second half of the 1990s. The low rate of growth was worrisome for agriculture sector in Orissa, which grew at 2.16 percent while engaging 73 percent of the population. The growth rate of agricultural wages was hardly above zero (Haan, 2004). Contribution of agriculture to NSDP declined from 67 percent in 1951 to 30 percent in 1998, while the workforce engaged remained almost the same at approximately 73 percent. It is estimated that the marginalized classes were the worst sufferers from agriculture backwardness. The per capita availability of agricultural land declined from 0.39 hectare in 1950 to 0.17 hectare in 1999 (State Planning Commission Report, 2002).[74] Small landowners entered into casual wage labour.

Within the primary sector, only mining and quarrying sub-sectors improved upon their already high rate of growth of the 1980s (Orissa HDR, 2004).

The revenue deficit in Orissa by 2001 was so high that the state did not have funds even to meet its salary, pension and interest payment and repayment liabilities. There was increasing gap between revenue and expenditure, which was met through borrowings. As a result, the expenditure on education and other social measures was cut down. Expenditure on agriculture decreased from sic percent of total state expenditure to two percent while expenditure on rural development fell from 12 to 7 percent.[75]

*Resource context:* The state of Orissa accounts for seven percent of India's forests. It also has a 480-kilometer coastline and 11 percent of India's surface water resources. Orissa has 20 percent of the mineral reserves in the country. The deposits include Chromite, bauxite, graphite, iron ore and coal (GoO, 1998-99).[76] The rate of mineral exploitation was less than one percent in 1995 (Total mineral reserves- 54599.9 MT and exploitation- 50.97 MT). The present rate of exploitation has increased manifold due to **increasing revenue interest** of the state. As a mineral producer, it excels in the production of iron ore, bauxite, chromite, dolomite and several other minerals. The presence of national and international industrial leaders in the mining sector in Orissa is a cause of respite to the dwindling state economy but a sign of threat to the state of environment and the people dependent on forests for livelihood. The reason for such interpretation is the negative correlation between mining and state of environment in the area and the development of its people. Most of the mineral deposits are in areas with high forest cover. Mining activities in Orissa have diverted maximum forestland compared to the national account. An area of 31780 ha of forestland was diverted between 1980 and 2005 for mining in Orissa (CSE, 2008). Often these areas have witnessed land use change and land degradation. In the mining blocks of Joda and Keonjhar Sadar, the area under mining and wasteland has gone up, while agriculture and forest cover show a declining trend (Srivastava et al, 2006).[77] The mining districts (except few like Angul, Sambalpur, Jharsuguda) have performed dismally on the human development indicators including poverty index (population below poverty line).

The forestry sector in Orissa may have contributed meager revenue[78] to the net state domestic product. But it serves as a source of livelihood for a huge chunk of population. It has been estimated that 20–50 percent of the household income per annum of these households comes from the so-called Non-Timber Forest Produce (NTFP) (Orissa HDR, 2004). In 2000, the ownership and control of 68 NTFP items was granted to the Panchayat in the schedule areas. Inspite of the pressure on forestland, there has been low investment in the sector by the state. The total expenditure (plan and non-plan) in the sector has been little more

than one percent (1.32 percent) of the total revenue expenditure. The bulk of the budget that is allocated is spent in salaries and wages. The budgetary fund is supported by support from external donors.

*Status of forest clearance for mining projects in Orissa:* Within the backdrop of enormous resource endowment and revenue deficit, he Government of Orissa focused on raising revenues through exploitation of its mineral resource. According to a study, the state of Orissa has cleared maximum amount of forestland for mining-which amounts to 17 percent of the national figure. Mining alone has accounted for half of the forestland diverted in the state (Behar et al, 2005).[79] According to the latest data (2008) from MoEF, the Ministry has cleared 587.639 ha of forestland for mining activities in Orissa while there has been 'in principle' approval for diversion of 123.068 ha of land. Besides, approval for diversion of 3327.1955 ha is pending at the Central level, while approval for 89.877 ha of forestland is pending at the state level.

The Industrial Policy of Orissa places a strong thrust on promotion of mineral based industries and its willingness to provide necessary infrastructural support. In this regard development of Gopalpur port was planned with a cargo handling capacity of 80 million tones per annum involving an investment of Rupees 5000 crores (Orissa Industrial Policy, 2007).[80] It would serve as the industrial corridor of Southern Orissa, especially for the mining and mineral processing zone covering Kalahandi, Rayagada and Koraput districts. Without being biased in outlook, one would like to question, "For a state which has signed MoU with various industries for an investment of Rupees 400000 crores, what does sound environmental management practice mean?" The question attains significance in light of the debate over mining in these areas (Kalahandi, Rayagada, etc.). We would examine, through the cases that follow, the pressure on forest and the people dependent on the forest and the state's role in protecting the environment and livelihood of the people vis-à-vis promoting industrial growth at the expense of the resources.

### Case of Bauxite Mining on Niyamgiri Hills in Orissa

Niyamgiri hill range is located in Kalahandi district and is the home to *Dongaria Kondhs*. *Dongaria Kondhs* are the primitive and scheduled tribes of the State. The *Dongarias* claim to be descendant of *Niyam Raja* and believe that the country belongs to the *Niyam Raja Penu* (a male deity). The hill is the source to River Vansdhara and major tributaries of Nagaveli River. There is a great deal of ecological importance laid down on the hill. Seventy five percent of the area is covered with forests, where more than 300 species of vegetation are found (CSE, 2008).

In 2004, M/s Vedanta Aluminium Limited signed an agreement with the Orissa Mining Corporation for mining bauxite from Niyamgiri hills. The project

involved setting up of aluminium complex at Lanjigarh tehsil in Orissa, which would include 1mtpa alumina refinery plant, 3 mtpa of bauxite mining and 75 MW captive power plant. The proposal involved diversion of 58.943 ha of forestland in the total land requirement of around 1440 ha for the projects.

**Ecological aspects of the project area:** The Niyamgiri hills are said to have dense forest with multiple species. The flora of the hill range exhibits very rich and varied assemblage of plant species. Eight distinct types of vegetation are seen in Niyamgiri where the dominant species are *Terminalia tomentosa* and *Shorea robusta*. A variety of other species like *Dhaura*, *Jamun*, *Tangan*, *Kasi*, *Bandhan*, *Sisoo*, *Bija*, *Kusum*, *Kuruma*, *Gambhari*, *Mohua*, *Kendu*, *Amla* (all local names) are found here. Besides several species of rare/endangered category, about 50 species of important medicinal plants and other wild ornamental were also found in the survey on the hill by the taxonomists. Niyamgiri hills are also home to several faunal species, some of which are categorized as endangered species in the Red Data book of the Zoological Survey of India. Wild animals like Leopard, Tiger, Elephant, Palm civet, Mouse deer, Barking deer, four horned antelope and a variety of other species are found. The hills are also home for rare birds like hill mynah and pied hornbill. No detailed ornithological study was carried out in the area. The diversity also includes other species of lizards and snakes that are rare in occurrence. The area was also proposed to be included in he elephant reserve and be declared as sanctuary.[81]

**Socio-economic aspects:** The *Dongaria Kondhs* living on the Niyamgiri hills had their economy primarily based on shifting cultivation, hunting and gathering. Of late, they have also engaged in horticulture. The social, cultural and economic life of this community is closely linked to the hills. The community also considers the hilltop as a sacred abode for gods and goddesses and thus they also refrain from chopping or felling the trees from the sacred forest on the hilltop.

In 2002, villagers of Lanjigarh were served with land acquisition and gram Sabha notice for a proposed alumina refinery project. This followed an even older agreement between Sterlite and Orissa Government for mining project. The notice proclaimed that when the project materialized, 12 villages would be razed, 60 families would be uprooted and 302 would lose their farmlands (CSE, 2008:260). There was mass resistance against the project under the banner of *Niyamgiri Surakhya Samiti*. In 2003, sixty-four households were evicted from a village Jagannathpur without any compensation. They were not compensated for the lost land under the ground of encroachment. Most of these families belonged to *Kondh* tribe.

The local economy in the region is marked by abject poverty and lack of infrastructural facilities. The company had assured that it would provide jobs on permanent basis to the tribals, particularly those who lost their land. However, the company later informed that plant maintenance, power plant operations, house keeping, canteen, material handling etc will be outsourced. Thus there was lack of

any positive statement on the availability of jobs on permanent basis. There was no detailed study in this regard. Moreover, Vedanta Industries had been banned from Norway from non-compliance of labour laws and violation of human rights.

**The setbacks in the project, a case of misguided priorities and concealed facts:** Even within the given backdrop, the company received environmental clearance grossly in violation of the principles of sustainable development that the mining and industrial policies of the state had pronounced. There was massive opposition to the project from various quarters. The struggle continued until in 2005, the Central Empowerment Committee opposed the project based on adverse impact of the project on ecology and the people in terms of: loss of biodiversity, destruction of water recharging capacity, damage to the Tel river, unsatisfactory compensation to the displaced and forced eviction.

Still significant was the misleading information that the proponents provided to the MoEF for getting environmental clearance. In its observation CEC stated.[82]

> Since the project involved the use of forestland, the MoEF should have granted the environmental clearance only after the project obtained a permit under the Forest Conservation Act. But the company did not file its proposal under the Act.
>
> Vedanta deliberately and consciously concealed the involvement of forestland in the mining project. In the acquisition notice dated June 6, 2002 issued by the District Collector, Kalahandi, it is clearly mentioned that 118 acres (47.75 ha) of forestland is included in the project site. But in its application for environmental clearance and also during examination of the proposal, Vedanta concealed this vital fact.
>
> In violation of the FCA, 1980, the project has been spilt into alumina refinery project and bauxite mining project, even though bauxite mining is an integral part of the refinery project. The MoEF accorded environmental clearance despite being fully aware that forestland would be used for mining at Niyamgiri if the alumina refinery were established at Lanjigarh.
>
> The construction work for the refinery was started on the project site much before environmental clearance was accorded in September 2004.

Even after these observations, there have been controversial stances of the MoEF and various institutions that have been dealing with clearance to the project. The Wildlife Institute of India (in a study at the behest of the Forest Advisory Committee) indicated the irreversible changes in the ecological characteristics of the area by the proposed project through geomorphologic changes, landscape changes, loss of forest and loss of flora and fauna. But later it also designed a mitigation plan of Rupees 42 crores for these adverse impacts on wildlife! (CSE, 2008)

The changing stances and the follow up on the issue inspite of concealment of facts, oppositions and controversies was indicative of the strong will of the Centre and the state to support the project worth Rupees 4000 crore. The decision on the case by the Supreme Court of India only triggers further debate on the social and environmental cost of development projects in India. The Supreme Court emphasized on the need for adherence to the principles of sustainable development while stating that "courts are required to balance development needs with the protection of environment and ecology." It argued on the severe impact of mining in such ecologically sensitive area vis-à-vis growth objectives of the state. But the Court's engagement was primarily with the credibility of the company as against other objectives even while it ruled against permitting the project by Vedanta. Thus although the Court denied permission to Vedanta to mine, the offer was open to Sterlite Industries (M/s SIIL, which is a subsidiary of Vedanta) to apply for the same if it agreed to the conditions laid down by the Court. For the purpose the State of Orissa shall float a special purpose vehicle (SPV) for schedule area development of Lanjigarh in which the stakeholders shall be State of Orissa, OMC Limited and M/s SIIL. M/s SIIL will also deposit every year 5percent of its annual profit before tax and interest from Lanjigarh project or Rupees 10 crores, whichever is higher, with the SPV. In addition, the company shall pay net present value of Rupees 55 crores and Rupees 50.53 crores towards Wildlife Management Plan. In addition, Rupees 12.20 crores towards tribal development and expense towards compensatory afforestation were also to be paid. The State Government also laid out conditions for rehabilitation, phased reclamation of mined area, soil conservation measures, study of wildlife and hydrogeology and several other conditions. It also sought allocation of five percent of the profit in the project to be accrued to development of infrastructure in the schedule area.

The decision of the Court indicated the priority of the State in revenue earnings even at the cost of 'sustainable development'. There has been similar stance of the state in other cases as well as for instance in the bauxite mining case on Baphlimali Hills in Rayagada by Utkal Alumina. The facilitator's role of the state in this project was driven again by the gain to the state exchequer and the belief in the 'multiplier effect' of money. The capital investment in the UAIL[83] project was Rupees 40000 million. The tax on works contract was estimated at 400 million rupees. The earnings in forex were estimated at Rs. 9000 million per year, while the royalty from the mines was estimated at Rs. 120 million per year. Thus the district administration extended full support to the setting up of the project, while the local resistance continues though people are disheartened by long drawn struggle. The struggle was also weakened by success of capital in buying out leaders that were spearheading the movement.

Orissa provides a challenging context for development with high dependence on agriculture, increasing industrialization due to rich mineral resources, while the threat to forest resources are increasing due to multiple pressure of industries, development, urbanization and subsistence requirement of the rural community. At the same time, State is attempting to stabilize the dwindling fiscal situation through exploitation of its natural resources. Poverty presents a great challenge with over 22 percent tribal population, which still depends heavily on the forests. However, the status of forest resources does not offer much scope for economic improvement of the dependent communities in light of structural and political factors. The context of forestry in Orissa is quite complex with multiple stakes, tenure and policy influence. The implications of these complex actor-resource-institution interactions are evident in the status of the forest resources and the tribals/forest dwelling communities.

## Biofuel: Case of Competing Land Use, Priorities and Policy Choice

The impetus on biofuel production was provided by the alarm over the global emissions and soaring oil prices. Thus the fossil fuel alternative, which was used in countries like Brazil and US to reduce the import bill, received worldwide attention in attaining energy security and later also in its role in development and poverty reduction. The attention is evident in its increasing production worldwide which has tripled from 4.8 billion gallons in 2000 to about 16 billion gallon in 2007, although it still accounts for less than 3 percent of the global transportation fuel supply (Coyle, 2007).[84] Contrary to the claims of its contribution in development and poverty reduction, there have been concerns regarding the net energy benefit of biofuel production (Pimental and Patzek, 2005)[85] and environmental, social and economic outcome. The life cycle assessment of biofuel production has yielded different outcomes based on the source of feedstock and the methodology used. During the last few years, concern about food security has also intensified with indication of competition between food crop and energy crop and impact of biofuel production on food prices in developing countries. Competing land use will also have environmental implications through increasing pressure on land, deforestation, threats to biodiversity, impact on soil, water quantity and quality and air emissions (Peskett et al, 2007).[86]

Within the backdrop of perceived benefit in terms of reducing oil import, energy security and other development needs, there has been lot of emphasis in the country for taking up production of biofuel especially for the transportation sector (blending with gasoline and diesel).[87] The reasons stated by the Government are: first, there is no alternative to petroleum-based fuels, i.e., motor spirit

or gasoline and high-speed diesel. Moreover, use of biodiesel becomes compelling in view of the tightening of automotive vehicle emission standards and court interventions. Second, biofuels are considered to be environmentally superior fuels and thus helps in complying with the emission norms. Third, it shows possibility of addressing concerns like climate change, energy security, import reduction and employment generation for the poor. There is also a mention of other benefits like checking soil erosion and land degradation and rehabilitating degraded land through greening. However, from the information that is available, many of these claims do not seem to have been constructed on adequate potential examination.

A Committee was formed by the Planning Commission to examine the scope of development of biofuel. The Committee identified *Jatropha curcas* as the most suitable species for the purpose of producing bio-diesel. Committee suggested that the species can be planted on understocked forestland managed by the JFM[88] committees, farmer's field boundaries to provide protective hedge, fallow lands, on farmers' holdings as agroforestry along with agricultural crops, public lands along railway tracks, highways, canals and community and government lands in villages. Thus it tried to establish ground for achievement of objectives other than energy security and emission norms.

Based on potential assessment, which apparently was also based on the targets in the United States and the European countries, the Committee set an initial target of 5 percent blend of biodiesel with petroleum by the year 2006-07 and raise it to 20 percent by the year 2011-12. Based on this target, it envisaged *Jatropha* plantation on 11.2 million ha of land. The table below depicts the area required for plantation for different blending rates.

**Table 5: Diesel and Biodiesel Demand, Area Required Under *Jatropha* for Different Blending Rates**

| Year | Diesel demand MMT | Biodiesel @ 5 percent MMT | Area for 5 percent Mha | Biodiesel @ 10 percent MMT | Area for 10 percent Mha | Biodiesel @ 20 percent MMT | Area for 20 percent Mha |
|---|---|---|---|---|---|---|---|
| 2001-02 | 39.81 | 1.99 | NA | 3.98 | NA | 7.96 | NA |
| 2006-07 | 52.33 | 2.62 | 2.19 | 5.23 | 4.38 | 10.47 | 8.76 |
| 2011-12 | 66.90 | 3.35 | 2.79 | 6.69 | 5.58 | 13.38 | 11.19 |

The potential availability of land as seen by the Committee was to the extent of 13.4 million ha, which covered: forest areas - 3 million ha, agricultural land (boundary plantations) - 3 million ha, Agroforestry - 2 million ha, culturable

fallow land - 2.4 million ha, wasteland under integrated watershed development - 2 million ha, strip lands such as roads, railways, canal banks, etc. - 1 million hectare. In addition, 4 million ha of wasteland across the country were also considered for such plantation. To achieve this target, a national mission on biodiesel was proposed by the Committee.

The **National Mission** was envisaged to include a large number of stakeholders in planting *Jatropha* over 11 million ha of land in and outside forests. In order to demonstrate the viability of the programme, the mission was proposed in two phases:

**Phase I:** This was a demonstration phase and was designed to achieve plantation on 4 lakh ha of land along with setting up of facilities for all the activities involved in forward and backward linkages. Total of eight compact areas were proposed, one in each state- four for implementation by the Joint Forest Management committees and the Forest Department (in the states of Tamilnadu, Chattisgarh, Gujarat and Tripura) and four by other agencies on non-forest land (in Uttar Pradesh, Madhya Pradesh, Maharashtra and Andhra Pradesh). The idea was based on the European model. Considering the diversity of land categories, agencies and the activities involved, six micro missions were proposed as part of the Mission. Nodal agencies were assigned for these micro missions based on the task involved.[89]

*Institutional framework:* An inter-ministerial coordination committee was proposed under the chairmanship of Deputy Chairman, Planning Commission, to formulate policy and to provide general guidance for effective implementation while dealing with issues of coordination and monitoring of the programme.

*Financial requirement:* The estimated financial requirement for the mission was of the order of Rupees 1496 crores during the tenth plan, where the government contribution was Rs 1384 crores. It was expected that the oil companies, guided by the Ministry of Petroleum, would induce private sector to set up such plants with financing from financial institutions.

It was expected that by the end of Phase I, the feasibility of *Jatropha* as substitute for diesel and a source of energy security would be established.

**Phase II:** This phase was expected to be self-sustaining expansion of the programme in different parts of the country. The objective was set to produce enough seed and biodiesel for 20 percent blending by the year 2011-12. The committee expected that the villagers would be attracted to *Jatropha* plantation on their field boundaries, fallow lands, fields, community land, government land and understocked forest. Within JFM arrangements, the possibility of giving tree *patta* was also discussed. It was expected that the success of the biodiesel programme would attract bilateral and multilateral funding for the project. The role of the Government was seen mainly as a facilitator in this phase, providing policy support and interventions/incentives in critical areas as may be identified during the monitoring and evaluation of the demonstration project.

The Centre was willing to extend support to the State governments in biodiesel production through the National Rural Employment Guarantee Scheme, apart from other avenues. Following Centre's impetus, the state governments geared up to respond to the demand of land for plantation and production of biodiesel. A number of companies like D1 Oil, Godrej Agrovet Ltd, Tata Motors, Indian Oil Corporation, Kochi Refineries Ltd, Biohealthcare Pvt, the Southern Online Biotechnologies Ltd, Jain Irrigation System Ltd, Nova Biofuels Private Limited, Natural Bioenergy Ltd and Reliance Energy Ltd, are at various stages of production process. A number of companies like the British Petroleum have also spent resources in research to explore the potential of biodiesel production from non-edible oil bearing crop. We will briefly review the states' response to the national mission on biodiesel that was launched in 2003.

### States' Response to the National Mission on Biodiesel

The states mentioned here include only those where the primary focus was not on private agricultural land but on commons or wasteland.

**Chattisgarh:** The state government constituted Chhattisgarh Biofuel Development Authority (CBDA) for development of biofuel in the state. A range of objectives was set for the CBDA including promotion of renewable energy through harnessing the bio-fuel potential, generating rural employment and earning carbon credits. Specific responsibilities were allocated to the CBDA, which included: approval of policies and programs related to biofuel; assessing, identifying and allocating resources to the existing programmes and if necessary, mobilizing additional resources for implementing the CBDA programmes. The state government considered allotment of government wasteland to government organizations desirous of setting up bio-diesel plant.

During the year 2005-2006, Jatropha plantation was taken up in 84000 ha of fallow land/bunds. About 18 crore Jatropha saplings were raised through the available facilities with various departments like the Forest, Agriculture, Forest Corporation, Minor Forest Produce Fedaration, Renewable Energy Development Agency and others. Thus by the year 2007, it was expected that almost 1.54 lakh ha would be under Jatropha cultivation.

There were several policy initiatives to promote the plantation and the establishment of biodiesel production unit in the state. Government fallow land was offered on lease to the private entrepreneur to undertake Jatropha plantation at rent that started at Rupees 100 per ha in the first year and increased to Rupees 1000 from the eighth year onwards. Rules were formulated for the lease of Government land for Jatropha or karanj plantation and biodiesel based processing units. Through this wasteland was to be allotted for 20 years initially, which may

later be renewed for a period of 10 years. The land was to be used only for Jatropha or karanj plantation.

**Rajasthan:** Sensing a strong prospect in production of biofuel, a Bio Fuel Mission was constituted in 2005-06 under the Chairmanship of the Chief Minister of the state. This was followed by the declaration of the Biofuel Policy and constitution of Biofuel Authority. The Revenue Department of the state also formulated the Rajasthan Land Revenue Allotment of Wasteland for Biofuel Plantation and Biofuel based Industrial and Processing Unit Rules in 2007. The state government decided to allot culturable wastelands in 11 districts for production of Jatropha and other tree borne oil seeds for the production of biofuel. It was decided that upto 70 percent of the wasteland available in a district will be allotted to Self Help Groups of BPL (below poverty line) families, Gram Panchayats, Agriculture Cooperative societies, Registered Societies and Village Forest Protection and Management Committees. The remaining 30 percent of wasteland will be allotted to private companies and Government enterprises. Within the companies, preference was set for those that also proposed to establish processing units, trans-esterification unit, take up research and development, establish a nursery for developing good quality planting material and provide employment to the local people on priority. The lease period for the land allotted for this task was 20 years. The state government retained the ownership of the land.[90]

The initiative has been criticized on several shortcomings. A report on promotion of biofuel by the Society of Promotion of Wasteland Development (SPWD) states that there has been no policy directive for biodiesel/Jatropha in the energy policy of the state. Also there is lack of clarity on backward and forward linkages, pricing and other issues (SPWD, 2007).[91] On the other hand, civil society organizations working on land reforms in Rajasthan see this as a possible ploy for capturing the village commons (DTE, 2007).[92]

A total of 40495 ha was identified in the 11 districts of Baran, Banswara, Bhilwara, Bundi, Chittorgarh, Dungarpur, Jhalawar, Kota, Rajsamand, Sirohi and Udaipur. The Watershed Development and Soil Conservation Department, Rural Development and Panchayati Raj Department, Agriculture Department and the non-government organizations have initiated Jatropha plantation in the state.

### Interpreting the Policy and Its Response

While states like Andhra Pradesh and Tamil Nadu laid emphasis on private land for cultivation of Jatropha, there was considerable emphasis in Chattisgarh and Rajasthan on wasteland or government land. The matter attains seriousness on examination of categories of wasteland and the dependence of the local people

on these resources for livelihood and other needs. Although the proportion of the problem invites for reexamination of the concept of "wasteland," the scope of the paper does not allow delving into this discussion at length.

Although the National Mission on Biodiesel proposed plantation in over 13 million ha of land, identification of land was not an easy task. Moreover, the chances of success of such a programme were not clear. Thus, we may not see such huge diversion of forestland (per se) for the purpose of biofuel plantation but the indirect consequence of diversion of land and change in land use were indicative of the impending pressure on the forests. Moreover, the category 'wasteland' itself included 'forestland' to the extent of 23 percent. The argument is further complicated by the land use classification in the country that is not really indicative of the actual usage pattern and the status of the land. In the following paragraphs we shall try and assess the pressure on forestland from diversion of land for biofuel plantation. In absence of proper land classification and also in absence of complete set of data on forestland diverted for the purpose of biofuel plantation, we would use the data on wasteland and 'commons' (which also include forest land) in these areas as a proxy indicator for impending pressure on the forest, concentrating on the arid and semi-arid region of India.

According to the national level data on coverage of wasteland under the National Mission on Biodiesel, approximately 73 percent of the wasteland in the country is considered as potential area for plantation of Jatropha. The table below shows the state wise distribution of the wasteland that is considered for Jatropha plantation.

The available information on potential area does not indicate the category of wasteland that would be diverted. Thus there is ambiguity on the inclusion of forestland in the category of waste (or even the wasteland of forest category). In order to clear this ambiguity and understand its implications, we would briefly look at the policy and the wasteland availability and the nature of dependence on these resources in Rajasathan.

As mentioned earlier, the Rajasthan government decided to allot wasteland in 11 districts of the state. It further specified that maximum 30 percent of the wasteland available in the district might be allotted to Government undertakings and companies. The rest would be allotted to local collectives like SHGs, Village Forest Security and Management Committee, Gram Panchayats, etc.[94] The data available on the wasteland composition in these districts shows concentration of most of these lands under three categories, namely, Land with/without scrub, Degraded notified forestland and Degraded pasture/grazing land. The table below shows the disaggregated wasteland data specifically for these three categories in 9 out of 11 districts for which data is available.

**Table 6: State-Wise Distribution of Waste Lands Under National Mission on Bio-diesel for Jatropha Plantation in India (2005)**

| States | Potential area for Jatropha curcas plantation (hectares) | Potential area as percent of total waste land |
|---|---|---|
| Andhra Pradesh | 4396310 | 84.95 |
| Arunachal Pradesh | 997259 | 54.42 |
| Assam | 1456576 | 72.76 |
| Bihar / Jharkhand | 1860585 | 88.61 |
| Goa | 39948 | 65.14 |
| Gujarat | 2870890 | 60.19 |
| Haryana | 262621 | 70.33 |
| Karnataka | 1789081 | 85.85 |
| Kerala | 99687 | 68.84 |
| Madhya Pradesh /Chhattisgarh | 6619759 | 94.96 |
| Maharashtra | 4855478 | 90.78 |
| Manipur | 1262402 | 97.49 |
| Meghalaya | 988951 | 99.85 |
| Mizoram | 407168 | 100.00 |
| Nagaland | 840410 | 100.00 |
| Orissa | 1888121 | 88.47 |
| Punjab | 105654 | 47.41 |
| Rajasthan | 5687700 | 53.84 |
| Sikkim | 213368 | 59.77 |
| Tamil Nadu | 1794971 | 78.00 |
| Tripura | 127593 | 99.99 |
| Uttar Pradesh / Uttaranchal | 1214063 | 31.31 |
| West Bengal | 258254 | 45.16 |
| Grand Total | 40036849 | 73.51 |

Source: Rajya Sabha Unstarred Question No. 3649, dated 19.05.2006 & Lok Sabha Unstarred Question No. 3726, dated 18.12.2006[93]

**Table 7: Wasteland Information for 9 Districts Covered Under the Biofuel Mission in Rajasthan**

| Districts | Land with/ without scrub | Land with/ without scrub as percent of total wasteland | Degraded notified forestland | Degraded notified forestland as percent of total wasteland | Degraded pastures/ grazing land | Degraded pastures/ grazing land as percent of total wasteland | Total wasteland | Total geog area | Wasteland as percent of total area |
|---|---|---|---|---|---|---|---|---|---|
| Banswara | 948.71 | 82.97 | 153.95 | 13.46 | 5.05 | 0.44 | 1143.38 | 5037 | 22.70 |
| Bhilwara | 1371.94 | 36.20 | 423.5 | 11.18 | 1293.52 | 34.14 | 3789.38 | 10455 | 36.24 |
| Bundi | 446.32 | 18.84 | 1045.54 | 44.13 | 156.42 | 6.60 | 2369.19 | 5550 | 42.69 |
| Chittaurgarh | 1468.76 | 54.63 | 373.69 | 13.90 | 344.96 | 12.83 | 2688.42 | 10856 | 24.76 |
| Dungarpur | 807.12 | 77.39 | 214.11 | 20.53 | 0 | 0.00 | 1042.99 | 3770 | 27.67 |
| Jhalawar | 350.3 | 18.14 | 911.31 | 47.19 | 350.09 | 18.13 | 1931.18 | 6219 | 31.05 |
| Kota | 99.44 | 2.43 | 2438.86 | 59.60 | 679.02 | 16.59 | 4092.23 | 12436 | 32.91 |
| Sirohi | 424.83 | 20.15 | 820.54 | 38.93 | 370.77 | 17.59 | 2107.9 | 5136 | 41.04 |
| Udaipur | 3724.46 | 95.23 | 95.83 | 2.45 | 79.37 | 2.03 | 3910.84 | 17279 | 22.63 |

Source: Wastelands Atlas of India 2000, Dept. of Land Resources, Ministry of Rural Development, Govt. of India.[95]

The table clearly depicts that most of the wasteland is constituted by these three categories. Remarkably, there is also high dependence by the local population on these resources for various needs, including grazing of cattle, fuelwood and other needs. Clearly, these categories of 'wasteland' cannot be unused category considering the local economic and the ecological conditions in these districts. Five out of these 11 districts are tribal dominated, where the dependence on these resources is likely to be higher. The data on forest cover of these districts also supports the kind of interlinkage and dependence. Most of these districts are also the most forested areas in Rajasthan. There is also massive 'encroachment' on the wasteland and the commons in Rajasthan. Without entering the debate of genuine and proxy claimants of these lands, it is important to mention that any intervention on these lands would also mean clearing these 'encroachments' (at least those who are proxy claimants). The table below shows the geographic area and the forest cover of these districts, also highlighting the tribal dominated districts among the stated 11.

**Table 8: District-Wise Forest Cover in Rajasthan (2005)**

| District | Geographic Area (sq kms) | 2005 – Assessment (Area in Km2) | | | | Percent of Geog area | Scrub |
|---|---|---|---|---|---|---|---|
| | | Very Dense Forest | Mod. Dense Forest | Open Forest | Total | | |
| Banswara (T) | 5037 | 0 | 48 | 322 | 370 | 7.35 | 97 |
| Baran | 6992 | 0 | 135 | 948 | 1083 | 15.49 | 143 |
| Bhilwara | 10455 | 0 | 34 | 186 | 220 | 2.1 | 136 |
| Bundi | 5550 | 0 | 143 | 302 | 445 | 8.02 | 150 |
| Chittorgarh (T) | 10856 | 0 | 576 | 1098 | 1674 | 15.42 | 186 |
| Dungarpur (T) | 3770 | 0 | 17 | 235 | 252 | 6.68 | 55 |
| Jhalawar | 6219 | 0 | 83 | 312 | 395 | 6.35 | 120 |
| Kota | 5443 | 0 | 159 | 454 | 613 | 11.26 | 114 |
| Rajsamand | 3860 | 0 | 130 | 288 | 418 | 10.83 | 61 |
| Sirohi (T) | 5136 | 0 | 305 | 580 | 885 | 17.23 | 181 |
| Udaipur (T) | 13419 | 0 | 1377 | 1717 | 3094 | 23.06 | 519 |
| Rajasthan | 342239 | 14 | 4456 | 11380 | 15850 | 4.63 | 4527 |

Source: MoEF, India[96]

(T)- Denotes tribal dominated district

Since there is absence of reliable data on livelihood dependence of the rural community on the forestland and the commons (both of these categories being included in the category 'wasteland'), I would rely on the study by N. S. Jodha in the dry regions of India.[97] Based on a study of six villages in two districts of Rajasthan, Jodha (2001) indicated the following pattern of dependence on the commons.

Where,

- Poor included agricultural labourers and small farm (less than 2 ha dryland equivalent) households. Others include large farm households only
- Fuel supply meant fuel gathered from CPRs as proportion of total fuel used during three seasons covering the whole year
- Animal grazing - Animal unit grazing days on CPRs as proportion of total animal unit grazing days
- Employment days - Total employment through CPR product collection
- Annual Income - Income mainly through CPR product collection

**Table 9: Extent of People's Dependence on Common Property Resources (CPRs)[98] in Dry Regions of India**

| State | Household category | CPRs contribution to Household Supplies, Employment Income, etc. | | | | |
|---|---|---|---|---|---|---|
| | | Fuel supply | Animal grazing | Employment Days (No.) | Annual Income (Rs) | CPR Income as proportion (percent) |
| Rajasthan | Poor | 71 | 84 | 165 | 770 | 23 |
| | Others | 23 | 38 | 61 | 413 | 2 |

Source: Jodha (2001: 128)

It is evident from the above table that the CPRs are important source of income and livelihood for the poor. The income dependence of 14-23 percent is based on conservative estimate of the stream of benefits provided by these resources. Jodha (2001) also indicates that the CPR income helps to reduce the extent of rural income inequalities.

The above description of the National Mission and the state response is clearly indicative of a few points:

- The National Mission on Biodiesel was not based on adequate study of the feasibility of such plantation and processing leading to fuel substitution; the nature of land involved and the implications of change in land use; the nature of dependence of the local population and the ecological value of the resource involved.
- For the state governments, the return from these plantation and establishment of processing unit by the industries had implications for revenue generation. Politically, this could be projected as achievement of the development goals through employment generation and poverty alleviation (potential) and possibly carbon credit. Clearly, this was not different from many other plantation schemes/programmes in the country like the social forestry that catered to the industrial needs rather than meeting the social requirements. The state governments clearly overlooked the ensuing conflict that would emerge from conflicting land use and other social and economic outcomes.
- Both the National and the State Governments were silent on equity considerations in their policies.

To sum the observations, I adopt the perspective of Jodha (2001) who observed that most of the policies and programmes for raising the productivity of CPRs lacked the CPR perspective. Most often these were run as state activities rather than ensuring people's participation. These initiatives were also marred by exclusive focus on production technology rather than community involvement and

user perspective. In the process, most often the community lands ended in being alienated from the people (Chambers et al, 1989). Jodha also saw serious consequence of productivity raising efforts without sufficient concern to the user perspective. Such a bias resulted in virtual conversion of CPR land into commercial production field, as witnessed in a number of social forestry projects (Chambers et al, 1989; Arnold and Stewart, 1991; Gupta, 1986).[99] Clearly, the initial result of the Mission on biofuel plantation was indicative of similar trend, which if not rectified could result in severe consequences and conflicts. The chances of intense pressure on forest were high not just because of the 'forest' category of 'wasteland', but of the other forestland, which faced future threat of conversion and enhanced pressure from local communities in absence of any other land for meeting their subsistence requirements.

The limitation of the above analysis is that there is lack of information on the physical and the commercial aspects of the plantations, which makes it difficult to support or refute the state's logic in targeting such massive programme. However, from the limited feedback across the country, the programme did not appear successful due to low yield from the crop and high opportunity cost. On the technical aspect, it was also indicated that these plants required intensive care and input to attain the level of projected yield or be even close to it. On the social aspect, there are apprehensions about consequences of rise in food prices with diversion of agricultural land for Jatropha. It is also reported that in many places, communities are denied their right to make a choice regarding land use. Based on technical and political factors, the Government realized that the demonstration phase of the Mission was not successful. This resulted in formulation of the new Policy on Biofuel, which was approved by the Cabinet in September 2008. However, in absence of the policy document in public, I have not analyzed it for this study.

## Implications of the Pressure on Forestland: Policies and Governance

As indicated in the paper, the trend of conversion of forestland for non-forest use is significant. In the case of hydropower, which is driven by a number of factors along with the energy crisis argument, the projected targets are stupefying. In a state where the supply of natural gas is limited and capacity addition by nuclear power seems unlikely in near future, hydel power is projected as the best alternative to balance the fuel mix. But in the nature of demands and its prioritization, the perspective of 'utility' and 'environment' seem counter posed. Environmental clearance is seen as a barrier in the development of hydropower rather than as one of the mechanisms to ensure a balance between environment and development needs. Therefore, robustness of the institutional framework lies also in ra-

tionalizing the objectives and shaping effective compliance mechanisms. There is a need to question both (i) the consistency in the goals of environment protection and growth in other sectors and also (ii) the way in which goals get prioritized at the implementation level. The National Electricity Policy, for instance, emphasizes on harnessing the hydroelectric potential of the country for speedy economic development. It emphasizes on the need for the state governments to review the procedures for land acquisition and other clearances for hastening the implementation. Simultaneously, the policy also mentions proper implementation of the rehabilitation and resettlement plan. However, as the goals get translated into realizable targets, not only are the targets set too high but one goal is prioritized at the cost of the other. Thus, we find that the essence of rehabilitation efforts is challenged and the social and environmental costs of the project have escalated. Similarly, in the case of mining projects, the net social and environmental costs are grossly understated. This trend is likely to go higher, increasing the pressure on forest and environment.

The institutional framework that governs the management of environment and forest in the country acts with the understanding that nation's development has to be consistent with the protection of environment and not at the cost of degradation of environment. In the real world, however, the goals of economic development and environmental protection have often been contradictory as is reflected from the loss of forest diversity and impoverishment of forest dependent communities. Precisely, the benefits and the costs of development have been unevenly distributed. In this section, we would briefly look at the legislation that governs the diversion of forestland for development projects in the country: the Forest Conservation Act, 1980 and the Environment Protection Act, 1996. We would also critically examine the concept of "net present value" and "compensatory afforestation" which instead of acting as means of compensating for loss of forest has remained mere "bureaucratic formality." Since the discussion about biofuel cannot be included in this ambit it would be discussed later.

## Forest Conservation Act, 1980

The Forest Conservation Act of 1980 restricted de-reservation of forest or use of forest for non-forest purpose by the State Governments, without the prior approval of the Central Government. But the Act neither defined what forest was nor clarified what were the non-forest uses. Thus the State Governments continued to divert land for commercial plantation like tea, coffee, rubber etc. Following such incidences, the amendment to the Act in 1988 introduced the explanation for non-forest use as breaking up or clearing of any forestland or por-

tion thereof for: (a) cultivation of tea, coffee, spices, rubber, palms, oil bearing plants, horticultural crops, or medicinal plants; (b) any purpose other than reafforestation. It did not include any work relating or ancillary to conservation, development and management of forests and wildlife.

With regard to the definition of "forest," the ambiguities resulted in State Government's interpretation of it only as Reserve Forests or forest under the control of the Forest Department. Subsequently, the Centre clarified it as inclusive of Reserve Forest, Protected Forest or any area recorded as forest in the Government records. Lands that were notified under Section 4 of the Indian Forest Act would also come within the purview of the Act. Other land in the forest category also included revenue forest, *panchayat* forest and village forest. Through a Supreme Court order in 1996, it was directed to include "forest" as understood in the dictionary sense (vide Supreme Court order dated 12.12.1996 in WP No. 202/1995). The amendment to the Forest Conservation Act in 1988 also restricted lease of forestland to any individual or authority, corporation, agency or any other organization now owned or managed or controlled by the Government. It also restricted tree clearing from natural forest for reafforestation. Precisely, with the Forest Conservation Act the prioritization of decisions was the prerogative of the Central Government. "The conversion of forestland, in the broad context of thrust on the conservation of forests, became subject to the articulation of interests at the national level. The Centre, thus, permitted projects that were perceived to be important, like the hydel projects, power plants and mining. But regional claims… and local use…was denied altogether" (Pathak, 1994: 59).

The Ministry of Environment and Forests claimed that the diversion of forestland came to a low of 0.38-lakh ha per annum since 1980 (as against 1.50 lakh per annum from 1950 to1980). However, data for diversion of forestland from 1980 to 2004 does not prove it. Moreover, the diversions cannot be generalized to per annum figure considering that the extent and reasons for diversion are dependent on a number of factors and priorities. Saxena (1995) had stated that the low figure of diversion in the initial years was perhaps due to non-reporting of the cases by the states in these years. The State Governments at that point were neither clear about the cases nor the implications of diversion. It was only after 1985 that implementation was strict with insistence of the Secretary, Environment and Forests (T. N. Sheshan) and the cases were recorded and diversions reported (Pathak, 1994: 19).

The conservation agenda of the Forest Conservation Act was not completely aligned in principle to the Indian Forest Act of 1927, which stressed on revenue generation and found no mention of conservation or livelihood. Meanwhile, the political context had also changed from 1927 to 1980. After the Stockholm conference and the oil crisis in the 1970s, energy consumption received considerable

attention in international politics. With increasing focus on energy, attention also drifted towards the developing nations and the issue of natural resource degradation. It was acknowledged that most Governments and international funding agencies had failed to take action to control deforestation. The basic policies of industrialization and modernization had proved inadequate in promoting socio-economic development. It was also pointed out that the effects of deforestation (and energy crisis) were differential depending on the use pattern and resource value. But unfortunately, monetary value always gained primacy in analyses. Meijer, as a critique of market ideology in forestry, criticized the absence of political analysis of the problem. He also deplored the tendency to regard all competing claims as equally valid (Meijer, 1980: 204).[100] Amidst this backdrop, there was strengthening of the conservationist lobby that was finding allies in both the developed and the developing nations.

The question of resource use and management also enters the domain of political economy due to competing claims. Most often it was seen that within competing interests and agenda, the concerns that got tabled was determined to a large extent also by what was articulated at the national level. Political articulation was also dependent on the actor and its position from where it was leading the lobby. Taking again the instance of Silent Valley project, the opposition was led by the Kerala Sastra Sahitya Parishad (KSSP), which built "unlikely collaboration" with wildlife conservationists. Each group had its own reason for opposing the project- KSSP emphasized the techno-economic appraisal of energy generating alternatives while the wildlife conservationists stressed on need for plant and animal conservation. Mrs. Indira Gandhi's final decision to scrap the project was interpreted as an attempt to enhance her image among the international conservation community (Gadgil and Guha, 2000: 73). Clearly, forest was at the center of political concern and the Ministry of Environment and Forest (MoEF) asserted itself over other Departments. There were two levels of conflict at this stage besides the equity considerations. First was the conflict between the Government departments from where the MoEF gained leverage in the environment-development debate. Second, there was the inherent tension between the role and power of the legislature, executive and the judiciary (Refer to Pathak, 1994). The Act also delayed the implementation of several development projects where the availability of land apart from forestland was limited (Saxena, 1995).

In a context where interest articulation at the Centre drove the agenda, the most distant were the forest dwellers and those dependent on the forest produce for subsistence. Saxena (1995) pointed at the contradiction between Section 2 (iii) of the Forest Conservation Act (after amendment in 1988) and Section 28 of the Indian Forest Act.[101] Similarly, restriction on choice of species was introduced through the amendment in 1988. There was a suspicion that all usufruct

trees were banned in order to wean the tribals away from the forests (Saxena, 1995: 22). The Act also was uncertain about the status of the land under shifting cultivation in Orissa, Andhra Pradesh, Madhya Pradesh and North Eastern states. Even the State Governments worked out no compensatory mechanisms if they were to be settled elsewhere. The provisions of the Act had implications for regularization of land, which received both favourable and non-favourable response. While it restricted diversion for agriculture, which caused massive transfer of forestland, it also denied opportunity of any claim over land by those who were settled on forestland by the intermediary tenures in pre-land reform period or those whose lands have been notified under the Indian Forest Act pending settlement of their claims.[102] The respite to this control was provided through the recently enacted Scheduled Tribes and Other Forest Dweller's (Recognition of Rights) Act, 2006.

## Environment Protection Act, 1986

The Act was deigned in response to the decline in the quality of environment due to increasing pollution, loss of vegetal cover and biological diversity, excessive concentrations of harmful chemicals in the ambient atmosphere and in the food chain, growing risk of environmental accidents and threats to life support system. Under the Act, the Central Government retains the power to take measures to protect and improve the environment, including the power to constitute an authority for the purpose of exercising and performing these functions. The Central Government also has the power to direct the closure, prohibition or regulation of any industry, operation or process or supply of any other service.

The Act requires the obtaining environmental clearances for specific types of new/expansion projects (which are addressed in detail under the Environmental Impact notification of 1994 and 2006) and for submission of an environmental statement to the State Pollution Control Board annually. The environmental clearance procedure had three components: first, an Environmental Impact Study was to be conducted and the report submitted as part of the clearance procedure. Second, a public hearing had to be conducted, the procedures of which are laid out in detail in the notification. Third, an Environment Management Plan has to be submitted and clearance for the same obtained separately.

### Environment Impact Assessment

Principally, Environmental Impact Assessment was a progressive decision. The idea was to evaluate the potential impacts of projects – both environmental and

social, to ascertain likely costs and whether the projected benefits justified these costs (CSE, 2008). However, the notifications and its provisions are grossly misused leading to ineffectiveness of the policy intent, as was seen in the cases discussed earlier. The quality of EIA report has been a serious concern, which is often based on incorrect data and incomplete information. The preparation of the reports by the consultants has been controversial since their views are biased in favor of the developer, irrespective of the actual findings. The notification on the EIA is criticized for leaving out many harmful projects from its scope (Kohli and Menon, 2005). This is facilitated by categorization of the project into A and B categories[103] in the new EIA notification. There are apprehensions that the State Governments would misuse this power (in absence of any check) in its rapid pursuance of industrialization. The revised EIA notification of 2006 also includes a new provision on 'scoping', which allows the project ToR to be formulated by the EAC[104] on the basis of information provided by the project proponent (site visit being optional). Further, the provision is that if the EAC does not decide the ToR within stipulated time, the project proponents can go ahead with their own ToR. This provision is criticized on the possibility of being misused.

The public hearings turn out to the weakest link, despite the intent of the clause being democratic. The lacunae with the public hearing are many. The first is that this is only a platform for consultation and the clearance maybe granted even if the people at the hearing are not in favour of the project (CSE, 2008). Further, the new notification of 2006 is criticized in limiting the audience at the public hearing. The consultation includes only local people and the locally registered organizations. Others may comment on the report in writing. Moreover, the EIA that is available for comments is only a draft version, while there is no means to ensure that the points have been incorporated in the final report. The process is further weakened by the clause in the new notification, which states that if the authorities feel that the situation is not conducive to conducting a meeting, it may be completely foregone. There is no quorum for the start of the hearings.

On an aggregate, the new notification facilitates fast clearance of the projects based on the demand of all the industrial policies. However, the notification does not bring much improvement in terms of ensuring transparency in decision-making or accountability of the state and the project proponent for the impact of the project.

As we have seen in both the case of hydel power project and the mining project, the EIA reports have been poor in quality and biased in favour of the project proponent without consideration of the geographical factors and the social and economic impact. The process of the EIA has also been violated in all the cases. More often the EIAs have concealed important information or have not provided them at all. The EIA report for another hydel project (Dibang hydroelectric

project) admits that it was prepared in a hurried manner and hence could not take detailed assessment on some aspects. The EIA report for Lower Subansiri project negates any adverse impact by the dam. The EIA report for the mining project in Niyamgiri had concealed important aspects on environment while the EIA report for the mining project on Baphlimali was not in public domain for a long time. The absence of proper assessment and conformance to the guidelines indicates lapse in implementation and accountability of the state and the project proponent towards the people who are affected. Often these reports thus end up being engineered and as mere bureaucratic procedures to be completed.

In the entire context the priority of the industries and the market seems to be taken forth by the policy makers. The EIA notification of 2006 is singularly conducive to the demand of the industry regarding delay in clearance procedures. Prior to the final notification of 2006, the Report of the High Level Committee on the National Mineral Policy had recommended that: the time frame for clearances should match international standards (180 days). There should be no requirement for clearance at the prospecting stage. Most significant however is the Committee's observation with regard to the public hearing where it states: "the most major reason for delays in the grant of clearances under the EPA is the procedure followed for public consultations." It suggested that: public consultations should be dispensed with for areas less than 50 ha. It also demanded that the public hearings be limited to issues arising out of the EIA report. It should also be limited to people residing in the area and not allow outsiders to participate. The notification of 2006 has responded to all of these concerns and leaves one wondering as to what ends are being targeted and at what cost? Why did the notification not respond to people's demand for fair and transparent procedures in terms of public hearing? Similarly in the case of hydel power projects and related environmental and forest clearances, the EAC considers all available information on the proposed project and recommends it for clearance or rejection to MoEF. However, the MoEF may over-rule the advice of the EAC if there are sufficient grounds for doing so! There is no mention whatsoever of the conditions under which MoEF may overrule the decision of the EAC.

## Compensating for the Loss of Forestland (and Forest)

### Compensatory Afforestation (CA)

It refers to afforestation done in lieu of the diversion of forestland for non-forestry use. The afforestation schemes are site specific and thus the rate also varies. There are two basic ways in which CA is envisaged: 1) it is done over an area which is equivalent area of the diverted forestland, and 2) afforestation maybe done over

degraded land twice in extent of the forest area being diverted. In some cases, the requirement for CA is being waived off, for example, in cases of reforestation of naturally grown trees in forestland or for diversion of land up to one hectare. However, the requirement for plantation of trees is applicable here. The land identified for CA has to be transferred to the Forest Department. The state/UT is required to create a separate fund for this money and utilize it completely for afforestation.

The performance of the states in terms of compensatory afforestation and utilization of the fund has been unsatisfactory. The report by the Central Government to the Supreme Court in 2000 depicted a shortfall of 36 percent of the total afforestation, compensatory or otherwise. It also stated that although funds were realized by the states for afforestation, many of them had spent 50 percent or less on afforestation. Almost 83 percent of the funds from the states were unutilized. Following the status report, MoEF was asked to develop a scheme wherein payment by the user agency was made towards afforestation while the state government made available the land on which afforestation was to be done. The CEC recommended formation of Compensatory afforestation fund in which all the money from the user agencies towards compensatory afforestation, net present value, catchment area treatment plan and others would be deposited. Instructions were also issued for use of funds and afforestation practice.

In 2004, Compensatory Afforestation Management and Planning Agency (CAMPA) was constituted for the purpose of management of money towards compensatory afforestation. Since the size of the fund was large and its management complex, the Compensatory Afforestation Bill was introduced in the Lok Sabha in 2008 to institutionalize and legislate a mechanism to collect and manage the money collected from projects cleared under the Forest Conservation Act, 1980. It states that the fund shall be under the control of the Central Government. The use of the fund shall be for plantation, assisted natural regeneration, forest management, protection, infrastructure development, Green India programme, wildlife protection and management, supply of wood and other forest produce saving devices and other allied activities. The Bill is criticized for working on objectives clearly outside its objective, for instance, including the Green India programme which is a massive afforestation programme proposed for degraded lands of the country (Kohli, 2008).[105] The Bill also states that all the work at the ground level shall be executed through Joint Forest Management Committee except in matters where the nature of work demands execution by any other agency.

A preliminary study of the Bill indicates discomfort with the retention of all the power of decision making by the Central Government. Discomfort also generates with the operational plan of including JFM committees. Unless proper directives and powers are given to the committee for fund utilization, the apprehension

is that these local institutions, which are already crumbling under the pressure of iniquitous resource distribution, may remain implementers of the Green India programme for degraded forestland, which would perform like any other plantation schemes that has been undertaken under Social forestry or others.

The question that remains here is the effectiveness of the approach in fulfilling the objective of the "compensatory afforestation." Are such efforts adequate to address the loss of forest under pressure from development projects?

### Net Present Value of Forest

The genesis of the issue of net present value was in the lack of compliance with the compensatory afforestation objectives in return of the loss of diversion of forestland for non-forest use. The Central Empowered Committee in consideration of the scheme submitted by the MoEF made recommendations for recovery of net present value (NPV) from the user agency along with compensatory afforestation. The NPV was to be recovered at the rate of Rs 5.80 to Rs 9.20 lakhs per ha of forestland diverted, depending on the quality and the density of forest. The underlying principle for collection of NPV was that the plantation raised under compensatory afforestation scheme could never adequately compensate for the loss of natural forest since plantations required more time to mature. Most of the states agreed to the recovery of NPV from the user agency but felt that the amount should be accrued by them and also that no NPV should be charged on degraded forest. Also all public utility projects shall be exempt from NPV. In light of the various use value of forest and the discussions entailed by various agencies and the government, the Supreme Court bench decided that NPV should be charged on all projects except hospitals, dispensaries and schools. The amount deposited would be used for achieving ecological plans and for protecting the environment and for regeneration of forest and maintenance of ecological balance and eco-system. The Committee was clear that the payment of NPV was for protection of environment and not in relation to any proprietary right and that the fund was to be worked out on economic principles. A three member expert committee was assigned the task of: identifying and defining parameters on the basis of which each category of forestland should be estimated; formulating a practical methodology applicable to different bio-geographical zones for estimation of the values in monetary terms; obtaining actual numerical values for different forest types in biogeographical zones; determining who should pay the cost of restoration/compensation on the basis of principles of public finance and which projects should be exempted from payment of NPV.

The Committee stated clearly that payments made for the diversion are "compensations for the loss of forest and the loss of flow of goods and services accruing

from it to diverse stakeholders" (Report of the Expert Committee on NPV). The Committee elaborated on different aspects where it clarified that NPV is payable for land under the ownership and management of the Forest Department and not applicable to land not finally notified as forestland. No permission could be given for protected areas, sacred groves, fragile ecosystems etc. The committee distinctly stated that the stakeholders in forests were entities or groups who were losers due to change in access to forests and their ecosystem goods and services; maybe local, regional, national or global. It conferred only user rights on user agency and not proprietary rights. In the context of diversion NPV was defined as: "loss of value of the forest resources to the stakeholders or the users as at the time of diversion for non-forest use. It does not refer to the value either accrued or created by the user agency that uses it as non-forest use." NPV was site specific. The full compensation of diversion consisted of: chargeable NPV and the ground rent of land based on prevailing rent in the region. The goods and services considered were: timber, carbon storage value, fuelwood and fodder, non-timber forest produce, ecotourism and watershed services. The Committee also determined levels of exemption from chargeable NPV activity wise. Based on this level, major irrigation and hydel power projects were given 30 percent exemption.

The Expert Committee also noted that from 2001 to 2006, no part of CAMPA collections were distributed either to the states or to the stakeholders, while as much as 573164 ha of forestland were diverted. Thus distribution of the fund was suggested on the basis of accrual at the local, state and national level for protection and regeneration of forest, plantation and forest development activities, and, for research and development at national scale respectively. Further, "ground rent" was to be collected by the District Collector and deposited in the State Forest Fund for use for forestland conservation programmes. The Committee created inviolate status for the protected areas, restricting diversion for non-forest use at any cost. Such services, including the preservation of endangered species was in principle "priceless." The inputs of the committee for the estimation of value of forestland were further significant in terms of demand for transparency in the process of clearance, factoring the varied nature of rights in the forest valuation and demanding its ascertainment before value was calculated, differential treatment to various categories of land depending on the nature of rights and privileges and inclusion of volume and cost of NTFP since it was an important source of livelihood for many.

The determination of the net present value was based on economic principles yet the comprehensive accounting and factoring in of people's rights was important. The method and principles for ascertainment of cost would help in proper valuation and counter the assumption that more development projects corresponded to greater benefits. For forests to be conserved, they need to be perceived

as more valuable than the usual, standard, utilities they provide. Once these benefits are given the value that people can use to compare with other uses, the cost of cutting a forest becomes huge[106] (CSE, 2005).[107]

Besides the economic valuation, there are also demands for localized payment for ecosystem services (like conserving biodiversity, providing carbon sinks, protecting watersheds, maintaining recreational value). The next question that arises is whether such valuation would be a deterrent to diversion of forest in ecologically fragile regions of the country? Will it incentivize destruction in other areas unless they turn unfit for any kind of use? Apparently, there seems to be enormous engagement with the economic valuation of resource, leaving out the social costs (which are difficult to factor). One can ask whether payment of net present value would be a deterrent to a bauxite producing company that finds the cost of producing bauxite in Orissa profitable even after these payments? The question can be taken forth to ask what would be the implication if it results in higher cost of basic commodities and services at other places? Apparently, there are ways and means to adjust these costs. In the current scenario, industries and the market have a way of forcing reforms in their favour, which is apparent in the sector specific policies. The consequent actions are more strategic and political in nature.

## Biofuel Programme: Uncertain Outcome

There were compelling objectives when the National Mission on Biodiesel was constituted. The learning from the demonstration phase of the programme was that the goals were based on improper analysis of the situation. Despite the apprehensions, many state governments made sufficient investment in the programme, especially in legal infrastructure for the programme. The fact was that these plants yielded the target outcome under 'specific' conditions, which were not met. The revised Biofuel policy that is recently passed by the cabinet retains several of these goals, including 20 percent blending target, with some time lag. It still talks of marginal/degraded wasteland. In absence of complete policy document it is difficult to assess whether, these lands have been identified. The policy also states that the bio-diesel plantations on community/Government/forest wastelands would be encouraged. It remains to be seen whether the learnings from the demonstration phase of the programme are incorporated. However, the concerns about land and the social implications still seem untouched except for exclusion of fertile irrigated land from plantations. The outcome of the new

policy is still uncertain, because it retains its emphasis on plantations on similar categories of land with similar targets and lack of safeguard for the poor.

The point that is being made is that economic principles cannot always act as means for reducing the expanding threat on forest. Moreover, most of these projects/programmes are implemented more or less like "infrastructure development," undermining (or undervaluing) the basic principle of development of the human and the natural resources of the country. The policy framework that governs these natural resources including the land, water, minerals, forest are still isolated efforts at achieving the goal of 'efficiency' and 'profitability'. The state finds its role in the entire process as a 'driver of capital', mediating inequitable outcome from exploitation of resource for unequal actors. What is required is a more 'sustained political effort' that imprints the principles of 'restraint' and 'judicious use' and recognizes the intrinsic value of the natural environment (including forest, water and other components of the ecosystem). These values and principles have to ensure that the projects do not result in environmental degradation and social and economic marginalization of the communities that are dependent on these resources. It also has to ensure that the poor (and powerless) no longer continue to be taxed for 'development' (economic growth) of the rich bourgeoisie (or those with power). It also has to ensure that the institutional framework is more accommodative to the voices of the marginalized at various levels.

## Conclusion

The pressure of conversion of forest to non-forest use has intensified in the years after liberalization of the economy. The figures may not adequately support this fact since the nature of diversions have varied in various periods, but the nature of projects and the process by which these conversions have occurred, support the intensity of this pressure. This precisely means that although the diversion of forestland from 1980 onward may appear to have reduced at an aggregate level, compared to the pre-1980 period, the pressure has increased on both the pristine forest (as in the north east) as well as ecologically fragile areas (of the Himalayan region, for instance). The paper has tried to present the magnitude of such pressures and examine the nature of conversions along with the drivers of such change. As is evident from the cases that are mentioned, the pressures on forestland show no signs of retreat and call us back to question the very definition and nature of "development." These projects have often underestimated the social and environmental impacts and resulted not just in environmental degradation but also creation of "development refugees" who have paid for "national devel-

opment." Although, the argument may sound clichéd apart from the problems with goal prioritization, there have been tremendous gaps between policy and practice.

## Limits to Growth and Impasse on Compensation

If we examine the potential of hydropower development and mining industry in the country, these sectors have envisioned enormous growth potential depending on the untapped potential of river basins and vast mineral resources. While the first claims to meet the target of clean power and meeting the demand-supply gap, the latter claims to make up for resource deficit in the states. Thus the hydro policy emphasizes on harnessing entire potential by 14th five-year plan and mining policy opens up to large-scale privatization and FDI in the Indian mining industry. Adherence to environmental safeguards and principles remains a formality while the delays in clearances are seen as roadblocks. The Mineral Policy sees the role of the state as a facilitator and regulator while it clearly states that conservation of minerals is not seen in the restrictive sense of abstinence from consumption or preservation. The state has been responding to the demands of the industry as is seen in the EIA notification.

The best way to make up for the loss of forest resources is seen in terms of 'compensation', which seems to be a paltry sum for the irreversible losses to the environment and destruction of livelihood for the resource dependent communities. People are not direct stakeholders in the development of these projects; they remain only the beneficiaries of 'compensation'. It seems unlikely that the manner in which compensation is understood would reduce the pressure of growth and exploitation.

The debate over pressure on forest seems to push forth to the concept of limits of growth, which in a different version calls for application of principles of "restraint" not so much for reasons of scarcity but for reasons of its impact and imbalance in the growth trajectory.

## Coordination Between Policies and Politics of Decision-Making

The Forest Conservation Act advocates a 'conservation' agenda, while the Industrial and the Mineral Policy of the country seem to push growth trajectory and further the projections in planning for growth. The environmental legislations like the EPA, 1986 and the following notifications seem to mediate between these two contradictory objectives while various institutional arrangements are

worked out to bridge the difference between objectives of development and environmental protection. However, what results is an uneasy compromise between these objectives and principles. The result is a policy and institutional arrangement that promotes the priorities of one at the cost of the other. In order to work out a fair solution, a level playing field for stakeholders need to be arranged, which demands initiative from the state internalizing the principle of justice and fair play in the planning objective.

## Endnotes

1. Excluding the forestland diverted for regularization of encroachment. The details follow in 2nd part of the paper.
2. Williams, P., 1986, "Introduction" in The Social and Environmental Effects of Large Dams, Volume 2: Case Studies, Goldsmith and Hildyard, 1986, 9-14.
3. Benveniste (1972:70) had rightly argued (and it seems to be relevant even today), "Goal specification requires high level of political consensus. When social consensus exists goal specificity does not create political costs. When many divergent views exist, however, the possibility of establishing well-defined goals that satisfy everyone becomes much more difficult. Even the process of spelling out goals may result in considerable conflict as each contending fraction struggles to place its own preferences high on the list of objectives"
4. Kumar, N., Saxena, N., Alagh. Y., and Mitra, K., 2000, India: Alleviating Poverty Through Forest Development- Evaluation country case study series, World Bank, Washington DC
5. The diversion until 1980 is not discussed in detail since increasing scope would make the paper unmanageable. Moreover, apart from the different contexts, even the legal framework governing the forest had undergone a change by this time.
6. Government of India, 2006, National Mineral Policy - Report of the High Level Committee, Planning Commission, New Delhi
7. Cited from Forest and Wildlife Statistics: India 2004. Accessed from Website: http://ifs.nic.in/rt/misc/fwstats04/table2_6.pdf
8. The Scheduled Tribes and Other Forest Dwellers (Recognition of Rights) Act, 2006
9. Information accessed through application under Right to Information Act in July 2008
10. The environmental clearance to the project was given in 1987 under the conditions:

a) The NCA would ensure that the environmental safeguard measures are planned and implemented *pari passu* with the progress of work on the project.
b) The detailed survey/studies assured will be carried out as per the schedule proposed and details made available to the department for assessment.
c) The catchment area treatment programme and rehabilitation plans are so drawn so as to be completed ahead of reservoir filling.
d) The department should be informed of progress on various works periodically.

11. However, this information was not received from MoEF. The only information available was yearwise and categorywise diversion from 1980 to 2008.
12. Web Reference: Source: http://cgforest.nic.in/
13. Web Reference: http://www.sikenvis.nic.in/docs/Status percent20of percent20Forest percent20land percent20diversion percent20cases.pdf
14. Web Reference: http://www.orissaforest.org/
15. Forestland falling prey to mining operations, News article published in *The Hindu*, 22nd April 2007
16. Web Reference: http://www.indiastat.com/india/ShowData.asp?secid=292115&ptid=108&level=3
17. News Article titled, "Biodiesel mission set to pull down shutters," in *The Economic Times* dated 4th August 2008. Web Reference: http://economictimes.indiatimes.com/News/News_By_Industry/Energy/Oil__Gas/Biodiesel_mission_set_to_pull_down_shutters/articleshow/3322496.cms
18. Government of India, *Report of the Committee on Development of Biofuel*, Planning Commission, New Delhi
19. Wastelands are "Degraded land which can be brought under vegetative cover, with reasonable effort, and which is currently under utilized and land which is deteriorating for lack of appropriate water and soil management or on account of natural causes" (http://dolr.nic.in/fschemes.htm )
20. Annual Report, 2001-02, Ministry of Rural Development, Government of India.
21. Web Reference : http://www.natural-resources.org/minerals/CD/docs/mmsd/topics/058_downing.pdf
22. Statement by N C Saxena, cited in the article, *Large Dam Projects and Displacement in India.* Web Reference: http://www.sandrp.in/dams/Displac_largedams.pdf. In another estimate by Roy (1999) Roy (1999), the estimated displacement was close to 33 million.
23. This explanation is based more on the forest/non-forest boundary rather than looking only at one set of problems comprehensively. In fact, forestland in question cannot be seen is isolation of its context in any case.
24. Rao, V.V.K., 2006, Hydropower in the North East: Potential and Harnessing Analysis, Background paper for the strategy report by the World Bank titled "Development and Growth in North East India: The Natural Re-

sources, Water and Environment Nexus," The World Bank, Washington DC. Web Reference: http://www.mdoner.gov.in/writereaddata/sublink3images/69706470684.pdf

25. Chawii, L., *Natural Resource Based Income and Livelihood Improvement Initiatives*, Background Paper for the strategy report by the World Bank titled "Development and Growth in North East India: The Natural Resources, Water and Environment Nexus," The World Bank, Washington DC. Web Reference: http://www.mdoner.gov.in/writereaddata/sublink3images/14NaturalResourceIncome7872117900.pdf
26. Karki, Madhav. 2001. Institutional and Socioeconomic Factors and Enabling Policies for Non-Timber Forest Products-Based Development in Northeast India. IFAD Report No.1145-IN.
27. Total reserve forest in northeast India-46600 sq km, protected forest- 13200 sq kms, and unclassified-77100 sq kms. (Poffenberger: 2007).
28. The hydropower potential of other river systems of the North East is also included in the potential for the Brahmaputra. The rivers in this basin are: Upper Brahmaputra, Teesta, Subansiri, Kameng, Kalang, Dihang-dibang, Luhit, Lower Brahmaputra, Barak and the neighbouring river systems.
29. This demand is one third of national average.
30. Only 76 percent of the villages in the region have power supply.
31. World Bank, 2007, *The Natural Resources, Water and Environment Nexus*, Strategy paper on Development and Growth in North East India, The World Bank, Washington DC.
32. Although there is large undeveloped potential in the northern region, there is also considerably rising power demand within the region, which makes it inadequate to meet demands of other states. There is also the concern about adverse impact of inadequate hydro-thermal mix on the power system of the country. The hydropower development scenario in other regions makes it imperative to meet the peaking demand from outside. There is need for complementary peaking capacity in these systems in absence of which there would be sub-optimal utilization of large base load thermal capacities in the regions (Rao, 2006).
33. Presently, free power from Ranganadi project amounts to 180 gigawatt-hours with revenue potential of Rs 450 million. The revenue to the state would increase to Rs 3760 million on completion of the ongoing Kameng and Lower Subansiri projects. It is further estimated (based on the preliminary feasibility reports) that from the schemes having tariff less than 2.50 per kilowatt-hour, the free power to the state of Arunachal Pradesh in a year would be about 10450 gigawatt-hours. The revenue to the state from the sale of this energy would be Rs 26125 million per year

34. North Eastern region has 30 schemes with installed capacity of 23286 MW with tariff less than Rs 2.50 per kilowatt-hour. Out of this, 16 schemes with installed capacity of 18366 MW have first year tariff lower than Rs 2.00 per kilowatt-hour.
35. Web Reference: http://www.nhpcindia.com/Projects/English/Scripts/Prj_Introduction.aspx?vid=23
36. Web Reference: www.cseindia.org/programme/industry/eia/subansiri.pdf
37. Data from NHPC states 4030.56 ha as "Forestland diverted/required"
38. Vagholikar, N., and Ahmed, F., 2003, Tracking a Hydel Project- the story of Lower Subansiri, *The Ecologist Asia*, Vol 11, No. 1, January-March 2003.
39. The list includes leopard, tiger leopard, clouded leopard, marbled cat, golden cat, dhole or wild dog, gour, serow, capped langur, slow loris, gharial etc (ibid: 4)
40. Choudhary, Anwaruddin, Comments on the Biodiversity Aspects of Environmental Impact Assessments of Kameng and Lower Subansiri HEP, in *Update on Dams, Options and Related Issues*, Issue 5, September 2002, SANDRP.
41. Cited from Goswami, D.C., and Das, P., 2002, *Hydrological impact of earthquakes on the Brahmaputra river regime, Assam: A study in exploring some evidences*, Proceedings of the 18th National Convention of Civil Engineers.
42. Web Reference: www.cseindia.org/programme/industry/eia/Subansiri.pdf
43. Ministry of Environment and Forest (MoEF)
44. *Dams, Rivers and People*, October, November, December 2004:12.
45. Web Reference: www.forestcaseindia.org/f4/updatesjun04
46. News article published in *livemint* on 15th January 2008, Discouraging Delays-New hydropower policy aims at wider local area development. Web reference: http://epaper.livemint.com/Articletext.aspx?article=15_01_2008_009_007&kword=&mode=1
47. There has been an exodus of employees, largely engineers, to private sector power firms like Reliance Energy, Lanco Infratech and DS Constructions (based on news article published in *livemint* on January 18, 2008- Capacity Addition- Disputes with contractors, staff exodus affect NHPC projects). Web Reference: http://epaper.livemint.com/Articletext.aspx?article=18_01_2008_004_001&kword=&mode=1
48. If the developer is not able to complete the project within four years of its financial closure, the quantum of power available for sale as merchant power will be reduced from 40 percent to 35 percent. This range increases for subsequent delays (ibid).
49. Cited from Bandopadhyaya, J., and Gyawali, D., 1994, Himalayan Water Resources: Ecological and Political aspects of Management, *Mountain Research and Development*, Vol. 14, No. 1, Feb 1994, pp 1-24. Web Reference:

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89. The micro missions along with the nodal agencies are listed below:
    *Micro mission on plantation on forestland: MoEF and State Government as nodal agency*
    *Micro mission on plantation on non-forestland: NOVOD (National Oilseeds and Vegetable Oil Development Board) under the Ministry of Agriculture as nodal agency*
    *Micro mission on plantation on other land: Ministry of Rural Development as the nodal agency*
    *Micro mission on procurement of seed and oil extraction: KVIC as the nodal agency*
    *Micro mission on trans-esterification, blending and trade: Ministry of Petroleum and Natural Gas as the nodal agency*
    *Micro mission on Research & Development*

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97. However, this study is taken only as indicative of the magnitude of dependence in the dry region and not as actual dependence in the districts that are under consideration for biofuel plantation.
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9

# Forests, Farms and Trees

## Past Trends, Current Status, and Future Prospects

K. D. SINGH

**Summary**

THIS ESSAY IS DIVIDED INTO three parts: 1) the recent trends (limited to 1970-2000); 2) the situation at the beginning of the 2000's; and 3) future prospects (by 2020). Key drivers determining the trends and prospects in each period are described.

The historic review begins with the Stockholm Conference on Human Environment, 1972, which raised global awareness of forests as an "ecological system." The National Commission on Agriculture Report released in 1976 introduced a paradigm shift in forest management "from low investment and slow growing forestry to high investment and fast growing forestry." It gave birth to concepts known as Production, Social and Environmental Forestry. The National Forest Policy 1988 provided further impetus to stop and reverse the forest loss and protect ecological integrity. It was instrumental in introducing participatory forest management, termed as Joint Forest Management. The forest loss did de-accelerate, but not stop completely.

Presently, the natural forest area has stabilized; the tree resources outside forests have become the main source of wood supply; and non-timber forest products have

taken over timber production in revenue terms. The joint forest management movement has taken roots in all the states of the country. The Forest Rights Recognition Act (2006) has been passed by the Parliament, but is yet to become operational.

In the coming periods (2000-2020), wood production outside forests and Non-timber Forest Products, will continue to grow and form major elements of the future strategy (2000-2020). Development in these areas is in line with faster and more inclusive growth advocated by the Planning Commission of India. These opportunities, however, need to be carefully internalized in the government forest management system with appropriate policy and institutional adaptations, knowledge and extension support to the local communities.

## Introduction

India accounts for nearly 80 percent of the managed forest area of the tropics (FAO 1982). The scientific techniques were introduced as early as in 1856 with sustained production of valuable timber from the state forests as the main objective. A systematic effort was made to develop scientific as well as practical knowledge required for sustainable forest management, including reliable methods of forest inventories, mapping, growth and yield estimation. At the time of Independence, the total forest area with settled rights (reserved forests) was 25 million ha. The current area of reserved forests is 41.6 million ha, which makes two-thirds of the total forest area at 67.7 million ha (FSI 1999).

The Forests of India are currently under extreme population pressure, about ten times the world average (FAO 2006). If they still exist today and in a reasonably good form, the credit must go collectively to the people, government and the Forest Service, who are keeping the balance between the present and future use of the forests as an intergenerational resource.

## Recent History and Key Drivers (1970-2000)

The year 1970 is a starting point, as it marks a beginning of a new thinking in the country. The major events, which made a lasting impact on the sector include: (i) Stockholm Conference on Human Environment 1972; (ii) The Report of the National Commission on Agriculture (including forests) 1976; (iii) The National Forest Policy 1988; and (iv) Green Revolution, reducing substantially the pressure on forestland.

## Stockholm Conference on Human Environment 1972

The Stockholm Conference, held in 1972, played an important role in raising global awareness about forests as "ecological systems." Prime Minister Indira Gandhi attended the Conference and later took the cause of forest and wildlife conservation as her personal and among the most important missions. A report published in the same year brought to public attention a significant reduction in the tiger population of the country, bringing it close to extinction limits. The fact precipitated action. The 42nd Constitutional Amendment 1976 was passed bringing Forests (17 A) and Protection of Wild Animals and Birds (17 B) under the concurrent list (as it was before 1920) of the Indian Constitution, thereby giving power to the Union Government to enact legislation, overriding state laws. A concrete outcome was the Forest (Conservation) Act 1980 aimed at controlling indiscriminate diversion of forestland by States for non-forestry purposes and made it compulsory to obtain the approval of the Central Government before making any transfer of forestland for non-forestry purposes, and mandating compensatory plantations equal to double the area on degraded forest lands.

In the early eighties, a social movement known as "chipko Andolan" (hugging of trees by womenfolk in order to protect them from contractors' axe) in the Himalayan Region led to banning of green felling. In 1984, the Forest Department was shifted from the Ministry of Agriculture to newly created Ministry of Environment and Forests. In the nineties, the judiciary started taking an active role in the forestry matters. Supreme Court interventions to control logging in the North-East Region resulted in closure of many of wood based industries. The Court has issued numerous orders relating to forests and their use including what constitutes a "forest."

## The National Commission on Agriculture

The National Commission on Agriculture (NCA) was constituted in 1972 to strengthen the agriculture sector (including forestry) to meet future national needs. NCA finalized its report in 1976, which guided the forest sector developments during 1980-90. The two main recommendations: creation of Forest Development Corporations (FDC) and launch of Social Forestry Projects (SFP). It may be noted that objective behind FDC was to draw upon institutional finances to fund forestry development. However, in all respects the corporations functioned like extended arms of the Forest Departments. "Run by State Forest Department Staff and a Board of Directors consisting of government officials, FDCs rarely adopted a corporate management style. With very few exceptions,

these public sector entrepreneurial efforts proved failures, resulting in great loss of public funds and other resources. These failures are in part due to inefficient management. "Unlike business enterprises, they were not able to attain efficiency in the use of capital, labour and raw materials because of, amongst other things, over-employment, fixed cost labour, low product prices fixed by the Government and employee fringe benefits unrelated to profitability" (Chandrasekharan 1999).

The SFP was abundantly supported by donors. About 24.84 million ha of plantations were raised: 13.51 million ha during 1980s and 11.33 million ha in 1990s. A MoEF study sums up their success as follows: "The performance of these plantations, in terms of survival, growth and yield, has been poor. Based on survival rate and stock density, effective area has been estimated at 40-50 percent of the recorded total. The MAI of forest plantations varies from about 2 cu. m / yr/ha for valuable timber species and about 5 to 8 cu. m /yr/ha for Eucalypts and other fast growing species. This may be compared to an MAI of over 10 cu. m/yr/ha generally and about 50 cu. m/yr/ha for good quality industrial plantations in other countries (MoEF 1999)."

Against the indicative target of 33-41 million cum of annual industrial wood production by end 1990, recommended by NCA, only 24 million $m^3$ was achieved. In fact, during this period, the relative price rise in respect of timber and fuelwood has been steeper than the food commodities. As expected, organized theft and illicit logging from forests increased in many states. Poorly staffed and badly equipped forest guards were facing an uphill task in protecting the forests against organized mafia. Another side effect was less attention given to natural regeneration of forests, as a consequence of increased emphasis on tree planting activities. The major part of the budgetary allocation, say about 70-80 percent was earmarked for social forestry without adequate attention to the regeneration of natural forests, resulting in the loss of biodiversity and non-wood forest product species (MoEF 1999).

From above account, it seems that both of NCA initiatives, FDC and SFP did not take off. Nor they have made any lasting impact on the state of forests. A main reason for this could be the failure of the Forest Departments to institutionalize the new concepts and learn to take more complex future challenges.

## The National Forest Policy 1988

Revision of 1952 national forest policy was also among NCA recommendations. However, on account of conflicting interests, it took more than a decade to reach a consensus in 1988 balancing needs of environment and development. The opening paragraph of the new National Forest Policy sums up well the rationale:

"Over the years, forests in the country have suffered serious depletion. This is attributable to relentless pressures arising from ever-increasing demand for fuel wood, fodder and timber; inadequacy of protection measures; diversion of forest lands to non-forest uses without ensuring compensatory afforestation and essential environmental safeguards; and the tendency to look upon forests as revenue earning resource. The need to review the situation and to evolve, for the future, a new strategy of forest conservation has become imperative. Conservation includes preservation, maintenance, sustainable utilization, restoration, and enhancement of the natural environment. It has thus become necessary to review and revise the National Forest Policy."

In a direct reference supremacy of the environmental functions of forests, in Section 2.2, the policy document states: "The principal aim of Forest Policy must be to ensure environmental stability and maintenance of ecological balance including atmospheric equilibrium which are vital for sustenance of all life-forms, human, animal and plant. The derivation of direct economic benefit must be subordinated to this principal aim."

The policy envisaged "massive people's movement with the involvement of the woman, to increase the forest cover and thereby minimize pressure on existing (reserved) forest." Pursuant to the policy declaration, the Central Government issued a notification in June 1990 to all the States providing broad guidelines for participation of village communities and voluntary agencies in the protection of State forests and usufruct rights of the community (including non-timber, grass, firewood and timber products), share in final harvest of timber; and preparation of micro-plan for the forest. The system, popularly called Joint Forest management (JFM), witnessed a phenomenal growth during 1990-2000: twenty-two States undertook concrete measures to create local institutions for protection and forest management. By 2000 end, about 36,130 Forest Protection Committees were managing a total of 10.25 million ha of forest area.

The 73rd amendment to the Indian Constitution, 1992, went one step further and made it mandatory for all states to decentralize governance through a three-tier structure: the State, District and Local Bodies (called Panchayati Raj Institutions or PRI in brief). The Act was extended to Schedule Tribe Areas (in brief called PESA 1996), whereby every Gram Sabha (Village Council) was constitutionally recognized as the third tier (State and District are the first two tiers) of administration and empowered to safeguard and preserve the traditions and customs of the people, their cultural identity, community resources and the customary mode of dispute resolution. Among the 29 functions recommended for decentralization, three relate to forestry: Social Forestry, Fuel Wood Plantations and Non-Timber Forest Products (NTFP). The Scheduled Tribes and Other

Forest dwellers (Forest Rights) Act 2006, to be discussed later, would take the process of decentralization in respect of forests still further (Singh et al. 2008).

## Green Revolution in Agriculture sector

Traditionally, forests and agriculture had a conflicting claim on land. Most of historic deforestation in the country took place for expansion of agriculture (Singh 2008). The green revolution, however, made it possible to produce more food from less land area (see Table 1), reducing substantially the pressure on forestlands. The net area sown was practically the same (even decreased) during the period 1970-2000, but the yield per ha increased from 1023 to 1626 kg / ha.

**Table 1: Economic & agricultural growth trends during 1980-2000**

| | | Economic Trends | | Agricultural Land Use | | |
|---|---|---|---|---|---|---|
| | Population | Real GDP Growth | GDP Per Caput | Net Area Sown | Area irrigated | Yield Food Grain |
| Year | Millions | (%) | % | Million ha | % | Kg / Per ha |
| 1951-52 | 361 | | | 118.75 | 18.1 | 536 |
| 1981-82 | 683 | 3.7 | 1.5 | 140.00 | 29.7 | 1023 |
| 1990-91 | 843 | 5.9 | 3.8 | 143.00 | 35.1 | 1380 |
| 2000-01 | 1027 | 6.2 | 4.4 | 141.63 | 43.4 | 1626 |

Source: MA (2005), Kalam et al. (1998)

## A Study on Forestry Trends During the Period

It may be recalled that 1988 Policy was enacted to stop / reverse the process of deforestation and forest degradation using a participatory mechanism. How successful was it in achieving this goal? An appropriate technique for analyzing its impact is to construct "change matrices" for 1980-90 and 1990-2000 (see Table 2).

Change matrices are some-what difficult to read, but full of interesting information. One could, for example, get estimates of decadal forest cover change rate during 1980-90 and 1990-2000 using the first and the second matrix respectively. One could also compare the two decadal change rates, to get an estimate of acceleration or deceleration in forest cover changes over the twenty-year period to

get a quantitative evidence of forest policy effectiveness in increasing the forest cover or, at least, stopping the negative slide. A summary of findings follows:

- The loss of closed forests has decelerated from 1.7 million ha during 1980-90 to 0.7 million ha during 1990-2000;
- The trends towards open forests formation has been reversed; and area under long and short fallows and shrubs are decreasing;
- Agriculture land area is stable; and plantations area is increasing; and
- Forest fragmentation is increasing (bad for wildlife).

One finds significant positive changes happening in the forests of the country during 1990-2000 decade in comparison to 1980-90 decade, except for the "fragmented forests" category. Here negative changes are taking place; the forest is getting more and more broken into patches, and it's bad for wildlife movement and biological diversity, as forest fragmentation increases biodiversity loss.

## The Current Situation and Emerging Trends

### The Current State of Forest Resources

According to the Forest Survey of India Report 2005, the recorded forest area was 76.5 million ha, or 23.3 percent of the geographic area of the country. The forested portion (with crown cover more than 10 percent) was 67.7 million ha, of which 38.7 million ha was classified as dense forest (with crown cover more than 40 percent) and 29.9 million ha as open forests (with crown cover between 10-40 percent). The shifting cultivation, mostly located in the North-East Region and included in the open forests, was 1.7 million ha.

The FSI 2005 assessment, compared to that in 2003, shows a decrease of forest and tree cover in the country by 72,800 ha. This is due to factors such as heavy withdrawals of forest products more than the carrying capacity, forest fires, heavy grazing and diversion of forestlands for non-forestry purposes. Forest plantations constituted 31.2 million ha, raised during 1951 to 1999 (FSI 1999).

The estimates of growing stock of forests on two occasions is based on inventory data collected as a part of pre-investment surveys over a 25 year period since 1965 and as a part of national forest inventory covering 120 districts in two rounds (2003 and 2005). The first survey estimated the growing stock of India's forests to be 4.741 billion $m^3$ (FSI 1995). Since forest inventories were not designed for national estimate and were spread over a long period it was difficult to assign any reference year to it. The second time estimate of total growing stock of the counties using the NFI data was 4.602 billion $m^3$ (Pandey 2008).

**Table 2: Land use change matrices for the period 1980-90 and 1990-2000**

| Transition matrix 1980-1990 ('000ha) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Land cover classes in 1980 | Land Cover Classes in 1990 | | | | | | | | | Total 1980 (area) ( percent) | |
| | Closed forests | Open forests | Long fallow | Fragmented forest | Shrub | Short fallow | Other land cover | Water | Plantations | | |
| Closed forests | 40272 | 808 | 580 | 40 | 37 | 268 | 440 | 14 | 33 | 42493 | 21.1 |
| Open forests | 208 | 12246 | 4 | 73 | 91 | 6 | 328 | 9 | 40 | 13006 | 6.5 |
| Long fallow | 52 | | 8989 | 4 | 2 | 1378 | 281 | | 4 | 10710 | 5.3 |
| Fragmented forest | 29 | 36 | 11 | 6990 | 5 | 3 | 214 | 6 | 15 | 7309 | 3.6 |
| Shrub | | 18 | | | 1855 | 1 | 58 | 5 | 13 | 1950 | 1.0 |
| Short fallow | 25 | | 124 | 4 | 2 | 2126 | 9 | | | 2290 | 1.1 |
| Other land cover | 91 | 87 | 35 | 104 | 87 | 21 | 120441 | 100 | 69 | 121015 | 60.2 |
| Water | 7 | 3 | | | | | 40 | 57 | 9 | 116 | 0.1 |
| Plantations | 31 | 15 | | 6 | 5 | | 40 | | 2114 | 2210 | 1.1 |
| Total 1990 (area) | 40714 | 13214 | 9744 | 7220 | 2065 | 3803 | 121952 | 192 | 2297 | 201100 | |
| ( percent) | 20.2 | 6.6 | 4.8 | 3.6 | 1.0 | 1.9 | 60.6 | 0.1 | 1.1 | | 100 |
| Transition matrix 1990-2000 ('000ha) | | | | | | | | | | | |
| Land cover classes in 1990 | Land Cover Classes in 2000 | | | | | | | | | Total 1990 (area) ( percent) | |
| | Closed forests | Open forests | Long fallow | Fragmented forest | Shrub | Short fallow | Other land cover | Water | Plantations | | |
| Closed forests | 39994 | 144 | 30 | 132 | 2 | 282 | 172 | 31 | 18 | 40714 | 20.0 |
| Open forests | 61 | 12807 | | 99 | 25 | 30 | 171 | 19 | 1 | 13214 | 6.6 |
| Long fallow | 1 | | 8736 | 15 | | 881 | 111 | | | 9744 | 4.8 |
| Fragmented forest | 6 | 17 | | 7049 | | 4 | 107 | 31 | 7 | 7220 | 3.6 |
| Shrub | | 1 | | 4 | 2020 | 15 | 22 | 4 | | 2065 | 1.0 |
| Short fallow | | | 299 | | | 3483 | 50 | | | 3803 | 1.9 |
| Other land cover | 15 | 92 | 75 | 339 | 33 | 62 | 121050 | 96 | 90 | 121852 | 60.6 |
| Water | 6 | | | 4 | | | 33 | 149 | | 192 | 0.1 |
| Plantations | | | | | | | 39 | | 2258 | 2297 | 1.1 |
| Total 2000 (area) | 39994 | 13061 | 9110 | 7643 | 2080 | 4755 | 121754 | 330 | 2374 | 201100 | |
| ( percent) | 19.9 | 6.5 | 4.5 | 3.8 | 1.0 | 2.4 | 60.5 | 0.2 | 1.2 | | 100 |

Source FAO (2002)

The FSI studies show that forest resources are gradually degrading not only on account of unplanned collection, but also from rampant grazing, fire and trampling by animals. According to a recent estimate of Forest Survey of India, the regeneration, in general, is lacking in more than 50 percent of forests of the country. On account of limited forest area and growing demand, the supply is progressively falling short of requirements. In respect to industrial wood, the deficit in 2000 was of the order of 29 million cubic meters. This is expected to exceed 43 million cubic meters by 2020 (Pandey et al. 2008). The withdrawal of fuel wood from forests in the year 2000 was estimated at 86 million tons annually against the sustainable level of 17 million tons (Singh 2008).

## Emergence of Agro-forestry

The emergence of trees outside forests as the major supplier of domestic and industrial wood in the country is a major development Table 3. In (percent) terms, the tree cover amounts to about 3.2 percent to the forest cover of the country. Farm forestry has become the main source of supply to wood based industries and fuelwood for cooking. This is on account of farmer's own initiative with limited support from the government in form of free seedlings.

**Table 3: Wood production from agro-forestry**

| Sources | Year (Million $m^3$) | | |
|---|---|---|---|
| | 1996 | 2001 | 2006 |
| Farm Forestry | 31 | 36 | 40 |
| Forest Reserves | 23 | 26 | 29 |
| Plantations | 10 | 11 | 13 |

Source: FSI 1996

The total growing stock of wood in TOF in the country is 1.616 billion $m^3$ constituted by 5.16 billion trees outside forests. It is to be mentioned here that the estimated growing stock of India's forests is about 4.7 billion $m^3$. TOF therefore constitutes a great resource of wood, almost 1/3 compared to country's forests.

A number of National Conferences on Agro-Forestry, for example ones held at Chandigarh in 2005 and 2006 and attended by a wide spectrum of scientific community, progressive farmers and people's representatives, all pointed towards great opportunities to enhance the farm income on a sustainable basis from adoption

of suitable (agro-climatic zone adapted) agro-forestry systems compared to monocultural cropping. The system is already being gainfully practiced on a large scale by medium and large farmers all over the country under irrigated conditions, but its potential has to be fully realized by small farmers without irrigation facility.

Benefitting from seedling distribution by the Social Forestry Programmes, Since 1979-80 farmers started planting of trees on their private lands as. Externally aided projects provided sufficient funds for planting. About 35 to 40 percent of the total plantation targets were achieved by distribution of seedlings, which were exclusively planted outside forests by individuals, private and other agencies. In addition, trees were planted in the common lands; land available along roads, railway lines, canals, ponds and village Panchayat by the Government departments. It is estimated that the percentage of trees outside forests was more than 70 percent of the total target.

Some of the wood-based enterprises like WIMCO Seedlings in Uttarakhand, ITC Bhadrachalam in Andhra Pradesh began raising and selling quality seedlings and providing incentives (like buy back arrangements) to plant trees during late 1980s. This approach became very popular and has been replicated by many other private enterprises in last one decade including Harihar Polyfibres in Karnataka, West Coast Paper Mills in Karnataka, JK Corporation in Orissa, Andhra Pradesh Paper Mills, Century Paper Mills in Uttarakhand and Siv Industries in Tamil Nadu.

## Escalating Demand of Industrial Wood

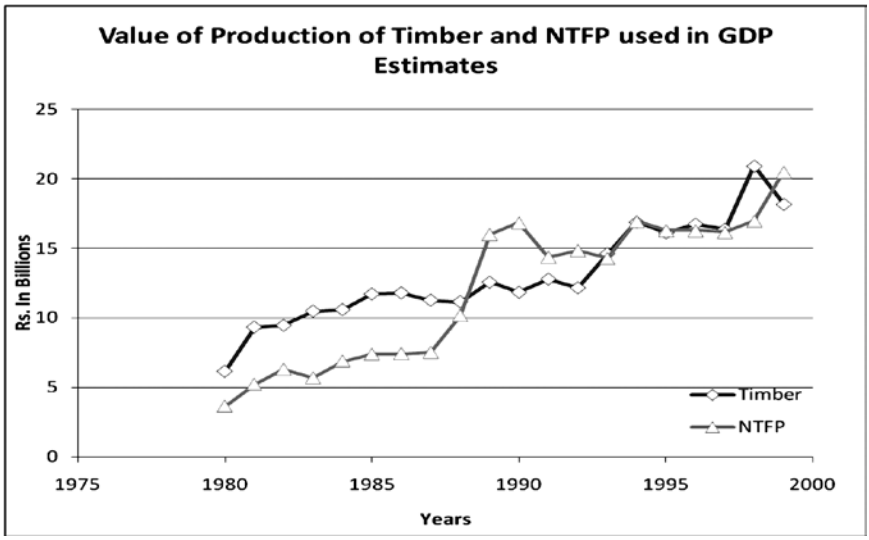
The import of wood, in particular pulp and paper products, registered a four-fold increase during the last decade. The total imports during 2000-01 were to the tune of 144 million US$. According to a global study, undertaken by a leading international company, the largest consumption growth in pulp and paper products during the next decade is expected to be in the Asian region and will account for nearly 34 percent of the World's paper consumption by 2010. India is listed among the countries with the largest increase in the consumption growth in the coming decade.

## Increasing Value of NTFP

A notable trend is growing importance of Non-timber Forest Products over the Timber in revenue terms (see Figure 1). Logging ban is responsible to some extent for the reduced emphasis on timber production from forests. In Orissa, for

example, the annual revenue from these sources rose from 35 percent in 1981-82 to 90 percent in 2001-02. One species, Kendu leaves (Diospyrus melanoxylon) generated 3/4 of the total revenue from forests. For local subsistence, they have been and remain "essential products."

**Figure 1: Rising importance of NTFP in the forest economy of India**




Source: Chauhan et al. (2008)

## Future Prospects

The future forest sector developments will be guided by two groups of variables: 1) the trends in national economy and government development priorities, which in turn will determine the qualitative and quantitative composition of demands on the forest sector; and 2) preparedness of forestry institutions to take up the challenges and deliver results.

### The National Economic Outlook

Regarding the national economy, the statistics in Table 4 indicate that, in the coming 20 years, the current rates of economic growth and emphasis on inclusive growth are expected to continue. The per capita GDP, which tripled during

1980-2000, is expected to almost quadruple during 2000-2020. The income of the poor (lowest 10 percent) is expected to improve; however, the relative divide between rich and poor is likely to remain almost the same.

**Table 4: Socio-economic trends during 2000-2020**

| Year | Population | Population Pressure | Urbanization Trends | GDP / Capita (All) | GDP / Capita Lowest (10 percent) |
|---|---|---|---|---|---|
| | Billions | No/ha | ( percent) | US$ | US$ |
| 2000 | 1.01 | 307 | 28 | 429 | 159 |
| 2010 | 1.16 | 357 | 32 | 762 | 282 |
| 2020 | 1.30 | 405 | 38 | 1538 | 569 |

Sources: GOI 2004 and Kalam et al.(1998)

The 11th Five Year Plan aims to achieve "faster, more broad-based and inclusive growth" and provides special measures "to reduce poverty and focus on bridging the various divides that continue to fragment our society" (GOI 2006). The "fact that the economy in many ways is better placed than it has ever been before should help us to achieve such ambitious targets." The last two quotes are respectively from the opening and closing pages of the 11th FYP document and are indicative of the importance government attaches to poverty problem.

The emphasis on inclusive growth is driven by the consideration that nearly 27.5 percent of the population of the country in 2004-2005 was living below the poverty line. Some leading states, with  percent of poor are given in brackets, were: Orissa (39.9 percent), Jharkhand (34.4 percent) and Andhra Pradesh (32.4 percent). All of them are located in the Central Zone of India. They are also the leading states in forest cover and scheduled tribe population. It may not be a surprise to find that more than 100 million poorest of the poor in the country live within 5 km radius of forests and majority of them happen to be scheduled tribes! In the remote regions, hilly and mountainous, agriculture in itself can not constitute the sustainable basis for bridging the divide. Obviously, the current paradigm for the scheduled area development has failed to solve the poverty problem. On the contrary, more and more of the districts in the Central Zone are experiencing insurgency!

The poverty and livelihood insecurity is also wide spread in rural areas on account of small holding, subsistence farming and unpredictable rainfall. During the 9th and the 10th FYP, the overall GDP growth rate has been respectively 5.5 and 7.2 percent and the agriculture sector only 2.0 percent and 1.7 percent respectively (see Table 5). The Farmer Commission has proposed a comprehensive strategy for a second "green revolution," which would certainly receive government attention. A question is: what is likely to be the impact of agriculture development (the promised second green revolution!) on the livelihood security and profitable agriculture? The 11th FYP document (Chapter 5: Bridging Divides: Including the Excluded) raises a basic question: "Will growth bypass the poor, excluding them from its benefit?" It is obvious that a pro-poor and biased strategy is called for, which localizes the poor regions and poor people, and gives special attention to development constraints and link production with the marketing is much needed.

**Table 5: An overview of the past macro-economic indicators**

| Sectors/ Sub-sectors | 9th Plan 1997-98 to 2001-02 | 10th Plan 2002-03 to 2006-07 |
|---|---|---|
| GDP Growth (%) | 5.5 | 7.2 |
| Agriculture | 2.0 | 1.7 |
| Industry | 4.6 | 8.3 |
| Services | 8.1 | 9.0 |

Source: 11th FYP Document

## The Forest Sector Response

For discussing the sector response (including forestry development and agricultural strategy) to meet its challenges, the country's landscape will be classified into two types: Forest and Agriculture Regions, which have distinct ecological, demographic and socio-economic settings and proportions of people below the poverty line. Thus they call for differing policy interventions (see Table 6).

**Table 6: Land classification from future forest sector development perspective**

| Regions | Major Land Use Types | Area (million ha) |
|---|---|---|
| I. The Forest Region (~ 164 million ha) | | |
| 1. | Forest covered areas | 64 |
| 2. | Cultivation in forest fringe areas | 15* |
| 3. | Deforested hills and mountains | 30* |
| 4. | Un-productive lands (Glacier and desert) | 55 |
| II. Agricultural Region (~ 165 million ha) | | |
| 1. | Irrigated agriculture | 50 |
| 2. | Rain-fed agriculture (favourable weather) | 20 |
| 3. | Rain-fed agriculture (low lying flood plains) | 20 |
| 4. | Dry land agriculture (arid and semi-arid zone) | 50* |
| 5. | Ravinous, gullied and degraded lands | 25* |
| Total | All Lands | 329 |

Source: FSI 2003, Ministry of Agriculture 2005

The Forest Regions have an area of 164 million ha and are generally located in remote tracts with under developed infrastructure. The number of inhabitants is estimated around 160 million people, which makes one person per ha. The forest region includes:

- Most of the natural forests (close to 64 million ha)
- Unrecorded cultivation in forest fringe (about 15 million ha)
- Deforested hills and mountains (30 million ha)
- Permanent unproductive areas including glaciers (55 million ha).

The terrain in the forest region is hilly, the growing season short and erratic. Agriculture land holdings are small and yield low; the major share of land (could be 80 percent) is under Government control. Population density, as expected from land use pattern and very inhospitable environment, is very low: about one person /ha, half of them Schedule Castes and Schedule Tribes.

The agricultural region covers about the same area viz. 165 million ha with the total population of 850 million people, which makes 5 persons per ha. About

140 million ha is reported under cultivation. Apparently, the figure does not include areas under shifting agriculture and unrecorded agriculture at the forest fringe. The region, as a whole, has made steady economic growth since Independence. By end of 2000, food production had reached a satisfactory level to provide reasonable food security to the entire nation; infrastructure development is proceeding well; and the economic growth is almost reaching a two digit figure.

## Prospects for the Forest Region Development

There would hardly be any disagreement about the top priority for the region: eradication of poverty among the forest fringe dweller in general and scheduled tribes. Forestry has the advantage that it is natural to the region and the forest fringe dwellers have traditional knowledge about forests. The other two issues of national importance in the region are protected area management (conservation of national biological diversity and wildlife) and soil and water conservation in the river basins.

Brief comments on the three future forest management scenarios follow.

*(1) Joint Forest Management (JFM)*: Presently, JFM does not include value addition and marketing. Accordingly, the expected GDP growth is lower than the first option. It is assumed that focus will be on forest management as during 1990-2000. As observed from the changes matrices of 1990-2000, JFM was able to reduce the deforestation to an extent but was not able to stop the deforestation completely, as it is essentially a top-down command and control model and does not have people empowerment as a goal. JFM must encourage bottom-up planning and implementation with a focus on the promotion of a more commercially viable livelihood approach. Communities must be placed at the centre of the development process, and the participatory and technological approaches need to be integrated. During the hearing on JFM, organized by NCA, the following conclusions were drawn and recommendations made:

JFM has been by and large successful. It is, however, important to see it as a part of a continuing process and not as a stand-alone programme.

The sustainability of JFM is a serious concern. Performance of the JFM "samitis" (committees) may be evaluated on the basis of certain indicators. The important among them are control of: (i) Encroachment (including misuse of area allotted to the samiti), ii) Grazing, (iii) Illicit felling, and (iv) Fire.

The community based natural resources management and development has major potential for enhancing the well being of people. Forests should therefore be unlocked on sustainable basis for strengthening the livelihood support system of the forest dwellers in general and "samiti" members in particular.

JFM has been perceived mostly as a forest department program in which people participate. In fact, it should be a people's program that the department should facilitate. JFM is not only what the department gives to people but also what the community has given to the cause of forests.

Towards the future development of the JFM process, it is recommended that the community assumes a central role in all planning process (including JFM) and the government as the provider of extension and support services.

*(2) NTFP Management, Cultivation and Marketing*: The goal under this option could be to achieve a steady increase of per capita income (say 6 percent per year or higher), to double the income of an individual by 2020. This option requires community capacity building to manage and market NTFPs on business lines. There are examples of successful NTFP ventures in the country based on forest produce run in the form of large scale government cooperatives: (i) Girijan Cooperative Corporation (GCC) of Andhra Pradesh is organizing procurement of NTFP at fair prices to tribal community by eliminating the middlemen and private traders. The annual turnover reported in 2004-2005 was US$ 9.6 million, most of it in form of disbursement to tribal collectors; and (ii) Madhya Pradesh and Chhattisgarh Minor Forest Produce Cooperative Federations, who are organizing Statewide NTFP collection, marketing and supporting processing and sale.

A recent study, conducted in Baripada Development Block in Mayurbhanj District of Orissa (Singh et al. 2009), shows GDP growth more than 6 percent can be achieved, if a system approach is applied to forest management including the entire value chain from planting/regeneration, management to marketing combined with community capacity building. This study took Sal leaf based cup and plate making as an example of enterprise. There were 30 other items collected by the community, which can be processed and marketed by the community. An interesting finding was that the communities were more interested in NTFP than timber harvesting. This way a continuous increase in forest growing stock was observed during 1985-2005.

A key lesson of the above study was that forestry, as a part of poverty alleviation strategy, needs to take multi-prong steps toward peoples empowerment, such as enabling communities to play a lead role in forest management, promoting local processing for forest products, marketing through village cooperatives, and developing partnerships with the private sector and NGOs.

The prospects of business enterprises based on NTFP are great. The Government could play an important catalytic role by promoting investments, knowledge transfer and capacity building of the indigenous Peoples, who could make a sustainable use of resources as a part of their social system. Andhra Pradesh established Girijan Cooperative Cooperation (GCC) in form an Autonomous Corporation in 1980 to get rid of the middle men and thereby increase the benefit to

the tribal people. The GCC was able to eliminate the middleman, provide essential commodities (like food and medicine) even in the interior area, and extend credit facilities for "agricultural activities." However, GCC fell short of promoting integrated development by excluding forest management from the scope of their involvement. In the new context of 1996 Constitutional changes, the local people have an important role as custodian of forest resources and their sustainable development.

| The Economic Impact of GCC, Andhra Pradesh | |
|---|---|
| Forest area | 3.2 million ha |
| Number of forests districts | 25 (on average 130,000 ha per district) |
| Beneficiaries | 2.5 million tribal people |
| Number of depots | 817 |
| Processing units | 8 |
| Annual turnover | US$25 million |

There is need for urgent action to promote sustainable NTFP management. The information on non-timber forest produce, which are the basis of subsistence of the forest fringe dwellers and main source of their cash income, is almost non-existent: what is the level of sustainable production, what is being actually harvested and sold? The knowledge about the management of NTFP, which number in hundreds does not exist. The responsibility for their management and marketing has now been transferred to local communities with no proper extension services nor is any accounting support. There is general apprehension that Tribal Act combined with uncontrolled market will hasten the decline of NTFP resources, which are already fast depleting. Nobody knows as to when they will completely disappear? The forestry scenario will fast deteriorate, if remedial measures are not soon undertaken.

*(3) Integrated Watershed Management*: Most of forest region is hilly and mountainous. Therefore, a strategy based on watershed development with emphasis on water conservation, appropriate combination of annual and perennial crops is most likely to provide a reliable source of income and livelihood security. A balanced approach to land use will be more profitable and ecologically more sustainable. Economic gains ate estimated high (6 percent) as there will a possibility of value addition from combining crops, forestry and cattle rearing. There are many success stories on the subject, which provide a sound basis for planning such

projects. The main development goal will be to make the community self-reliant in respect of basic needs and consist of:

- Improved agriculture practices through soil and water conservation, minor/micro irrigation, technology upgrading and extension with greater emphasis on high value crops including medicinal & aromatic plants.
- Livestock improvement including poultry etc.
- Access to safe drinking water.
- Other income generating activities
- Improving access to markets, market information and developing rural roads/marketing infrastructure.

The above issues are important in most forestry regions of the country. Other important considerations are: participation of all stakeholders including the private sector's involvement, building sustainability into the design of programmes at the start-up stage itself, promoting use of social capital, cost sharing among stakeholders and use of sustainable models / practices.

*(4) Protected Areas and Wildlife Management*: The track record of forest protection, particularly in the tropical countries, has been poor. There is a strong emerging consensus that, if forest conservation is to succeed, conservation efforts need to go beyond protected areas and cover all forests (Singh 2005). Even the most ambitious exponents of biodiversity protection only hope to achieve the allocation of around 10 percent of the geographic area of the country under parks and reserves. In our country, it is presently (4.75 percent) of the land area. Obviously, the fate of most of biodiversity will depend upon what happens to forests under sustainable forest management. To achieve an effective protected area system, even within the limited area, presents a formidable task, as obvious from the current debate on tiger protection in the country. A number of questions emerge from discussions: what minimum number of tigers, from a genetic perspective, one should aim to have in a park? What could be done to increase the number of tigers in two parks which are among the largest but contain among the lowest number of tigers? What could be the role of intensive forestry practices, to reduce the pressure on protected forest areas? In view of above remarks, the future forest management situations are presented in Table 7.

## Prospects for Enhancing Tree Cover in Agriculture Region

National Conferences on Agro-Forestry, held at Chandigarh in 2005 and 2006, attended by a wide spectrum of scientific community, progressive farmers and representatives. They all pointed towards great opportunities to enhance the

**Table 7: Scenarios for development and conservation in the forest region**

| Forest Land Class | Forest Management Situations | Potential Forest Area (million ha) | Estimated GDP Growth ( percent / year) |
|---|---|---|---|
| I | Multiple Use Forest Management<br>1. NTFP Management and Marketing<br>2. Joint Forest Management<br>3. Implement Scheduled Tribes Act | 50 | <br>6<br>4<br>2 |
| II | Wildlife and Protected Area Management | 14 | 2 |
| III | Integrated Watershed Management | 45 | 6 |
| IV | Permanently Unproductive Areas | 45 | ----- |

farm income on a sustainable basis from adoption of suitable (agro-climatic zone adapted) agro-forestry systems compared to mono-cultural practices. The system is already being gainfully practiced on a large scale by medium and large farmers all over the country under irrigated conditions, but its potential has to be fully realized by small farmers without irrigation facility (see Table 9).

Several recent Agroforestry Conferences indicate feasibility of achieving a much higher level of yield (see Kulkarni 2004, Dogra et al. 2006, Dhiman 2007). These studies clearly show that the tree component, if well chosen, could significantly add to the farmer's income (see Table 8). Further gain is possible by integrating crops with trees and cattle by a factor of 1.50 to 2.0 (Rai et al. 1999); and by integration with wood based industries by a factor of 3-5.

**Table 8: Increase of farmers' income per ha through agroforestry**

| | Income from Agroforestry (INR: 1998 Prices) | |
|---|---|---|
| Farm-Size | Un-irrigated | Irrigated |
| Small | 1921 | 2772 |
| Medium | 1600 | 4279 |
| Large | 2150 | 11751 |
| Average Farm | 1895 | 7511 |
| Sample Size | 429 | 1239 |

Source: Rai et al. (1999)

By the end of the millennium, agro-forestry was producing industrial and non-industrial wood more than forestry proper. It was also improving the productivity of the farm environment and providing additional income and employment in the rural areas. The achievement of the minimum forest cover targets, enshrined in the 11th Five Year Plan Document, to a great extent, depends on the success of agro-forestry.

**Employment Generated: 150,000**

Yamuna Nagar Argoforestry Model In Haryana, 2006

Annual Wood supply: 2.3 million $m^3$
Price of Unprocessed Wood: INR 3,500 millions
Price of Processed Product: INR 17,000 million

The country is importing substantial quantity of industrial wood, which in 2002 was estimated at INR 450 millions with a rising trend. The possibilities of augmenting the indigenous supply are great, as only a small fraction of farmers are engaged in agro-forestry. Another interesting fact is that wood produced at the farm costs much less to transport: one metric cube of wood at mill site costs around US$ 30 compared to US$60 per cubic meter from the national forests.

The demand for additional wood by 2020 is estimated at 150 million $m^3$, of which share of industrial wood 50 million $m^3$ and non-industrial wood 100 million $m^3$ (MoEF 1999). Agroforestry (see Table 9) could meet these production goals is a cost-effective manner provided a far-sighted policy and institutional mechanism could be put in place.

**Table 9: Potentials of wood production through agro-forestry**

| Land Capability Class | Recommended Agroforestry practices | Potential Area (million ha) | Expected annual yield ($m^3$ /ha) |
|---|---|---|---|
| I | Agro-forestry in favourable conditions (irrigated fields / moist soils) | 90 | 20 |
| II | Agro-forestry in unfavourable conditions (semi-arid and arid climates) | 50 | 10 |
| III | Ravinous and degrades lands (Block forestry plantations) | 25 | 10-20 |

The following major problems relating to the sub-sector have been repeatedly identified in all Conferences on agro-forestry:

- Lack of strategic directions (Supply-Demand Forecasts) for agro-forestry linking potential production with market demand.
- Matching species with the site, access to high quality planting material of proven suitability, especially at the initial tree-planting phase.
- Over regulation often restricting the access to markets for farmer grown timber and tree products, partly due to rules intended to curb illegal logging from natural forests or government plantations.
- Marketing and Price support system to ensure right prices and smoothen market fluctuations.

A key requirement is to ensure that trees grown are a part of value chain. This calls for advance planning of future use, when trees will be mature, their prices and use. Ideal is if there is a tie between industrial location and tree growing in terms of quality and quantity. This will also help in getting R&D investment and even buy-back arrangements. WIMCO and ITC are good examples, which have played a pioneering role in evolving high yielding clones of desired tree species with yield level raised from 4-5 $m^3$ /ha to 30-40 $m^3$ /ha.

## Need for Institutional Innovations

TIFAC and IIASA jointly adopted "forest sector" as the first study area and organized a workshop in April 2007 in New Delhi, which was attended by over 100 forestry experts, who covered all aspects (see http://www.tifac.orgin/abt/india_iiasa_workshop07.htm) of the forest sector. Based on workshop discussions, 25 papers were commissioned on selected topics to document the status of the available knowledge, information and trends in the forest sector. The peer reviewed papers appear in the special issue of International Forestry Review in December 2008.

A synthesis of the papers clearly brings out that the forest system of India is undergoing rapid and fundamental changes. The societal demand on forests is getting very diversified and rising much faster than the capacity of forests to supply them on a sustainable basis. This widening gap is a main cause of forest degradation and forest biodiversity loss taking place on an unprecedented scale; and eroding rapidly the very basis of livelihood of forest dependent communities and by that contributing to their increased poverty.

The rising demand for forest goods has positive implication too and offers new opportunities to enhance the sector contribution to the national economic growth and poverty alleviation, in particular, the latter through development of

NTFP and trees outside forest, which are of direct concern to estimated 300 million tribal and rural poor. The supply gap of nearly 95 million $m^3$ of industrial wood by 2020 could be met from forest plantations in non-forest areas through private and public partnership, which would also create substantial new employment opportunities to the rural poor and add significant value through processing. The greening of the country will also have positive impact on climate change, perhaps, one of the most important global concerns.

The move towards a more comprehensive and multiple-use forestry, including both timber and non-timber products; commodities as well as environmental services; forestry and agro-forestry techniques, would require major policy and institutional orientation and strengthening of the technology, information and knowledge support. This is a major challenge as the organizational structure; planning and control methods; research and training support, are all geared towards securing sustained supply of mainly industrial timber from state forests. A mismatch between the changing societal demands on forests and non-changing forestry institution and organization could result in stagnation or decline of the sector and acceleration of the process of forest degradation.

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# Epilogue

ARVIND KHARE

WITH THE ENACTMENT OF THE Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act 2006, the Indian State has finally admitted that it has committed a historical injustice by denying the rights of forest dwelling people. The lackadaisical implementation of the Act reveals the deeper roots of this injustice, which are discussed at length in the various pieces in this volume.

The violence and denial of rights perpetuated through the existing social, political and economic structures of Indian polity are unlikely to subside with the passage of a single Act. This is why, despite the delay in publishing this compilation, we believe this volume provides a much deeper analysis of what perpetrates injustice in the forest areas of the country and contributes substantially to the understanding of the many inherent contradictions in Indian societal structures, economic policies, laws, and constitution.

The forest sector provides a nearly perfect reference point through which the dichotomy between India's desire to emerge as a leading global economic power and its ability to cope with complex social problems can be understood. How India addresses this dichotomy will determine whether social and political upheavals are avoided or if even more violent social conflicts surface; whether India

benefits from equitable economic growth or the gulf widens between rural and urban areas; and whether India can respect human and civil rights (including property rights) or consigns poor and underprivileged people to even more inhuman conditions.

India has witnessed rapid and sustained economic growth for the last two decades. Yet, India is also home to the greatest number of poor people residing in a single country. Poverty in India is characterized by geographic concentration, ethnic orientation, and resource relationships. It is more rural than urban, concentrated in the Eastern and Central states, more common amongst tribal and scheduled caste people, and according to some analysts, more prevalent in forest areas than agricultural or urban areas. Amongst the approximately 85 million tribal people of India, 94 percent reside in and around forests. While India is the only country in South Asia claiming an increase in forest cover in the last two decades, its forest productivity is one of the lowest in the world. There is booming demand for forest products, but limited benefits for the small scale producers of these forest products. It claims to have the best known co-management program for forests, but no real transfer of rights to community co-managers allowing them to access and freely use forest land, or trade in forest products. Inherited laws from the colonial past, archaic institutions, and a regressive regulatory framework continue to prevent millions of forest dependent people from using their forest resources and integrate into this booming economy.

## Economic Growth and Poverty

India has more than tripled the size of its economy in the last 20 years (1990-2010). Despite this impressive growth, widespread poverty has not reduced in comparable proportions. There is a huge debate about the exact dimensions of poverty in India, but it is now recognized by most policy makers that at least 25 percent of the population lives below the poverty line. These more than 250 million poor people live in the east and north-east states, central tribal belt, and eastern and western fringes of the southern peninsula of India. These are precisely the areas of highest concentration of forests, tribal people, and poverty. The consequences of the co-existence of rapid economic growth and vast areas of poverty, particularly in tribal areas, are immediately visible in two distinct trends reflective of the social and economic chasm that shapes the political economy of India.

The first trend relates to increasing violent struggle in forest areas, commonly referred to as areas affected by "Naxalite" or "Maoist" violence. The Prime Minister of India has described it as "the single biggest internal security challenge ever faced by our country." It affects 170 of India's 602 districts, mainly in the poorest

parts of India, and particularly in the forest areas most inhabited by tribal people. The Government of India estimates 10,000 armed fighters and 40,000 supporters are involved in these violent struggles. It also exposes years of failure of a military response to end this threat. A group of civil rights organizations investigating a government campaign against these groups in Dantewada district of Chhatisgarh (where tribal peoples constitute 82 percent of the rural population) observes, "the conflict in Dantewada gets pushed to a higher plane where the war against the Maoists also ties in with the struggle over ownership and control over land, water, forests and mineral wealth. ...[An] all-India policy hiding behind 'security' and 'development' reveals itself as nothing but a crude struggle for occupying tribal land." (When the State Makes War on Its Own People, PUDR et al, 2006)

The second trend is inherent in the kind of economic growth taking place in the country. As the economy grows, most urban areas will face increasing pressure on forest and common lands from commodity producers, paper and pulp industries, extractive industries and the emerging energy sector, as well as an expansion of infrastructure to transport goods and meet the rising demands of the emergent middle class. Tribal forest communities' rights are now in direct confrontation with more powerful players – the results of which are visible across the country. A recent study by the Society for Promotion of Wastelands Development (SPWD) shows that more than 20 million ha of forest and common land will be acquired in the next two decades to serve these sectors' growing requirements for land (SPWD, 2012). The consequences of this will be dire for the millions of tribal and poor people who depend on these forest and common lands for survival.

## Constitutional Guarantees and Colonial Legacy

While the passage of Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act 2006 is a recent event, the constitution of India guarantees the sanctity of property rights of everyone. For tribal people in particular, the constitution has special provisions that protect their land rights. Unfortunately, the legal framework that governs forest management in India is mainly derived from a Forest Act enacted by the then colonial government in 1878. The three main legislations (the Indian Forest Act 1927, Wildlife Conservation Act 1972, and Forest Conservation Act 1980) and the subsequent legislations and circulars contradict the original intent and violate the basic guarantees for tribal people enshrined in the constitution. The main reasons for these contradictions between the constitution and the law are four-fold: (a) a complete disregard of historic, traditional, and ancestral rights of communities and tribal

people in forest areas, especially in wildlife conservation areas; (b) the overwhelming powers of forest bureaucracy (India has arguably more government forest personnel per ha of forest than any other large country); (c) the centralization of power through the Forest Conservation Act, despite attempts at decentralization of governance through Panchayati Raj institutions (73rd amendment to the constitution); and (d) the conflict and confusion between state legislation and the powers granted to tribal communities over their community resources, including the ownership of minor forest produce and the control of tenure in their (scheduled) areas by the Panchayat Extension to Scheduled Areas Act 1996.

The combined effect of these and numerous state legislations in conjunction with urban middle class environmentalism is that the otherwise savvy public interest litigants have not yet begun to challenge the basic violation of constitutional rights in forest areas, particularly the tribal areas. Is it any wonder then that there is a greater militarization amongst the tribal communities as the constitutional guarantees fail, bureaucracy usurps all powers, and an otherwise liberal middle class looks the other way?

## Forest Biodiversity: Missing Tigers and Displaced People

The singular strategy for conservation of forest diversity has been to declare more and more forest area as protected area. Between 1975 and 1990, approximately 400,000 ha of forest land were brought under strict protection mode each year, thus extinguishing all rights of usage and extraction by local people. Currently, almost 25 percent of India's forest land is protected, accounting for 4.74 percent of the geographical area of the country (Wildlife Institute of India). More than four million people in India's protected areas were designated as encroachers and deprived of any rights. Yet, in spite of these "protective" measures it was reported in 2005 that tigers no longer inhabit the Sariska Tiger Reserve in Rajasthan. The criminalization of four million people accounts for the failure of the single model of biodiversity conservation in India – the creation of protected areas.

The challenge we face is enormous, and competing lobbies are already at work. More urban area wealth seeks the wildlife refuge. Urban environmentalism and criminalization of forest dwellers exist side by side. Hence the fake debate about tigers versus tribes, and continuing to place a greater proportion of forests out of the reach of forest dwellers so urban elites and the emergent middle class can enjoy the wildlife refuge. Concurrently, forest communities are becoming more organized and pushing to consolidate their gains under the Forest Rights Act.

The historical context of this problem lies in the British colonial intent of using forestland for timber, revenue generation, and the hunting pleasure of the

colonists. Despite the transfer of power, there has been little change in the laws that were instrumental in shaping these colonial policies. Beginning with the Forest Act 1865, the Indian Forest Act 1927, the Forest Conservation Act 1980, and Wildlife (protection) Act and its subsequent amendments in the early 1990s, there has been a constant onslaught on tribal culture that has completely restructured the relationship between tribal communities and forests, as well as between tribes and others.

## The Challenge

Major political and social transitions accompany the rapid economic growth reshaping most sectors of Indian polity. Uneven growth, emergence of multi-party coalition governments, political assertion by lower castes and the underprivileged, growing protests in rural areas, and the radicalization of remote regions indicate the enormity and importance of these changes. How each sector manages these transitions will determine the fate of more than 250 million poor people in India.

The forest sector clearly needs a more comprehensive narrative, more grounded policy, and smarter regulations to shape development that is pro-poor, avoids social conflict and leads to growth. The enactment of the Forest Rights Act is just the beginning of this process. Bureaucratic resistance to implementing the Act indicates that the path ahead will not be easy. But hopefully, it will not lead to some untenable choices between armed insurgency or total annihilation of tribal culture and livelihoods. Rather, our choices must lead to a more equitable future for all Indians.


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1238 Wisconsin Avenue NW
Suite 300
Washington, DC 20007
*www.rightsandresources.org*