

**Base paper for the Committee to Study Development in Hill
States arising from Management of Forest Lands**

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1. Introduction and Issues

Mountain systems in hill states support local, national, and global community by providing numerous goods and services including fresh water, food, lifesaving medicinal products, energy, a rich array of biodiversity, and associated traditional knowledge, as well as cultural diversity. Mountains are among the most fragile environments in the world; they are also among the ecosystems most vulnerable to climate change. If they become degraded or fail to generate services, the costs to the local, national, and global community could be severe. Although Chapter 13 of Agenda 21¹ recognized the value of mountain systems, these are not yet sufficiently reflected in national, regional, and international policies and priorities. Sustainable development of hill areas has remained marginal in the international development agenda and in national and sectoral policies such as those for land, water, forest, and the

¹Agenda 21 is the action plan of the United Nations related to sustainable development and was outcome of the United Nations Conference on Environment and Development, also known as Earth Summit, held at Rio De Janeiro, Brazil, in 1992. Chapter 13 of Agenda 21 focuses on Sustainable Mountain Development.

environment. Twenty years after the Rio Earth Summit, many of the challenges remain. To sustain the services provided by the mountain ecosystems, it is essential to promote positive conditions to motivate hill states to continue and enhance their efforts in conserving the ecosystems required to address the local developmental needs as well as the current national and global challenges.

Mountain ecosystems are important for national, regional, and global economic growth and human wellbeing. However, their services do not receive adequate recognition in national economic decision-making, including development planning and resource allocation. Since the value of mountain ecosystem services is not captured in GDP, their contribution to national economies and to people's livelihoods is invisible. People of hill states bear a large part of the opportunity cost of providing essential ecosystem services to society at large, yet they receive inadequate incentives for their conservation efforts. This is often reflected in poor economic and social indicators of development in hill states.

The development and growth in hill states in India both in terms of income levels, creation of social and economic infrastructure, and human development indicators has not only been well below their potential but also compares unfavorably with many non-hill states (Tables 1-4). The gap between the hill states as a region and the rest of the country in terms of various developmental outcomes, productivity and capacity of people and institutions is large and growing. Even within the region, there are vast differences, particularly between the populations living in the hills and in the plains and between those living in the towns and villages. This is largely due to resource and environmental constraints, deficiency in human capital and skill development, and developmental policy and governance deficits faced by the hill states. The key environmental concerns in hill states constitute deforestation, fragmentation of forests, soil degradation, biodiversity loss and contamination and silting of water bodies. To a large extent these are a result of lack of clarity in resource use policies (including land) and ownership rights of resources; and the lack of technical and other support for improvement in traditional practices of mining, logging and shifting cultivation, and identification and creation of new opportunities for livelihood.

It is well recognized that the hill states must adopt a development path that would not disturb the ecological balance of the region. For, it is the essence of the survival of the people living in the region and also for the people downstream and even beyond the political boundaries of India. However, people of hill states have the right to a dignified life and equal

opportunities to develop and grow thus it is important to ensure that the strategy for their development takes into account their special features (geographical, topographical and socio-political characteristics manifested in difficult terrain, severe weather conditions, fragile ecology, dispersed habitats, small and under-developed markets for basic factors of production, strategic political considerations due to long international borders) such that these do not constrain their development in any way. Also, the constant pressure on hill states for conservation of resources—with benefits spilling over beyond their boundaries— which besides involving direct public expenditure affects the ability to develop productive activities and generate revenue for the benefit and welfare of people ,underline the need for a different development model for the hill states.

In one sense, development of infrastructure can be seen as a barometer of a region's/state's economic and social wellbeing. Infrastructure development is critical for sustainable development and growth of hill states both for the welfare of people and for improving the productivity of resources and return on investment. These states are resource deficient owing to, poor flow of capital and their mandate for resource conservation and the need to devote resources to fulfil this mandate. In hill states, infrastructure development should be planned judiciously such that it helps in easing out their natural and geo-political constraints. For instance, augmentation of the transport and communication networks and power infrastructure, will improve the quality of people's lives, and attract the private investment needed for development. Similarly, by improving connectivity by air, sea and inland waterways both within the region and with the rest of the country and the neighbouring countries will help open up markets and increase mobility. Also, quality infrastructure for human capital development will help improve capacity and productivity of people and thus other factors of production.

1.1.1. General Issues

1.1.2. Persistent Poverty and Marginalization of Hill States

Mountain ecosystems and production systems are closely interrelated. Geographically referenced data are thus essential to their sound management and planning for sustainable development. Livelihoods in mountain areas are considerably more susceptible to environmental and economic changes than those in lowlands because of rough topography, remoteness, and poor socioeconomic infrastructure. New approaches to creating livelihood opportunities are required. Effects of changing climate on mountain ecosystems are manifold,

some are known some unknown, this makes infrastructure planning and development in hills is even more complex. Both higher temperatures and changes in precipitation can influence optimal infrastructure design.

1.1.3. Lack of mountain specific development perspective and policies, and sound governance

There is no other way to development of hill states but to look for opportunities in sustainable harnessing of local endowment of resources. Since availability of key resources is constrained by conservation needs, it is important that productivity of resources is increased with the help of technology and enabling policies and institutions.

1.1.4. Unclear Property Rights, Emerging Market for Ecosystem Services

With markets emerging for carbon, watershed services, and biodiversity, there is need for review in current regulations, including clear property and use rights, and access and benefit sharing, among others. Realization of the true value of these services, by way of compensation or other market mechanisms, will boost the conservation efforts.

1.1.5 Challenges in valuation of and lack of compensation for Ecosystem Goods and Services

Valuation of mountain eco services is challenging. For, mountain ecosystems are dynamic and multifunctional, and their components interact in complex ways. Different ecosystem services are interlinked and highly interdependent (Ring et al. 2010), and natural processes are variable over space and time. Ecosystem services are generally supplied to buyers in bundles, not alone. For example, mountain forests sequester and store carbon, thus mitigating climate change, but at the same time they prevent erosion; protect watersheds, soil, and biodiversity; and provide hydrological services. All these pose a challenge to their valuation. Data collection and monetary valuation should therefore be a continuous and multi-institution effort.

According to Singh (2007) the total value of forest ecosystem services in Uttarakhand, is US\$ 2.4 billion per year. The food production and raw materials that have market values constitute only a small proportion (18.7%) of the total value. According to a Green India States Trust (Gundimeda et al. 2006) study, the per hectare ecological value of soil nutrient conservation, flood control, and water recharge in dense forest is of the order of

Rs. 5,860 in Himachal Pradesh and about Rs.6,255 in Uttarakhand. Though these estimates can serve as a guide in initiating the process of compensation to the hill states, more work is required to come up with firm estimates.

1.2 Issues Related to Infrastructure in Hill States

1.2.1 North East Region (NER) States

The biggest constraint in the NER has been the poor state of infrastructure, in particular, roads, railways and power. At 66 km/100 sq. km area, the road length in the region is lower than that the average in the country (75 km/sq. km) and the quality of roads in the region is extremely poor. The total railway track length in the entire region is 2,592 km, with broad-gauge track confined to Assam. The inland waterways in the Brahmaputra and smaller rivers, such as the Kolodyne in Mizoram and Barak in Assam, have become non-functional after the partition of the country. Air connectivity to the region is poor: three of the state capitals do not have airports, and feeder services from Delhi/Kolkata/Guwahati to the state capitals where airports exist are poor. Most intra-regional connection is routed through Kolkata, which is expensive in terms of both time and money (Rao et al, 2007).

The closest railway station is at New Jalpaiguri in West Bengal, situated 16 km from Siliguri. NH-31A links Siliguri to Gangtok. In Nagaland, the railway network is just till Dimapur. The length of the National Highway is only 365.38 km whereas that of state roads is 1094 km. The state's only airport is located at Dimapur (70 km away from the State Capital) though another is being planned at Kohima. Tripura is connected with the rest of the country (takes about 36 hours) by a meter gauge railway line extending to Luming and Silchar in Assam. National Highway-44 also connects it to Assam and the rest of India. Agartala airport, the main airport in Tripura provides flights to Kolkata, Guwahati, Bangalore, Chennai, Delhi and Silchar. Meghalaya is a land locked state with a large number of small settlements in remote areas. Roads are the only means of transport within the state. While the capital city Shillong is relatively well connected by road and air (the state has an airport at Umroi, about 40 km from Shillong on the Guwahati- Shillong highway but operation is limited to only 50 seater aircraft, and the flights are often irregular due to erratic weather conditions). There is also a helicopter service between Guwahati and Shillong.

The lack of connectivity has virtually segregated and isolated the region not only from the rest of the country and the world, but also within itself. Poor density of road and rail transportation within the region has not only hampered mobility but also hindered the development of markets. Trade barriers with the neighboring countries have equally contributed to this. The blocking of access to the Chittagong port and the land route through Bangladesh, has closed the sea transportation routes for the region altogether. Inland waterways, which were an important means of transportation, have all but vanished due to the complexities in the political and economic relationship with Bangladesh. The region has tremendous potential for generating hydroelectric power, but actual generation is less than 8 per cent of the potential.

Improving connectivity is an important precondition for social and economic mobility and market integration. With various insurgency groups operating in different parts of the region, land transportation within the region has become hazardous. Critical to improving connectivity are diplomacy and an improvement in border infrastructure and trade facilitation with neighboring countries, particularly China, Myanmar and Bangladesh. Diplomatic initiatives and an extension of the rail network to the Chittagong could help open up India's access to the Chittagong port and significantly reduce transportation time and cost. Diplomatic initiatives could also help to open up access through inland waterways with neighbors, to provide better connectivity to the region.

Faster movement of goods and people at lower costs is essential to provide an impetus to economic activity. It helps the development of markets, reduces exploitation by middlemen, and in the process improves livelihoods of people in remote areas by enabling them to market their products at higher prices. By increasing social interaction among people of different states in the region, it promotes awareness and harmony. Opening up remote areas can also help improve the law and order situation, especially in areas affected by insurgency, and help protect people's property rights. All these are important preconditions for attracting the private investment needed for development in the region. In the human development context, better roads mean easier access to health centres for people and to schools for children, which, apart from being desirable outcomes in themselves, will promote a more productive and better skilled workforce.

Infrastructure and connectivity could support the 'Look East' policy and provide an impetus to trade with the Eastern part of the globe. Although the policy has been in place for

a decade and a half and it has benefited the rest of the country appreciably, the NER has gained very little. The essential principle of this policy has been that the NER shares 98 percent of its borders with the neighboring countries of Bhutan, Nepal, China, Bangladesh and Myanmar. Indeed, there is considerable potential for the policy to benefit the region but that would call for a qualitative change in the relationship with the neighboring countries, particularly the larger countries of Bangladesh, China and Myanmar.

Telecommunications infrastructure in the NER lags far behind the rest of the country. This infrastructure is particularly important given the difficulty of physical communication in the hill areas. Apart from allowing greater national and international integration for people of the region, most of the earlier studies have pointed to the need for the NER states (particularly in the hilly areas) to promote their IT sectors. As the IT industry moves from the metros of the country to outlying areas, NER states are considered the next most likely destination, given the high rates of literacy, and large pool of educated people in the region.

1.2.2 *Western Region Himalayan States*

Water is the most precious product of the Himalayan ranges. Himalayan glaciers are important in maintaining ecosystem stability and as buffers regulating runoff of water supply. In the context of global warming this dynamics will be impacted. Therefore, planning and investment priority must be accorded to the conservation, protection and maintaining the purity of this resource. Formulation of an efficient and practical river valley and watershed management strategy within enforceable, water governance framework is imperative. Initiatives for conservation and revival of springs, lakes, aquifers, underground channels etc. need a comprehensive policy.

Many areas are facing water and moisture scarcity. Access to tap water, water quality and quantity are serious issues. Rain fed re-charge in the springs is decreasing as evident by its drying up or decreased discharge observed in the springs of Uttarakhand. Ground water potential of different states should also be considered while planning for water security for the region. In a wider context, the possible impact on operational efficiency of hydropower and irrigation projects would also need to be assessed.

The region is power deficient at the same time has untapped hydro power potential. A clear policy on hydro/no-hydro zone will provide clarity on hydro potential of the region, and

an opportunity to plan for off grid sources of energy. Domestic energy needs in the mountains are primarily for cooking, lighting, and space heating. Firewood remains the primary source of cooking for a majority of households (over 60 per cent). There is a general lack of access to clean energy sources. Solar energy is used only in a limited scale in different states; Uttarakhand (1.9% households), and Jammu & Kashmir (0.7%).

The local economy of most of the hill states of India is still dependent on agriculture and horticulture. Yet, surplus production of agriculture or horticulture makes no sense unless these can be carried, on time, conveniently and cheaply to the places of consumption. Connectivity is the key to transporting produce from production centres to the markets. This region is characterized with poor road network, inadequate communication and marketing infrastructure. The health, education and cultural welfare of the people is also affected adversely due to poor connectivity to service centers.

Construction of road, rail and air transport network is crucial. Himachal Pradesh has a road network of 28,208 km, including eight national highways. Railway tracks exist, connecting Punjab with a few towns --Shimla, Solan and Una. There are three domestic airports in the state—Shimla, Bhuntar (Kullu), and Gaggal serving Kangra and Dharamsala. While most of the major cities of Uttarakhand, located in the plains, are accessible throughout the year by road and rail, most towns and villages in the higher altitudes remain cut off for large periods in a year due to landslides and snowfall. At present there are only two airports in the state viz., Jolly Grant (Dehradun) and Pant nagar (Udham Singh Nagar District). In spite of steady progress there is huge deficit especially in terms of quality of roads.

Telecommunications infrastructure in the region lags far behind the rest of the country. This infrastructure is particularly important given the difficulty of physical communication in the hill areas. Deficiency in infrastructure in terms of telecommunications and satellite supported connectivity is a serious constraint in development and growth in the region. This is partly due to the challenges posed in laying optical fiber cables along hill terrains. The SATCOM division of National Informatics Centre has VSATs connecting the Districts/States. This service needs to be augmented (Report of the Task Force on Indian Himalayan Region, GoI, 2010).

2. Status of Forests in Hill States

At present (FSI, 2009), India has 76.52 million ha of forest area, constituting 23.28 percent of the country's total area. Forest area has been classified into reserve (54.44 percent), protected (29.18 percent) and unclassified (16.38 percent) forest (Table 7). In India, forest ownership is mainly with the government. Private companies, corporations, individuals, clans and communities own significant areas of unclassified forest. The seven northeastern states of Meghalaya, Mizoram, Nagaland, Tripura, Arunachal Pradesh, Manipur and Assam have the largest areas of unclassified forest in India, and these are controlled by local communities with very little State control².

Seven NER states (Sikkim excluded) with only 7.76 percent of geographical area of the country account for nearly one fourth of its forests cover. The total forest cover in the region is 170,423 km² which is 66.81 percent of the geographical area as against the national average of 21.02 percent. Very dense, moderately dense and open forests constitute 14.64 percent, 43.42 percent, and 41.94 percent of the total forest cover, respectively. As compared to 2005 assessment, a net gain of 598 km² of forest cover (as against 728 km² for the country) has been observed in 2007 assessment mainly on account of regeneration in shifting cultivation areas. Of these Manipur, Meghalaya, and Mizoram are the net gainers (with Mizoram on top of the list with a net gain of 640 km² followed by Manipur at 328 km²) while other four states are net losers with Nagaland showing highest loss at 201 km². Uttarakhand, J& K, and HP did not show any significant gain or loss in forest cover during the period. (Table 8)

Table 9 presents a summary of forest cover in tribal districts of the country. The tribal districts constitute only 33.64 per cent geographical area of the country, though the forest cover in these districts is 59.72 per cent of the total forest cover of the country. All the NER states have over 75 per cent geographical area under forest cover, except Assam. Overall, data in table 9 indicate the richness of forest cover in the tribal districts in general, and in NER region in particular. It is significant to note that the forest cover in the tribal districts shows a net gain of 690 km² of the total gain of 728 km² for the country as a whole during the period under reference.

²Unclassified forests provide the backbone for livelihood generation, as these are the areas where most shifting cultivation takes place. Village, community and private forests are used mainly for meeting the subsistence needs of communities in terms of fodder and fuel wood, and other non-timber products.

About 20,443 km², or 9.2% of the total geographical area of Jammu and Kashmir, is under forest cover. About 10,953 km² of these forests have a crown density above 40 per cent; the crown density of the remaining forests ranges from 10% to 40%. About 3,108 km² is under scrub forest. Most forests are in the Kashmir Valley and the Jammu division. Certain national laws, the IFA, 1927 and the F C A, 1980 are not applicable to Jammu and Kashmir, but the state has its own Forest Act and Forest Conservation Act, both of which must be complied with when undertaking works that encroach on forest areas. However, since the Forest Act and the Forest Conservation Act of the Government of India are not applicable to the state of Jammu and Kashmir, any project activity that encroaches on forest areas needs to obtain clearance from the State Forest Department, as per the Jammu and Kashmir Forest (Conservation) Act, 1997.

Despite the pressures of development, and growing population, India has been able to maintain its forest cover and address the issues of deforestation. However, unsustainable exploitation of forest resources has resulted in the degradation of the forests which has been estimated at 40 per cent³ for the past two decades (TERI, 2009).

India has registered an average economic growth of 7% over last one decade. While large infrastructure projects like dams, roads, special economic zones have been implemented, the benefits of this development have not trickled down to large part of rural India. Further, this has affected forests and other natural resources in two ways. One, large areas of forest have been diverted for the above mentioned projects. Second, lots of people have been displaced from their village commons without much compensation (MoEF 2006). The loss of their earlier livelihood opportunities, in turn, has put pressure on forests, resulting in its degradation.

It is important to ensure that the benefits of infrastructure development especially when diversion of forest land is involved, reach the rural areas and to the community which suffers the highest local externality — due to displacement or degradation due to project activity. For instance, in many cases it will take a few years before the benefits of a highway can be realized by the local community if linking roads are not provided. Similarly, power project will not benefit them directly if their villages are not supplied power. Besides,

³This estimate is based on the crown cover change, which does not take into account the degradation of ground vegetation and change in soil characteristics

affected/displaced community will need to be helped with alternative livelihood opportunities.

The net change in any class of forest cover may be the result of improvement somewhere and degradation elsewhere. There could be several reasons for this change. FSI in consultation with the state Forest departments has ascertained important reasons of changes in forest cover in some states (table 10). Among the hill states, decrease in forest cover is mainly due to shifting cultivation, departmental felling, and encroachment.

FSI has released the State of Forest Report, 2011 in February 2012; however, the full report could not be accessed from its web site. Based on a recent report on the same (DTE, 8 February, 2012) the following observations can be made on the status of forest cover in hill states:

India has lost 367 square km of forest cover (between 2007 and 2009) when compared with 2009 report of FSI⁴. The total forest cover in the country is now at 6,92,027 sq. km. This accounts for 21.05 per cent of the total geographical area of India. Northeastern states saw a decrease of 549 sq. km of forests during this period. The other states that lost forest cover are Kerala (24 sq. km), Chhattisgarh (4 sq. km), Maharashtra (4 sq. km), Uttar Pradesh (3 sq. km), Gujarat (1 sq. km) and Chandigarh (0.22 sq. km). The states that registered forest growth include Haryana, Himachal Pradesh, Karnataka, Goa, Jammu & Kashmir, Uttarakhand and West Bengal. A total of 548 sq. km forest cover has decreased in the 124 hill districts of the country.

2.1 Estimates of Wasteland in India and Hill States

There are several estimates of the extent of degraded lands reported by various agencies in the country. These estimates vary largely due to variation in approaches and methodologies of estimation. According to an atlas (Wasteland Atlas of India, 2010) developed by the National Remote Sensing Agency (NRSA) of the Department of Space on the wastelands of the country, there are 13 categories of wastelands covering 19.4% of the country's geographical area; while in the IHR, wastelands cover significantly higher (about one third) proportion of the total area of the region (Tables 11a and 11b). More than one fifth (22.4%) land in the IHR is either under snow or barren and does not support any biological

⁴The study conducted by the Indian Institute of Science (IISc), Bangalore for "Current Science" journal says that massive deforestation has been masked by Forest Survey of India's afforestation data. The IISc study contradicts FSI's forest-cover figures and highlights a loss of 998.5 sq. km of forests between 2007 and 2009 (ToI, 2012).

growth. However, for most of the states in the north-eastern Himalaya, reliable revenue records are yet to be prepared or updated. Land ownership and obtaining right-of-way are major issues for executing developmental projects in areas where government owns no or small area of land (e.g., Nagaland and Meghalaya). This has implications on the time taken for project execution and cost of the project. Further, the wasteland atlas has categorized area under *Jhum* as wasteland, although it is a prominent traditional agricultural land use associated with the social framework of a large number of tribal communities of the north-eastern states. Local terrain in the region coupled with dynamic practices (both in time and space) of shifting cultivation, and lack of cadastral maps make it difficult to provide accurate estimates of areas under such usage. This can, however, be measured using space borne technology, albeit at higher resolution; and will require frequent updating (GoI, 2010).

The land resources of the Himalayan region are steadily degrading due to a number of natural and man-made factors. The continuing uplift of the Himalaya has also contributed to a modification in the land forms, leading to slope instability especially during heavy rains. The soil erosion rate in northwest Kashmir is of the order of 2 to 12 mm/year, and in Kumaun region of Uttarakhand it is 1.73 mm per year. The IHR rivers transfer the eroded material to the plains and as stated earlier, the sediment load in the Himalayan rivers is amongst the highest in the world. River Brahmaputra carries more than 650 million tons of sediment per year; the Ganga more than 417 million tons per year. Soil erosion and landslides that occur in the IHR on account of very swift surface run-off from degraded forests, low vegetal cover areas, construction activities (buildings and roads), improper cultivation practices (faulty terraces and shortened *Jhum* cycles) are of major concern. The only way of tackling this is through a strictly observed, mountain specific land use policy and watershed based land use planning. There is need for uniformity in protocols for land use classification in the entire region. Interventions are also required to manage, improve and supplement *Jhum* (GoI, 2010).

3. Forest Management Policies and Laws

There are a number of laws and policies which impact forestry sector and forest management in India. The different laws related to the forests and biodiversity include Indian Forest Act (IFA), 1927; Forest (Conservation) Act (FCA), 1980; Wildlife (Protection) Act, 1972; and Biological Diversity Act, 2002. However, the key policies and laws which have brought paradigm shift in forest management include National Forest Policy (NFP), 1988;

Joint Forest Management Resolution (JFMR), 1990; National Environment Policy (NEP), 2006; Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 along with the recently adopted National Action Plan on Climate Change (NAPCC). A brief analysis of these is given below. The present legislative framework for environmental protection is broadly contained in the umbrella NEP 2006, Environment Protection Act 1986, the Water (Prevention and Control of Pollution) Act, 1974, the Water Cess Act 1977 and the Air (Prevention and Control of Pollution) Act, 1981. The environmental clearance process is required for 39 types of projects and covers aspects like screening, scoping and evaluation of the upcoming project. The main purpose is to assess impact of the planned project on the environment and people and to try to abate/minimize the same.

The IFA, 1927, was the first comprehensive Act governing the forest sector. The Act does not address contemporary issues such as people's participation in forestry management.

The FCA 1980, was enacted to control the diversion of forest land for non- forestry purpose and to slow down deforestation. Under this legislation, the approval of the central government is required for diversion of forest land above 1 ha. for non-forestry purposes. The user agency has to pay for compensatory afforestation as well as an amount equal to the Net Present Value of the forests diverted. While this Act has helped in keeping a check on diversion of forests for non-forestry purposes, it has also posed serious challenges for setting up developmental infrastructure in states, especially the hill states which have limited non-forest land resources.

The NFP, 1988, marked a paradigm shift in forest management from regulatory to participatory. It implied a shift from the earlier revenue-oriented forest management to the current conservation-oriented management. It puts emphasis on meeting peoples' needs and involving them in management of forests. Meeting the subsistence needs of the local communities, maintenance of environmental stability and restoration of ecological balance have been identified as the major objectives of forest management under the NFP.

JFM, 1990 facilitated involvement of local communities in the management of forests. JFM is reported to have had positive impacts in terms of improvement in vegetation cover and income of communities in many areas across the country. However, several issues

such as distribution of powers of Forest Protection Committees (FPCs) vis-à-vis those of the forest department, gender equity, security of tenure, financial sustainability remain.

The NEP, 2006 recognized that forest laws and formal institutions have undermined traditional community rights and disempowered communities, and such disempowerment has led to the forests becoming open access in nature, leading to their gradual degradation. The Policy advocates recognition of traditional rights of communities.

The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006(RFRA) recognizes the rights of forest dwelling STs and other forest dwellers (in occupation for at least 3 generations or 75 years). The rights include habitation, self-cultivation for livelihood, ownership, access to minor forest produce, other community and customary rights. The Act commands upon them the responsibility of protection of forests. The procedure for determining the rights of dwellers is initiated at the level of *Gram Sabha*.

The Green India Mission under the NAPCC, 2008, advocates bringing one-third of the geographic area of the country under forest cover, through afforestation of wastelands and degraded forest areas. A key program to facilitate this is the Greening India Program, under which 6 Mha of degraded forest area would be afforested with the participation of FPCs. The mission also recognizes the need for effective conservation of biodiversity both within and outside Protected Areas (PAs). While this is an important policy statement, the guidelines for its implementation are being formulated. As of now, the money collected under NPV and compensatory afforestation has been reallocated for the afforestation activities under the NAPCC.

In addition, Wild Life (Protection) Act,1972 (amended in 2001 and 2002) and Biological Diversity Act, 2002 provides for protection of wild animals, birds, plants and their habitats, and setting up of protected areas.

3.1 Forest Management in Special Areas

This can operate at two levels— tenure rights and right to decision making. The decentralized governance framework is not uniform and varies in states, scheduled areas and special category regions. While most states are governed by the provisions of *nagarpalikas* in urban areas and *panchayats* in rural areas, certain areas have a different version of it or are

exempt from these institutional arrangements. Further, Schedule VI areas bar application of Acts of central and state governments in the subject matter where Autonomous Council is authorized to make laws. This would imply that the IFA, 1927; and the FCA, 1980 would be applicable only to the reserve forests in Schedule VI areas whereas these Acts would apply in non-Schedule VI areas.

3.2 Cross-Sectoral Linkages

In the absence of an integrated land-use policy and development planning in the country/states, the policies and programs of various governments, ministries have inadvertent impacts (both positive and negative) on the forestry sector. The linkages between forest management and some of the important programs such as watershed development, National Rural Employment Guarantee Scheme, agriculture and energy programs can be used gainfully in addressing conflicts in forest conservation and infrastructure development.

Afforestation activities have been part of watershed development in the country since the beginning of the program. Its implementation should be improved by strengthening the coordination between the watershed development agencies and the state forest department.

Permissible works under the NREGS include land development, afforestation and horticulture activities. At present 8% of total NREGS funds are being utilized for drought proofing, which include the plantation activities. It has been proposed to increase NREGS funding for plantation activities.

Under central agriculture program, some of the national level activities like National Horticulture Mission and National Bamboo Mission are being undertaken to improve the livelihoods of the farmers and simultaneously increase the vegetative cover of the country.

The energy program has direct impact on the forest management in the country. It is estimated that 65% of rural and 22% of urban population, constituting 40% of total population of the country depends upon fuel wood for cooking purposes (NSSO, 2001). It puts an immense pressure on forests and is one of the reasons for degradation of forests. The Ministry of New and Renewable Energy (MNRE), Government of India, has been promoting improved cook stoves (IC) which could significantly save fuel wood and thus could reduce pressure on the forests. There is a huge potential of 85 million ICs in the country which could save 17 MT of fuel wood every year.

Similarly, cultivation of *Jatropha* on wastelands for biofuel production has an impact on forest management. India aims to replace 5% of petro- diesel with biofuels by 2012. It will require plantation of 2.29 Mha of area with *Jatropha curcas* (Planning Commission, 2003). Wherever, these lands are used as pastures and for collection of fuel wood their diversion will put an additional pressure on the forests. A case by case evaluation of cultivation of *Jatropha* will help.

3.3 Reducing Emissions from Deforestation and Forest degradation (REDD)

India advocates a mechanism to raise resources with a national level accounting for REDD. Indian approach on financing REDD activities is a mix of market and fund based approaches; a central funding would compensate for maintenance of forest carbon stocks whereas money for compensating change in carbon stocks (due to decrease in deforestation and degradation or increase in forest cover) could be generated by selling carbon credits in the international markets (MoEF 2009).

3.4 Compensatory Afforestation Fund Management and Planning Authority (CAMPA)

The Supreme Court has ordered that Rs 11,000 crore, collected for diversion of forestland for non-forest uses, be released to state governments. States in India have long fought the Centre to recover the money they gave to the compensatory afforestation fund. Collected over seven years, the money has been lying idle because the states and the Centre disagreed over controlling the money.

4. The FCA, 1980

4.1 Basic Features

The FCA, 1980 provides for prior approval from the Central Government for de-reservation of reserved forests; use of forest land for non-forest purpose; assigning of forest land to any private person of any authority/ corporation/ agency not owned, managed or controlled by government; and clearing of naturally grown trees for the purpose of reforestation.

4.2 Organizational set up for implementation of FCA

- Forest Conservation Division – MoEF
- Regional Office (Headquarters) - MoEF
- Six Regional Offices located at - Bangalore, Bhopal, Bhubaneswar, Chandigarh, Lucknow, and Shillong

4.3 Functions of regional offices

- Processing proposals under FCA seeking diversion of forest land up to 40 ha. in each case,
- Follow up action on the implementation of conditions and safeguards laid down by the Ministry while granting clearance to development projects under FCA, 1980 and EPA, 1986.
- Monitor and evaluate on-going forestry projects and schemes with specific emphasis on conservation of forest.

4.4 Procedure for grant of approval under FCA, 1980

1. Every user agency, who want to use forest land for non-forest purpose, after examining all feasible alternatives, prepares the proposal in the format prescribed in the Forest (Conservation) Rules, 2003 and submits to the concerned nodal officer authorized in this behalf by the State Government, along with requisite information and documents complete in all respect well in advance of taking any non-forest activity on the forest land (see flow chart 1).
2. The proposals received from the user agencies are examined by the State Government at minimum four levels, covering all levels of hierarchy from Divisional Forest Officer to the State Government.
3. The guidelines issued under the FCA, 1980 provide that the proposal submitted to the Central Government for diversion of forest land should be accompanied with the opinion of the local people in the form of a resolution of the '*AamSabha*' of Gram Panchayat/Local Body of the area endorsing the proposal that the project is in the interest of people living in and around the proposed forest land except in case wherever consent of local people in one form or another has been obtained by the State or the project proponents, and the same is clearly indicated in the proposal. The

projects necessitating linear diversion of forest land in several villages, diversion of private forest land, and the proposals involving small public utility projects like drinking water, schools, hospitals do not require consent of the 'AamSabha' of Gram Panchayat/Local Body.

4. The State Government, after being satisfied that the proposal requires prior approval under the Forest (Conservation) Act, 1980, sends the proposals along with its specific comments and justification for diversion of forest land, to the MoEF. The proposal involving clearing of naturally grown trees in forest land or portion thereof for the purpose of using it for reforestation are sent in the form of Working Plan or Management Plan.
5. The proposals involving forest land up to forty hectares in each case and those involving clearing of naturally grown trees in forest land or portion thereof are sent to the concerned Regional Office of the MoEF. The proposals involving forest land of more than forty hectares are sent by the State Government to the Secretary, MoEF, with a copy of the proposal (with complete enclosures) to the concerned Regional Office of the MoEF.
6. In respect of the proposals involving diversion of forest land up to 40 hectares received by the Regional Office, the Chief Conservator of Forests of the concerned Regional Office is competent to finally dispose off all proposals involving forest land up to 5 hectares, except in respect of the proposals for regularization of encroachments and mining (including renewal of mining leases). Similarly, proposals involving clearing of naturally grown trees in forest area or portion thereof for reforestation are also finally disposed of by the Chief Conservator of Forests of the concerned regional office. The Chief Conservator of Forests, Regional Office seeks prior approval of the MoEF, whenever the proposal involves clear-felling of forest area having density above 0.4, irrespective of the size of area involve; and proposals involving clear-felling in more than 20 ha. in plains and 10 ha. in the hilly region, irrespective of the density.
7. In respect of the proposals involving diversion of forest area above 5 hectares and up to 40 hectares and all proposals for regularization of encroachments and mining up to 40 ha., the same are examined by the Regional Chief Conservator of Forests in

consultation with an Advisory Group consisting of the representatives of the State Government from Revenue Department, Forest Department, Planning and/or Finance Department and the concerned Department whose proposal is being examined. The views of the Advisory Group are recorded by the Regional Chief Conservator of Forests and along with the same; the proposal is sent to the MoEF for consideration and final decision.

8. The concerned Regional Office of the MoEF inspects the forest land, proposed for diversion, in all cases which involve forestland of more than 100 ha.
9. Every proposal involving more than 40 ha. forest land, along with site inspection report, wherever required, are referred by the MoEF to the Forest Advisory Committee composed of following members:-
 - (i) The Director General of Forests, MoEF – Chairperson
 - (ii) Additional Director General of Forests, MoEF- Member.
 - (iii) Additional Commissioner (Soil Conservation), Ministry of Agriculture – Member
 - (iv) Three eminent experts in forestry and allied disciplines (non-officials)– Members
 - (v) Inspector General of Forests (Forest Conservation), MoEF – Member Secretary
10. The Forest Advisory Committee having due regard to all or any of the following matters tenders its advice on the proposals referred to it:
 - (a) Whether the forest land proposed to be used for non-forest purpose forms part of a nature reserve, national park, wildlife sanctuary, biosphere reserve or forms part of the habitat of any endangered or threatened species of flora and fauna or of an area lying in severely eroded catchment;
 - (b) Whether the use of any forest land is for agriculture purpose or for the rehabilitation of persons displaced from their residence by reason of any river valley or hydro-electric project;
 - (c) Whether the State Government or the other authority has certified that it has considered all other alternatives and that no other alternatives in the

circumstances are feasible and that the required area is the minimum needed for the purpose; and

- (d) Whether the State Government or the other authority undertakes to provide at its cost for the acquisition of land of an equivalent area and afforestation thereof.
11. While tendering advice, the Forest Advisory Committee may also suggest any condition or restrictions on the use of any forest land for any non-forest purpose, which in its opinion, would minimize adverse environmental impact.
 12. The MoEF, after considering the advice of the Forest Advisory Committee and after such further enquiry as it may consider necessary, grant approval to the proposal with appropriate mitigation measures or reject the same.
 13. In case a proposal involves diversion of forest land located within a protected area notified in accordance with the provisions of the Wildlife (Protection) Act, 1972, approval of the Standing Committee of the National Board for Wildlife (NBWL) and Hon'ble Supreme Court is required to be obtained by the concerned user agency before grant of approval under the Forest (Conservation) Act, 1980. Similarly, in case the forest land proposed for diversion is located within the duly notified eco-sensitive zone around boundary of a protected area, EIA of the project needs to be placed before the Standing Committee of NBWL. In case Eco-sensitive zone has not been notified, 10 km distance from the boundary of such protected area shall be treated as eco-sensitive zone.
 14. To boost the development in rural and tribal areas, general approval has been granted under FCA, 1980 for diversion of forest land for public utility development projects, to be executed by Government Departments, of area involving less than one ha. in each case, namely; schools, dispensary/hospital, electric and telecommunication lines, drinking water, water/rainwater harvesting structures, minor irrigation canal, non-conventional sources of energy, skill up-gradation/vocational training centre, power sub-stations, communication posts and police establishments like police stations/outposts/border outposts/watch towers, in sensitive areas.

15. General approval has also been granted under FCA, 1980 for underground laying of optical fiber cables, underground laying of telephone lines and underground laying of drinking water supply pipelines.
16. As a special measures to boost development of basic infrastructure in Left Wing Extremism (LWE) affected districts in nine States of the country, the general approval for diversion of the forest land for execution of 13 categories of public utility projects by Government Departments has been relaxed for diversion of forest and upto 2 hectares in each case, for a period of five years *i.e.* till 31.12.2015. For 60 LWE affected districts identified for implementation of Integrated Action Plan (IAP) the said general approval has been further relaxed for diversion of forest land upto 5.00 ha. in each case.
17. The mandatory mitigative measures required for approval under the FCA, 1980 include creation and maintenance of compensatory afforestation, realization of Net Present Value of the diverted forest land, preparation and implementation of wildlife conservation plan etc.

4.5 Earlier Recommendations/Observations/Proposals to speed up the approvals in this context

- 4.5.1 The Govindarajan Committee Report (GoI, 2002), set up to reform investment approvals and implementation procedures, made wide-ranging recommendations for re-engineering the project cycle for public investment for physical and social sector development. The first part of the report covered the stage of project conceptualization to investment approval. The second part focused on downstream issues from investment approval to implementation of project and its operation.

The committee identified delays in environment and forest clearances as the largest source of delays in development projects and observed that empowering of the single window system at the state level along with re-engineering of regulatory processes would have maximum impact on reducing delays in getting approvals and implementing projects. It has suggested that states can consider various alternatives such as enacting legislation or amending the rules of business to empower specially constituted bodies to operationalize and empower the single window system. It has also detailed a process for re-engineering all relevant regulatory systems at the

central, state and local government levels to ensure transparency, unambiguous decision rules, minimizing documentation and ensuring accountability. The process would require that the best global practices are taken on board and the revised processes are embodied in e-governance systems.

In the case of environmental clearances, which cause maximum delays to projects, the report suggests that the empowered committees with representation of all concerned including states should be set up for expediting decisions. Expert agencies should be authorized for initial scrutiny of applications. Diversion of forestland for pre-construction activities should be permitted after the non-forest land identified for compensatory afforestation has been transferred to the forest department.

The committee stressed the need for re-engineering of regulatory procedures prescribed under various legislation and regulations to simplify procedures for grant of approvals and reduce delays as well as simplify regulation of projects during their operational phase. It has suggested that re-engineering groups be set up in the Ministries for detailed examination of each approval requirement under various Acts, rules and regulations and re-engineering of the regulatory process. As many approvals as possible should be placed on self-regulation, that is, under automatic approval upon filing of necessary documents.

The report identified the ministries of labour, environment and forests, power, agriculture, petroleum, and industrial policy and promotion as the ones in which re-engineering groups need to be set up.

4.5.2 Stating the urgent need to streamline land acquisition and environment clearance for infrastructure projects, the Economic Survey for 2010-11 has recommended setting up a National Forest Land Bank to expedite clearances. “A National Forest Land Bank, with clear paperwork and titles, could significantly reduce the approval time for forest clearances,” the Survey said.

4.5.3 The draft NEP 2004, under its approach to process related reforms, noted that the recommendations of the Govindarajan Committee will be followed for reviewing the existing procedures for granting clearances and other approvals under various statutes and rules. These include the Environment Protection Act, Forest Conservation Act,

the Water (Prevention and Control of Pollution) Act, the Air (Prevention and Control of Pollution) Act and Wildlife (Protection) Act, and Genetic Engineering Approval Committee (GEAC) Rules under the Environment Protection Act. The objective is to reduce the delays and the levels of decision-making, realize decentralization of environmental functions, and ensure greater transparency and accountability. The draft NEP, 2004 also noted the need for substantive reforms in environment and forest clearances. In order to make the clearance processes more effective, the following actions were proposed:

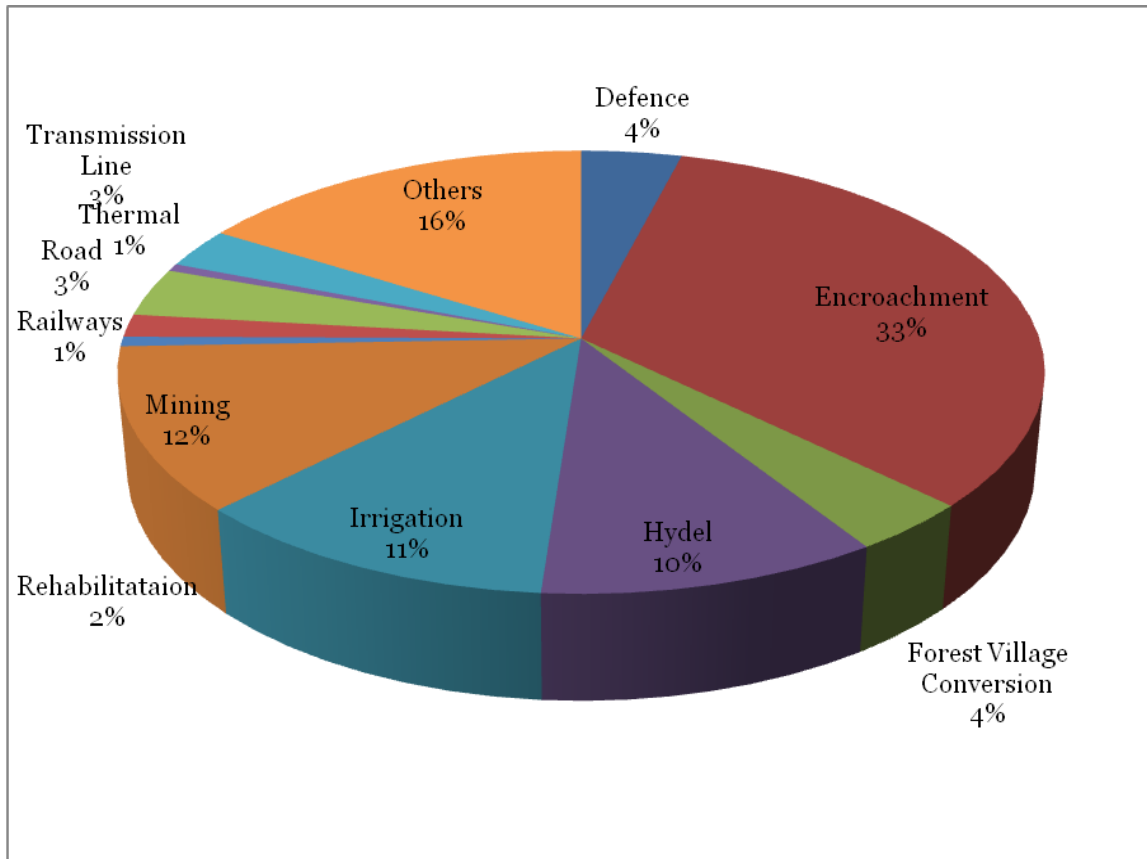
- a) Encourage regulatory authorities, Central and State, to institutionalize regional and cumulative environmental impact assessments (R/CEIAs) to ensure that environmental concerns are identified and addressed at the planning stage itself.
- b) Give due consideration, to the quality and productivity of lands which are proposed to be converted for development activities, as part of the clearance process. Projects involving large-scale diversion of prime agricultural land would require environmental clearance whether or not the proposed activity otherwise requires environmental clearance.
- c) Encourage clustering of industries and other development activities to facilitate setting up of environmental management infrastructure, as well as monitoring and enforcing environmental compliance. Emphasize post project monitoring and implementation of environmental management plans through participatory processes, involving the government, industry, and the potentially impacted community.
- d) Prohibit the diversion of dense natural forests to non-forest use, except in site specific cases of vital national interest. No further regularization of encroachment on forests should be permitted.

4.6 Approvals under FCA, 1980: Assessing the Performance

Since the FCA, 1980 came into being; a total forest area of 11.33 lakh ha. has been diverted for various activities. A sectoral break-down of this is presented in Graph 1(also see table 12). Graph 2 provides the status of approvals given during the said period. The following observations can be made on the basis of the information in these graphs:

- Since these projects were approved under FCA, 1980 appropriate mitigation measures were taken which was not the case prior to implementation of FCA, 1980.
- One third of the total forest land diverted is gone to encroachments whereas only 2 per cent is taken up by rehabilitation.

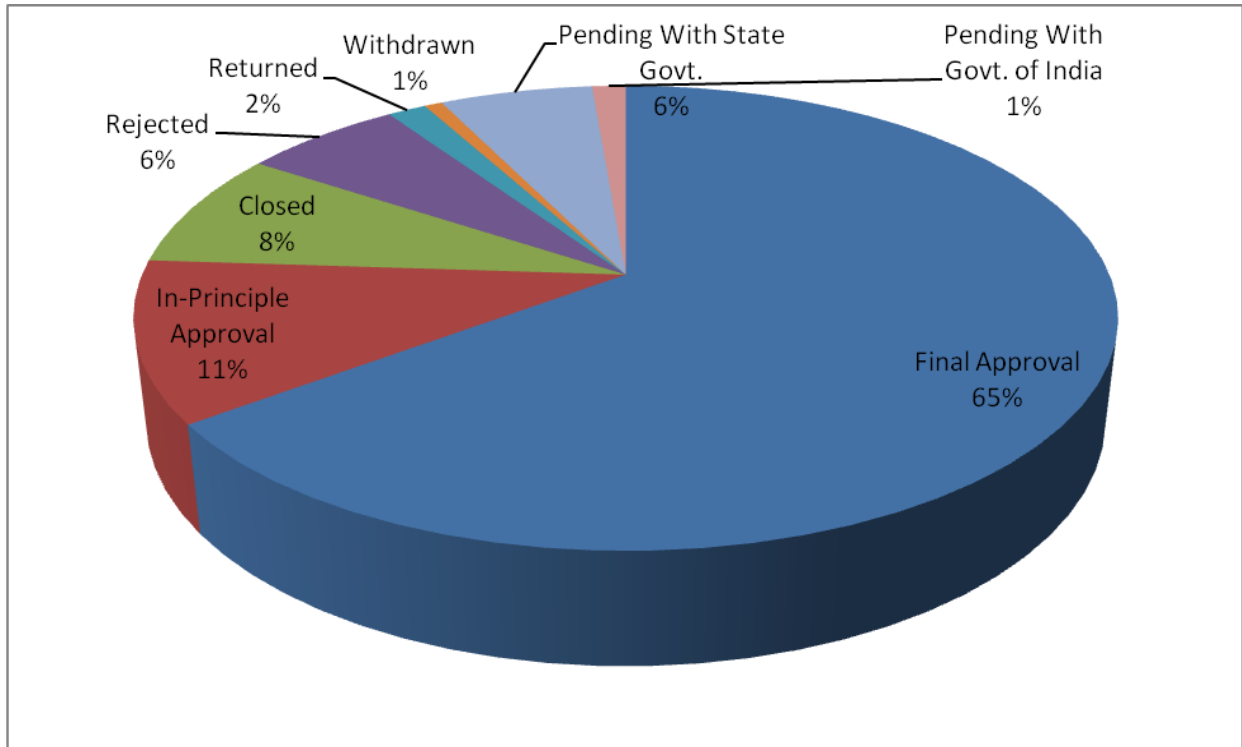
Graph 1: Approvals accorded for forest land diversion during 1980- 31 January 2012 (All India)



Source: MoEF, 2012

- Of the 29,534 proposals received for approval during the said period, in 65 per cent of the cases final approval has been granted and another 11 per cent have been given in-principle approval, implying an approval rate of 75 per cent (Graph 2).
- In the absence of any benchmark it is difficult to judge the success or otherwise of the approval rate. However, the number of cases rejected and closed constitute 14 per cent of the total cases which seems resonable given the nationalforest cover targets, and the complexity of the issues involved.

Graph 2: Status of forest clearance proposals during 1980- 31 January 2012 (All India)



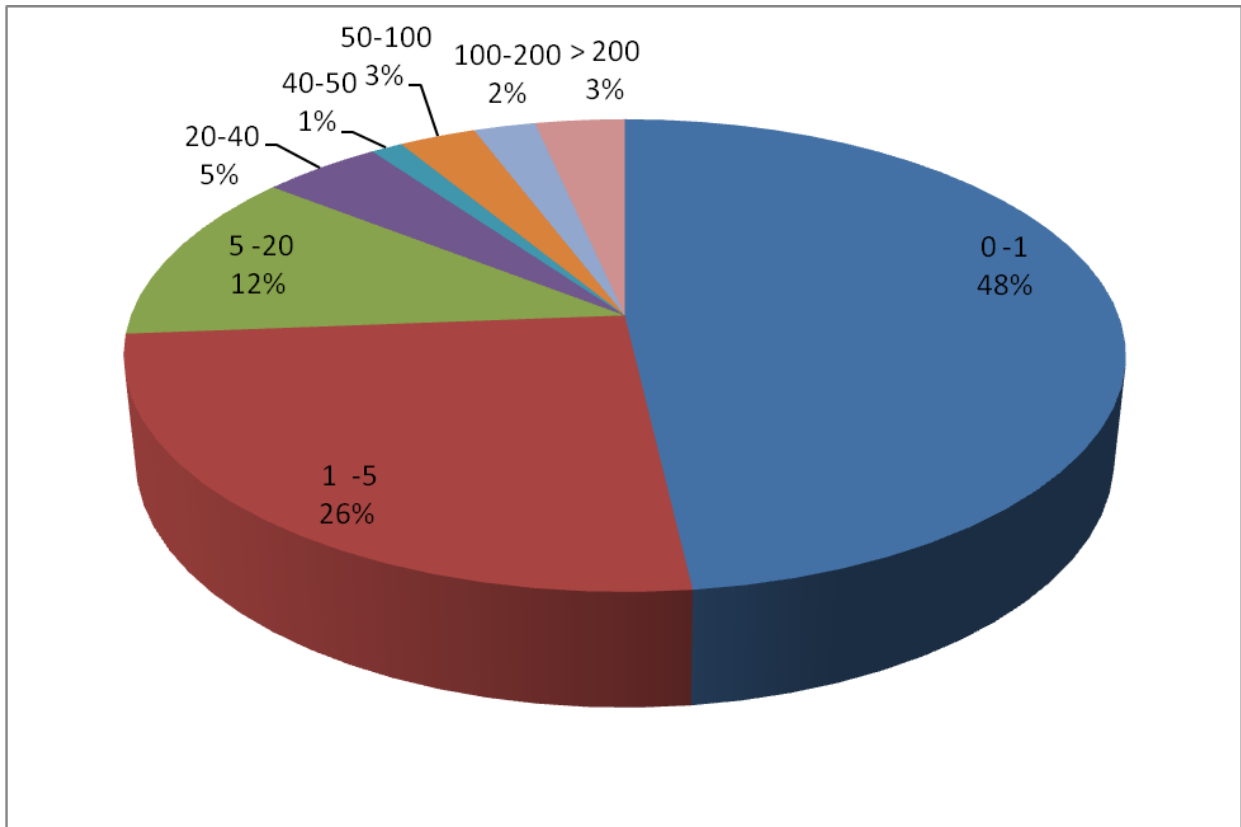
Source: MoEF, 2012

It may be seen in Graph 3 that 48 per cent of the total cases for approval of forest land were in upto 1 ha.category and over a quarter of cases were in 1-5 ha. category. Only in 5 per cent of the total cases were in over 100 ha. category. As mentioned earlier, to facilitate the implementation of certain categories developmental projects undertaken by government agencies in identified areas/categories the following general approvals have been granted by the MoEF in 0-1 ha and 1-5 ha classes:

- Public utility projects of 11 identified categories implemented by the government department – throughout country – 1 ha. in each case up to 31.1.2013
- Public utility projects of 13 identified categories implemented by the government departments in 60 districts in left wing extremism (LWE) affected districts selected for iap: 5.00 ha. in each case till 13.05.2016
- Public utility projects of 13 identified categories implemented by the government departments in remaining 23 LWE districts: 2.00 ha. in each case till 31.12.2015.

Similarly, some broad observations can be made about the status of the approvals in hill states (Tables 13-16).

Graph 3: Forest diversion proposals in different area classes (All India)



Source: MoEF, 2012

The Graph 4 shows the number of days taken in granting stage-I approval under the FCA, 1980 by the MoEF during the period under reference. It may be seen that one fourth of the total cases took more than one year for stage-I approval, 7 per cent cases were dropped (returned, rejected, closed, withdrawn) at this stage, while 68 per cent cases were given stage-I approval in under one year. Of the latter, 39 per cent cases received stage-I approval within two months, stipulated time being 90 days except in case of lease renewal where it is 60 days.

While the discussion so far in this sub-section provides an overview of the status of approvals under FCA, 1980; the data does not help understand the following:

- Which projects (type, size (in terms of forest area involved), location, type of institution responsible for execution of the project) took longer than the stipulated time. Is there a pattern? And
- What are the reasons for delay?

At the state government level:

Do reasons for delay constitute: poor /incomplete proposal; sloppy follow up; lack of trained personnel; lack of reliable data/information to support the case; absence of dedicated group of people for the purpose?

Previous record of poor compliance with the mitigative provisions of the FCA, 1980 could also be a factor leading to additional safeguards by the approving authority and thus more time. An overview of the compliance (by the state governments) in the cases cleared under FCA, 1980 shows that during the reference period, of the total 15,361 cases monitored, 42 per cent of the cases were found non-compliant (Table, 17). A state wise analyses shows that among the hill states the major defaulters are Arunachal Pradesh, Meghalaya, Manipur and Uttaranchal with non-compliance rate of 100%, 42%, 40%, and 34% respectively. However, in Arunachal Pradesh only one case was monitored and was found non-compliant. The extent of non-compliance and non-compliance in respect of which provisions is however not available except in the case of compensatory afforestation requirement.

All the hill states have defaulted on meeting the requirement of compensatory afforestation (Table 18). Among the hill states, Tripura tops the compliance list with almost 43% compliance in compensatory afforestation followed by Meghalaya (27.12%), J&K (25.6%), and Arunachal Pradesh(23.15%). Manipur is the biggest defaulter followed by Uttaranchal and Assam.

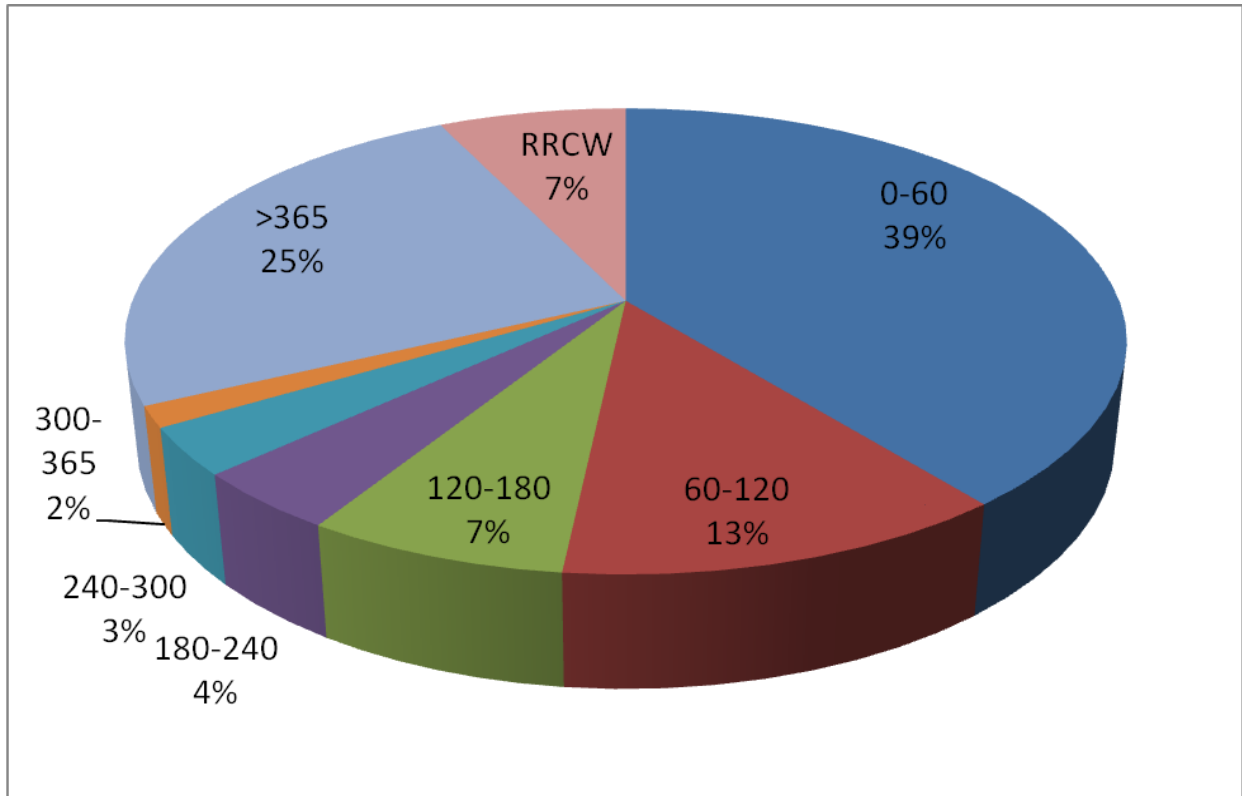
At the MoEF level:

Do reasons for delay constitute: lack of trained personnel; lack of reliable data/information needed in decision making; absence of dedicated group of people for the purpose; lack of transparency?

Issues arising from the difference of opinion, between centre and states, on the desirability and design of the project due to lack of vision, faulty planning, obsolete technology, multiplicity of schemes, overlapping jurisdictions could be a source of delay in decisions. For instance, one of the most common areas of contention (which came up in my discussions with the officials at the MoEF) is the desirability of better traffic management vis-a-vis broadening of some of the roads in mountains. Similarly, instead of a comprehensive plan for the development of an area where space utilisation can be optimised and projects can be executed in a time bound manner with minimum environmental damage⁵, projects are undertaken by various departments resulting in duplications, less than optimal use of scarce space, environmental pollution and leakages. Therefore, for himalayan region better planning and convergence of schemes is very crucial.

⁵The Prime Minister at Nainital declared that the Centre will set up “Himalayan Development Authority” for overall development of the Himalayan region including all the states of North East.

Graph 4: Time taken (in days) by the MoEF to accord stage-I approval under FCA, 1980



RRCW- Returned, Rejected, Closed, Withdrawn); Source: MoEF, 2012

5. Views, Demands and Proposals of State Governments

This sub-section collates and presents the views and suggestions received from the hill states in response to the communication sent by this Committee to elicit information, views and suggestions of the state governments on certain issues (list of questions in annexure). Only 3 states, Himachal Pradesh, Meghalaya, and Tripura have so far responded. We have supplemented this information by drawing on the information in Verma (2009), which was forwarded to THFC by five hill states, Arunachal Pradesh, Himachal Pradesh, Meghalaya, Sikkim, and Uttarakhand, indicating their priority areas as well as tentative requirement to meet those demands for the THFC.

5.1 Responses received from the hill states by this Committee

5.1.1 Himachal Pradesh

To ensure speedy clearance under FCA, 1980 the following steps have been taken:

- a. Workshops at circle and division levels have been organized for user agencies and forest officers to facilitate preparation of FCA cases.
- b. Cases from PCCF office are sent to state government on single file system, which has reduced the time taken in processing the cases considerably.
- c. State Advisory Group meeting is being organized regularly.
- d. Forest Officers have been posted in two Government Department/Corporation (HPPWD and HP Power Corporation), who are the main stakeholders in forest land diversion.
- e. State government has requested MoEF to give power to state government to take decision in up to 5 ha. forest area cases under the FCA, 1980.

Himachal Pradesh has submitted a long list of projects under various stages of approval. A hard copy of the same is on the file.

5.1.2 Manipur

- a. Among the infrastructure projects that have not been taken up for want of environmental and forest clearances in the last 10 years in Manipur, mention may be made of Tipaimukh H.E. Project, and Loktak Downstream H.E. Project. There are other projects related to road construction/improvement work, power transmission lines, etc. requiring diversion of forest land under the FCA, 1980 and these are under different stages of submission/examination for obtaining clearances. Every proposal for infrastructure development requiring forest land diversion under FCA, 1980 requires documents/information/clarifications to be furnished by the user agencies and there are laid down procedures/guidelines from the MoEF and orders of the Hon'ble Supreme Court of India for obtaining forest/environmental clearances for infrastructure projects.
- b. State Forest Department is not in a position to assess the loss of revenue and other investments due to Projects not being cleared on account of forest clearance.
- c. The State Government is yet to have its own Forest and Environmental Policy. However, it is suggested that the guidelines under the FCA, 1980 may be modified wherein the states may be authorized to accord diversion of forest land from 1 ha. to 5 ha. for certain categories of activities like school building, dispensary/hospital, electric/telecommunication lines, drinking water, rainwater harvesting structures, minor irrigation canals, non-conventional sources of energy, skill-up-gradation/vocational training centres, power sub-stations, communication posts and police establishments like Police Station/outposts/Border Out posts, watch towers in sensitive areas (identified by MHA).
- d. State Government has taken various infrastructure projects relating to roads and bridges, buildings, rural electrification, etc. With fund available from various sources under State Plan, CSS, NEC and NLCPR, Rail and air connectivity continue to receive much needed attention from the Government of India. However, much more

remain to be done through greater investment in these sectors as there is development lag in comparison with all India level. In case of rural electrification, 2096 villages out of 2524 villages electrified. Total surfaced road length (including strengthening and improvement) so far achieved is 1915 km (675 km – State Highways, 1964 km – Major District Roads, 130 km – Other District Roads, 146 km – Inter Village Roads). The road density in Manipur is 56.51 km per 100 sq. km against All India average of 62 km.

- e. The suitable areas/degraded forests for afforestation in Manipur have been identified through satellite imageries and field inventories and in pursuance of Hon'ble Supreme Court directives. All the forest areas in the state, irrespective of classification and ownership, have been put under approved scientific management plans also known as Working Plans. The prescriptions of the approved Working Plans essentially constitute action plan for afforestation and intensification of canopy cover. But bridging the gap between afforestation/canopy cover improvements/achievements under various Plans/Schemes/Finance Commission Awards/ National Afforestation Programs/National Bamboo Mission/ CAMPA implemented by the State Forest Department and the extent of area identified to be suitable/degraded forests (10500 sq. km approx.) in the state for afforestation and intensification of canopy cover will require increase in financial resources.
- f. Some of the factors affecting development of infrastructure could be lack of financial resources; outdated land laws in force in the state, etc. These factors need to be reviewed. Infrastructure to the frontline/subordinate staff, continuous skill up-gradation programs, etc. is suggested.

5.1.3 Tripura

Tripura has identified the following as key sectors for development.

| Sl. No. | Sector | Departments | Activities Proposed |
|---------|-----------------------|-----------------------------|---|
| 1. | Social Infrastructure | Social Education | <ul style="list-style-type: none"> • Creation of Village level Hub for Women and Child Welfare Activities-This may cover children, old aged, destitute, widows disabled. • Creation of basic infrastructure for all AWCs and integrating it with livelihood opportunities. Making use of IT based services in AWCs • Bridging gap-Providing drinking water and sanitation facilities in all AWCs • Training and capacity building of the Anganwadi Workers-Setting up Training Centres covering a cluster of 3 villages. This can also be used for capacity building of PRI functionaries |
| | | Education | <ul style="list-style-type: none"> • Construction of Residential Schools • Bridging of drinking water and sanitation gaps in all the existing schools • Setting up of District level training centres • Setting up of Polytechnics • Capacity |
| | | Health | <ul style="list-style-type: none"> • Construction of PHCs and Sub Centres • Construction of Sub-Divisional Hospitals • Equipping the existing PHCs/CHCs/Sub Centres • Training Paramedical staff |
| | | Water Supply and Sanitation | <ul style="list-style-type: none"> • Setting up water testing laboratory in all the Districts • Piped Water Supply in uncovered habitations • Rain Water harvesting and purification systems • Bridging the quality gaps |
| 2. | Basic Infrastructure | PWD (Roads and Bridges) | <ul style="list-style-type: none"> • Replacement of SPT Bridges • Connectivity to all habitations with 250 to 500 families • Improving Connectivity to important Tourist Destinations |
| | | PWD (Irrigation) | <ul style="list-style-type: none"> • Rain water harvesting with sprinkler systems (Mizoram model) |
| | | Power | Non-conventional methods for covering the un-electrified habitations |
| 3. | Economic | Agriculture | Livelihood activities for RoFR Beneficiaries –Horticulture/bamboo based activities |

| | | | |
|--|------------|----------|--|
| | Activities | Industry | Setting up integrated infrastructure development Centres-Handicraft and Sericulture based activities Setting up Handicraft clusters |
|--|------------|----------|--|

5.2 Based on the responses of the hill states to THFC

5.2.1 Arunachal Pradesh

Priority Areas:

1. Compensation on account of revenue loss due to imposition of restrictions on extraction of forest produces as untied grant.
2. Reclamation of degraded forests and initiation of soil and water conservation measures.
3. Carbon Credit Issues: Incentive for containing carbon dioxide emission and mitigating global warming.
4. Control of shifting cultivation by discouraging Jhuming practices.
5. Maintenance of forests.
6. Wild life conservation, intensification of management and infrastructural facilities including research and documentation, demarcation of boundaries with permanent structures etc.

Major Issue: Compensation for revenue loss due to ban on green felling

Revenue from forest has been the most important non-tax revenue for Arunachal Pradesh for a fairly long time. This revenue was generated through logging and sale of timber. In the absence of industries, forest revenue was very important for development of the State until the Supreme Court put restrictions in the forest conservation case of 12, December, 1996(TN Godavarman v Union of India). The decline in the forest revenue in the state on account of said restrictions, seriously affected state's ability to finance its developmental needs as there has been no compensation to compensate this loss and to maintain large area under forest thereby generating large number of positive externalities and giving on State's development. The revenue loss for the 10 years (1997-2007) is about Rs. 774.90 crores.

Proposal for TFHC allocations (five year) from Arunachal Pradesh

| No | Head | Rs. (Incrore) |
|--------------|---|-----------------|
| 1. | Compensation on account of Revenue loss due to imposition of restrictions on extraction of Forest produces as untied grant. | 774.90 |
| 2. | Grant for Reclamation of degraded forests and initiation of soil and water conservation measures | 238.00 |
| 3. | Carbon Credit Issues: Incentive for containing carbon dioxide emission and mitigating global warming. | 1000,00 |
| 4. | Control of shifting cultivation by discouraging Jhuming practices | 540.00 |
| 5. | Maintenance of Forest | 1000.00 |
| 6. | Wild life conservation, intensification of Management and infrastructural facilities including Research and documentation, demarcation of boundaries with permanent structures etc. | 250.00 |
| Total | | 3802.90* |

* This amount to be suitably indexed for inflation at 7% for the entire award period up to 2014-2015.

Source:-Verma (2009).

5.2.2 Himachal Pradesh

Priority Areas

1. Maintenance of forest roads and building's
2. Forest Protection Plan.

Proposal for THFC allocations (Five Year) From Himachal Pradesh

| No | Head | Rs. (In Crore) |
|--------------|---|----------------|
| 1 | Revenue loss per annum due to ban on green felling to be compensated. | 150 |
| 2 | Expenditure per annum under on Forest Sector Non-plan schemes to be compensated | 60 |
| 3 | Additional cost per annum for plantation & Soil conservation To treat 450 Sq.Km. peryear @ Rs.40000 perha | 180 |
| 4 | Requirement of fund for maintenance of forest roads and buildings | 30 |
| 5 | Maintenance and Preservation of forests | 100 |
| 6 | Forest Protection Plan | 8 |
| Total | | 538 |

Source:-Verma (2009).

5.2.3 Meghalaya

Priority Areas

1. Infrastructure Development (Housing/communication (GPS and other equipment)/ roads).
2. Investment for forest nurseries planting material– High Tech Nursery.
3. Purchase of land considering the peculiar land regulation system.
4. Tree improvement (provincial trial and seed orchard).

5.2.4 Sikkim

Priority Areas

1. Conservation of existing forests.
2. High input plantations.
3. Training and capacity building.
4. Strengthening of infrastructure.
5. Settlement of FRA (Forest right recognition) Act.

5.2.5 Uttarakhand

Priority Areas

1. Infrastructure Development and Forest Protection.
2. Livelihood Development.
3. Management Plan Prescription.
4. Forest and Wild Life Conservation.
5. Soil and Water Conservation.
6. Research- Development & Extension.
7. Mitigation of Climate Change.
8. Promotion, development and Marketing of NTFP.
9. Management and Development of *Van Panchayats*.
10. Corpus Fund for Natural Disaster Management.

5.2.6 Compensation and rewards for ecosystem services and sharing of the Grant

To take the first hand stock of use and perceptions of different stakeholders across the States an exercise was conducted across different states during the Round Table Meetings (Verma, 2009). The stakeholders provided weights for allocation between national and local regions only as the domain of the finance commission pertains to inter-state transfer only. In case of global benefits the states shall have to trade with some developed country or a country needing carbon / biodiversity credits. The following has been the distribution of transfer for different ecosystem services if an amount is fixed up ecosystem service wise.

Allocation of weights by Stakeholder's across different eco system services

| ECOSYSTEM SERVICE | ALLOCATION OF WEIGHTS | | |
|-------------------------------------|-----------------------|---------|--------------------------------|
| | National | Local | Remarks |
| Carbon Sink | 100/100 | | |
| Biodiversity | 90 / 98 | 10/2 | |
| Water | | | |
| - <i>Drinking</i> | 80 / 99 | 20 /01 | |
| - <i>Irrigation</i> | 75/95 | 25/05 | |
| -Commercial | 95/90 | 5/10 | |
| Flood Control | 95 / 99 | 5/1 | No Plains |
| Siltation control | 95 / 80 | 5/ 20 | |
| Climate regulation | 80 / 80 | 20/ 20 | |
| Carbon Sequestration | 95 / 98 | 5/2 | additionality |
| Clean Air provision (spm) | 70 / 80 | 30 / 20 | |
| Landscape(Recreation) | 95 | 5 | |
| Landscape & Aesthetic Value | 60 / NA | 40 / NA | Property pricing. Outsiders |
| Forest based Livelihoods | 0/ 70 | 100/30 | Gender issue |
| Forest Succession | | | Not relevant |
| Pollination service | 0/ 30 | 100/70 | |
| Nutrient movement | 5/5 | 95 / 95 | |
| sands/ boulders& sand, limestone | 75 | 25 | |
| Cultural values-educational | 75 / 90 | 25 / 10 | |
| Cultural values-sacred grove | 25 / 20 | 75/80 | |
| Mining | NA | NA | Negative |

| | | | |
|--------------------------|-------|---------|--|
| Shelter belt / Windbreak | 0/ NA | 100/ NA | |
| Landslide control | 5 | 95 | |
| Hydrological cycle | 95 | 5 | |
| Defense/ Strategic | 100 | 0 | |

Source: Verma (2009)

It can be seen from the above table that services like carbon sequestration, biodiversity, watershed benefits accrue more to the external regions than the site of origin of such ecosystem services thus higher weights were allocated to the National Category which means compensation for such provisioning is desired through the financial transfers. It was further affirmed that the services which are locally consumed had to be considered within the state budgets thus re-allocation of expenditure is also desired within the states domestic budgets.

5.2.7 Summing up

The above discussion gives an insight into the genuine requirements of various states which vary from compensation on account of revenue losses due to imposition of restrictions on extraction of forest produce as untied grant, for reclamation of degraded forest, carbon credit issues i.e. incentive for containing carbon dioxide emissions and mitigating global warming, maintenance of forests, high in put plantations to achieve the green cover target, construction and maintenance of staff quarters, soil conservation activities, wild life conservation, training and capacity building, strengthening of infrastructure for ecotourism development, recharging watersheds, increasing tree cover outside forest area etc. The information provided and views expressed brings out that the regular grants have not been enough for various priority activities, thus needs to be supplemented through finance commission transfer in the form of grant-in-aid. States further pleaded for a setting up of a mechanism of compensation and rewards for provisioning of various ex-situ benefits which are realized by the neighboring states as well as by the rest of the world but states do receive any financial recognition for such provisioning. There exists scope for introducing incentive based mechanisms as additional source of finance and to reward the stakeholders engaged in conserving process for sustaining their interest in long run.

6. Strategy for Infrastructure Development

1. Development of infrastructure cannot be independent of the vision for the overall development of the region/states implying that they have to be calibrated simultaneously. This is for at least two reasons: one, development of infrastructure involves huge monetary costs thus it is important that it is utilized optimally such that it contributes to the development of the region/state and facilitates resource generation for the maintenance and future augmentation of infrastructure; and two, mountain ecology is sensitive to infrastructure development therefore it is essential that the necessary infrastructure is built and maintained with long term perspective. *Setting up of an infrastructure planning mission for formulating a long term plan for development of infrastructure in Hill States may be considered. This exercise must be in consultation with the Hill States.*
2. Given the overall vision for the development of the region/state infrastructure development can be approached in two different ways. One of the ways to approach infrastructure development would be to identify sectors with comparative advantage so as to utilise the resources of the region productively for the benefit and welfare of the people and then work out the relevant infrastructure needs and gaps. The other approach could be to divide the infrastructure development into two phases. In the first phase, the infrastructure may be planned focussing on: (i) easing out the constraints in connectivity and mobility of people, goods and services, and information and ideas both within and outside the region/states, and (ii) provision of basic needs such as good quality of energy, water, education and health services. In the interim, the sectors/activities in which private sector interest and investment would pick up may be identified. The second phase of infrastructure development should be built around the sectors which show promise in the context of the state/region. An analysis of the current position of major infrastructure in the states will form the basis of the analysis of the gaps in provision, projected requirements over the next five to twenty years, the potential for expansion and how the expansion is to be affected. This analysis has to be in consultation with the hill states.
3. Although each hill state has its unique economic, socio-cultural context, and opportunities and constraints requiring formulation of state specific infrastructure

strategy, yet hill states in the east are more homogenous than other states within the western region except Jammu and Kashmir. For instance, hill states in the west are better placed *vis-a-vis* those in the east and Jammu and Kashmir because of their proximity to the big markets in mainland India largely owing to relatively better connectivity. However, hill states in the east with relatively homogenous cultural and ethnic mosaic and close proximity to one another will stand to gain from a strategy which improves their internal physical connectivity and contributes to the unification of markets such that the states in the region gain from the strengths of one another in terms of endowment of human and natural resources. Thus, in formulating strategy for infrastructure development the hill states can be broadly divided into eastern and western regions. The issue of connectivity in Jammu and Kashmir is similar to that of the north-eastern states.

4. The development of infrastructure is a challenging task given the complex ecological and topographical features of hill states. Therefore, there is a need to have a Himalayan perspective to infrastructure development and thus move on from the conventional approaches. All the hill states fall in Seismic Zone IV or V (table 5) and thus require a clear mountain sensitive land use policy for development purposes and appropriate norm/codes for buildings and infrastructure. Technology used in development of infrastructure should be sensitive to and at the same time in conformity with the mountain ecology and other local conditions. As mentioned earlier, changing climate issues pose additional challenges for optimal design of infrastructure in hill states. There must be clear demarcation between activity and no-activity zone. In the case of roads, the nature of the terrain in the hill areas makes cutting and laying of roads more expensive both in terms of material cost as well as time taken to complete the work. Similarly, laying of telecommunication network, optical fiber cables, grid connectivity needs greater planning, execution time and other resources. *Enhancement of norms for technology, quality, and cost of infrastructure development needs special consideration. A technology mission for the development of infrastructure in hill states may be considered.* Further, extensive network of ropeways and hanging bridges in improving surface connectivity in high regions would be more efficient and supportive of local ecology than the conventional roadways. These can also contribute to tourism potential of the region. It would therefore be important that a comprehensive view is taken and the local stakeholders

are consulted in the process of infrastructure planning. Such projects are also likely to create opportunities to involve private sector in infrastructure development. The PPP mode may work in power and telecommunication also. Private sector presence by way of investments brings new channels of technology spillover to the public sector firms in the form of enhanced efficiency and diffusion of knowledge in the long-run.

5. Climate Change is a cross cutting issue and challenges transcend different sectors. Strategies to minimize the anticipated adverse impacts must be designed right away, in association with specialized agencies or dedicated missions to avoid delays in seeking approvals from a chain of ministries/departments. Infrastructure planning should be done zone-wise/river-basin wise. Similarly, environmental impact assessments/approvals should be sought for a zone/river-basin etc.
6. Conservation and sustainable use of bio-diversity is an example of spatial externalities. Rewarding the providers of this service is necessary to reconcile both national and global public benefits of conservation of natural resources. In principle, national/global benefits of forests (carbon sequestration and protection of biodiversity) should motivate at least some partial payments. Compensation should be paid because forest rich states are also the forest dependent states. Loss of revenue from resources they possess affects them in two ways. One, they can hardly afford to budget for maintaining and enhancing their forest resources, besides revenue compression leads to cuts in vital developmental expenditures. Two, since it is the poorest that bear the burden of conservation (when conservation policies are not designed with human perspective), as their lives are crucially linked to both resources and services the forests provides, social and economic inequities widen and often find expression in extremism. In sum, much of the funding for infrastructure development in hill states will have to be borne by the central government. The relevant question is what should be the mechanism for it?

The Twelfth Finance Commission, in principle, recognized the need to compensate the states with forest cover for the loss of revenue, loss of alternative economic activities and higher cost of providing public services. This issue received sharper focus in The Thirteenth Finance Commission, for one of the terms of reference of THFC required it to take into account “the need to manage ecology, environment, and climate change consistent with sustainable development” in making its

recommendations. Accordingly, the THFC has recommended environmental grants to support three areas: forests, water sector management, and renewable energy. Given that there is trade-off between commercial and conservation benefits of forests, from even the national perspective hill states should explore the possibility of resource transfers from the central government for the spillover benefits generated from forest conservation/opportunity cost of forest conservation. Some broad estimates of these are available to guide the quantum and form of compensation (table In this context, it may be noted that the greatest gain in carbon storage and biodiversity, potentially would come from protecting mature marginal frontier forests that would have been harvested without the offset payment. Therefore, payments to protect the full forest area are not necessary because the volume at risk is mainly the forest at the margin. However, case for compensation for opportunity cost of full forest area in terms of loss of alternative economic activities remains valid.

The potential benefits of introducing fiscal equalization principles into regional environmental funding have been recognized in some countries. In Germany ecological functions are incorporated into inter-governmental fiscal relations through conditional grants; Switzerland gives project oriented grants by developing an index on bio-diversity; needs based index forms the basis for fiscal equalization across regions for environmental management in Queensland, Australia. In Indian context also, an indicator that could reflect both conservation efforts and the stock of natural resource, and appropriately quantify their gains is required in integrating environmental concerns in federal transfer mechanisms.

A contentious issue in this context is the choice of policy option for compensation. Various considerations including low technical and governance capacities of the state and local governments have led to reservations about general grants or even project based grants in India. There seems some merit in this argument until governance deficiencies at the state and local government level are addressed. However, it would be unfair to use this argument to undermine the need for compensation to hill states. *The Committee may consider creating an “infrastructure and technology fund” for hill states which can be used for creating and upgrading strategic developmental infrastructure and for development/sourcing of hill sensitive technology (especially for development of market for niche mountain products, and diversification and value*

addition in agriculture) which are the two most critical factors in improving the productivity of resources and boosting the environmental and developmental performance of the hill states. The need for such fund should reduce overtime, so that eventually the compensation for provision of environmental services could be linked entirely to a comprehensive index of environmental externalities/performance.

6. Augmenting infrastructure, including rail, road, inland water and air transportation to facilitate a two-way movement of people and goods within the NER region and outside, communication networks including broadband and wireless connectivity, and harnessing of the vast power generation potential, all of which will open up markets for produce from the region, attract private investment, create greater employment opportunities and expand choices for people of the region. Making the “look east” policy meaningful for the region by connecting it with Southeast Asian markets needs serious consideration. Connectivity of NER with ASEAN would require opening up the sea route through the Chittagong port and the land routes through Myanmar and China. In addition, opening up the land route through Bangladesh could enormously benefit both countries and diplomatic efforts should focus on improving relations with the neighbors. Indeed, given the strong stakes of the people of the region in improving relations with the neighbors, it is important to evolve a mechanism to consult the states in the region in conducting diplomacy with these countries. Improving connectivity is the most important measure for the resurgence of the NER. Good transportation networks are necessary to inter-link potential growth centres, promote tourism, connect to border trade points and support economic, social and security needs. Creation of a common market is necessary for the region to develop as an entity and realize the goals of peace and prosperity.
7. Decentralized small scale power generation and distribution are considered to be mountain friendly and need to be promoted. Medium and major projects can be planned only in areas considered to be ecologically stable and where river basin environmental impact assessments have been undertaken; and the resultant findings support such projects. Solar and wind energy and other community based initiatives must be considered as an alternative to fuel wood.

8. Improved governance mechanisms in all the Hill States should be accorded high priority. Institutional strengthening and capacity building should be addressed with the help of professionals and academic bodies.
9. Enhanced economic security and poverty alleviation go hand in hand with peace, stability, and sustainable management of mountain resources in hill states. Trans-boundary cooperation through supportive policies and physical infrastructure is crucial to sustainable development of hill states.
10. *To speed up the process of forest land and environmental approvals the following may be considered:*
 - a. *Comprehensive planning for overall development of an area/city/state (medium to long-term perspective) encompassing infrastructure development schemes across different sectors to optimize space utilization.*
 - b. *Training for all relevant government departments/corporations/user agencies and forest officials for preparation of FCA, 1980 cases.*
 - c. *Dedicated specialized groups/missions at the state level and in MoEF for preparation and scrutiny of cases. Initial preparation and scrutiny may also be outsourced to experts/expert agencies.*
 - d. *Posting of forest officers and subject experts in relevant government departments/corporations/user agencies.*
 - e. *Adoption of best global practices and e-governance systems.*
 - f. *Continuous updating of crucial data and information for decision making.*
 - g. *Introducing incentives for ensuring accountability.*
 - h. *Posting a compliance officer at state level and at the MoEF who will periodically prepare a compliance report which can be analyzed to identify the action points and recommend appropriate processes, checks and balances, technical and compliance training and e-governance needs to plug systemic and other flaws.*

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TABLE 1: Categorization of states on the basis of Forest Cover

| Category | Range | Characteristics | States |
|-------------------------------|--|--|---|
| Very High Forest Cover States | More than 60% of Geographic area under forest and tree cover | Characterized by large geographical areas under forests. Hilly terrain, less populated and less industrialized states | Mizoram, Nagaland, Arunachal Pradesh, Tripura, Manipur, Meghalaya |
| High Forest Cover States | 30-60% of Geographic area under forest cover | Characterized by good forest cover. Mixed group with some states lagging behind in development. | Uttarakhand, Kerala, Sikkim, Chattisgarh, Assam, Orissa |
| Medium Forest Cover States | 15-30% of Geographic area under forest cover | Characterized by low forest cover, agriculture being the predominant economic activity. Mostly developed states. | Jharkhand. Himachal Pradesh, Madhya Pradesh, Tamil Nadu, Karnataka, Andhra Pradesh, Maharashtra, West Bengal |
| Low Forest Cover States | Less than 15% of Geographic area under forest cover | Characterized by very low forest cover, agriculture being predominant economic activity in most cases. Group with rich and poor states in terms of economy and density of population | Jammu and Kashmir, Gujarat, Uttar Pradesh, Bihar, Haryana, Rajasthan, Punjab |

Source: - Verma, 2009

Table 2: Ranking of States on the basis of GDP per capita, forest cover per capita, HDI, GDI and HPI

| State | GDP | FC | HDI | GDI | HPI |
|---------------------|-----|----|-----|-----|-----|
| Hill States | | | | | |
| Arunachal Pradesh | 15 | 1 | 12 | 8 | 20 |
| Assam | 21 | 12 | 11 | 19 | 18 |
| Himachal Pradesh | 4 | 9 | 17 | 1 | 3 |
| Manipur | 17 | 4 | 4 | 3 | 13 |
| Meghalaya | 16 | 3 | 9 | 5 | 19 |
| Mizoram | 12 | 2 | 1 | 9 | 8 |
| Sikkim | 8 | 5 | 3 | 16 | 10 |
| Tripura | 13 | 8 | 5 | 20 | 15 |
| Uttaranchal | 11 | 6 | | | |
| Other States | | | | | |
| Andhra Pradesh | 10 | 15 | 19 | 6 | 11 |
| Bihar | 25 | 25 | 23 | 22 | 22 |
| Chattisgarh | 18 | 7 | 16 | | |
| Gujarat | 5 | 19 | 13 | 11 | 7 |
| Haryana | 1 | 22 | 10 | 12 | 4 |
| Jharkhand | 19 | 13 | | | |
| Karnataka | 9 | 14 | 14 | 10 | 9 |
| Kerala | 6 | 17 | 2 | 2 | 1 |
| Madhya Pradesh | 23 | 11 | 21 | 15 | 14 |
| Maharashtra | 3 | 16 | 8 | 7 | 5 |
| Orissa | 22 | 10 | 20 | 17 | 21 |
| Punjab | 2 | 23 | 6 | 13 | 2 |
| Rajasthan | 20 | 20 | 18 | 14 | 16 |

| | | | | | |
|---------------|----|----|----|----|----|
| Tamil Nadu | 7 | 18 | 7 | 4 | 6 |
| Uttar Pradesh | 24 | 24 | 22 | 21 | 17 |
| West Bengal | 14 | 21 | 15 | 18 | 12 |

FC: Forest Cover

HDI: Human Development Index

GDI: Gender Development Index

HPI: Human Poverty Index

Source: Verma, 2009

Table 3: Pattern of Regional Development Across States

| States | EDI | % of electrified villages | Surfaced Road Length Per 000' Sq. km. (Km of Geographical Area) | Rail Density (Rail Route Km per 1000 sq. km. of Area) of Geographical Area (Km) | Tele density (%) | Rural Unemployment rate | Urban Unemployment rate | No of Village covered by PHC |
|--------------------------------------|--------------|---------------------------|---|---|------------------|-------------------------|-------------------------|------------------------------|
| Base Year | 2006-07 | 2004-05 | 2002 | 2005 | 2007 | 2004-05 | 2004-05 | 2006 |
| <i>VERY HIGH FOREST COVER STATES</i> | | | | | | | | |
| Mizoram | 0.661 | 97.74 | 136 | 0.07 | 12.2 | 0.3 | 1.9 | 14 |
| Nagaland | 0.581 | 95.15 | 389 | 0.78 | 9.16 | 1.8 | 5.5 | 16 |
| Arunachal Pradesh | 0.458 | 60.45 | 68 | 0.02 | 13.67 | 0.9 | 1.2 | 48 |
| Tripura | 0.545 | 95.34 | 419 | 6.14 | 5.56 | 13.3 | 28 | 12 |
| Meghalaya | 0.517 | 52.16 | 292 | 0 | 6.21 | 0.3 | 3.5 | 60 |
| Manipur | 0.598 | 88.25 | 173 | 0.06 | 5.04 | 1.1 | 5.5 | 33 |
| Group Average | 0.56 | 81.51 | 246.33 | 1.18 | 8.64 | 2.95 | 7.60 | 30.50 |
| <i>HIGH FOREST COVER STATES</i> | | | | | | | | |
| Goa | 0.645 | 100 | 1845 | 18.64 | NA | 11.1 | 8.7 | 19 |
| Uttarakhand | 0.629 | 83.31 | 201 | 6.45 | 9.5 | 0.6 | 3.3 | 29 |
| Kerala | 0.772 | 96.85 | 1291 | 27.02 | 33.54 | 10.7 | 15.6 | 2 |
| Sikkim | 0.662 | 90 | 218 | 0 | 17.12 | 2.4 | 3.7 | 19 |
| Chattisgarh | 0.521 | 26.03 | 181 | 8.52 | 3.24 | 0.6 | 3.5 | 39 |
| Assam | 0.477 | 75.95 | 164 | 31.95 | 9.74 | 2.6 | 7.2 | 43 |
| Onssa | 0.487 | 79.24 | 336 | 14.64 | 9.51 | 5 | 13.4 | 40 |
| Group Average | 0.6 | 78.77 | 605.01 | 15.32 | 13.78 | 4.71 | 7.91 | 27.29 |

| | | | <i>MEDIUM FOREST COVER STATES</i> | | | | | | |
|--------------------------|--------------|--------------|-----------------------------------|---------------|--------------|-------------|-------------|--------------|--|
| Jharkhand | 0.381 | 97.42 | 36 | 24.35 | 3.43 | 1.4 | 6.5 | 99 | |
| Himachal Pradesh | 0.707 | 96.55 | 301 | 5.12 | 28.57 | 1.8 | 3.8 | 46 | |
| Madhya Pradesh | 0.481 | 93.86 | 254 | 15.93 | 12.22 | 0.5 | 2.8 | 46 | |
| Tamil Nadu | 0.741 | 100 | 968 | 32.07 | 22.55 | 1.2 | 3.5 | 13 | |
| Karnataka | 0.68 | 100 | 544 | 15.55 | 25.05 | 0.7 | 2.8 | 18 | |
| Andhra Pradesh | 0.67 | 99.82 | 436 | 18.92 | 19.62 | 0.7 | 3.6 | 18 | |
| Maharashtra | 0.677 | 98.19 | 681 | 17.96 | 18.78 | 1 | 3.6 | 24 | |
| West Bengal | 0.458 | 83.56 | 558 | 43.45 | 8.63 | 2.5 | 6.2 | 44 | |
| Group Average | 0.60 | 96.17 | 472.04 | 21.67 | 17.36 | 1.23 | 4.10 | 38.50 | |
| | | | <i>LOW FOREST COVER STATES</i> | | | | | | |
| Jammu and Kashmir | 0.633 | 98.19 | 45 | 0.62 | 16.08 | 1.5 | 4.9 | 18 | |
| Gujarat | 0.677 | 99.3 | 634 | 26.96 | 24.14 | 0.5 | 2.4 | 17 | |
| Uttar Pradesh | 0.526 | 58.24 | 692 | 35.82 | 10.77 | 1.3 | 5.4 | 76 | |
| Bihar | 0.321 | 49.34 | 349 | 35.89 | 7.32 | 1.5 | 6.4 | 27 | |
| Haryana | 0.612 | 99.93 | 595 | 36.12 | 23.11 | 2.2 | 4 | 17 | |
| Rajasthan | 0.582 | 93.77 | 241 | 17.06 | 15.49 | 0.7 | 2.9 | 24 | |
| Punjab | 0.654 | 100 | 1047 | 41.64 | 37.05 | 3.8 | 5 | 26 | |
| Group Average | 0.57 | 85.54 | 514.70 | 27.73 | 19.14 | 1.64 | 4.43 | 29.29 | |
| | | | | | | | | | |
| Group Average | 0.60 | 79.86 | 432.12 | 709.91 | 18.22 | 1.70 | 4.50 | 28.00 | |

Table 4: Status of Hydropower Potential and Development in the IHR (installed Capacity)

| State | Identified Capacity | Capacity Developed | | Capacity under construction | | Capacity developed and under construction | | Capacity yet to be developed | |
|-------------------|---------------------|--------------------|--------|-----------------------------|-------|---|-------|------------------------------|--------|
| | (MW) | (MW) | (%) | (MW) | (%) | (MW) | (%) | (MW) | (%) |
| Uttarakhand | 18175 | 2980.1 | 16.40 | 1926.0 | 10.60 | 4906.1 | 26.99 | 13269.0 | 73.01 |
| J&K | 14146 | 1864.2 | 13.18 | 899.0 | 6.36 | 2763.2 | 19.53 | 11382.9 | 80.47 |
| Himachal Pradesh | 18820 | 6085.5 | 32.34 | 4435.0 | 23.57 | 10520.5 | 55.90 | 8299.6 | 44.10 |
| Meghalaya | 2394 | 185.2 | 7.74 | 84.0 | 3.51 | 269.2 | 11.24 | 2124.8 | 88.76 |
| Sikkim | 4286 | 254 | 1.96 | 2139.0 | 53.87 | 2393.0 | 55.83 | 893.0 | 44.17 |
| Arunachal Pradesh | 50328 | 423.5 | 0.84 | 2600.0 | 5.17 | 3023.5 | 6.01 | 47304.5 | 93.99 |
| Nagaland | 1574 | 99.0 | 6.29 | 0.0 | 0.00 | 99.0 | 6.29 | 1475.0 | 93.71 |
| Assam | 680 | 375.0 | 55.15 | 0.0 | 0.00 | 375.0 | 55.15 | 305.0 | 44.85 |
| Manipur | 1784 | 105.0 | 5.89 | 0.0 | 0.00 | 105.0 | 5.89 | 1679.0 | 94.11 |
| West Bengal | 2841 | 156.5 | 5.51 | 292.0 | 10.28 | 448.5 | 15.79 | 2392.5 | 84.21 |
| Tripura | 15 | 15.0 | 100.00 | 0.00 | 0.00 | 105.0 | 5.89 | 1679.0 | 94.11 |
| Mizoram | 2196 | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 2196.0 | 100.00 |

Source: Central Electricity Authority, 2008

Table 5: Seismic Zonation of the HR States

| States | Intensity MSK | Seismic Zone |
|-------------------|----------------------|---------------------|
| J&K | VIII to IX or more | IV or V |
| Himachal Pradesh | VIII to IX or more | IV or V |
| Uttarakhand | IX or more | V |
| Sikkim | VIII | IV |
| Meghalaya | IX or more | V |
| Assam | IX or more | V |
| Tripura | IX or more | V |
| Mizoram | IX or more | V |
| Manipur | IX or more | V |
| Nagaland | IX or more | V |
| Arunachal Pradesh | IX or more | V |

Note: West Bengal hills fall in Zone IV

Source: *BIS Seismic Zone, 2000*

Table 6: Forest Ecosystem Services provided by the Different States of IHR

| Himalayan State | Value of Ecosystem Services as of 1994 (Billion Rs.) |
|------------------------|---|
| | Western Himalayan States |
| J&K | 118.02 |
| Himachal Pradesh | 42.46 |
| Uttarakhand | 106.89 |
| | North-Eastern States |
| Sikkim | 14.02 |
| Arunachal Pradesh | 232.95 |
| Manipur | 59.67 |
| Meghalaya | 55.16 |
| Mizoram | 56.61 |
| Nagaland | 49.39 |
| Tripura | 20.40 |
| Total IHR | 944.33 |

Source: Singh, S.P. 2007. Himalayan Forests Ecosystem Services: Incorporating in National Accounting, CHEA, Nainital.

Table 7: DISTRIBUTION OF FOREST AREA IN INDIAN STATES (in km2)

| State | Area | Reserve forest | Protected forest | Unclassified forest | Total forest | Percent of total area |
|---------------------|---------|----------------|------------------|---------------------|--------------|-----------------------|
| Hill States | | | | | | |
| Arunachal Pradesh | 83743 | 15321 | 8 | 36211 | 51540 | 61.54 |
| Assam | 78 438 | 18 242 | 3 934 | 8 532 | 30 708 | 39.15 |
| Himachal Pradesh | 55 673 | 1 896 | 31 473 | 2 038 | 35 407 | 63.6 |
| Jammu and Kashmir | 222 235 | 20 182 | -- | -- | 20 182 | 9.08 |
| Manipur | 22 327 | 1 463 | 4 171 | 9 520 | 15 154 | 67.87 |
| Meghalaya | 22 429 | 981 | 12 | 8 503 | 9 496 | 42.34 |
| Mizoram | 21 081 | 7 127 | 3 568 | 5 240 | 15 935 | 75.59 |
| Nagaland | 16 579 | 86 | 507 | 8 036 | 8 629 | 52.04 |
| Sikkim | 7 096 | 2 261 | 285 | 104 | 2 650 | 37.34 |
| Tripura | 10 486 | 3 588 | 509 | 2 196 | 6 293 | 60.01 |
| Uttar Pradesh | 294 411 | 36 425 | 1 499 | 13 739 | 51 663 | 17.54 |
| Other States | | | | | | |
| Andhra Pradesh | 275068 | 50479 | 12365 | 970 | 63814 | 23.20 |
| Bihar | 173 877 | 5 051 | 24 168 | 7 | 29 226 | 16.81 |
| Delhi | 1 483 | 78 | 7 | 0 | 85 | 2.83 |
| Goa | 3 702 | 165 | 0 | 1 259 | 1 424 | 38.46 |
| Gujarat | 196 024 | 13 819 | 997 | 4 577 | 19 393 | 9.89 |
| Haryana | 44 212 | 247 | 1 104 | 322 | 1 673 | 3.78 |
| Karnataka | 191 791 | 28 611 | 3 932 | 6 181 | 38 724 | 20.19 |
| Kerala | 38 863 | 11 038 | 183 | -- | 11 221 | 28.87 |
| Madhya Pradesh | 443 446 | 82 700 | 66 678 | 5 119 | 154497 | 34.84 |
| Maharashtra | 307 690 | 48 373 | 9 350 | 6 119 | 63 842 | 20.75 |
| Orissa | 155 707 | 27 087 | 30 080 | 17 | 57 184 | 36.73 |
| Punjab | 50 362 | 44 | 1 107 | 1 750 | 2 901 | 5.76 |
| Rajasthan | 342 239 | 11 585 | 16 837 | 3 278 | 31 700 | 9.26 |

| | | | | | | |
|------------------------|---------|----------------|----------------|----------------|---------------|--------------|
| Tamil Nadu | 130 058 | 19 486 | 2 528 | 614 | 22 628 | 17.4 |
| West Bengal | 88 752 | 7 054 | 3 772 | 1 053 | 11 879 | 13.38 |
| A&N Islands | 8 249 | 2 929 | 4 242 | 0 | 7 171 | 86.93 |
| Chandigarh | 114 | 31 | 0 | 0 | 31 | 27.19 |
| Dadra and Nagar Haveli | 491 | 198 | 5 | 0 | 203 | 41.34 |
| Daman and Diu | 112 | 0 | 0.7 | 0 | 0.7 | 0.62 |
| Lakshdweep | 32 | 0 | 0 | 0 | 0 | 0 |
| Pondicherry | 493 | 0 | 0 | 0 | 0 | 0 |
| Total | | 416 547 | 223 321 | 125 385 | 765253 | 23.28 |

Source: FSI, 2009

Table 8: Change in Forest Cover of States/UTs between 2005 And 2007 Assessments

(Area in km²)

| State/UT (Hill States) | 2005 | | | | 2007 | | | | Change* | | | |
|---------------------------|------------|------------|--------|--------|------------|------------|--------|--------|------------|------------|------|-------|
| | Very Dense | Mod. Dense | Open | Total | Very Dense | Mod. Dense | Open | Total | Very Dense | Mod. Dense | Open | Total |
| Arunachal Pradesh | 20,859 | 31,632 | 14,981 | 67,472 | 20,858 | 31,556 | 14,939 | 67,353 | -1 | -76 | -42 | -119 |
| Assam | 1,464 | 11,653 | 14,641 | 27,758 | 1,461 | 11,558 | 14,673 | 27,692 | -3 | -95 | 32 | -66 |
| Himachal Pradesh | 3,224 | 6,386 | 5,056 | 14,666 | 3,224 | 6,383 | 5,061 | 14,668 | 0 | -3 | 5 | 2 |
| Jammu & Kashmir | 4,298 | 8,977 | 9,414 | 22,689 | 4,298 | 8,977 | 9,411 | 22,686 | 0 | 0 | -3 | -3 |
| Manipur | 689 | 5,522 | 10,741 | 16,952 | 701 | 5,474 | 11,105 | 17,280 | 12 | -48 | 364 | 328 |
| Meghalaya | 334 | 9,527 | 7,344 | 17,205 | 410 | 9,501 | 7,410 | 17,321 | 76 | -26 | 66 | 116 |
| Mizoram | 134 | 6,384 | 12,082 | 18,600 | 134 | 6,251 | 12,855 | 19,240 | 0 | -133 | 773 | 640 |
| Nagaland | 1,280 | 5,072 | 7,313 | 13,665 | 1,274 | 4,897 | 7,293 | 13,464 | -6 | -175 | -20 | -201 |
| Sikkim | 500 | 2,161 | 696 | 3,357 | 500 | 2,161 | 696 | 3,357 | 0 | 0 | 0 | 0 |
| Tripura | 113 | 4,816 | 3,244 | 8,173 | 111 | 4,770 | 3,192 | 8,073 | -2 | -46 | -52 | -100 |
| Uttarakhand | 4,762 | 14,170 | 5,561 | 24,493 | 4,762 | 14,165 | 5,568 | 24,495 | 0 | -5 | 7 | 2 |
| Other States | | | | | | | | | | | | |
| Andhra Pradesh | 820 | 24,805 | 19,606 | 45,231 | 820 | 24,757 | 19,525 | 45,102 | 0 | -48 | -81 | -129 |
| Bihar | 232 | 3,253 | 3,322 | 6,807 | 231 | 3,248 | 3,325 | 6,804 | -1 | -5 | 3 | -3 |
| Chhattisgarh | 4,166 | 35,146 | 16,617 | 55,929 | 4,162 | 35,038 | 16,670 | 55,870 | -4 | -108 | 53 | -59 |
| Delhi | 7 | 50 | 120 | 177 | 7 | 50 | 120 | 177 | 0 | 0 | 0 | 0 |
| Goa | 511 | 626 | 1019 | 2156 | 511 | 624 | 1,016 | 2,151 | 0 | -2 | -3 | -5 |
| Gujarat | 376 | 5,319 | 8,909 | 14,604 | 376 | 5,249 | 8,995 | 14,620 | 0 | -70 | 86 | 16 |
| Haryana | 26 | 488 | 1,090 | 1,604 | 27 | 463 | 1,104 | 1,594 | 1 | -25 | 14 | -10 |
| Jharkhand | 2,595 | 9,892 | 10,235 | 22,722 | 2,590 | 9,899 | 10,405 | 22,894 | -5 | 7 | 170 | 172 |
| Karnataka | 1,772 | 20,196 | 14,232 | 36,200 | 1,777 | 20,181 | 14,232 | 36,190 | 5 | -15 | 0 | -10 |
| Kerala | 1,443 | 9,404 | 6,437 | 17,284 | 1,443 | 9,410 | 6,471 | 17,324 | 0 | 6 | 34 | 40 |
| AAadhya Pradesh | 6,648 | 35,035 | 36,056 | 77,739 | 6,647 | 35,007 | 36,046 | 77,700 | -1 | -28 | -10 | -39 |
| Maharashtra | 8,747 | 20,847 | 21,067 | 50,661 | 8,739 | 20,834 | 21,077 | 50,650 | -8 | -13 | 10 | -11 |
| Orissa | 7,077 | 21,421 | 20,257 | 48,755 | 7,073 | 21,394 | 20,388 | 48,855 | -4 | -27 | 131 | 100 |
| Punjab | 0 | 738 | 922 | 1,660 | 0 | 733 | 931 | 1,664 | 0 | -5 | 9 | 4 |
| Rajasthan | 72 | 4,454 | 11,486 | 16,012 | 72 | 4,450 | 11,514 | 16,036 | 0 | -4 | 28 | 24 |
| Tamil Nadu | 2,925 | 10,189 | 10,200 | 23,314 | 2,926 | 10,216 | 10,196 | 23,338 | 1 | 27 | -4 | 24 |
| Uttar Pradesh | 1,626 | 4,569 | 8,151 | 14,346 | 1,626 | 4,563 | 8,152 | 14,341 | 0 | -6 | 1 | -5 |
| West Bengal | 2,992 | 4,646 | 5,332 | 12,970 | 2,987 | 4,644 | 5,363 | 12,994 | -5 | -2 | 31 | 24 |

Table 8: Change in Forest Cover of States/UTs between 2005 And 2007 Assessments (Contd...)

(Area in km²)

| State/UT | 2005 | | | | 2007 | | | | Change* | | | |
|----------------------|---------------|----------------|----------------|----------------|---------------|----------------|----------------|----------------|------------|-------------|--------------|------------|
| | Very Dense | Mod. Dense | Open | Total | Very Dense | Mod. Dense | Open | Total | Very Dense | Mod. Dense | Open | Total |
| A & N Islands | 3,779 | 2,414 | 470 | 6,663 | 3,762 | 2,405 | 495 | 6,662 | -17 | -9 | 25 | -1 |
| Chandigarh | 1 | 10 | 6 | 17 | 1 | 10 | 6 | 17 | 0 | 0 | 0 | 0 |
| Dadra & Nagar Haveli | 0 | 115 | 101 | 216 | 0 | 114 | 97 | 211 | 0 | -1 | -4 | -5 |
| Daman & Diu | 0 | 1 | 5 | 6 | 0 | 1 | 5 | 6 | 0 | 0 | 0 | 0 |
| Lakshadweep | 0 | 16 | 10 | 26 | 0 | 16 | 10 | 26 | 0 | 0 | 0 | 0 |
| Puducherry | 0 | 14 | 28 | 42 | 0 | 13 | 31 | 44 | 0 | -1 | 3 | 2 |
| Total | 83,472 | 319,948 | 286,751 | 690,171 | 83,510 | 319,012 | 288,377 | 690,899 | 38 | -936 | 1,626 | 728 |

Source: - FSI, 2007

Table 9: Forest cover in tribal districts in 2007

(Area in km²)

| State/UT (Hill States) | No. of Tribal Districts | Geographical Area in Tribal Districts | Forest Cover | | | | % of G.A. | Change* in forest cover | Scrub |
|---------------------------|----------------------------|--|----------------------|----------------------|----------------|----------------|--------------|----------------------------|---------------|
| | | | Very Dense Forest | Mod. Dense Forest | Open Forest | Total Forest | | | |
| Arunachal Pradesh | 13 | 83,743 | 20,858 | 31,556 | 14,939 | 67,353 | 80.43 | -119 | 111 |
| Assam | 16 | 50,137 | 651 | 4,666 | 6,691 | 12,008 | 23.95 | -32 | 89 |
| Himachal Pradesh | 3 | 26,764 | 950 | 1,068 | 1,213 | 3,231 | 12.07 | 0 | 138 |
| Manipur | 9 | 22,327 | 701 | 5,474 | 11,105 | 17,280 | 77.40 | 328 | 1 |
| Meghalaya | 7 | 22,429 | 410 | 9,501 | 7,410 | 17,321 | 77.23 | 116 | 211 |
| Mizoram | 8 | 21,081 | 134 | 6,251 | 12,855 | 19,240 | 91.27 | 640 | 1 |
| Nagaland | 8 | 16,579 | 1,274 | 4,897 | 7,293 | 13,464 | 81.21 | -201 | 2 |
| Sikkim | 4 | 7,096 | 500 | 2,161 | 696 | 3,357 | 47.31 | 0 | 356 |
| Tripura | 4 | 10,486 | 111 | 4,770 | 3,192 | 8,073 | 76.95 | -100 | 75 |
| West Bengal | 11 | 69,403 | 2,965 | 4,473 | 4,861 | 12,299 | 17.72 | 24 | 28 |
| Other States | | | | | | | | | |
| Andhra Pradesh | 8 | 87,090 | 239 | 16,745 | 8,583 | 25,567 | 29.36 | -96 | 2,405 |
| Chhattisgarh | 9 | 92,656 | 3,611 | 24,573 | 12,026 | 40,210 | 43.40 | -21 | 79 |
| Gujarat | 8 | 48,409 | 322 | 2,949 | 3,496 | 6,767 | 13.98 | -8 | 382 |
| Jharkhand | 8 | 44,413 | 1,677 | 6,057 | 6,155 | 13,889 | 31.27 | 96 | 339 |
| Karnataka | 5 | 26,597 | 1,248 | 7,642 | 4,249 | 13,039 | 49.02 | 1 | 55 |
| Kerala | 9 | 27,228 | 1,073 | 7,026 | 5,010 | 13,109 | 48.15 | 53 | 44 |
| Madhya Pradesh | 18 | 139,448 | 5,645 | 20,291 | 16,376 | 42,312 | 30.34 | -48 | 2,100 |
| Maharashtra | 11 | 138,272 | 7,277 | 11,397 | 10,835 | 29,509 | 21.34 | -11 | 2,127 |
| Orissa | 12 | 86,124 | 5,279 | 14,465 | 13,555 | 33,299 | 38.66 | 78 | 2,593 |
| Rajasthan | 5 | 38,218 | 0 | 2,444 | 3,904 | 6,348 | 16.61 | 0 | 940 |
| Tamil Nadu | 6 | 30,720 | 695 | 2,396 | 3,636 | 6,727 | 21.90 | -3 | 417 |
| Uttar Pradesh | 1 | 7,680 | 409 | 475 | 436 | 1,320 | 17.19 | -1 | 1 |
| Andaman & Nicobar | 2 | 8,249 | 3,762 | 2,405 | 495 | 6,662 | 80.76 | -1 | 53 |
| Dadra & Nagar Haveli | 1 | 491 | 0 | 114 | 97 | 211 | 42.97 | -5 | 1 |
| Daman & Diu | 1 | 72 | 0 | 1 | 3 | 4 | 5.56 | 0 | 0 |
| Lakshadweep | 1 | 32 | 0 | 16 | 10 | 26 | 82.75 | 0 | 0 |
| Grand Total | 188 | 1,105,744 | 59,791 | 193,813 | 159,121 | 412,625 | 37.32 | 690 | 12,548 |

Refers to change in the area with respect to revised assessment for 2005.

Source: - FSI, 2007

Table 10: Reasons of change in forest cover

| | |
|--------------------------|--|
| Andhra Pradesh | Decrease in forest cover is mainly due to departmental felling in the Eucalyptus plantation areas. |
| Arunachal Pradesh | Decrease in forest cover in the State is because of shifting cultivation. |
| Assam | Loss of forest cover is mainly attributed to encroachment in insurgency affected areas of Sonitpur, Karbi Anglong, and Darrang districts. Forest cover in the hill districts of North Cachar Hills and Karbi Anglong has decreased on account of shifting cultivation. |
| Chhattisgarh | The decrease in forest cover is mainly due to mining activity and encroachment in insurgency affected areas. |
| Jharkhand | Increase in forest cover is mainly on account of effective protection by the village forest protection committees. Plantation of miscellaneous species in Deoghar and Dumka districts has also shown an increase in forest cover. |
| Manipur | Increase in forest cover is mainly on account of regeneration in abandoned shifting cultivation areas. |
| Meghalaya | Main reason for the increase in forest cover is the afforestation activity undertaken by the forest department and regeneration in the abandoned shifting cultivation areas. |
| Mizoram | Increase of forest cover is mainly due to re-growth in the abandoned shifting cultivation areas and regeneration of bamboo in bamboo flowering areas. |
| Nagaland | Decrease in forest cover is mainly due to shifting cultivation. |
| Orissa | Main reason for the increase in forest cover is effective protection by the JFM committees and regeneration in shifting cultivation areas. |
| Tripura | Decrease of forest cover is mainly due to shifting cultivation. |

Source: - FSI, 2009

Table 11a: Wastelands and Non-usable lands in the IHR (km²)

| Region | Wasteland | | Non-usable Area | | |
|--------------------------|------------|-----------------|-----------------|-------------|---------|
| | Total Area | % to Total Area | Snow/Glacier | Barren/Rock | Steep |
| Indian Himalayan Region | 180432.91 | 33.5 | 55788.49 | 38415.07 | 4198.37 |
| India | 638518.31 | 19. | 55788.49 | 64584.77 | 7656.29 |
| <i>Source: GoI, 2010</i> | | | | | |

Table 11b: State wise waste land availability

| | (area in sq. km) |
|---------------------------|------------------|
| State | Total WL |
| Hill States | |
| Arunachal Pradesh | 18176 |
| Assam | 14034 |
| Himachal Pradesh | 28337 |
| Jammu and Kashmir | 70202 |
| Manipur | 13175 |
| Meghalaya | 3411 |
| Mizoram | 4470 |
| Nagaland | 3709 |
| Sikkim | 3808 |
| Tripura | 1323 |
| Uttarakhand | 16097 |
| Hill States Total | 176742 |
| Other States Total | 375953 |
| All India Total | 552695 |

Source: Indrani Chandrasekharan et. Al. (2010)

Table 12: category-wise breakup of the forest land diverted as on 31.01.2012

| Category | No. of Proposals | Area Diverted (Ha.) |
|---------------------------|------------------|---------------------|
| Defense | 245 | 40,088 |
| Dispensary/ Hospital | 40 | 115 |
| Drinking Water | 1,525 | 2,451 |
| Encroachments | 64 | 3,68,432 |
| Forest Village Conversion | 16 | 41,170 |
| Hydel power | 478 | 1,15,884 |
| Irrigation | 2,085 | 1,25,263 |
| Mining | 1,733 | 1,43,503 |
| Railways | 273 | 8,508 |
| Rehabilitation | 48 | 18,464 |
| Road | 6,064 | 43,611 |
| School | 138 | 2,708 |
| Thermal Power Plant | 45 | 6,208 |
| Transmission Line | 2,363 | 33,794 |
| Village Electrification | 50 | 178 |
| Wind Power | 69 | 3,702 |
| Others | 7,665 | 1,74,277 |
| Total | 22,801 | 11,34,564 |

Source: MoEF, 2012

Table 13:- Statement showing cases (Category wise & Case wise) under FCA,1980

| State: All State | During the Period: 25/10/1980 to 31/01/2012 | | | | | | | | As on: 31/01/2012 | |
|----------------------------|---|-----------------------|--------------------|-------------|-------------|------------|------------|------------------|-------------------|--------------|
| CATEGORY | APPROVED | IN-PRINCIPLE APPROVED | % APPROVED | CLOSED | REJECTED | RETURNED | WITHDRAWN | PENDING WITH-GOI | PENDING WITH-SG | TOTAL |
| DEFENCE | 183 | 62 | 81.66666667 | 26 | 15 | 1 | 0 | 4 | 9 | 300 |
| DISPENSARY/HOSPITAL | 36 | 4 | 74.07407407 | 5 | 6 | 0 | 0 | 1 | 2 | 54 |
| DISPUTED SETTLEMENT CLAIMS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DRINKING WATER | 1462 | 63 | 92.64884569 | 58 | 26 | 16 | 6 | 2 | 13 | 1646 |
| ENCROACHMENTS | 54 | 10 | 52.45901639 | 47 | 6 | 0 | 0 | 0 | 5 | 122 |
| FOREST VILLAGE CONVERSION | 1 | 15 | 27.5862069 | 5 | 1 | 18 | 0 | 0 | 18 | 58 |
| HYDEL | 399 | 83 | 81.97278912 | 37 | 13 | 2 | 4 | 15 | 35 | 588 |
| IRRIGATION | 1750 | 339 | 73.1442577 | 399 | 265 | 37 | 7 | 13 | 46 | 2856 |
| MINING | 1416 | 322 | 60.91833158 | 355 | 491 | 38 | 33 | 65 | 133 | 2853 |
| OTHERS | 6644 | 1147 | 74.92066545 | 685 | 549 | 224 | 60 | 117 | 973 | 10399 |
| RAILWAY | 230 | 43 | 86.11987382 | 19 | 8 | 2 | 0 | 3 | 12 | 317 |
| REHABILITATION | 42 | 6 | 43.24324324 | 37 | 14 | 0 | 0 | 0 | 12 | 111 |
| ROAD | 5066 | 1019 | 80.19240907 | 519 | 273 | 61 | 53 | 98 | 499 | 7588 |
| SCHOOL | 123 | 15 | 65.4028436 | 36 | 27 | 1 | 1 | 0 | 8 | 211 |
| THERMAL | 37 | 8 | 83.33333333 | 2 | 2 | 0 | 0 | 2 | 3 | 54 |
| TRANSMISSION LINE | 1990 | 284 | 82.72098945 | 186 | 87 | 27 | 40 | 32 | 103 | 2749 |
| VILL. ELEC | 47 | 3 | 65.78947368 | 24 | 1 | 1 | 0 | 0 | 0 | 76 |
| WIND POWER | 52 | 17 | 84.14634146 | 1 | 0 | 2 | 2 | 6 | 2 | 82 |
| Total | 19532 | 3440 | 76.41032464 | 2441 | 1784 | 430 | 206 | 358 | 1873 | 30064 |

Table 14: Statement showing cases (Sector wise & State wise) under FCA,1980

During : 25/10/1980 To 31/01/2012

Region: Central

Case Status: In-Principle Approved

| | Category | DEFENCE | DISPENSARY /HOSPITAL | DRINKING WATER | ENCROACHMENTS | HYDEL | THERMAL | MINING | RAILWAY | ROAD | SCHOOL | IRRIGATION | TRANSMISSION LINE | VILL. ELEC | OTHERS | WIND POWER | FOREST VILLAGE CONVERSION | REHABILITATION | DISPUTED SETTLEMENT CLAIMS | Total |
|-------------------|---------------------|-----------|----------------------|----------------|---------------|-----------|---------|-----------|---------|------------|----------|------------|-------------------|------------|------------|------------|---------------------------|----------------|----------------------------|-------------|
| ARUNACHAL PRADESH | NO. of Cases | 25 | 1 | 0 | 1 | 9 | 0 | 16 | 1 | 0 | 121 | 0 | 14 | 0 | 29 | 0 | 0 | 0 | 0 | 217 |
| | Area Diverted (ha.) | 2446.478 | 4.9 | 0 | 13419.29 | 5124.06 | 0 | 103.471 | 24.908 | 3798.2199 | 0 | 0 | 924.896 | 0 | 5946.7973 | 0 | 0 | 0 | 0 | 31793.0202 |
| ASSAM | NO. of Cases | 6 | 0 | 1 | 0 | 5 | 0 | 84 | 4 | 26 | 0 | 4 | 35 | 0 | 104 | 0 | 0 | 0 | 0 | 269 |
| | Area Diverted (ha.) | 702.702 | 0 | 0.9544 | 0 | 4319.375 | 0 | 168.876 | 555.298 | 617.4086 | 0 | 57.712 | 1048.918 | 0 | 508.4994 | 0 | 0 | 0 | 0 | 7979.7434 |
| HIMACHAL PRADESH | NO. of Cases | 8 | 2 | 16 | 0 | 193 | 0 | 62 | 2 | 751 | 11 | 11 | 151 | 1 | 401 | 1 | 0 | 3 | 0 | 1613 |
| | Area Diverted (ha.) | 845.4515 | 0.988 | 2.7339 | 0 | 4428.0245 | 0 | 1421.4681 | 2.754 | 2183.10981 | 5.2976 | 76.2594 | 3783.4561 | 1.17 | 912.352923 | 34.2867 | 0 | 10.27 | 0 | 13707.62253 |
| JAMMU & KASHMIR | NO. of Cases | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |
| | Area Diverted (ha.) | 0 | 0 | 0 | 0 | 1041.203 | 0 | 0 | 0 | 0 | 0 | 0 | 458.882 | 0 | 0 | 0 | 0 | 0 | 0 | 1500.085 |
| MANIPUR | NO. of Cases | 4 | 0 | 3 | 0 | 2 | 0 | 0 | 0 | 9 | 0 | 1 | 5 | 0 | 4 | 0 | 0 | 0 | 0 | 28 |
| | Area Diverted (ha.) | 62.208 | 0 | 1.523 | 0 | 418.5 | 0 | 0 | 0 | 320.86 | 0 | 595 | 671.54 | 0 | 6.6088 | 0 | 0 | 0 | 0 | 2076.2398 |
| MEGHALAYA | NO. of Cases | 2 | 0 | 32 | 0 | 1 | 0 | 1 | 0 | 13 | 2 | 2 | 13 | 0 | 35 | 0 | 0 | 0 | 0 | 101 |
| | Area Diverted (ha.) | 8.1089 | 0 | 33.60294 | 0 | 99 | 0 | 116.589 | 0 | 65.095633 | 1.1086 | 1.2108 | 139.9647 | 0 | 181.9163 | 0 | 0 | 0 | 0 | 646.596873 |
| MIZORAM | NO. of Cases | 1 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 11 | 1 | 0 | 1 | 0 | 11 | 0 | 0 | 0 | 0 | 30 |
| | Area Diverted (ha.) | 0.42 | 0 | 0 | 0 | 24687.85 | 0 | 0 | 0 | 483.465 | 158.9 | 0 | 54.24 | 0 | 353.00435 | 0 | 0 | 0 | 0 | 25737.87935 |
| NAGALAND | NO. of Cases | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Area Diverted (ha.) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SIKKIM | NO. of Cases | 12 | 0 | 16 | 0 | 30 | 0 | 1 | 0 | 147 | 0 | 4 | 33 | 0 | 96 | 0 | 0 | 0 | 0 | 339 |
| | Area Diverted (ha.) | 925.76295 | 0 | 40.24188 | 0 | 548.9342 | 0 | 0.0464 | 0 | 860.88275 | 0 | 4.09 | 321.55305 | 0 | 295.52817 | 0 | 0 | 0 | 0 | 2997.0394 |
| TRIPURA | NO. of Cases | 116 | 4 | 0 | 1 | 0 | 3 | 18 | 9 | 20 | 4 | 1 | 7 | 0 | 101 | 0 | 0 | 1 | 0 | 285 |
| | Area Diverted (ha.) | 438.282 | 4.687 | 0 | 27.4 | 0 | 118.49 | 31.878 | 320.236 | 398.426 | 8.96 | 2.54 | 273.2437 | 0 | 5793.607 | 0 | 0 | 2.83 | 0 | 7420.5797 |
| UTTARANCHAL | NO. of Cases | 13 | 18 | 1014 | 0 | 102 | 4 | 24 | 1 | 2123 | 56 | 263 | 128 | 1 | 749 | 0 | 3 | 7 | 0 | 4506 |
| | Area Diverted (ha.) | 2042.9425 | 46.29176 | 223.34632 | 0 | 5524.0709 | 7.88122 | 294.266 | 122.737 | 9364.52106 | 260.8597 | 771.76958 | 3101.33964 | 9 | 16546.4883 | 0 | 2744.421 | 3693.99 | 0 | 44753.92498 |

Table 15: Statement showing cases (Area wise) for diversion of Forest Land under FCA, 1980

| Region: Central | | | | | | | | | | | | |
|-------------------------------------|-----------------------------|----------------------|---|----------------------|-------------------------------|----------------------|-------------------------------|----------------------|------------------------------|----------------------|---------------------------|----------------------|
| Case:- In-Principle Approved | | | During the period : 25/10/1980 to 31/01/2012 | | | | | | | | As on: 31/01/2012 | |
| STATE/UT | Cases For 0 to 5 Ha. | | Cases For 5 to 10 Ha. | | Cases For 10 to 20 Ha. | | Cases For 20 to 40 Ha. | | Cases For above40 Ha. | | Total No. of Cases | |
| | No. of Cases | Area Diverted | No. of Cases | Area Diverted | No. of Cases | Area Diverted | No. of Cases | Area Diverted | No. of Cases | Area Diverted | No. of Cases | Area Diverted |
| Arunachal Pradesh | 53 | 117.267 | 19 | 140.48 | 32 | 485.372 | 51 | 1500.58 | 55 | 29424.24 | 210 | 31667.9322 |
| Assam | 186 | 362.964 | 27 | 202.986 | 13 | 191.15 | 22 | 655.384 | 21 | 6567.26 | 269 | 7979.7434 |
| Himachal Pradesh | 1327 | 2101.18 | 71 | 498.866 | 57 | 861.024 | 44 | 1267.75 | 68 | 8919.18 | 1567 | 13647.9939 |
| Jammu & Kashmir | 0 | 0 | 0 | 0 | 1 | 12.82 | 1 | 33.8 | 6 | 1453.47 | 8 | 1500.085 |
| Manipur | 15 | 17.55 | 0 | 0 | 1 | 18 | 2 | 68.73 | 10 | 1971.96 | 28 | 2076.2398 |
| Meghalaya | 90 | 43.362 | 1 | 7.28 | 3 | 45.2 | 3 | 81.15 | 4 | 469.605 | 101 | 646.596873 |
| Mizoram | 11 | 10.528 | 1 | 10 | 2 | 30.853 | 0 | 0 | 16 | 25686.5 | 30 | 25737.87935 |
| Nagaland | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sikkim | 261 | 280.027 | 20 | 158.135 | 19 | 282.229 | 23 | 603.528 | 16 | 1673.12 | 339 | 2997.0394 |
| Tripura | 243 | 368.866 | 7 | 48.998 | 6 | 81.002 | 11 | 328.16 | 17 | 6593.55 | 284 | 7420.5797 |
| Uttaranchal | 3956 | 4776.54 | 277 | 2008.62 | 142 | 1932.44 | 41 | 1148.49 | 90 | 34887.83 | 4506 | 44753.92498 |
| Hill States (total) | 6142 | 8078.284 | 423 | 3075.365 | 276 | 3940.09 | 198 | 5687.572 | 303 | 117646.715 | 7342 | 138428.0146 |
| All India | 17615 | 18153.22 | 1254.00 | 9227.36 | 1162.00 | 17102.06 | 969.00 | 28255.95 | 1884.00 | 1064357.72 | 22884.00 | 1137096.30 |

Table 16: Statement showing Hydel cases under FCA, 1980

| During : 25/10/1980 To 31/01/2012 | | | | | | | | | | | | |
|--|-----------------|------------------------------|-------------------|---------------|-----------------|-----------------|------------------|-------------------------|------------------------|--------------|----------------------------|----------------------|
| Region: All States | | | | | | | | | | | As on:31/01/2012 | |
| STATE/UT | APPROVED | IN-PRINCIPLE APPROVED | % APPROVED | CLOSED | REJECTED | RETURNED | WITHDRAWN | PENDING WITH-GOI | PENDING WITH-SG | TOTAL | Area Diverted (ha.) | Capacity (MW) |
| ARUNACHAL PRADESH | 5 | 4 | 57.142857 | 0 | 0 | 0 | 0 | 3 | 2 | 14 | 5124.060 | 2696 |
| ASSAM | 3 | 2 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 4319.375 | 2156 |
| HIMACHAL PRADESH | 151 | 42 | 84.649123 | 7 | 2 | 0 | 2 | 6 | 18 | 228 | 4428.025 | 8024.768 |
| JAMMU & KASHMIR | 2 | 1 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1041.203 | 0 |
| MANIPUR | 0 | 2 | 66.666667 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 418.500 | 90 |
| MEGHALAYA | 1 | 0 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 99.000 | 84 |
| MIZORAM | 2 | 3 | 83.333333 | 1 | 0 | 0 | 0 | 0 | 0 | 6 | 24687.850 | 419 |
| NAGALAND | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.000 | 0 |
| SIKKIM | 24 | 6 | 93.75 | 1 | 0 | 0 | 0 | 1 | 0 | 32 | 548.934 | 2496 |
| TRIPURA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.000 | 0 |
| UTTARANCHAL | 92 | 10 | 82.926829 | 10 | 5 | 1 | 1 | 0 | 4 | 123 | 5524.071 | 5226 |
| Total Hill States | 280 | 70 | 84.33735 | 19 | 7 | 1 | 3 | 11 | 24 | 415 | 46191.018 | 21191.768 |
| All India | 399 | 88 | 82.124 | 37 | 13 | 2 | 4 | 15 | 35 | 593 | 115,908.354 | 29226.218 |

Table 17: Statement showing Compliance Report of the cases cleared under FCA, 1980

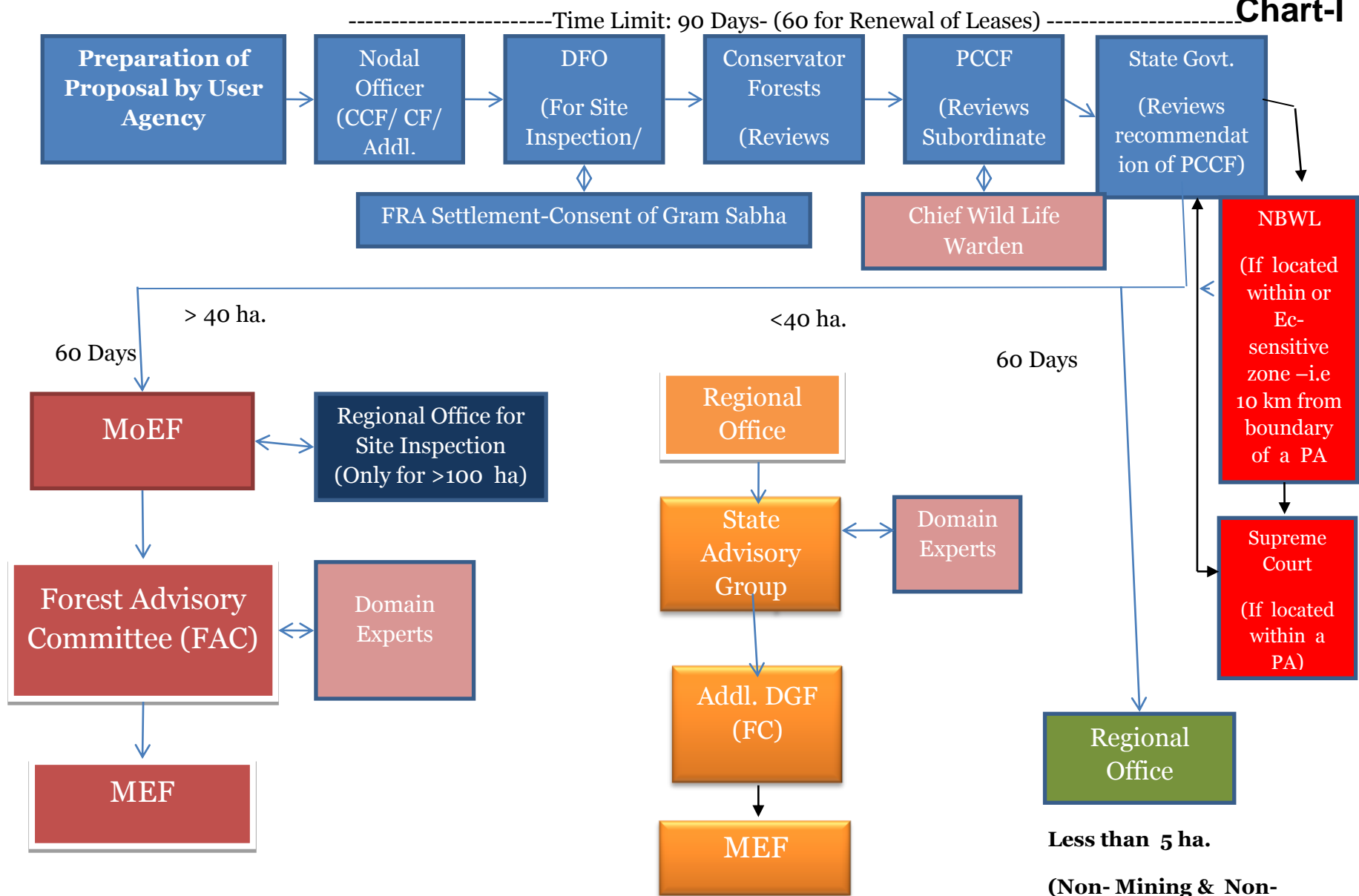
| During the period : 25/10/1980 To 31/01/2012 | | | | |
|---|----------------------------|-------------------------------|----------------------------|----------------------------------|
| Region: All States | | | As on :31/01/2012 | |
| Sr. No. | States / UTs | No. of Cases Monitored | Conditions Complied | Conditions Not - Complied |
| 1 | Andaman & Nicobar Island | 16 | 12 | 4 |
| 2 | Andhra Pradesh | 42 | 25 | 17 |
| 3 | Arunachal Pradesh | 1 | 0 | 1 |
| 4 | Assam | 4 | 4 | 0 |
| 5 | Bihar | 0 | 0 | 0 |
| 6 | Chandigarh | 0 | 0 | 0 |
| 7 | Chhattishgarh | 2 | 0 | 2 |
| 8 | Dadar & Nagar Haveli | 0 | 0 | 0 |
| 9 | Daman & Diu | 0 | 0 | 0 |
| 10 | Delhi | 0 | 0 | 0 |
| 11 | Goa | 19 | 16 | 3 |
| 12 | Gujarat | 7 | 7 | 0 |
| 13 | Haryana | 1 | 1 | 0 |
| 14 | Himachal Pradesh | 34 | 0 | 3 |
| 15 | Jammu & Kashmir | 0 | 0 | 0 |
| 16 | Jharkhand | 41 | 9 | 32 |
| 17 | Karnataka | 43 | 9 | 34 |
| 18 | Kerala | 10 | 6 | 4 |
| 19 | Lakshdeep | 0 | 0 | 0 |
| 20 | Madhya Pradesh | 66 | 16 | 50 |

| | | | | |
|-----------|--------------------|--------------|-------------|-------------|
| 21 | Maharashtra | 64 | 30 | 33 |
| 22 | Manipur | 15 | 9 | 6 |
| 23 | Meghalaya | 7 | 7 | 0 |
| 24 | Mizoram | 14 | 8 | 6 |
| 25 | Nagaland | 0 | 0 | 0 |
| 26 | Orissa | 52 | 20 | 32 |
| 27 | Pondichery | 0 | 0 | 0 |
| 28 | Punjab | 24 | 23 | 1 |
| 29 | Rajasthan | 2750 | 1003 | 1747 |
| 30 | Sikkim | 0 | 0 | 0 |
| 31 | Tamil Nadu | 26 | 16 | 10 |
| 32 | Tripura | 16 | 15 | 1 |
| 33 | Uttar Pradesh | 867 | 153 | 714 |
| 34 | Uttaranchal | 11232 | 7418 | 3814 |
| 35 | West Bengal | 8 | 7 | 1 |
| | Total | 15361 | 8814 | 6515 |

Table 18: Statement showing progress in Compensatory Afforestation

| During: 25/10/1980 To 31/01/2012 | | | | | | | | | | | | |
|----------------------------------|-------------------|-----------------------|---------------------|---------------------------------|--------------------|-------------------------|---------------------|--------------------|--------------------|--------------------|-------------------|-------------------|
| | | | | | | | | | | | As on: 31/01/2012 | |
| S.NO. | STATE/UT | No. OF CASES APPROVED | AREA DIVERTED (HA) | COMPENSATORY AFFORESTATION (HA) | | | | | | | | (% OF CA ACHIEVED |
| | | | | STIPULATED | | | | ACHIEVED | | | | |
| | | | | FOREST LAND | NON FOREST LAND | PENAL CA ON FOREST LAND | TOTAL | FOREST LAND | NON FOREST LAND | TOTAL | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | |
| 1 | Arunachal Pradesh | 219.000 | 31793.020 | 14036.384 | 5150.350 | 3160.832 | 22347.566 | 5070.528 | 111.000 | 5181.528 | 23.156 | |
| 2 | Assam | 269.000 | 7979.740 | 9579.191 | 1669.038 | 341.752 | 11589.981 | 849.010 | 637.000 | 1486.010 | 12.822 | |
| 3 | Himachal Pradesh | 1613.000 | 13707.620 | 22766.675 | 575.302 | 3997.424 | 27339.401 | 5769.697 | 137.000 | 5906.697 | 21.488 | |
| 4 | Jammu & Kashmir | 8.000 | 1500.080 | 1124.940 | 0.000 | 0.000 | 1124.940 | 288.000 | 0.000 | 288.000 | 25.601 | |
| 5 | Manipur | 28.000 | 2076.230 | 964.826 | 1453.388 | 0.000 | 2418.214 | 181.160 | 0.000 | 181.160 | 7.492 | |
| 6 | Meghalaya | 101.000 | 646.590 | 608.453 | 347.300 | 14.620 | 970.373 | 258.451 | 4.800 | 263.251 | 27.129 | |
| 7 | Mizoram | 30.000 | 25737.870 | 19557.968 | 10806.401 | 247.306 | 30611.675 | 38.154 | 5520.653 | 5558.807 | 18.159 | |
| 8 | Nagaland | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| 9 | Sikkim | 339.000 | 2997.030 | 8058.311 | 152.266 | 95.912 | 8306.489 | 1808.000 | 18.000 | 1826.000 | 21.983 | |
| 10 | Tripura | 285.000 | 7420.570 | 3711.053 | 744.117 | 1709.222 | 6164.391 | 2591.541 | 58.210 | 2649.751 | 42.985 | |
| 11 | Uttaranchal | 4506.000 | 44753.920 | 16993.635 | 14727.663 | 311.992 | 32033.290 | 3947.141 | 0.000 | 3947.141 | 12.309 | |
| Total Hill States | | 7398.000 | 138612.670 | 97401.436 | 35625.824 | 9879.060 | 142906.320 | 20801.682 | 6486.663 | 27288.345 | | |
| All India | | 22972 | 1137096.3031 | 442239.5730 | 568377.7803 | 225019.7628 | 1235637.1162 | 269640.0442 | 152210.1469 | 421850.1911 | | |

Chart-I



Flow Chart for FCA Approvals Present Procedure

ANNEXURE 1: RECOMMENDATIONS OF EARLIER COMMISSION/REPORT/SUMMITS ON HILL STATES

This annexure presents a summary of recommendations of some of the earlier Commission/Report/Summits on Hill States in respect of infrastructure development.

1. The Shukla Commission Report (1997)

Main recommendations on infrastructure:

Roads

In the interest of improved trunk connectivity, four priority roads recommended by the 1994 Working Group should be developed as national highways.

These are:

- The 290 km Daboka-Lanka-Lumding-Haflong-Udarband-Silchar highway in Assam;
- The 241 km Kohima-Mokokchung-Amguri road providing an alternative connection between Assam and Nagaland,
- The 210 km Sairang-Manu highway linking Aizawl to Agartala, and,
- The 135 km Agartala-Udaipur-Sabroom highway in Tripura which is already included for upgradation in the PM's package. Their construction should be given to the Directorate General of Border Roads (DGBR). Maintenance of the NH 52 section between Balipara to Jonai should be entrusted to DGBR. Following roads should also be given high priority in the Ninth Plan proposals for upgradation of roads in the state sector:
 - North Guwahati Hajo-Barpeta-North Salmara, Assam (120 km). This will provide an alternative link to North Salmara where it will join NH-31. The existing section of NH-31 between these two points is highly vulnerable to floods and is also affected by militant activities.
 - Dudhnoi-Damra-Nangalbibra-Bagmara-Gasuapara-Dalu, Meghalaya (196 km). This road will connect NH-37 and NH-51 It passes through limestone and coal deposits and is the route for exports of coal to Bangladesh.

- Aizawl-Thenzawl-Lunglei-Tlabung (Demagiri), Mizoram (263 km) Shell limestone deposits in the area between Tuirial airfield and Sailungvar Tlang will be accessed with the construction of this road. It will also provide a connection to the Karuphuli waterway through Bangladesh to Chittagong in due course. The other state highways, major district roads and other district roads proposed, including the Arunachal East-West Highway, should be integrated into a regional master plan for roads.

In addition, there is need for a revised regional perspective plan for road development in the Northeast with international linkages. This should be related to and prioritized according to emerging opportunities and strategic requirements and could incorporate the NEC's proposal for a road all along the Indo-Myanmar border from Champhai in Mizoram to Vijoy Nagar in Tirap, Arunachal Pradesh. As in the case of railways, Bangladesh should be approached with proposals for a road connection from Agartala to Akhaura and for the construction of a major new highway from Lunglei-Tlabung (Demagiri) in Mizoram to Chittagong. This would open up both central and western Mizoram and the Chittagong Hill Tracts for development and tourism. The Tlabung (Demagiri) connection will also provide access to the Karnaphuli waterway. The DGBR could be tasked to take on a larger role in road development and maintenance. The Rubber Board has constructed a short stretch of rubberized road in Tripura as this surfacing is better able to withstand wear and tear and heavy rain. This pilot project should be critically evaluated under varied conditions as the technology could have a bearing on maintenance costs which are very high in the Northeast.

(The unit cost of providing infrastructure as well as various public services in hill states is higher than in general category states. The low density of population, difficult terrain and high cost of transporting the inputs for the services creates severe cost disabilities. Roads in these states cannot be straight and they need to be taken round the forests. Low density of population results in higher cost of education and health services)

Railways

- Full funding for expeditious completion of the present clutch of sanctioned projects already under way, including the Bogi beel Bridge.
- The Diphu-Karong and Bairabi-Saireng lines should be taken up in the interests of national integration. The Commission accordingly suggests a suitable provision that will enable work to commence during the 9th Plan on these two lines and the Siliguri-New Bongaigaon conversion.
- The construction capability of the railways may be augmented commensurately.
- The operating losses on the new lines proposed should be a charge on the general budget.
- There should be a fast and conveniently timed overnight train between Dimapur and Guwahati to enable passengers to connect with air services to and from Delhi and Calcutta.
- Early discussions should be initiated with Bangladesh for linking up the IR and BDR railway systems, particularly in the Karimganj and Agartala sectors. India should be prepared to invest on such upgradation as the BDR system might require in order to carry the additional Indian traffic up to Chittagong. This also includes augmentation of related port capacity. These options could offer quicker and more cost-effective solutions to some of the problems of the Northeast. India should offer to assist Myanmar which would like to extend its railway along the Chindvvin X'alley, parallel to the Mizoram-Manipur border. This would link with the main Yangon Mandalay rail system and could form part of the Trans-Asian Railway in which international interest has revived. The Government of India was in fact earlier indirectly approached to provide coaching stock up to a value of 8- 9 million dollars.

Waterways

- High priority should be accorded to IWT in the Northeast and enhanced transit and transshipment arrangement negotiated with Bangladesh along the lines indicated.
- The charter and competence of IWAI be enlarged with adequate financial support and a meaningful presence in Guwahati and Silchar.
- Close liaison is necessary between the Central Water Commission and Brahmaputra Board on the one hand and the IWAI on the other so that water resource development meshes with the development of waterways.
- The Central Inland Water Corporation (CIWTC) must be strengthened with a strong regional presence at the same time; private operators should be encouraged to take up component segments of IWT development and operation. Funding should be provided.
- Modernized country craft development should be taken in hand to extend services to feeder routes. There should be some agency to study this matter and play a promotional role.
- There has to be a policy for waterfront development and location of industries to generate traffic. Short navigation canals from such waterfronts or waterways to deepened beels with jetties and production/warehousing facilities around them might be envisaged. Ring embankments could offer flood protection.
- An R&D facility needs to be developed to undertake studies with regard to types of river craft for different categories of waterways and cargo in the Northeast sector. Safety should be an important factor.

Aviation

- Guwahati should be made a regional hub for Indian Airlines so that aircraft stationed there can operate services without delays on account of late arrival of aircraft from Calcutta or Delhi because of fog or other weather or technical problems.
- With the gradual lifting of the restricted area permit regime in the Northeast, and the opening of new trade and tourist opportunities, international flights should operate out of the region to destinations like Dhaka, Chittagong, Mandalay, Yangon and Bangkok in the first instance. Tourist packages could be developed around these services.
- An integrated plan for the utilization of the Guwahati international air cargo facility should be prepared by the Ministry of Commerce in consultation with the North-eastern states.
- A study should be initiated for inducing short take-off-and-landing (STOL) aircraft into the Northeast circuit in view of the need to connect remote hill areas and provide feeder tourist services.

Power

- Full funding must be provided to on-going power projects to ensure that further cost and time overruns are avoided in this critical sector.
- The Department of Power should concert action to refine its perspective power development programme for the Northeast, currently under preparation, in consultation with the Brahmaputra Board, NEEPCO, Power Grid Corporation and the concerned States, taking account of all pending and proposed hydel, thermal and gas-based stations on the anvil. These projects should be ranked and efforts made to secure funding.
- System efficiency must be improved by urgent steps to reduce T&D losses and improve PLF. The CEA or Power Grid Corporation should undertake a quick study of critical gaps and linkages within three months with priority funding.
- A similar expert assessment should be made of the additional generation that can be brought on stream by meeting fuel deficits, whether of gas or coal.

- Determination of who should execute the KarbiLangpi, Kameng and Loktak Downstream projects should be speedily resolved to avoid delay and further cost escalation.
- The proposed power tariff regulatory authority should be brought into being as early as possible, or this might even be done separately for the Northeast as an interim arrangement, as a prelude to reorganization of the Assam and Meghalaya electricity boards. Consumers would prefer reliable supplies and service to notional subsidies that do not really benefit them.
- Consideration should be given to corporatizing the remaining five electricity departments in the Northeast so that they are insulated from political pressure and patronage in pricing, staffing and forward planning. There has to be a new culture if the huge power potential of the region is to be realized.
- State SEBs be allowed to borrow for expansion purposes. We accordingly recommend that the centre guarantee these borrowings on suitable terms and conditions related to Northeast realities and opportunities.
- The Brahmaputra Board, and all other water resource and development agencies in the Northeast, must be mandated to the fullest transparency so that public confidence and accountability are both enhanced. Early public hearings and consultation with NGO groups could provide rewarding. Delays in implementing mega projects would be disastrous and it is imperative that compensatory action to mitigate all environmental impacts and ensure protection of bio-diversity is assured.
- An early inter-state meeting should be convened by the centre at the highest level to secure full agreement on and approval for the Tipaimukh project which could have a transforming effect on the southern tier of the Northeast.
- Investigations of the twin Chhimtui (Kaladan) hydro projects in southern Mizoram should be conducted with an eye to investigating the possibility of navigation down the river to Sittwe (Akyab) and the sea. The cooperation of the Myanmar authorities should be sought. The Kaladan is reportedly already navigable for a considerable stretch in Myanmar up to Paletwa.

- Initial planning should be taken in hand to tie the North-eastern and Eastern electricity grids in view of the expected growth of generation in the Northeast and Bhutan. A situation must be avoided such as currently prevails when surpluses in the eastern grid cannot be transferred to the adjacent power short northern and southern grids. Even in the intermediate period, power generation could become the cash strapped Northeast's largest source of resource mobilization.

2. Report on NER Vision 2020: Recommendations for Infrastructure

- Much of the infrastructure spending in the NER would have to be done by the central government; PPP models such as Build-Operate-Transfer (BOT) being implemented in other states are unlikely to succeed particularly in road and rail networks.
- Power is the single most important constraint to economic growth of the NER states. In the long run, the planned development of Arunachal as the 'hydel capital' of the NE makes sense. However, environmental and other concerns need to be sorted out before appraisal, not after DPRs are in place.
- In the short run, say five years, targeted generation should be lowered to 5,000 MW (double the present capacity of the NE) to eliminate power constraints to the economic development of NER. In addition, internal transmission grids are the biggest priority in all the states.
- In the immediate future, the hill areas could substantially meet consumer demands in far-flung areas via micro-hydel projects. The Ministry of Non-Conventional Energy Sources (MNES) could be approached for appropriate subsidies.
- In planning road networks under the SARDP particular attention should be given to roads within states as these are crucial to both creating a unified NER market and improving tourist activity.
- The suggestions on rail connectivity made at the Sectoral Summit of the NEC are valid. However, the funding pattern and source of funds must be specified upfront or the planned network will remain a pipe dream. Logically, the planned extensions of

existing lines to states by 2010 should be tackled first, and connectivity of state capitals dealt with in the subsequent five years.

- Air connectivity in the NER remains an issue, due to inability to determine the hub which has remained Kolkata by default. Guwahati is the natural hub but it should be possible to link state capitals directly to each other through the use of air taxis.
- In the long run, the NER can benefit greatly from the IT revolution, if telecommunications infrastructure is developed along the lines followed by the rest of the country. However, since hilly terrains are not very conducive to normal broadband connectivity, the use of optic fibre to enhance the connectivity seems to be indicated.
- Much more attention should be given to inland water routes as a method of connectivity within the region. The existing potential is largely untapped.

3. Recommendations of the Report of the Task Force on Hill States, 2010

3.1 Road, Rail and Air Connectivity

The recommendations of this Task Force will find acceptance if the people of the India Himalayan Region (IHR) are enabled to travel outside their village or towns for worker leisure; service providers are enabled to reach distant corners, and local produce is facilitated for reaching markets. This can be achieved only if there is a good combination of road, rail and air connectivity, each supporting the other. The Task Force recommends two loop railway lines – one for the Western Himalayan region connecting Jammu & Kashmir, Himachal Pradesh, and Uttarakhand, and the other for the North-Eastern Region. These two loops should be linked to each other through the existing national network of the northern and eastern railway. The road network of the IHR must link up with the rail network at appropriate places for performing the aforementioned functions. The road network should also be linked up with air services so as to provide opportunities for perishable goods and persons needing emergency health care to reach the rest of the country or outside. The Task Force recommends that every IHR state should have at least one small air-strip for accepting large helicopters and short take-off and landing planes. The airport should be located near the major production centre rather than the capital city of the state.

3.2 Natural Resource Analysis and Advisory Centre (NRAAC)

The Task Force recommends the up gradation of an existing institute or the establishment of a new institute. This institute should have full digital data on the resource base of the IHR; should be able to analyze data to detect changes or see trends; and should be able to guide policy makers and planners on any activity that is likely to affect any resource or the environment of the region. Consultation with this body should be mandatory before any major activity in the IHR is undertaken. For effectively carrying out all the recommendations, and to support their planning as well as for much needed monitoring, all IHR states need to join in and establish a user friendly digital databank (spatial and non-spatial).

3.3. Strategic Environmental Assessment

A new perspective to replace the practice of project based environmental impact assessment, with Strategic Environmental Assessment needs to be introduced. Since the Task Force is recommending that the IHR states should be very restrictive in the use of their resources as this will be in the long term interest of the IHR as well as the country, it is logical then to suggest that the IHR states be compensated for this self-denial of short term gain. The Task Force recommends the setting up of a dedicated, non-lapsable Gap Fund and a compensation mechanism for IHR states. The Gap Fund must, however, not be open ended; indeed, it should be linked to Good Politics and Good Governance. IHR states that do not show this, as per the perception of the Himalayan Development Forum, suggested in the Chapter on Governance, should not be able to leverage the funds. Such non-conventional measures are recommended in the context of the importance and fragility of the IHR.

3.4 Resource Sharing between IHR States

There is need for establishing resource sharing mechanisms and/or inter-exchange between the IHR states. For instance, extraction of petroleum and petroleum gas from Assam may first be used to satisfy the need and demand of the neighboring IHR states. Likewise, IHR states should have first charge on electricity generated in the region. Such policies will generate a great degree of goodwill.

3.5 Waterways and Ropeways

Of the three inland national waterways declared so far in the country, the Sadiya-Dhubri stretch of river Brahmaputra (891 km) is in the IHR. The road network should match with this waterway to optimize the cost of transportation. Ropeways, steel-rope bridges and the like must be encouraged to continue providing timesaving and environment friendly transport alternatives in the mountains. The legal framework of Himachal Pradesh can form the basis for the development and extension of such methods in IHR

3.6 The main overall recommendations of the Task Force

IHR States should invest in agro-horticulture-forestry skill and technology development. Output per ha will increase, productivity per person, in terms of service capability will increase. However, producers and skilled persons need access to markets for selling surplus as well as opportunities to offer their skills. Therefore, States should invest in connectivity, marketing arrangements including IT enabled service infrastructure. Wealth generated should be attracted for ploughing back on land as well as on education/ training. So, IHR States should encourage special investment opportunities with high rate of return. Resultant skill/ educational institutes will be enabled to improve production technology as well as human capital.

4. Recommendations of North Eastern Council (NEC) Draft Vision 2020

Infrastructure

- Faster execution and completion by 2015 of the Central Master Plan for road connectivity;
- Increase road length of district roads to about 1 lakh km by 2020;
- Road density to be increased to the present national average of 75 km.;
- Upgradation of national highways to four-lane;
- A separate regional road maintenance fund;
- Ten old airstrips in the region be developed; new airports set up at Itanagar, Kohima, Gangtok, Lungleh, Tura and Belonia; separate designated air service with base at Guwahati;

- All projects for the construction of about 262 km. of new railway tracks in the region should be completed by 2010 and all capitals be connected by broad-gauge rail by 2020;
- Institute a programme to make Ganga-Brahmaputra-Barak-Meghana into an integrated natural waterway by 2020;
- At least 305 MW of hydel potential and 155 MW of thermal potential to be harnessed by 2020;
- Small and mini hydel projects to exploit the small hydel potential of 2112 MW by 2020;
- Generation of at least 2800 MW by 2011-12 be taken up to meet projected peak load; and
- Ensure grid management and economic power dispatch.

Water management by 2020

- Exploitation of 80 percent irrigation potential (to cover 42 lakh hectares);
- Creation of additional live storage of 25 bcm;
- Rainwater harvesting of 4 mcm;
- Groundwater development to reach 7 bcm;
- Integrated land and water resource management projects in interstate river basins;
- Coverage of all degraded, rain-fed wasteland under watershed project;
- Drip irrigation;
- Water policy for each state; and
- Make the NER a destination for fresh water globally.

5. Conclusions and Recommendations of Sectoral Summits of North East Council

5.1 First Sectoral Summit to Review Power Sector Programs in Pasighat, January, 2007)

- I. A two pronged strategy to be adopted for power generation with focus on
 - (a) Small/Localized Hydel & Thermal and NRE projects for catering to local needs.

- (b) High capacity Hydel & Thermal Power Projects with associated Transmission lines for first meeting the demand for power of the North Eastern Region and thereafter that of the rest of the country.
- II. Ministry of Power to develop a clear, coherent and sustainable Power Policy for the NER which takes into account the special characteristics and needs of the Region.
- III. Ministry of Power has set-up a Task Force for preparing a Master Plan for Power Development in the North East Region. The Task Force should take note of the issues raised and conclusions arrived at this Sectoral Summit. The report should be finalized expeditiously and inputs included in the Ministry's XIth Plan proposals.
- IV. CEA to undertake feasibility studies for utilizing considerable shale deposits in Arunachal Pradesh and coal deposits in Assam and Meghalaya with the objective of increasing the share of thermal power.
- V. ONGC & ILFS are in the process of setting up the 750 MW Palatana Gas Power Project in Tripura. Only Tripura and Assam have entered into MOU with ONGC / ILFS for purchase of power. Other power deficient States may also approach ONGC / ILFS for accessing power from the Palatana project.
- VI. PGCIL to invest more in the trunk transmission lines for improving inter and intra-region connectivity. Adequate transmission system for evacuating power generated by public and private sector hydro projects in Sikkim to be developed. Priority to be accorded for creating a grid to meet power shortages in the North Eastern States. The issue of funding and recovery would be addressed by Sub-Group II.
- VII. Transmission, sub-transmission and distribution system improvement to be one of the thrust areas for NEC during 11th Plan. In order to build up a shelf of priority projects, NEC to support intensive survey and investigation work relating to such projects by the State Governments.
- VIII. State Governments to prepare perspective plans for Transmission, Sub transmission and Distribution Systems in their respective States within the next six months to cover the XIth Plan period (2007-12).

- IX. The issue of Gas availability and pricing is a matter of concern and needs to be appropriately addressed for exploiting the substantial Gas reserves in the Region for Power generation. The Ministry of Petroleum & Natural Gas to accord due consideration to the suggestions of the NE States and to resolve the issue of pricing of gas expeditiously.
- X. The issue of high transmission charges (35 paise / unit), presently under reference to CERC, needs to be followed up(x) The issue of high transmission charges (35 paise / unit), presently under reference to CERC, needs to be followed up by the Ministry of Power and resolved at the earliest.
- XI. Recognizing the need for continuing assistance to the States for improving their Distribution systems, the Ministry of Power to continue the APDRP with the existing norms, guidelines and funding pattern (90:10) for the NE States during the XIth Plan.

5.2 Second Sectoral Summit to Review Road Sector Programmes held At Shillong.

- I. The BOT (Toll)/BOT (Annuity) funding pattern for roads allotted to NHAI to under SARDPNE/NHDP-III B is not considered suitable/feasible. Lack of response has delayed implementation. DoRTH to consider budgetary support as has been done for roads entrusted to BRO and Assam PWD.
- II. Capacity building of State PWDs for better planning & management of road assets is critical. ADBs assistance should be expanded. DoRTH may also seriously consider including an institution development and capacity building component in SARDP-NE and other road programmes with the objective to improve capacities of State PWDs.
- III. Maintenance of road assets is important. All States to consider enactment of legislation on the lines of the Mizoram Road Fund Bill. Mizoram to expedite enactment and implementation.
- IV. DoRTH to consider the demand for extension of the East-West Corridor or, in the alternative to upgrade road linking all State capital cities and district HQs with four/two lane roads.

- V. States to utilize funds awarded by 12th Finance Commission for maintenance of assets. Sikkim has suffered because of inadequacy of award.
- VI. Ministry of DONER to accord priority to funding of conversion of timber bridges to RCC bridges. DoNER may consider funding porter tracks for connectivity to remote hamlets in hill areas.
- VII. A Master Plan encompassing all categories of roads to be developed by Ministry of DoNER, in consultation with the Ministries of Shipping, Road Transport & Highways, Rural Development, Planning Commission, NEC and the State Governments. The multiplier benefits of road sector programmes in promoting socio-economic growth should be factored in the proposed Master Plan. Priority be accorded to roads providing connectivity to hydro-project sites, important LCS and other economic and commercial growth centres. Consultants or a consortium of Consultants to be identified for implementing this proposal.
- VIII. Ministry of DONER to continue funding roads which are not included under other Central and State sector programmes. NEC to continue to focus on roads which provide inter-state road connectivity.
- IX. DORTH to make all efforts to complete implementation of selected roads under NHDP-II, NHDP- III and SARDP-NE within the targeted dates.
- X. States to rationalize royalty rates being imposed on construction materials. Local quarries be allowed to be exploited for sourcing materials by road construction agencies.
- XI. States to streamline/ simplify procedures for Environment and Forest clearance for felling of trees, shifting of public utilities, removing encroachments etc.
- XII. BRO to consider setting-up Chief Engineer's office in Tripura and Sikkim.
- XIII. Ministry of DONER, in consultation with the DEA, to request ADB to take up special training of Manipur State PWD within a time bound framework. Special attention to be paid to improvement of roads in hill areas of the State.

- XIV. DORTH, NHAI and BRO to consider freezing of alignments so as to reduce delays in implementation.
- XV. Ministry of DONER to request MEA to take the initiative to improve bilateral relations with Bangladesh to provide transit facilities to the North Eastern States, particularly to Tripura.
- XVI. Ministry of DONER/ NEC to examine the proposal to create a pool of road construction equipment which can be leased/rented out to registered contractors.
- XVII. Adequate provision be included in the original cost of construction of roads for maintenance during construction phase.
- XVIII. States to provide complete details of land along the NHs to the construction agencies, as envisaged in National Highways, Land and Traffic Control Act, 2002. As per this Act the management of road land lies with the highway construction/ maintenance agency.
- XIX. To address the transportation needs of major hydro power projects in Arunachal Pradesh and Sikkim and major Land Customs Stations (LCS) in the NER, the Do RTH may consider according priority to such NH projects under SARDP-NE.
- XX. NEC and NLCPR funds should not be included under State Plans. They should continue to be utilized for projectised assistance for Inter-State Projects and Intra-State Projects respectively in NER.
- XXI. Ministry of Defence to consider nominating a Nodal Officer for NER related issues.
- XXII. It was observed from the presentation made by the Ministry of Rural Dept. That the States are slow in preparing proposals and awarding contracts under PMGSY. States advised to put the institutional arrangements as suggested in PMGSY in place.
- XXIII. The quality of roads under the PMGSY leaves much to be desired. Ministry of Rural Dept. to devise suitable and effective strategies for improvement of quality.
- XXIV. Ministry of Rural Development to assist States to enhance capacities in respect of documentation and accounting under PMGSY.

- XXV. States to control high cost of construction under the PMGSY scheme.
- XXVI. To address issues relating to PMGSY, a Committee chaired by Shri P.P. Shrivastav, Member, NEC be constituted. It will include representative of Ministries Do NER and Rural Development, National Rural Roads Development Agency (NRRDA), Planning Commission, State PWD/RD/RWD as the case may be. Planning Adviser, NEC will be the Member-Secretary. Report to be submitted within three months.
- XXVII. To address issues relating to implementation of NHDP-II, NHDP-IIIB and SARDP-NE, a Committee chaired by Dr. (Smt.) I.K. Barthakur, Member and NEC is constituted. It will include representatives from the Ministries of DORTH, Planning Commission and State PWD Ministers. Adviser (Transport), NEC will be the Member-Secretary. Report to be submitted within three months.
- XXVIII. Secretary, DONER in consultation with DORTH, will constitute a third Committee to address technical and research related issues with the primary objective to reduce the cost of construction of roads in the NER. CRRI may be associated.

5.3 Third Sectoral Summit to Review Inland Water Transport among others

- I. Ministry of Shipping/IWAI to follow up with the Ministry of External Affairs the renewal of Indo- Bangladesh IWT protocol on long term basis and expeditious approval of the Kaladan River multi-modal transport route from Mizoram to Sittwe port.
- II. IWAI to ensure that NW-II is made fully operational within March, 2009 and expedite necessary approval for declaration of Barak River (Lakhipur to Bhanga) as NW-VI and take up development of the waterway on priority.
- III. IWAI to develop credible night navigation facilities on NW-II to reduce travel time. Ministry of Shipping/IWAI to consider deputing a delegation abroad for studying effective methodology for providing night navigation facilities.
- IV. To reduce manual handling of cargo, IWAI to consider providing mechanical handling of cargo.

- V. IWAI to consider proposal from the Govt. of Mizoram to link the Tlawng and Barak Rivers to enable transport of cargo from Mizoram into the Barak Valley and further through the proposed NW-VI.
- VI. Ministry of Shipping/IWAI to take up the Tripura Government proposal for declaring Ashuganj as Port-of-Call during the next meeting with Bangladesh.
- VII. The existing CSS needs to be revisited and funding under the new Central Sector Scheme, to be administered by M/O DONER, to be raised substantially with components on capacity building and assistance to the States to carryout survey and investigation and preparation of DPRs.
- VIII. IWAI to carry out awareness campaigns on the possibility of developing navigation facilities on rivers in Arunachal Pradesh. State Govt. advised to submit proposals for accessing funds available under the 100% CSS.
- IX. Government of Tripura to send a formal proposal to IWAI for carrying out feasibility survey of the Gumti River.
- X. IWAI to expedite EFC for procuring four cutter suction dredger and other equipment for carrying out dredging operations on NW-II.
- XI. DONER to work out details of the new Central Scheme in consultation with the Planning Commission, Ministry of Shipping/IWAI and the NE States for implementation WEF 2007-08.

5.4 Fifth Sectoral Summit to Review Air Connectivity Sector Programmes in Aizawl, 2007

- I. The Report submitted by the Committee Chaired by Dr. S.S. Sidhu, H.E. Governor of Manipur on a 'Dedicated Airline for the North Eastern Region' was endorsed/accepted by the members present at the sectoral summit.
- II. Specific milestones were tentatively decided for implementing the basic recommendation of the Sidhu Committee for selection of an operator for the proposed dedicated airline:

- 25th May 2007 – Issue of Public Notice inviting Expressions of Interest.
 - 25th June 2007 – Last date for receipt of Expressions of Interest.
 - 15th July 2007 – Evaluation of technical and financial bids.
 - 15th August 2007 – Awarding of contract to the party and announcement by Hon'ble P.M. about dedicated airlines in the North East.
- III. Guwahati to be developed as an airline hub in North part of NER and Agartala/Imphal to be developed as hubs in the Southern region of NER.
- IV. Night landing facility to be provided at Imphal by the end of 2007.
- V. Pending finalization and implementation of a dedicated airline in the Region, the interim period has to be serviced by Alliance Air. M/s Alliance Air to work out an agreement for extending the existing MOU for another year.
- VI. M/s Alliance Air was advised to increase flights in the Category-II routes pertaining to the North Eastern Region.

5.5 Sixth Sectoral Summit on Rail Connectivity Programmes in New Delhi, 2007.

The 6th North-East Sectoral Summit on Rail Connectivity noted that only 4% of India's railway network is located in the North-East. At the same time, the Summit also noted that the Ministry of Railways has not only consistently spent over 10% of its Gross Budgetary Support (GBS) in the North-East but it has been increasing year over year and it has reached almost 15% of GBS. Notwithstanding this performance on the GBS front, the historical gap that needs to be made up is so large that a much accelerated programme of rail connectivity is required to provide the basic infrastructure capacity for the North East to realize its economic potential. To this end, the Summit agreed that the 14 major railway projects listed in the annex will be sought to be completed within the 11th plan period with an investment of around Rs. 10,000 cr. However, the provision of the required funds is but the beginning; what is required to be able to ensure that the availability of funds is matched by performance on the ground is the packaging of the following key action points, all of which were found to be feasible and practical by the Summit participants:

- I. A long-term plan which clearly indicates the phases in which identified projects will be completed in five year time frame of the 11th plan period.
- II. The release of the annual installments by the Ministry of Finance at the BE stage and not at the RE stage as at present.
- III. The determination by the Ministry of Railways, in association with the State governments concerned, of the availability of capacity to undertake the physical work implied in the financial estimates with a view to augmenting the capacity to the required extent to fulfill the physical target. In this connection, particular note was taken of the willingness of the Ministry of Railways to enter into partnership with domestic and foreign partners to attain the specified targets within accelerated time frame.
- IV. Paripassu with determining the availability of financial resources and construction capacity, the need to estimate security requirements and ensure that security considerations do not stand in the way of meeting financial or physical targets.
- V. The establishment of a comprehensive monitoring mechanism, with representatives from all the stakeholders concerned, to keep under regular and frequently review the progress of works and the removal of road blocks. With a view to approaching the question of railway construction in this comprehensive manner, it was underlined that the stakeholders' ministries, agencies and State government concerned should adopt the Mission Mode so that all problems of coordination are resolved within the Mission Mode and the agencies concerned work together towards a common objective. The Summit recognized that if the 14 projects annexed are in fact completed within the 11th Plan period through the Mission Mode, as agreed, it will transform the face of the transport infrastructure in the North- East and unleash the enormous development potential of the region. Over and above the 14 major projects identified in the annex, it was agreed to further explore with the next few months the following innovative ideas put forward by different state delegations.
- VI. Arunachal Pradesh: A concept paper on the 'India-China Friendship Railway' to bring

railway to those parts of the North-East that border China and possibly link up with the Chinese rail network which now extends into Tibet up to Lhasa and beyond. Further, another concept paper will be prepared by the Government of Arunachal Pradesh highlighting the railway construction requirements which will be indispensable to the full utilization by the North East and the country as a whole of the power generation potential of 30,000-50,000 MW from Arunachal Pradesh alone.

VII. Meghalaya: A concept paper linking Jogighopa through the plains of West Garo District and the southern plains bordering Bangladesh all the way through the East Khasi and Jantia Districts to link up with the Lumding-Silchar railway line so as to exploit the potential for horticulture products such as cashew nuts and anthuriums as also the vast mineral deposits, including coal, limestone and uranium, of Meghalaya.

VIII. Tripura: A concept paper on extending railways to connect with all the Land Custom Stations, planned and proposed, on the frontiers of the North-Eastern Region with neighboring countries. The Tripura delegation will also prepare a concept paper on the steps required to rejuvenate Bangladesh interest in trade and transit relations with India in general and North-Eastern Region in particular, especially with reference to a possible linkage from Sabroom to Chittagong.

IX. Mizoram: The Ministry of Railways, in association with the Government of Mizoram, to prepare a concept paper on extending the proposed Bairabi to Sairang broad gauge line to a river port on the Kolodyne River with a view to linking up with the proposal to established riverine transport to Sittwe port in Myanmar.

X. Nagaland: The Ministry of Railway, in association with State Government of Nagaland, to explore the possibility of marginal adjustments in the route alignment to touch locations of economic significance in the hill states of the North-East, including Nagaland. The Government of Nagaland will give a concept paper on railway lines along the foothills of Nagaland. As and when the concept papers are ready, discussions will be organized by the Ministry of DoNER between stakeholders at the capital of the States or in Delhi, as appropriate. State delegations made a number of State-specific suggestions for improving Rail Connectivity. These are listed in the section 'Issues &

Conclusions' and will be further pursued with the authorities concerned. There was general agreement that every effort should be made to extend and modify proposed railway alignment to connect up with State capitals wherever present proposals fall short of reaching the State capital. In this connection, special emphasis was laid on the following proposed extensions/modifications:

- A. Mizoram: Bairabi- Sairang to be extended to Aizawl.
- B. Manipur: Jiribam-Tupul line to be extended to Imphal
- C. Nagaland:Dimapur-Zubza to be extended to Kohima
- D. Meghalaya: Azra – Byrnihat to be extended to Shillong.
- E. Sikkim: Siliguri to Rangpo to be extended to as near to Gangtok as feasible.

The Summit agreed that Ministry of DoNER and NEC should be associated on a continuing basis and as a matter of right in the inter-ministerial issues relating to the railway network of the North-East.

Conclusions

1. There is an immediate need to identify source of funding for the 'National Projects' by the Planning Commission and the Ministry of Finance.
2. The Ministry of Railways has the capacity to implement projects in a given time-frame, provided funds are available. The allocation of funds to the Railways for these projects should be made at the B.E. stage which is more appropriate and is a distinct advantage to the Railways who are planning implementation of projects.
3. A Mission Mode needs to be adopted so as to ensure timely implementation of projects. Therefore, monitoring mechanism needs to be in place. The Ministry of DoNER and NEC should be involved at all levels of decision making with regard to planning of rail projects in the North Eastern Region.
4. Given the progress of the ongoing projects and the commitment of the Government of India to provide necessary funds for the ongoing projects, it is expected that the Ministry of Railways will implement 14 approved projects in the 11th Five Year Plan.
5. To cut down delays, it must be ensured that alignments for rail projects which are once firmed up should not be altered. Issues such as land acquisition and environment & forest clearances should be sorted out at the beginning of the project.
6. Security concerns at project sites should be addressed by State Governments and the Ministry of Home Affairs. The security protection provided by Tripura Government at rail project sites is exemplary and worth emulating. Issues of providing security, forest clearances, and land acquisition are leading to 'wastage of capacity'. Therefore, the State Government would resolve these issues expeditiously.
7. A special Meeting on rail projects in Meghalaya and Nagaland will be organized in Shillong/ Kohima.
8. All State capitals need to be connected by rail. In cases where the rail links are being terminated short of the capital such as Jiribam to Tupul (Imphal), Dimapur to Zubza (Kohima), Sivok to Rangpo (Gangtok) the Railways should conduct feasibility studies for extending the railway links upto the State capitals.

9. A special session on 'Look East Policy' needs to be organized by Ministry of DoNER.

5.6 Seventh Sectoral Summit on Telecom, I-T and E-Governance in Kohima, 2007

Telecom Sector

- I. Minister DoNER to take up the matter of restriction on mobile telephony within 0-500 meters of the international border with the Ministries of Home and Defence in the light of the peculiar situation of the Region.
- II. Regarding stringent requirements for verification of customers, the suggestion to use the electoral photo identity card as proof of identity may be examined by the Department of Telecommunication in consultation with the MHA. Other similar ideas may also be explored to enable the people of the North- East to have hassle free and quick connection.
- III. BSNL will take steps to introduce online billing facility in the Region and quick incorporation of payments made to overcome multiple billing and settlement disputes concepts of easy-billing centers being operated in many cities need to be introduced in the NE States as well.
- IV. To address the lack of adequate skilled manpower in the NER for meeting the requirement of telecom sector, the North Eastern Council in consultation with BSNL and other service providers will consider setting up of a Regional Institute for Training of Telecom Personnel, preferably at Dimapur. Dr. (Mrs.) I.K. Barthakur will coordinate.
- V. The Department of Road Transport and Highways as well as the State Governments should examine and give effect to the proposal for providing service ducts in all new roads and existing roads where widening work is undertaken to facilitate and economize the laying up and maintenance of cables and to minimize disruption.
- VI. The large number of check posts and long procedures lead to avoidable delays and increase the cost of transportation. The States should streamline the system which should be made uniform for the whole Region.

- VII. The states should have a single window, time bound and efficient system for according clearances for laying of cables. Restoration charges should be rationalized so as to not become deterrent.
- VIII. The pros and cons of underground cable network *vis-à-vis* other alternatives like PGCIL Cable, submarine cable and a cable through Brahmaputra should be clearly studied by the BSNL in view of the peculiar conditions in the Region. Ministry of DoNER should ask the PGCIL to include in their proposed study of the transmission needs of the Region, the utility of the network from the point of view of providing alternate connectivity on their cables.
- IX. State Electricity Boards should give priority to ensure regular, uninterrupted and quality power for running the telecom and IT network.
- X. DoNER should constitute a Committee under the Chairmanship of. Shri P.P. Shrivastav, Member, NEC, for better coordination and synergy among various stakeholders with a view to achieve optimum results at accelerated pace by identifying problems, integrating networks and resolution of conflicts.
- XI. The States should facilitate acquisition of land for setting up of telecom infrastructure and also provide security for the officials wherever required.

Information Technology

- I. The North-East States should endeavor to develop themselves into preferred IT destinations by creating an enabling environment with appropriate policy intervention and PPP models.
- II. The IT industry should not be misled by the false portrayal of the North-East as a Region beset with terrorism and insurgency. The fact is that large swathes of the Region have impeccable law and order situation. Ministry of DoNER and the NE

States should take appropriate measures to dispel such a notion from the minds of potential investors.

- III. Quality infrastructure should be created to position the Region as an attractive and viable destination for the IT industry.
- IV. The states should give highest importance to use IT to lift the quality of life of their people, particularly in the rural areas.
- V. The States should take appropriate measures for promotion of local entrepreneurship in IT. A scholarship based system of identifying; nurturing and promoting IT talent should be introduced.
- VI. The North-East Region should position itself to become the back office for the Southeast Asian and Far East Asian countries.
- VII. The IT industry is likely to have much lower attrition rate in the Region as the people are generally attached to their heritage. The States and the NASSCOM may highlight this crucial aspect which is becoming a major concern of the industry.
- VIII. The state Governments are unable to find resources for running the CICs and are requesting for the extension of status-quo for a few more years. Further, questions were raised regarding the viability of converting the CICs into CSCs at many places. The Department of Information Technology should take into account the concerns of the states before taking a final decision.²⁵³Aizawl, Imphal, and Tezpur (with extension centres at Guwahati and Kohima). The centers should be established in all the States of the Region.
- IX. The Government should work towards a One India Plan for Bandwidth so that the North-East States do not suffer from this handicap.
- X. The IT and Higher Education Departments in the NE States should extend requisite support to NASSCOM for the NASSCOM Assessment of Competence in IT Skills. They should remain fully involved with the whole process since it has long term

implications for employment, training and modification of curriculum. NEC and North Eastern Regional Educational Council should sensitize the Vice-chancellors of Universities and College Principals for sensitizing the eligible students for taking NAC.

E-Governance

- I. Many of the NE States do not provide IT enabled citizen centric services at present. National Informatics Centre has to upgrade existing technical support to the North-East States for e-Governance. The States should provide content as well as update it regularly.
- II. The States should undertake Capacity Building programmes for employees at all levels.
- III. For optimum utilization of the CICs (CSCs afterwards), awareness campaigns should be organized in remote and interior areas.
- IV. DIT should expeditiously resolve the issue of State Wide Area Network with the Government of Arunachal Pradesh and the network should be in place for all the NE states by 31.03.08.