

## Chapter VI

### **Environmental Movements, Policies and Programmes: Case Analysis of POSCO and Tipaimukh**

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Environmentalism is a social as well as a political movement on the issues of environment based livelihood system and environmental governance. Environmentalism in twentieth century emerged with the environment-development debate and effectively focused on the human needs and their satisfaction and it became a critique of modern developmental process. In twentieth century India, particularly since 1960's, environmentalism became a popular resistance by the local micro movement organizations; on the contrary, green thinking was also reflected through Mrs. Gandhi's speech in Stockholm conference, 1972. But socially formed grassroots organizations in India made the green thinking very popular in a radical way. The question of natural resource based livelihood system was pivotal to the grassroots organizations. Even in twenty-first century India, many livelihood-based social movements and social movements against modern economic developmental process are identified as the real foundations of Indian environmentalism or green thought. Environmentalism emphasized on the human responsibility to protect environment and the environmental stewardship. The responsibility indicates the individual responsibility and governmental responsibility. In twenty-first century India, political movement on behalf of the government to protect the natural environment and ecosystem is equally significant like the social movement by the civil society organizations. Twenty-first century environmentalism endeavours to save the humans from the probable danger of modern economic developmental process and simultaneously it shows compassion for other living non-human creatures which would face severe threats as a result of the process of huge industrialization and big dam construction.

Each and every nation state takes care of its own natural resources. The Ministry of Environment and Forests (MoEF), which was constituted in 1985, is the nodal agency in the administrative structure of the Central Government to look after conservation and management of natural resources in the country. At the beginning of twenty-first century, MoEF was entrusted with planning, promotion and coordination and overseeing of the implementation of environmental and forestry programmes.<sup>1</sup> Land, water and forests are the prime natural resources which fulfill the social, economic and cultural requirements of the nation. MoEF is concerned about the proper management of these natural resources. Apart from the MoEF, several ministries, boards, departments and organizations have been formed for taking care of India's biodiversity and natural resources. The chapter is a critical evaluation of the governmental actions to manage India's natural resources and biodiversity so as to explore the nature of political movement for environmental governance.

### ***India's Land:***

*India: State of Environment 2001*, highlights that, out of 328.73 million hectare (mha) India's total geographical area, 304.89 mha comprise the reporting area and 264.5 mha only is under use for agriculture, forestry, pasture and other biomass production. It was also highlighted that, India supports approximately 16% of the world's human population and 20% of the world's livestock population on merely 2.5% of the world's geographical area.<sup>2</sup> It further reports that out of India's total degraded land (188.1 mha), about 162.4 mha is due to displacement of soil material by water and wind and 21.7 mha is due to *in situ* processes (physical, chemical and biological processes) as salinity and water-logging. The remaining 4 mha is affected by the depletion of nutrients.<sup>3</sup> About the land holdings, National Sample Survey Organization (NSSO) data (2003-04) highlights that, about 41.63% of households do not own land other than homestead. While one third of the households are landless, those near to landlessness add up one third more. 60% of

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<sup>1</sup> UNEP, 2001, *India: State of the Environment 2001*, United Nations Environment Programme, p. 49.

<sup>2</sup> *ibid*, p. 61.

<sup>3</sup> *ibid*, p. 66.

the country's population has the right over only 5% of country's land; whereas 10% of the population has control over 55% of the land.<sup>4</sup>

**Table 1: Distribution of Ownership Holdings of Land in India (2003-04)**

Category	Proportion of Households (%)	Proportion of Area Owned (%)
Landless	31.12	0
Less than 0.4 ha	29.82	5.11
0.4 – 1 ha	18.97	16.89
1 – 2 ha	10.68	20.47
2 – 3 ha	4.22	13.94
3 – 5 ha	3.06	16.59
5 – 10 ha	1.6	15.21
More than 10 ha	0.52	11.77

*Source: Draft National Land Reforms Policy, 24<sup>th</sup> July, 2013, Department of Land Resources, Ministry of Rural Development, Government of India, New Delhi, p. 3*

Updating the data, the *State of Environment Report: India-2009* reports that, out of total geographical area, 306 mha comprises the reporting area and 146.8 mha is degraded land. An estimated 146.82 mha area suffers from water and wind erosion and other complex problems like alkalinity/salinity and soil acidity due to water-logging.<sup>5</sup> About the land use pattern, the Central Statistical Organization data shows the percentage distribution of country's total land area. The data highlights that the 22.2% land is under forest cover, 13.3% is uncultivable, 3.3% permanent pastures and other grazing land, 1.2% is under tree crops included in net sown area, 5.1% cultivable wasteland, 8.2% fallow land and 46.3% net sown area.<sup>6</sup> In twenty-first century India, increasing industrialization, urbanization and dam construction processes are becoming crucial factor for land degradation, especially the protest movement organizations often highlight such factor. Level of urbanization in India increased from 17% in 1951 to 31% in 2011. The number of urban agglomerations,

<sup>4</sup> MoRD, 24<sup>th</sup> July 2013, *Draft National Land Reforms Policy*, Department of Land Resources, Ministry of Rural Development, Government of India, New Delhi, p. 3.

<sup>5</sup> MoEF, 2009, *State of Environment Report: India-2009*, Ministry of Environment and Forests, Government of India, New Delhi, pp. 65-66.

<sup>6</sup> MoRD, 24<sup>th</sup> July 2013, *Draft National Land Reforms Policy*, Department of Land Resources, Ministry of Rural Development, Government of India, New Delhi, p. 3.

having a population of more than one million, has been increased from 5 in 1951 to 53 in 2011. During 2001-2011, the number of towns in India has increased from 5,161 to 7,935.<sup>7</sup> As per 2011 Census, 68.84% of the country's population lives in 6,40,867 villages and the remaining 31.16% lives in 7,935 urban centers.<sup>8</sup> Currently, the initial steps or land acquisition for industrialization as well as for urbanization is uprooting many peasants from the agricultural land, creating agricultural sector as industrial hub or SEZ and lowering the productivity of acquired land; case of industrialization in Singur is a remarkable example. During 2006, about 997 acres of land was acquired forcibly from Singur block of Hooghly district of West Bengal by the Left Front Government unleashing large scale terror and repression for TATA Small Car manufacturing factory. But due to local protests, TATA moved from Singur and went to Gujarat with dubious aim. The highly fertile land of Singur was rendered uncultivable. Ratan Tata once said that, since the lease fees have been paid for two years in advance, the land will remain in possession.<sup>9</sup> However, through *Singur Land Rehabilitation and Development Act, 2011*, the newly formed Government of West Bengal led by Trinamool Congress took legal steps to restore the land back to the so called unwilling peasants but such initiative had to be abandoned because of the legal complexities and subject to Supreme Court decisions. Notably, on 31<sup>st</sup> August 2016, Supreme Court quashed the land acquisition by erstwhile left-front government and ordered to return the land to the farmers. The state governments of India started to pass Special Economic Zone (SEZ) act at their respective administrative boundary, for example the Government of West Bengal passed SEZ Act in December 2003, the Government of Odisha also introduced SEZ in 2003 and implemented Orissa Industrial Facilitation Act in 2004 for accelerating industrialization. With this progress many state governments of India took several policies for land acquisition, even followed repressive measures to grab land from the peasants and daily wage earners. Consequently, the forcible land

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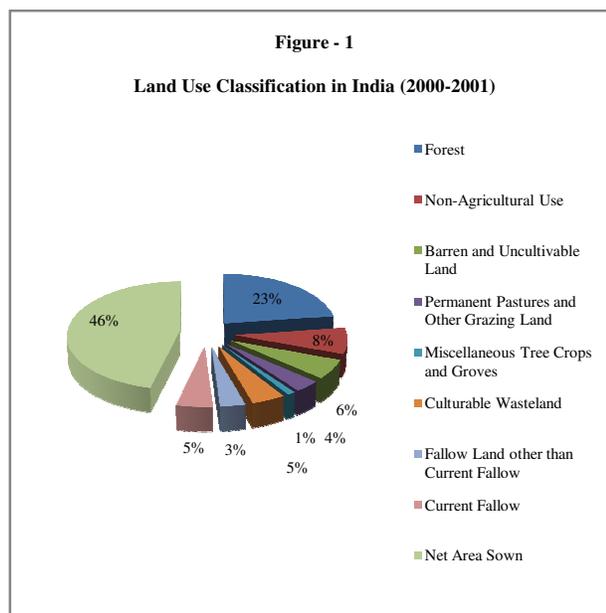
<sup>7</sup> MoRD, July 2013, *National Land Utilization Policy: Framework for Land Use Planning and Management*, Department of Land Resources, Ministry of Rural Development, Government of India, New Delhi, p. 9.

<sup>8</sup> *ibid*, p. 7.

<sup>9</sup> Bhattacharyya, Amit, 2009, *Singur to Largarh via Nandigram: Rising Flames of People's Anger against Displacement, Destitution and State Terror*, Visthapan Virodhi Jan Vikas Andolan, Jharkhand, pp. 10-11.

acquisition for industrialization has aggravated left wing extremism and radical Maoist movement in many parts of the India.<sup>10</sup> Percentage of agricultural land is decreasing day-by-day due to the initiative for industrialization taken by the State Governments. Notwithstanding, according to the data furnished by *The World Bank*, while percentage of agricultural land in India was 60.7 in 2001, the percentage decreased in 2012 and it became 60.3.<sup>11</sup> Therefore, only 0.4% has been reduced in that period.

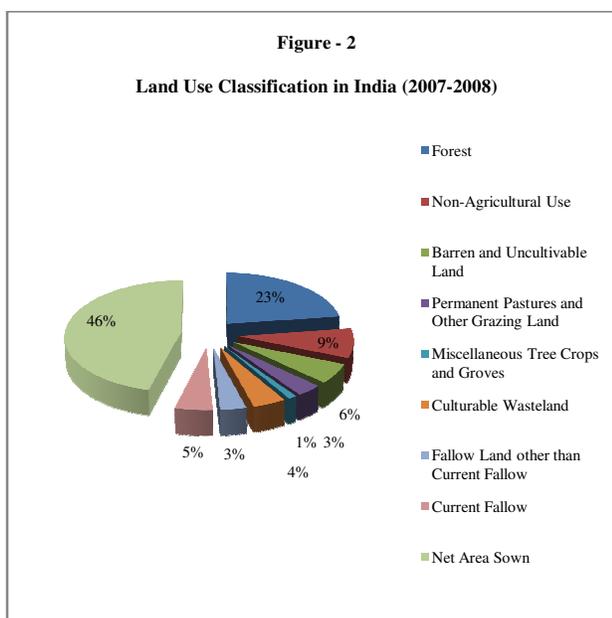
The following figures show the land use classification in India between 2000-2001 and 2007-2008. Notable difference can be seen in the land used for non-agricultural purpose, i. e. while during 2000-2001 it was 8%, during 2007-2008 it became 9%. Therefore, percentage of non-agricultural land increased. On the other hand, percentage of permanent pastures and other grazing land decreased, i. e. while during 2000-2001 it was 4%, during 2007-2008 it became 3%.<sup>12</sup>



<sup>10</sup> Chakrabarty, Bidyut, 2014, *Communism in India: Events, Processes and Ideologies*, Oxford University Press, New Delhi, p. 177.

<sup>11</sup> *Agricultural Land (% of Land Area)*, available at <http://data.worldbank.org/indicator/AG.LND.AGRI.ZS> accessed on 28<sup>th</sup> July 2015.

<sup>12</sup> Kumar, S. Suresh, *Land Accounting in India: Issues and Concern* available at <http://unstats.un.org/unsd/envaccounting/seeaLES/egm/LandAcctIndia.pdf> accessed on 12<sup>th</sup> November, 2015.



*Source: Data-Book 2011, Indian Agricultural Statistics Research Institute, New Delhi*

Land is the vital source of income for the Indian people, especially the poor. According to Census 2011, 263 million people are engaged in agricultural sector.<sup>13</sup> However, the percentage of farmers has decreased from 50% in 1951 to 24% in 2011 and percentage of farm labourers has increased from 19% in 1951 to 30% in 2011.<sup>14</sup> Little progress was seen in the agricultural sector. Agricultural census from 1970-71 to 2000-01 reveal that the distribution of operational holding across size-classes of land possessed has increased from 51% to 63% for marginal holdings (0-1 hectare), has remained around 19% for small holdings (1-2 hectares) and has decreased for all the other size class of holdings. On the contrary, in 2000-01, semi-medium holdings (2-4 hectares) constituted 12%, medium holdings (4-10 hectares) 5% and large holdings (more than 10 hectares) at 1% of the number of operational holdings. That shift indicates the decrease of inequality with regard to distribution of landholdings from 0.64 to 0.56. However, it is also the fact that, between 1995 and 2007, more than 200,000 farmers committed suicides. 83% of them were the male farmers. The suicide mortality rate for male farmers increased from 10.5% in 1995 to 18.2% in

<sup>13</sup> <http://www.downtoearth.org.in/news/farmers-have-decreased-farm-labourers-increased-census-report--40940> accessed on 29<sup>th</sup> July, 2015.

<sup>14</sup> <http://www.hindustantimes.com/india-news/how-many-farmers-does-india-really-have/article1-1250762.aspx> accessed on 29<sup>th</sup> July, 2015.

2007 and that for male non-farmers increased from 12.4% to 14.1%.<sup>15</sup> It is also important to note that, the central and state governments of India have taken many steps to ensure land rights for the people; 'Operation Barga', distribution of *patta* etc. are the noteworthy examples to provide land rights to the shareholders or the landless people in West Bengal. On the contrary, Panchayats (Extension to Scheduled Areas) Act or PESA, 1996 and The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 etc. are also the significant initiatives to ensure the land rights for the tribals. In the form of big industrialization, globalization is uprooting many poor people from their source of livelihood. Hence, frequent movement against the land acquisition has become common occurrence in Indian politics. Movement against land acquisition in Greater Noida (Uttar Pradesh), in Singur and Nandigram (West Bengal), in Kalinga Nagar (Odisha) and even in many parts of North-East India is basically anti-globalization and modern developmental model that disrupt the life and culture of Indian peasant society.

The Government of India is fully aware about the fact that, a huge amount of land is the first requirement for industrial development. In other words, the government has to create land bank to meet industrial development. The industrial development includes the development of Industrial Estates, creation of Special Economic Zones (SEZs), Specialized Industrial Parks, Investment Zones, National Manufacturing and Investment Zones (NMIZs), Special Investment Regions, Petroleum, Chemicals and Petro Chemical Investment Regions (PCPIRs) and Industrial Corridors etc. Apart from these developments, supportive development is also necessary, such as housing areas, transport, trade and commerce areas, wasteland, waste water treatment and disposal areas etc. Therefore, a considerable amount of land is highly required for the successful fruition of the industrial growth. The 12<sup>th</sup> Five Year Plan (2012-17) provides that the country needs to reach an annual economic growth rate of at least 8% in five years in order to significantly increase the quality of life of the citizens, to reduce poverty and to foster environmentally

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<sup>15</sup> Mishra, Srijit and D. Narasimha Reddy, 2011, "Persistence of Crisis in Indian Agriculture: Need for Technological Institutional Alternatives" in D. M. Nachane edited *India Development Report 2011*, Oxford University Press, New Delhi, p. 55.

sustainable development. The 12<sup>th</sup> Five Year Plan proposes growth of economy at 9 to 9.5% during the Plan period and has ambitious targets for various sectors. For instance, the growth of manufacturing sector is proposed at 9.8 – 11.5% and the mining and quarrying at 8.0 – 8.5%. It was expected that, this will bring in demand for additional land and put pressure on existing land uses for their conversion. The National Manufacturing Policy, 2011 of the Government of India, besides, has set industrial growth rate of 12 to 14% in the medium run and contribution of industrial sector to national GDP by 25%. It aims to create 100 million additional jobs by 2022.<sup>16</sup> But the Government of India is facing problems like – land crisis, absence of public consensus and frequent resistance from micro movement organizations, lack of compatible policy measures for land acquisition and rehabilitation and resettlement etc. Under this circumstance, it has become quite difficult to fulfill the assured benefit. To meet the demands for urbanization, industrialization, mining and transport sectors etc. Government of India needs compatible Land Acquisition Policy first. Recently, *The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement (Amendment) Ordinance, 2015* has been introduced in Lok Sabha. The bill allows the Government to exempt five categories of projects from: a) Social Impact Assessment, b) Limits on Acquisition of Irrigated Multi-cropped Land through notification and c) Consent Provisions. The five categories of projects are: i) National Security or Defence, ii) Rural Infrastructure including Electrification, iii) Affordable Housing and Housing for the Rural Poor, iv) Industrial Corridors set up by the appropriate Government undertakings and v) Infrastructure Projects including the projects under public-private partnership where the ownership of land continues to vest with the Government. The amendments make few changes on: a) Industrial Corridors and b) Social Infrastructure. The amendments clarify that the land acquired for industrial corridors will be for industrial corridors set up by the government and government undertakings. Moreover, land can be acquired upto 1 km on both sides of the designated railway line or road of the industrial corridor. The amendments remove

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<sup>16</sup> MoRD, July 2013, *National Land Utilization Policy: Framework for Land Use Planning and Management*, Department of Land Resources, Ministry of Rural Development, Government of India, New Delhi, p. 10.

social infrastructure as an exempted category.<sup>17</sup> The bill highlighted the pragmatic issues to sort out the problems of unemployment and poverty of the proposed region where economic developmental processes would be accelerated after land acquisition. But, while *The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013* highlights on the ‘consent’ clause, i. e. the consent of at least 80% of the affected families in case of land acquisition for private companies and in case of public-private project consent of at least 70% of the affected families is required through prior information before acquisition process, the new ordinance removed the consent clause and closed many doors of open discussions. Such initiative from the administrative machineries is intensifying people’s resentment and mass protest against the state authority. Non-violent resistance under the leadership of Anna Hazare is an intense reaction against the Governmental action on passing the new bill on land acquisition.<sup>18</sup>

### ***India’s Water:***

*India: State of Environment 2001* reports that, India receives an average annual rainfall equivalent of about 4,000 billion cubic meters (BCM) and most of the rainfall is confined to the monsoon season from June to September. Levels of precipitation vary from 100 mm a year in Western Rajasthan to over 9,000 mm a year in the North-Eastern state of Meghalaya. With 3,000 BCM of rainfall concentrated over the four monsoon months and the other 1,000 BCM spread over the remaining eight months. Therefore, rivers of India carry 90% of the water during the period from June-November and only 10% of the river flow is available during the other six months. Out of 4,000 BCM of available water from precipitation, the mean flow in the country’s river is about 1,900 BCM. Out of this amount, only 609 BCM is utilizable. Through a publication, *Storages in River Basins of India*, Central

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<sup>17</sup> *The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement (Amendment) Ordinance, 2015*, Legislative Department, Ministry of Law and Justice, Government of India, New Delhi, 3<sup>rd</sup> April, 2015; PRS Legislative Research, *LARR (Amendment) Bill, 2015: Amendments Proposed on March 9, 2015*.

<sup>18</sup> ‘Anna Plans Larger Movement for Farmers’, *The Hindu*, 24<sup>th</sup> February, 2015, available at <http://www.thehindu.com/news/national/hazare-slams-modi-govt-on-land-acquisition-ordinance/article6925146.ece>, accessed on 9<sup>th</sup> November, 2015.

Water Commission (1997) reported that, with 177 BCM of live storage created by the existing major and medium projects and another 75 BCM of storage from projects under construction and there is still a gap of 440 BCM of water which is utilized. Through another publication *Ground Water Statistics*, Central Ground Water Board (1996) reported that India receives 431.9 BCM ground water resources which is the product of natural recharge from rainfall and due to recharge contributions from canal irrigation. The utilizable ground water resources have been assessed at 395.6 BCM out of which 325.6 BCM is used for irrigation purpose and the rest 70.0 BCM is used for domestic and industrial purposes.<sup>19</sup> *State of Environment Report: India-2009* also provides data related to India's surface water and ground water. It reports that India's twelve major rivers along with a number of smaller rivers and streams comprise a total catchment area of approximately 252.8 mha. The Ganga, Brahmaputra, Meghna are the major rivers with a combined area of 110 mha which is more than 43% of the catchment area of all the major rivers in India. Other major rivers with a catchment area of more than 10 mha are the Indus (32.1 mha), Godavari (31.3 mha), Krishna (25.9 mha) and Mahanadi (14.2 mha). Bay of Bengal receives about 70% and the Arabian Sea receives 20% of water resources from India's rivers. The remaining 10% drain into the interior basins and few natural lakes scattered across the country. These are the sources of surface water. On the other hand, Ministry of Water Resources estimated the replenishable ground water potential of the country is 431 Km<sup>3</sup> per year. India use 16% water of total potential excluding the water reserved for drinking, industrial and other purposes other than irrigation. The potential available for irrigation is 360 Km<sup>3</sup> per year. Nearly about 92% of India's utilizable water is used for the irrigation purpose. *World Bank* (1999) estimated that water consumption for industrial development and international trade has risen and will continue growing at a rate of 4.2% per year. Besides demand for water for industrial, energy production and other uses will rise from 67 billion m<sup>3</sup> to 228 billion m<sup>3</sup> by 2025. *World Resources Institute* (2000)

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<sup>19</sup> UNEP, 2001, *India: State of the Environment 2001*, United Nations Environment Programme, pp. 115-116.

reported that only 85% of the urban and 79% of the rural population has access to safe drinking water and fewer still have access to adequate sanitation facilities.<sup>20</sup>

**Table 2: Water Availability in India**

Sl. No.	Items	Quantity
1.	Annual Precipitation (including Snowfall)	4000
2.	Average Annual Availability	1869
3.	Per Capita Water Availability (2001) in Cubic Meters	1820
4.	Estimated Utilizable Water Resources	1122
	i) Surface Water Resources	690 Cu Km
	ii) Ground Water Resources	431 Cu Km

*Source: State of Environment Report: India-2009, Ministry of Environment and Forests, Government of India, 2009, p. 40*

R. C. Trivedi has highlighted few statistical accounts on the abstractive uses and in-stream uses of India's water resources. Different abstractive uses are: a) domestic water supply, b) irrigation and c) the industrial use. The in-stream uses are: a) hydropower, b) fisheries, c) navigation, d) community bathing and washing and e) cattle bathing and watering. Ministry of Water Resources estimated that, nearly 25 billion cubic meter (BCM) of water was used for domestic purpose in 1990; whereas during 2003-04, Central Pollution Control Board (CPCB) measured that, nearly 35,000 liters of water per day was supplied to Class – I cities and Class – II towns of India. Nearly 84% of the water was used only for irrigation and the estimated amount was 460 BCM per annum. According to an estimation done by CPCB, about 10 BCM per annum of water was used in the industries as process water; whereas about 30 BCM per annum was used as cooling water in power plants. Central Water Commission Report (2000) reported that the total potential for hydropower development in India was at 84,000 MW at 60% load factor. A potential of about 13,400 MW had been created and three schemes with a total power potential of about

<sup>20</sup> MoEF, 2009, *State of Environment Report: India-2009*, Ministry of Environment and Forests, Government of India, New Delhi, pp. 40-42.

5,420 MW were under construction.<sup>21</sup> From 2000 to 2014, construction processes of a total of 7 large dams (with height 50 m and above) have been completed for the purpose of hydroelectric power generation and irrigation. These are: Tehri Dam (2005) in Uttarakhand, Baglihar Dam (2009) in Jammu & Kashmir, Subansiri Lower HE (NHPC) Dam (2014) in Arunachal Pradesh, Indira Sagar (NHDC) Dam (2006) in Madhya Pradesh, Warna Dam (2000) in Maharashtra, Teesta – V (NHPC) Dam (2007) in Sikkim and Lower Ghatghar Dam (2007) in Maharashtra. A total of 8 large dams are still in the process of construction. These are: Lakhwar Dam in Uttarakhand, Pakal Dul Dam in Jammu & Kashmir, Sardar Sarovar Gujarat Dam in Gujarat, Koteshwar Dam in Uttarakhand, Lower: PPSP Dam in West Bengal, Doyang Hep Dam in Nagaland, Parbati II Dam in Himachal Pradesh and Aruna Dam in Maharashtra.<sup>22</sup> Recently Dam Rehabilitation and Improvement Project (DRIP) has become an important concern for the Ministry of Water Resources. It has been stated that this project has been taken up for the continuous strengthening of the dam safety activities in India. DRIP has been taken up with World Bank assistance at an estimated cost of Rs. 2100.00 Crore. The project aims at rehabilitation and improvement of about 223 large dams in four states, i. e. Madhya Pradesh, Odisha, Kerala and Tamil Nadu. Five more states and or organizations, i. e. Karnataka, Punjab, Uttar Pradesh, Uttaranchal Jal Vidyut Nigam Limited and Damodar Valley Corporation, have also been incorporated in to the DRIP at a large stage for which a provision of unallocated resources had been provided in the project estimate. The project development objectives of DRIP are to: a) improve the safety and performance of selected existing dams and associated appurtenances in sustainable manner, and b) strengthen the dam safety institutional set up in participating States as well as at Central level. It was decided that these objectives are to be achieved through investments for physical and technological dam improvements, managerial upgrading of dam operations, management and maintenance with accompanying institutional reforms. Furthermore, it was expected that the institutional development

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<sup>21</sup> Trivedi, R. C., 2006, “State of Water Quality and its Management in India” in Velma I. Grover edited *Water: Global Common and Global Problems*, Science Publishers, USA, pp. 59-60.

<sup>22</sup> *Large Dams in India*, available at [http://india-wris.nrsc.gov.in/wrpinfo/index.php?title=Large\\_Dams\\_in\\_India](http://india-wris.nrsc.gov.in/wrpinfo/index.php?title=Large_Dams_in_India), accessed on 3<sup>rd</sup> August, 2015.

activities will lead to an improvement in the system wide management approach to all dams in the participating states, over and above the focus on the selected dams covered by the project. Thus, the project will address system management in a holistic manner.<sup>23</sup> Water Resources Departments of the four participating States and State Electricity Boards of Tamil Nadu and Kerala would be the project implementation agencies and the overall implementation of the project would be coordinated by Central Water Commission with assistance of a management and engineering consulting firm. Out of the total project cost (2100.00 Crore), 80% will be funded by the World Bank loan or credit and 20% will be borne by respective State Governments and Central Water Commission. Apart from the structural and non-structural measures for rehabilitation and improvement of identified dams, the scope of project also includes the development of appropriate institutional mechanisms for safe operation and maintenance of all large dams in participating states. In addition to these, strengthening of the institutional set up for national level dam safety surveillance and guidance would be taken up in Central Water Commission. The project has become effective from 18<sup>th</sup> April, 2012 and will be implemented over a period of six years.<sup>24</sup>

**Table 3: Number of Dams State-wise under DRIP and Estimate of Project Cost**

State	Total No. of Large Dams	No. of DRIP Dams	Total Project Cost (Rs. in Crore)
Kerala	58	31	279.98
Odisha	198	38	147.74
Madhya Pradesh	899	50	314.54
Tamil Nadu	116	104	745.49
CWC	-	-	132.00
Unallocated Resources	-	-	480.24
Total	1271	223	2100.00

*Source: Annual Report 2013-14, Ministry of Water Resources, River Development and Ganga Rejuvenation, Government of India, New Delhi, pp. 51*

<sup>23</sup> *Dam Rehabilitation & Improvement Project (DRIP)*, available at <http://wrmin.nic.in/writereaddata/AbouttheMinistry/DRIP5577330800.pdf>, accessed on 4<sup>th</sup> August, 2015.

<sup>24</sup> *ibid*; MoWR, *Annual Report 2013-14*, Ministry of Water Resources, River Development and Ganga Rejuvenation, Government of India, New Delhi, pp. 50-51.

B. R. K. Pillai, Director (Dam Safety Rehabilitation Directorate) and Project Director (DRIP), Central Water Commission, viewed that many of DRIP dams are facing various structural deficiencies and shortcomings in operation and monitoring facilities which may affect the safety of the structures and the life and properties in and around the dam. Many of these dams are built on the basis of the prevalent empirical formulae and found to be inadequate based on the current design standards and philosophy. The typical commonly observed problems are: a) seepage boils and leakage downstream of earth dams; b) deformity and erosion of upstream and downstream slopes, erosion of abutments and settlement and cracks along dam crests; c) under designed spillways; d) excessive seepage through masonry dams; e) cracks and pitting in concrete and masonry spillways and outlet gate structures and erosion of energy dissipation systems and spill channels; f) deficiencies in gates and hoisting system and g) malfunctioning of dam monitoring instruments.<sup>25</sup>

National Water Policies of 2002 and 2012 have emphasized on the dam safety services in India. *National Water Policy 2002* has addressed many complex issues of equity and social justice with regard to water distribution. Policy also assured that the participatory approach as well as integrating quality, quantity and the environmental aspects, the existing institutions at various levels under the water resources sector will have to be appropriately reoriented or organized and even created wherever necessary. Further, it was also stated that the preservation of the quality of environment and the ecological balance should be a primary consideration and the adverse impact on the environment, if any, should be minimized and should be offset by adequate compensatory measures. Thus the project should be sustainable.<sup>26</sup> But the policy had several drawbacks. The policy causes contradictions between other policy measures for social, economic and environmental development. The policy objective behind the 73<sup>rd</sup> and 74<sup>th</sup> constitutional amendments was to ensure grassroots participation in water management. This was not mentioned in the

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<sup>25</sup> B. R. K. Pillai, *Dam Rehabilitation and Improvement Project (DRIP – India): 270 Dams to be Rehabilitated*, available at [http://damsafety.in/ecm-includes/upload\\_folder/1395373897-21032014-DAM-REHABILITATION-AND-IMPROVEMENT-PROJECT%20DRIP-INDIA-270-DAMS-TO-BE-REHABILITATED.pdf](http://damsafety.in/ecm-includes/upload_folder/1395373897-21032014-DAM-REHABILITATION-AND-IMPROVEMENT-PROJECT%20DRIP-INDIA-270-DAMS-TO-BE-REHABILITATED.pdf), accessed on 25<sup>th</sup> August, 2015.

<sup>26</sup> MoWR, April 2002, *National Water Policy 2002*, Ministry of Water Resources, Government of India, New Delhi, pp. 1-9.

2002 water policy and even the policy is silent about the question that how stakeholders, including women, could be included in policy development and debate. The policy document has failed to give credence to the Rural Development Ministry's 1994 Guidelines on Participatory Water Development. On the contrary, the policy also has failed to explain why river basin authorities or boards have not been established despite the River Basin Authority Act of 1956, although such boards are common in many countries. This does not necessarily mean the *River Basin Planning* is the ultimate objective rather in future biospheric planning may be the order of the day to overcome the climate change and other atmospheric concerns.<sup>27</sup> To overcome the problems of *National Water Policy 2002*, *National Water Policy 2012* highlighted many important issues such as formulation of Water Framework Plan, level of the several Uses of Water, strategies on Adaptation to Climate Change and many other issues like Enhancing Water Available for Use; Demand Management and Water Use Efficiency; Water Pricing; Conservation of River Corridors, Water Bodies and Infrastructure; Project Planning and Implementation; Management of Flood and Drought; Water Supply and Sanitation; Institutional Arrangements; Trans-Boundary Rivers, Database and Information System; Research and Training Needs; and Implementation of National Water Policy. The policy mentions that 'there is a need to evolve a National Framework Law as an umbrella statement of general principles governing the exercise of legislative and/or executive (or developed) powers by the Centre, the States and the Local Governing bodies... such a framework law must recognize water not only as a scarce resources but also as a sustainer of life and ecology'. In matters of project planning and implementation, the policy tried to be interdisciplinary in nature. It stated that, the 'water resources projects should be planned considering social and environmental aspects also in addition to techno-economic considerations in consultation with project affected and beneficiary families. The integrated water resources management with emphasis on finding reasonable and generally acceptable solutions for most of the stakeholders should be followed for planning and

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<sup>27</sup> Ray, Binayak, 2008, *Water: The Looming Crisis in India*, Lexington Books, New York, p. 31.

management of water resources projects'.<sup>28</sup> The National Water Resource Policy 2012 emphasized on the 'National Water Framework Law'. The 'need for an umbrella framework' has been justified to reconcile the water rights of the states with the increasing importance of water as a national concern and several judicial decisions have also justified it under Article 21 of the India Constitution guaranteeing the right to life. The water resources are becoming scarce due to competing demands, pollution of sources, equity challenges, climate change impacts and competition for resources internationally necessitates managing water as a community resources held by the state under the public trust doctrine to achieve food security, livelihood and equitable and sustainable development for all. The key features of 'National Water Framework Law' include:

- a) *Right to Water*, i. e. every individual has a right to a minimum quantity of potable water for essential health and hygiene and within easy reach of the household and that the minimum quantity of potable water shall not be less than 25 liters per capita per day. The state's responsibility for ensuring people's right to water shall remain despite corporatization or privatization of water services and the privatization of the service, where considered necessary and appropriate, shall be subject to this provision,
- b) *Water Pricing*, i. e. water charges shall be determined on volumetric basis and shall be reviewed periodically in order to meet equity, efficiency and economic principles. The recycle and reuse of water, after treatment to specified standards shall also be incentivized through an appropriately planned tariff system. The principle of differential pricing for water for drinking and sanitation and for ensuring food security and supporting livelihood for the poor may be adopted. The appropriate Government may provide minimum quantity of water for drinking and sanitation free of cost to eligible household being part of pre-emptive need.

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<sup>28</sup> MoWR, *National Water Resource Policy (2012)*, Ministry of Water Resources, Government of India, New Delhi, pp. 1-13.

Available water, after meeting the pre-emptive needs shall increasingly be subjected to allocation and pricing on economic principles so that water is not wasted in unnecessary uses and could be utilized more gainfully and water infrastructure projects are made financially viable,

- c) *Integrated River Basin Development and Management*, i. e. the appropriate Government shall develop, manage and regulate basins of intra-State rivers through specific legislations enacted for such purpose and shall cooperate and participate constructively in planning and management of intra-State rivers along with other co-basin States. River basin or sub-basin shall be developed with unified perspectives of water and ensuring holistic and balanced development of both the catchment and the command areas following the principle of integrated water resources management,
- d) *Ground Water*, i. e. ground water shall be protected, conserved and regulated through appropriate laws and by adequate and efficient measures using a precautionary approach so as to protect available resources and promote sustainable groundwater use. The regulation of groundwater shall be in consonance with the principles of non-discrimination, equity, principle of subsidiarity and shall conform to the constitutional provisions for decentralization of powers and functions. States shall manage groundwater conjunctively with surface water of any basin of which it is a part, taking into account any interconnections between aquifers or between an aquifer and a body of surface water, as well as any impact on aquifers caused by activities within the States' jurisdiction. The extraction of ground water in any manner in any area shall be regulated through community based institutions with due regard to the hydro-

geological and ecological characteristics and features of the aquifer as a whole.<sup>29</sup>

But the problem of *National Water Policy 2012* is about the phrase – ‘generally accepted solutions’. Before taking any step on river basin project or multipurpose dam project, it is important to determine the proper definition on ‘generally acceptable solutions’ and it is also necessary to invent the ways, means and or measures that how ‘generally acceptable solutions’ would be achieved. However, no action can be taken regard to the implementation of river basin project or multipurpose dam project without having consent from the project affected people. The *National Water Policy 2012* is widely concerned about the project affected people and public consensus. But if the parliament passes *The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement (Amendment) Ordinance, 2015* without including the ‘consent’ clause, the proper implementation of the *National Water Policy 2012* would be hardly possible because while the *National Water Policy 2012* is considering the ‘consent’ matter, the new ordinance on land acquisition is not concerned with the matter of the measures of public consensus. Consequently, the riparian people would loss the right over the riparian land and river waters as a result of the implementation of multipurpose river project, especially when the land acquisition process would be going on. However, if the government prioritizes the *National Water Policy 2012* with little modification regard to unambiguous explanation on ‘generally accepted solutions’, social justice can be realized.

In India, large dams have become the icons of modern economic development. The proposal for the construction of mega dam generates the apprehensions and anxiety among the anti-dam groups regarding the environmental sustainability and rights over river resources. Thus developmentalist environmentalism takes a definite shape. Protests and reactions generally come from the environmentalists, who are the critique of modern economic developmental

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<sup>29</sup> Asthana, Vandana and A. C. Shukla, 2014, *Water Security in India: Hope Despair and the Challenges of Human Development*, Bloomsbury, New York, pp. 177-179.

process, and the subaltern people, who depend upon the river waters and other river resources for the survival imperatives; even the voice of protest also echoes from the riparian state or states which face or likely to be faced unequal distribution of river waters and other environmental destructions. It is important to note that, the anti-dam movements in India became prominent and powerful in the last part of the 20<sup>th</sup> century and largely succeeded in building up a global network of resistance movements. Monirul Hussain viewed that, the anti-dam movements have become a very powerful category of new social movements cutting across the national, geographic, class and gender boundaries and with this process the issues of displacement, resettlement and rehabilitation, equity and justice, utility and efficacy of the mega dams, impact of dam on the environment and biodiversity and the question of human rights and particularly the rights of the indigenous or tribal people who had to bear the brunt of displacement disproportionately emerged very prominently in public discourse.<sup>30</sup> Even in twenty-first century, protest against dam continued vehemently in North-East India; movement against Pagladiya dam, Subansiri Lower dam, Tipaimukh dam are few examples. Basically, anti-dam movement in North-East is going on against the drastic conversion of Brahmaputra valley and Barak valley. The North-East India has been identified as India's 'future powerhouse'. At least 168 large hydroelectric projects with a total installed capacity of 63,328 MW are proposed for this region. Arunachal Pradesh and Sikkim have signed multiple memorandum of understanding or agreement with power developers. Till October 2010, the Government of Arunachal Pradesh had allotted 132 projects to companies in the private and public sectors for a total installed capacity of 40,140.5 MW.<sup>31</sup> Construction of Lower Subansiri Mega-dam on the border of Assam and Arunachal Pradesh intensified people's resistance demanding the ecological justice and the rights of the indigenous people. The Subansiri Valley Indigenous Peoples' Forum (SVIPF) was one of the earliest protest organizations which drew support from many ethnic students' organizations, such as *Takam Mising Paring Kebang*,

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<sup>30</sup> Hussain, Monirul, 2008, *Interrogating Development: State, Displacement and Popular Resistance in North East India*, Sage Publications, New Delhi, pp. 101-102.

<sup>31</sup> Vaghlikar, Neeraj, 2011, "Dams and Environmental Governance in North-east India" in *India Infrastructure Report 2011 on Water: Policy and Performance for Sustainable Development*, Infrastructure Development Finance Company, Oxford University Press, New Delhi, p. 360.

All-Assam Gorkha Students' Union etc. The participation of women members through separate protest organization, i. e. *Subansiri Sanrakshak Nari Santha*, was also observed. In Assam, *Krishak Mukti Sangram Samiti* (KMSS) is at the forefront of the movement against dam and the *Asom Jatiyatabadi Yuva Chhatra Parishad* (AJYCP) is representing the interest of the Assamese.<sup>32</sup>

### ***India's Forest:***

*India: State of Forest Report 2001* reports that, out of 3,287,263 km<sup>2</sup> Total Geographical Area, 423,311 km<sup>2</sup> was Reserved Forest, 217,245 km<sup>2</sup> was Protected Forest and 127,881 km<sup>2</sup> was Un-classed Forest. Therefore, Total Recorded Forest Area was 768,436 km<sup>2</sup> which is 23.38% of the total geographical area.<sup>33</sup> On the other hand, *India: State of Forest Report 2013* highlights that, the Total Recorded Forest Area in the country is 771,821 km<sup>2</sup>, i. e. 23.48% of 3,287,263 km<sup>2</sup> Total Geographical Area comprising of 425,494 km<sup>2</sup> Reserved Forest, 214,986 km<sup>2</sup> Protected Forest and 131,341 km<sup>2</sup> Un-classed Forest.<sup>34</sup> In India, three major types of forests are: a) Tropical forests, b) Subtropical forests and c) Sub-alpine forests and Alpine forests. The total forest cover of the country, as per 1997 assessment was 633,397 sq. km. which constitute 19.27% of India's total geographical areas.<sup>35</sup> On the other hand, according to the assessment of 2005, the total forest cover of India was 677,088 sq. km. which constitute 20.60 percent of the geographic area of the country.<sup>36</sup> Therefore, data shows that, after 1997 assessment, the total forest cover increased slightly but, besides, between 2003 and 2005, the total forest cover had decreased slightly by 728 sq. km. The states which have shown a decline in the forest covers are: Nagaland (296 sq. km.), Manipur (173 Sq. km.), Madhya Pradesh (132 sq. km.) and Chhattisgarh (129 sq. km.). A significant loss of forest cover was seen

<sup>32</sup> Das, Samir Kumar, 2013, *Governing India's Northeast: Essays on Insurgency, Development and the Culture of Peace*, Springer, New Delhi, p. 64.

<sup>33</sup> FSI, 2002, *India: State of Forest Report 2001*, Forest Survey of India, Ministry of Environment and Forests, Government of India, New Delhi, p. 7.

<sup>34</sup> FSI, 2013, *India: State of Forest Report 2013*, Forest Survey of India, Ministry of Environment and Forests, Government of India, New Delhi, pp. 3-4.

<sup>35</sup> UNEP, 2001, *India: State of the Environment 2001*, United Nations Environment Programme, p. 83.

<sup>36</sup> MoEF, 2009, *State of Environment Report: India-2009*, Ministry of Environment and Forests, Government of India, New Delhi, p. 13.

in Andaman and Nicobar Islands (178 sq. km.) because of Tsunami, whereas the states of Tamil Nadu (41 sq. km.) and Tripura (32 sq. km.) have shown a marginal increase in the forest cover, with Arunachal Pradesh (85 sq. km.) showing significant increase in the total forest cover. In developing countries, population pressure, poverty and weak institutional framework have been viewed as the predominant underlying causes of forest depletion and degradation. *State of Environment Report: India-2009* noticed that, excessive population and livestock pressure and the requirements of the forest products for essential development generate pressure on forest resources like fuel-wood, fodder, timber, lumber, paper which in turn triggers deforestation. Besides, as compared to the incremental and regenerative capacities, overexploitation of the forest resources escalates the forest depletion and degeneration process. Most importantly India has witnessed a spurt of large projects from big dams and thermal power projects to huge mines and massive industrial complexes.<sup>37</sup>

Forest products can be divided into two parts: a) major forest products which include timber and firewood; and b) minor forest products which include lac and tanning materials, edible and essential oil, resin etc. In India, dependence on forest products is very high both in rural as well as in urban areas. Important commercial and non-commercial forest products are: i) fuel-wood, charcoal or energy, ii) fodder, mainly grasses and leaves, iii) timber, structural timbers, specific utility or industrial timbers, ornamental timbers, iv) bamboos and canes which may be used for various purposes, such as furniture, building construction, fodder etc., v) grasses used as raw material for paper and pulp manufacture, fodder, matting, ropes, cordage and thatching, vi) fibers, such as jute, flax, leaf fibers and cotton, vii) flosses for stiffing of mattresses, pillows, cushions and life belts, viii) coir, primarily coconut coir, ix) essential or volatile oils, such as grass oils, flower oils, leaf oils, root oils and wood oils, x) fixed oils, such as castor oil, cotton seed oil, coconut oil, *Mahua* oil, *Neem* oil and *Sal* butter, xi) waxes, such as *Candelilla* wax and white wax, xii) dyes mainly flower and fruit dyes, bark and wood dyes and root dyes, xiii) tannins obtained from

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<sup>37</sup> *ibid*, pp. 14-15.

species, like *Khair*, *Sal* and *Terminalia*, xiv) medicines and drugs obtained from different parts of forest species are used for the treatment of different disorders and diseases, xv) food – the principle edible parts being leaves, pulp of fruits, seeds, enlarged starchy rhizomes, young and succulent culms and nut kernels, xvi) gums exuded by many tree species, xvii) resins including gum resins, oleo resins and gum oleo resins, xviii) *Lac* excreted by the lac insect which feeds on some trees, xix) leaves of certain forest species may be used for wrapping, cups, plates, fodder, thatching, finishing and polishing. *Beedi* or *Tendu* leaves are an important forest product, xx) honey and wax, xxi) soap substitutes, xxii) marking nuts, xxiii) solar piths, xxiv) bead seeds.<sup>38</sup> It was estimated that, in India, there are 3000 plants which have medicinal value, 200 plant bear essential oil or commercial oil-seeds, 100 species give dyes of commercial importance and 120 species give gums and resins. Collection of different products is responsible for the production of 101,200 tonnes of food products, 132,250 tonnes of myrobalan, 7,097,000 tonnes of *Sal* seeds, 697,600 tonnes of *Mahua*, 115,000 tonnes of *Neem* seeds, 1600 tonnes of sandal oil, 950 tonnes of lemon grass oils, 180,500 tonnes of gums, 17,000 tonnes of resin, 360 tonnes of *Beedi* leaves, 4,716,000 tonnes of bamboos, 5750 tonnes of fibers and 13,000 tonnes of lac and this is only recorded production.<sup>39</sup> In India, upto 30 million people depend upon minor forest produce for some part of their livelihood.<sup>40</sup> Basically the tribals or many Indian traditional communities are mostly dependent on the forest resources for their survival. They use timbers, like bamboos, for construction of houses and fencing the dwelling places and agricultural areas, they collect firewood for cooking, they use forest woods for agricultural implements, rafters and for making hunting equipments, they use grasses for thatching houses. On the contrary, agro-industries are producing the goods for common consumption depending upon the forest products. Even the non-agro based industries like paper mill industry, rubber industry and furniture making companies are also dependent

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<sup>38</sup> Negi, S. S., 1997, *Forestry in India: Research, Extension, Training and Education*, M. D. Publications Pvt. Ltd., New Delhi, pp. 11-13.

<sup>39</sup> Negi, S. S., 1996, *Forests for Socio-Economic and Rural Development in India*, M. D. Publications Pvt. Ltd., New Delhi, p. 82.

<sup>40</sup> Chauhan, R. N., 2007, *Global Forest Resources (Geographical Approach)*, Oxford Book Company, Jaipur, p. 156.

upon the forest products like grasses and bamboos, rubber cement or adhesive elements, barks or trees etc. For the industries, which purify honey and produce sauce, jam, juice and jelly, forest products have a great commercial value for them. Furthermore, pharmaceutical companies also depend upon forest resources for vitamin base, drug components and other essential ingredients for preparing medicines. *Ayurveda* industry is predominant in India based on many available and rare species of plants and forest resources which have medicinal value.

Noticeably, the rate of deforestation in India is growing day-by-day. Hyper-tendency towards urbanization, modernization and industrialization are the underlying causes behind environmental destruction; even hyper-dependency over the forest resources for survival and subsistence of the poor is also another predominant cause. *The Marrakesh Accord & The Marrakesh Declaration* defined 'deforestation' as 'the direct human-induced conversion of forested land to non-forested land'.<sup>41</sup> United Nations Food and Agriculture Organization (UN FAO) defines deforestation as 'the conversion of forest to another land use or the long-term reduction of the tree canopy cover below the minimum 10% threshold'.<sup>42</sup> *The National Forest Commission* report, 2006 mentioned that around 41% of total forest in the country is already degraded, 70% of the forests have no natural regeneration, and 55% of the forests are prone to fire. *Ministry of Environment and Forest* (2009) reports that India's forest cover decreased by 36700 ha between 2007 and 2009 and it was primarily tribal and hilly regions that were to blame. Tribal districts showed a 67900 ha loss in forest cover. Most of the North-Eastern Indian states showed significant reduction in forest cover. In the hilly terrain regions of North-East, many tribal groups practice shifting cultivation. They clear additional land as they move from one area to the next.<sup>43</sup> From 2002 to 2006, the total area of forest increased by 0.60% whereas forest biovolume declined by 5.92%, as per Forest Survey of India

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<sup>41</sup> Kyoto Protocol – *The Marrakesh Accord & The Marrakesh Declaration*, UNFCCC Conference of the Parties, 29<sup>th</sup> October 2001 – 10<sup>th</sup> November 2001, Annex – A.

<sup>42</sup> FRA 2000, *On Definitions of Forest and Forest Change*, Forestry Department, Food and Agriculture Organization of the United Nations, Forest Resource Assessment Programme, Working Paper 33, Rome, 2<sup>nd</sup> November 2000, p. 10.

<sup>43</sup> Banerjee, Atrayee and Chowdhury Madhurima, 2013, "Forest Degradation and Livelihood of Local Communities in India: A Human Rights Approach", *Journal of Horticulture and Forestry*, Vol. 5, No. 8, pp. 122-129.

(FSI) – 2003, 2005 and 2009, at an average rate of 70 million m<sup>3</sup> (cubic meter) per year. Assuming a typical biovolume (67.14 m<sup>3</sup>) for forests in India (averaged from values in FSI 2003, 2005, 2009), the loss is equivalent to clearing 10,426 km<sup>2</sup> of forest per year. If one assumes this clearing affected native and non-native forest (collectively encompassing 690,250 km<sup>2</sup> in 2005) at equivalent intensity, this corresponds to a net deforestation rate of 1.51% per year. However, if the decline in biovolume arose solely from the loss or thinning of native forests as because plantations continued to expand over this period), this translates into a mean clearing rate of 2.67% per year for native forests (assuming 389,970 km<sup>2</sup> of native forest was present in 2005). This second value accords more closely with the estimated rate of native forest loss (2.42% per year) calculated by subtracting estimated plantation area from total forest cover. On the contrary, forest cutting for fuel-wood is the greatest driver of forest loss and attrition in India. *World Bank report on India: Unlocking Opportunities for Forest Dependent People in India* (2006) highlights that, about 247 million people in India rely mostly on natural forests for part of their subsistence or cash livelihoods and two-thirds of these use fuel-wood as an energy source, primarily for cooking and heating. Rural households generally require 1.5 – 2.0 kg of dry fuel per person each day. Totally, an estimated 94.6 million metric tons of fuel-wood are being harvested annually in India and additional wood is consumed for building construction, fencing and other uses.<sup>44</sup>

Sumit Chakravarty and others (2012) have highlighted the direct and indirect causes of forest degradation. The followings are the *direct causes*:

- a) *Expansion of farming land*, i. e. clearing of forests for agricultural settlement with logging and other reasons like roads, urbanization and fuel-wood accounting for the rest. Through the process of shifting cultivation, the cultivators destruct the natural forest cover for soil nutrients. Shifting cultivation in many parts of Asia destroyed huge amount of natural forest cover.

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<sup>44</sup> Puyravaud, Jean-Philippe, Priya Davidar and William F. Laurence, 2010, “Cryptic Destruction of India’s Native Forests” in *Conservation Letters* 3, Volume 3, Issue 6, Wiley Periodicals Inc., pp. 391-392.

- b) *Forest and other plantations*, i. e. timber plantation, tree crops and other plantation initiatives like rubber plantation, tea plantation etc. Tree crops and rubber plantation plays an important role in deforestation in Indonesia than the subsistence oriented shifting cultivation.
- c) *Logging and fuel-wood*, i. e. business of tree felling and preparing the timber and burning woods. Logging in Southeast Asia is more intensive and quite destructive.
- d) *Overgrazing*, i. e. excessive use of grassland for pasturage. In north Beijing, Inner Mongolia and Qinghai province overgrazing is transforming grassland into a desert.
- e) *Fires*, i. e. burning of forest. Fires are used to extend the roads, agricultural settlements and pastures. Deforestation due to road pavements in Brazil had lead to higher incidences of forest fires.
- f) *Mining*, i. e. industry of obtaining minerals from the mining zone. Mining with logging in Philippines was a prime force to loss the forest cover. In the states of Odisha and Jharkhand of India, setting up of mining industries would destruct huge hectares of forested land.
- g) *Urbanization/industrialization and infrastructure*, i. e. the processes of industrial development and expansion of cities or the conversion of villages into cities. The construction of roads, railways, bridges, airports opens up the land to development and brings increasing numbers of people to forest frontiers.
- h) *Air pollution*, i. e. impure air quality which is associated with the degradation of some European and North American forests. This is called 'waldsterben' or death of forest.
- i) *Wars and role of the military*, i. e. political tensions, military operations and use of nuclear power. Forest destruction in El Salvador has resulted from war and military involvement in wars, the role of military in deforestation has been documented in Southeast Asia and South America.
- j) *Tourism*, i. e. creation of national parks and sanctuaries, picnic spots etc. Improper opening of these areas would cause damage of forest covers. In

Cape Tribulation and Australia, the rain forest is being threatened by excessive tourism and similarly lack of adequate management plans for eco-tourism has become a threat for the resources of Terai and Duars of Eastern India.

The *indirect causes* are, as Sumit Chakravarty and others specify: a) colonialism, b) the debt burden, c) over population and poverty, d) transmigration and colonization schemes, e) land rights, land tenure and inequitable land distribution and resources, f) development/land conversion value, fiscal policies, markets and consumerism (these are the economic causes), g) undervaluing the forest, h) corruption and political cause.<sup>45</sup>

As the reasons behind forest degradation in India, P. Davidar and others in *Assessing the Extent and Causes of Forest Degradation in India: Where Do We Stand?* (2010) view that the *critical livelihood*, i. e. forest linkage of a huge forest dependent population is an important factor behind the reduction of forest cover. A. Aggarwal and others in *Forest Resources: Degradation, Livelihoods and Climate Change* (2009) mention that the *demand and supply gap of forest products*, resulting in exploitation beyond its carrying capacity. *Forest Survey of India* report (2011), *Ministry of Environment and Forest* reports (2006, 2009), P. Davidar and others and A. Aggarwal highlighted that the *forest fires, overgrazing, illegal felling and diversion of forest land* (both permitted and illegal for non-forest uses due to competing land use demand for developmental and other uses) are the principal causes behind the attrition of forest resources in India.<sup>46</sup> Table 4 is showing the state and union territory wise change in forest cover in India making a comparison between the records of *India: State of Forest Report 2003* and *India: State of Forest Report 2013*. The table shows that the forest cover decreased mainly in many North-

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<sup>45</sup> Chakravarty, Sumit, S. K. Ghosh, C. P. Suresh, A. N. Dey and Gopal Shukla, 2012, "Deforestation: Causes, Effects and Control Strategies" in Okia Clemet Akais edited *Global Perspectives on Sustainable Forest Management*, InTech, Rijeka, pp. 6-15.

<sup>46</sup> Nayak, Bhibhu Prasad, Priyanka Kohli and J. V. Sharma, 2011, *Livelihood of Local Communities and Forest Degradation in India: Issues for REDD+*, The Energy and Resources Institute, New Delhi, p. 4.

East states. Highest decrease took place in Arunachal Pradesh. On the contrary, highest increase is observed in the state of West Bengal.

**Table 4: Comparison of 2003 and 2013 Assessments of Forest Cover (area in km<sup>2</sup>)**

States/Union Territories	Geographical Area	2003 Assessment				2013 Assessment				Net Difference (b - a)
		Very Dense Forest*	Moderately Dense Forest**	Open Forest***	Total Forest (a)	Very Dense Forest	Moderately Dense Forest	Open Forest	Total Forest (b)	
Andhra Pradesh	275,069	23	24,356	20,040	44,419	850	26,079	19,187	46,116	+1,697
Arunachal Pradesh	83,743	13,907	39,604	14,508	68,019	20,828	31,414	15,079	67,321	-698
Assam	78,438	1,684	11,358	14,784	27,826	1,444	11,345	14,882	27,671	-155
Bihar	94,163	76	2,951	2,531	5,558	247	3,380	3,664	7,291	+1,733
Chhattisgarh	135,191	1,540	37,440	17,018	55,998	4,153	34,865	16,603	55,621	-377
Delhi	1,483	0	52	118	170	6.76	49.38	123.67	179.81	+10
Goa	3,702	0	1,255	901	2,156	543	585	1091	2219	+63
Gujarat	196,022	114	6,231	8,601	14,946	376	5,220	9,057	14,653	-293
Haryana	44,212	2	518	997	1,517	27	453	1,106	1,586	+69
Himachal Pradesh	55,673	1,093	7,883	5,377	14,353	3,224	6,381	5,078	14,683	+330
Jammu & Kashmir	222,236	2,102	8,395	10,770	21,267	4,140	8,760	9,638	22,538	+1,271
Jharkhand	79,714	2,544	9,137	11,035	22,716	2,587	9,667	11,219	23,473	+757
Karnataka	191,791	431	22,030	13,988	36,449	1,777	20,179	14,176	36,132	-317
Kerala	38,863	334	9,294	5,949	15,577	1,529	9,401	6,992	17,922	+2,345
Madhya Pradesh	308,245	4,000	37,843	34,586	76,429	6,632	34,921	35,969	77,522	+1,093
Maharashtra	307,713	8,070	20,317	18,478	46,865	8,720	20,770	21,142	50,632	+3,767
Manipur	22,327	720	5,818	10,681	17,219	728	6,094	10,168	16,990	-229
Meghalaya	22,429	168	6,323	10,348	16,839	449	9,689	7,150	17,288	+449
Mizoram	21,081	84	7,404	10,942	18,430	138	5,900	13,016	19,054	+624
Nagaland	16,579	57	5,650	7,902	13,609	1,298	4,736	7,010	13,044	-565
Orissa	155,707	288	27,882	20,196	48,366	7,042	21,298	22,007	50,347	+1,981
Punjab	50,362	0	743	837	1,580	0	736	1,036	1,772	+192
Rajasthan	342,239	14	4,482	11,330	15,826	72	4,424	11,590	16,086	+260
Sikkim	7,096	458	1,904	900	3,262	500	2,161	697	3,358	+96
Tamilnadu	130,058	2,440	9,567	10,636	22,643	2,948	10,199	10,697	23,844	+1,201
Tripura	10,486	58	4,988	3,047	8,093	109	4,641	3,116	7,866	-227
Uttar Pradesh	240,928	1,297	4,699	8,122	14,118	1,623	4,550	8,176	14,349	+231
Uttaranchal (now Uttarakhand)	53,483	4,002	14,420	6,043	24,465	4,785	14,111	5,612	24,508	+43
West Bengal	88,752	2,303	3,742	6,298	12,343	2,971	4,146	9,688	16,805	+4,462
Andaman & Nicobar	8,249	3,475	2,809	680	6,964	3,754	2,413	544	6,711	-253
Chandigarh	114	1	8	6	15	1.36	9.66	6.24	17.26	+2
Dadra & Nagar Haveli	491	0	145	80	225	0	114	99	213	-12
Daman & Diu	112	0	2	6	8	0	1.87	7.4	9.27	+1
Lakshadweep	32	0	12	11	23	0	17.18	9.88	27.06	+4
Pondicherry	480	0	17	23	40	0	35.23	14.83	50.06	+10
<b>Total</b>	<b>3,287,263</b>	<b>51,285</b>	<b>339,279</b>	<b>287,769</b>	<b>678,333</b>	<b>83,502</b>	<b>318,745</b>	<b>295,651</b>	<b>697,898</b>	<b>+19,565</b>

**Note:** \*All lands with tree canopy density of 70% and above

\*\*All lands with tree canopy density of 40% and more but less than 70%

\*\*\*All lands with tree canopy density of 10% and more but less than 40%

*Source: India: State of forest Report 2003*, Forest Survey of India, Ministry of Environment and Forests, Government of India, New Delhi, pp. 28-29; *India: State of Forest Report 2013*, Forest Survey of India, Ministry of Environment and Forests, Government of India, New Delhi, p. 17

The above table reveals that the North-East states such as, Arunachal Pradesh, Assam, Manipur, Nagaland and Tripura have lost a considerable amount of forest cover in between 2003 and 2013. The underlying causes behind the deforestation or forest degradation in North-East India are: heavy encroachment in the forest land, unbalanced shifting cultivation, illegal tree felling, acceleration of developmental projects like setting up of big industry and construction of mega dams etc. Anup Saikia (2014) observed that the *jhum* cultivation, encroachment, logging, population pressure, timber consumption are the prime factors of deforestation in North-East India.<sup>47</sup> Subir Bhaumik (2009) highlighted that, due to population pressure, encroachment, illegal logging, development projects and slash and burn agriculture etc. North-East India is facing the problem of forest degradation.<sup>48</sup> Samir Kumar Das edited *Blisters on their Feet: Tales of Internally Displaced Persons in India's North East* (2008) indicates that *jhum* cultivation, developmental projects, heavy migration and illegal logging, resettlement in forest areas are major causes of deforestation in India's North-East regions.<sup>49</sup> Walter Fernandes and Sanjay Barbora (2009) focused on the huge developmental project, natural disaster like floods and unbalanced shifting cultivation as the factors behind the loss of forest cover in North-East India.<sup>50</sup>

The issue of environmentalism has come to the surface because of the livelihood struggles by tribals and other poor people who are dependent on India's

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<sup>47</sup> Saikia, Anup, 2014, *Over-Exploitation of Forests: A Case Study from North East India*, Springer, New York, pp. 61-65.

<sup>48</sup> Bhaumik, Subir, 2009, *Troubled Periphery: Crisis of India's North East*, Sage Publications, New Delhi, pp. 65, 133, 199, 245, 272-273.

<sup>49</sup> Das, Samir Kumar (ed.), 2008, *Blisters on their Feet: Tales of Internally Displaced Persons in India's North East*, Sage Publications, New Delhi, pp. 33, 72, 164, 168-169, 270, 283, 320.

<sup>50</sup> Fernandes, Walter and Sanjay Barbora (ed.), 2009, *Land, People and Politics: Contest over Tribal Land in Northeast India*, North Eastern Social Research Centre and International Workgroup for Indigenous Affairs, Gawhati, pp. 122-123, 130, 149.

natural resources for their survival. During environmental struggle, the participants generally highlight their economic and cultural relationship with the nature. In India, many social protests against developmental projects raised the question of rehabilitation on the grounds of cultural traditions and religious background. The movement participants raised the question that how the psychological rehabilitation would be possible if they become displaced from the rich biodiversity zone where developmental actions would take place. However, like the evangelical environmentalism of the United States, Indian environmental movements were not drawing attention to the notions like global warming and climate change. Movements against the developmental projects in many parts of India were attempting to stop land acquisition for the protection of the old places of worship. For example – movement against Pagladiya dam project in Nalbari district of lower Assam was concerned with the protection of temples, *Naamgahars* and other places of worship inside the proposed site for the project.<sup>51</sup> A renewed attempt was found among the *Adivasis* to preserve the sacred groves when they were protesting against the building of Koel-Karo dam in Bihar. That project was stalled for the protection of sacred groves which are the cultural icons for many tribal communities.<sup>52</sup> Sacred groves in India are the communally protected forests which have significant religious connotation. Environmental discourse surrounding sacred groves in India tends to represent the groves as a vanishing tradition, i. e. a part of the heritage of ancient wisdom that is being eroded as Indian society becomes more industrialized, educated, materialistic and imbricated in global networks of commerce and information. Romanticized and essentialized vision of tradition accompanies much of the rhetoric about sacred groves that feeds into a resurgent and militant Hindu nationalism which glorifies the supposed centrality of Hinduism to India's national character in a way that antagonizes others and this rhetoric has had a profound pragmatic effect on sacred groves in some regions of India.<sup>53</sup> In India, approximately

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<sup>51</sup> Hussain, Monirul, 2008, *op. cit.*, p. 133.

<sup>52</sup> Damodaran, Vinita, 2007, "Tribes in Indian History" in Ranjan Chakrabarti edited *Situating Environmental History*, Manohar, New Delhi, p. 151; Deb, Debal, 2009, *Beyond Developmentality: Constructing Inclusive Freedom and Sustainability*, Earthscan, New York, p. 346.

<sup>53</sup> Kent, Eliza F., 2013, *Sacred Groves and Local Gods: Religion and Environmentalism in South India*, Oxford University Press, New York, p. 4.

a total of 22968 sacred groves have been documented. K. C. Malhotra and others in *Sacred Groves in India* (2007) have documented 23076 sacred groves in India.<sup>54</sup> The following table provides the number of sacred groves documented so far in India.

**Table 5: State wise documentation of Protected (Sacred) Groves in India**

State	Local term for Sacred Groves	Number of Documented Sacred Groves
Andhra Pradesh	-	750
Arunachal Pradesh	<i>Gumpa</i> forests (sacred groves attached to Buddhist monasteries)	58
Assam	Than, Madaico	40
Chhattisgarh	Sarna, Devlas, Mandar, Budhadev	600
Gujarat	-	29
Haryana	-	248
Himachal Pradesh	Devbhumi	10,000
Jharkhand	Sarana	21
Karnataka	Devara Kadu	4,050
Kerala	Kavus	2,000
Maharashtra	Devrais	2,799
Manipur	<i>Gamkhap, Mauhak</i> (sacred bamboo reserves)	365
Meghalaya	Law Lyngdhoh	79
Orissa	Jahera, Thakuramma	322
Puducherry	Kovil Kadu	108
Rajasthan	Orans, Kenkris, Jogmaya	9
Sikkim	Gumpa forests	56
Tamil Nadu	Kovil Kadu	448
Uttarakhand	Deothan bugyal (sacred alpine meadows)	1
West Bengal	Garamthan, Harithan, Jahera, Sabitrithan	1093

**Source:** Yogesh Gokhale and Ajeet K. Negi edited *Community-based Biodiversity Conservation in Himalayas*, The Energy and Resources Institute, New Delhi, p. 65

In South India, 59% of the area of sacred groves has been lost during 1990s and others may have been reduced to below their ecologically viable size. In Bihar, Northern India, many of the ancient sacred groves, established around 2400 BC, have recently been degraded. Among 166 inventoried sacred groves around Manipur

<sup>54</sup> Bisht, T. S. and A. B. Bhatt, 2011, "Sacred Groves: A Traditional Way Conserving Biodiversity in Garhwal Himalayas, Uttarakhand" in Yogesh Gokhale and Ajeet K. Negi edited *Community-based Biodiversity Conservation in Himalayas*, The Energy and Resources Institute (TERI), New Delhi, p. 64.

only a few, i. e. 11% are well preserved, while most are threatened. Losses are also occurring in Garhwal Himalaya.<sup>55</sup> Industrialization, urbanization, multipurpose river projects, tourism, mining projects and other economic developmental projects would be the serious causes of the destruction of sacred groves. Emma Tomalin classified religious environmentalism into two types; a) ‘strong’ or ‘romantic’ and b) ‘weak’ or ‘pragmatic’. ‘Strong’ or ‘romantic’ version of religious environmentalism is committed to pursuing a religiously inspired environmentalism, whereas the ‘weak’ or ‘pragmatic’ expression considers that the religion played a role in protecting biodiversity in the past but it is less relevant in the modern age except where it is still strong or as a means of encouraging participation in environmental projects.<sup>56</sup> Most of the contemporary movements against developmental projects to save natural resources and objects which possess religious values are deeply inspired by the ‘pragmatic’ version of religious environmentalism than the ‘romantic’ version because the movement participants mostly prioritize the economic value of the natural resources than the religious value. Therefore, pragmatic environmentalism is now a dominant ideology of the popular resistance against destructive developmental projects to ensure economic rights as well as religious freedom centering round the natural resources of the country.

Recently the Government of India is determined to follow the mechanism of REDD+ to expand and conserve the forest and tree resources. India’s comprehensive approach to REDD is termed as REDD+ approach which argues for compensating not only for ‘reducing deforestation’ but also for ‘conservation, sustainable management of forest and increase in forest cover’.<sup>57</sup> REDD was first discussed in 2005 by the United Nations Framework Convention on Climate Change (UNFCCC) and the decision on REDD+ was adopted through “Bali Action Plan” with reference

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<sup>55</sup> Dudley, Nigel, Shonil Bhagwat, Liza Higgins-Zogib, Barbara Lassen, Bas Verschuuren and Robert Wild, 2010, “Conservation of Biodiversity in Sacred Natural Sites in Asia and Africa: A Review of the Scientific Literature” in Bas Verschuuren, Robert Wild, Jeffrey A. McNeely and Gonzalo Oviedo edited *Sacred Natural Sites: Conserving Nature and Culture*, Earthscan, New York, p. 26.

<sup>56</sup> Tomalin, Emma, 2009, *Biodiversity and Biodiversity: The Limits to Religious Environmentalism*, Ashgate Publishing Limited, England, p. 162.

<sup>57</sup> Aggarwal, Ashish, Soumitri Das and Varghese Paul, 2009, *Is India Ready to Implement REDD Plus?: A Preliminary Assessment* (a discussion paper), The Energy and Resources Institute, New Delhi, p. 5.

to all five eligible activities for REDD+. Sustainable management of forests, conservation of forest carbon stocks and enhancement of forest carbon stocks constitute the “+” in REDD+.<sup>58</sup> REDD (Reducing Emission from Deforestation and Forest Degradation) is the global endeavour to create an incentive for developing countries to protect, better manage and save their forest resources. Thus it is contributing to the global fight against climate change. On the contrary, REDD+ goes beyond merely checking deforestation and forest degradation and includes incentives for positive elements of conservation, sustainable management of forests and enhancement of forest carbon stocks. REDD+ conceptualizes flow of positive incentives for demonstrated reduction in deforestation or for enhancing quality and expanse of forest cover. REDD+ works on the basis of creating a financial value for the carbon stored and enhanced in biomass and soil of standing forests. Countries that reduce emissions and undertake sustainable management of forests will be entitled to receive funds and resources as incentives. REDD+ approach incorporates important benefits of livelihoods improvement, biodiversity conservation and food security services. It has been claimed that the REDD+ will benefit local communities, tribal communities and forest dwellers as it explicitly safeguards their rights and those of indigenous peoples. India is committed that monetary benefits from REDD+ will flow to local, forest dependent, forest dwelling tribal communities. This is ensured for the following reasons:

- a) In India, the REDD+ is intended to be an additional co-benefit to the goods and services already accruing to and being enjoyed by the local community and therefore it comes as a bonus without compromising on the existing benefits.
- b) India's own acts, guidelines, executive instructions and orders at central and state level additionally ensure that REDD+ will not adversely impact on the traditional and legal rights of the local communities over forests but on the other hand will ensure more monetary benefits flowing to them.

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<sup>58</sup> UNFCCC, 14<sup>th</sup> March 2008, *Report of the Conference of the Parties on its Thirteenth Session held in Bali from 3 to 15 December 2007*, United Nations Framework Conventions on Climate Change, pp. 3-6, available at <http://unfccc.int/resource/docs/2007/cop13/eng/06a01.pdf> accessed on 22<sup>nd</sup> August, 2015.

- c) All international REDD+ deliberations and negotiations recognize and respect national legislations relating to safeguards for the rights of indigenous peoples and local communities and aim to promote their participation in implementation and monitoring of REDD+.<sup>59</sup>

*National REDD+ Policy and Strategy* highlighted that, the goals of REDD+ are in conformity with India's National Forest Policy, 1988, which aims to ensure environmental stability and maintenance of ecological balance through protecting, conserving and enhancing the existing forests of the country. The Forest (Conservation) Act, 1980 has regulated diversion of forest land for non forestry purpose and provided for compensatory afforestation. Safeguarding Rights of Local communities was also addressed in the National Forest Policy as well as in the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006. Prior consent of local communities/Gram Sabha is mandatory before the proposals for diversion of forests are approved by the Central Government. Thus the existing policy framework is supportive of implementation of REDD+. There are ten point objectives of National REDD+ policy including improvement of the livelihood status of local communities; strengthening of coordination among sectors and stakeholders having direct and indirect impacts on land use and forestry; developing appropriate mechanism for channelizing REDD+ funding and transferring the accrued financial benefits to the communities in a fair, equitable and transparent manner etc. Few programmes have been identified as the strategy to implement REDD+. These are: a) National Forest Monitoring System, b) National REDD+ Architecture and Governance, c) Platform for Stakeholder Engagement, d) National REDD+ information system e) Transparent, Equitable and Accountable management and f) Capacity Building. The policy also highlighted that, a National REDD+ Authority will be established in Ministry of Environment and Forests under a National Steering Committee on REDD+ serviced by REDD+ Cell. There will be Supporting Institutions like Government, Semi-Government and Non-

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<sup>59</sup> MoEF, 24<sup>th</sup> November 2010, *India's Forests and REDD+*, Ministry of Environment and Forests, Government of India, New Delhi, pp. 1-7, available at <http://www.moef.nic.in/downloads/public-information/REDD-report.pdf> accessed on 26<sup>th</sup> February, 2015.

Government Technical & Scientific Institutions such as Forest Survey of India, Indian Council of Forestry Research and Education, Indian Institute of Forest Management, Indian Institute of Science and Wildlife Institute of India. National REDD+ Authority and REDD+ Cell will prepare a national inventory of carbon sequestration in forests, i. e. an action plan indicating the national reference level for emissions and a national monitoring and reporting system. It will also support creation of Sub-National Level REDD+ architecture/institutional framework with relevant stakeholders and initiating REDD+ pilots for learning. REDD+ cell will assist the National REDD+ Authority.<sup>60</sup>

MoEF and Wildlife Institute of India report (2005) explored that the Joint Forest Management (JFM) guidelines were issued in 1990 to facilitate the involvement of local communities to the management of forests and immediately 1,00,000 Forest Protection Committees have been constituted across the country which manage 28% of the total forest area. According to the MoEF report (2006), National Environmental Policy 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 declaration in the classic sense of tragedy of commons. The policy advocates recognition of traditional rights of communities to remedy a serious age old injustice. In accordance with the status report provided by Ministry of Tribal Affairs (2009), The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of) Forest Rights Act, 2006 seeks to rectify some of the anomalies that have resulted from the notification of tribal and other lands as state forests without settling of rights. It was reported that, upto October 2009, 2.49 million claims have been filed under the Act, out of which 0.56 million titles have already been distributed. D. B. Varadarajan commented that, as REDD proposals and

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<sup>60</sup> MoEF, 2014, *National REDD+ Policy and Strategy*, Ministry of Environment and Forests, Government of India, New Delhi, pp. 1-7, available at <http://envfor.nic.in/sites/default/files/Draft%20National%20Policy%20&%20Strategy%20on%20REDD.pdf>, accessed on 24<sup>th</sup> August 2015; MoEF, 2014, *Reference Document for REDD+ in India*, December Ministry of Environment, Forests and Climate Change, Government of India, New Delhi, available at <http://envfor.nic.in/sites/default/files/press-releases/Reference%20Document%20For%20REDD+%20in%20India.pdf>, accessed on 24<sup>th</sup> August 2015.

projects gather momentum indigenous peoples, forest movements and forest policy experts emphasize that effective and sustainable policies on forests and climate change mitigation must be based on the recognition of rights, respect for the principle of Free, Prior and Informed Consent (FPIC) and requirements for progressive forests sector tenure and governance reforms. During Bali Action Plan (2007), the decision on REDD did not contain explicit recognition of the need to respect the rights of indigenous people and local communities. While Conference of the Parties to the Convention (COP) decision did not mention human rights instruments or important intergovernmental commitments like the UN Declaration on the Rights of Indigenous People (UNDRIP), in India majority of forest resources function as life support systems for nearly 400 million people and also act as safety nets. In spite of heavy dependence of people on forests these resources are used in a sustainable manner due to certain indigenous forestry practices of forest fringe communities which reduce the extraction and dependency load on forests and thus help better management of forest carbon.<sup>61</sup>

Movement for ensuring forest rights still continues. Basically movements for forest rights emerge when the government fails to provide the assured benefit to the tribals and other forest dwellers or when the *de facto* control by the forest department persists even after empowering the tribals and other forest dwellers. Tribal movement against the Joint Forest Management policy of the State Government of Jharkhand during 2001 was a remarkable example. Forest rights movement in Jharkhand forced the central government to recognize the rights of all forest dependent people in forests. Consequently, the introduction of Scheduled Tribe and Forest Dwellers (Recognition of Forest Rights) Bill, 2005 was a strategy to satisfy the forest dependent people who were following the way of protest.<sup>62</sup> After signing memorandum of understanding between POSCO and state Government of Odisha,

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<sup>61</sup> Vharadarajan, Dhulasi Birundha, 2014, "REDD, Climate Change and the Rights of Tribal Communities in India" in *Journal of Studies in Dynamics and Change*, Vol. 1, No. 1, pp. 17-18.

<sup>62</sup> Mullick, Sanjay Bosu, 2007, "State Forest Policy and Adivasi Self-rule in Jharkhand" in Chittaranjan Kumar Paty edited *Forest, Government and Tribe*, Concept Publishing Company, New Delhi, pp. 28-29.

forest rights movement was started in Jagatsinghpur district. The movement raised the question against the clarity on the implementation of Forest Rights Act, 2006.

### ***India's Biodiversity***

*India: State of Environment 2001* reports that India occupies only 2.4% of the world's land area but contributes to the world's biodiversity approximately 8% of the total number of species which is estimated to be 1.75 million. India has approximately 45,000 plant species and 65,000 faunal species. The faunal species includes 1228 bird species, 428 reptile species, 372 mammal species, 204 amphibians and 2,546 fish species.<sup>63</sup> *India: State of Environment Report-2009* highlights that India has 45,500 plant species including fungi and lower plants and 91,000 animal species that represents about 7% of the world's flora and 6.5% of the world's fauna respectively. It also reported that, India has some 59,353 insect species, 2,546 fish species, 240 amphibian species, 460 reptile species, 1,232 bird species and 397 mammal species, of which 18.4% are endemic and 10.8% are threatened.<sup>64</sup> Botanical Survey of India Report (2009) has provided the number of species in major groups of plants and microorganisms. India has 8 major groups of plant and microorganisms including 850 virus/bacteria species, 7175 algae species, 14,500 fungi species, 2223 lichens, 2500 bryophytes, 1,200 pteridophytes, 67 gymnosperms and 17,527 angiosperms. Out of these figures, 6200 species of angiosperms, 7 species of gymnosperms, 193 species of pteridophytes, 629 species of bryophytes, 527 species of lichens, 3500 species of fungi and 1925 species of algae are endemic. India has over 800 crop species and 320 wild relatives. Out of these figures, India has 51 species of millets; 31 legumes; 109 fruit species; 27 species of spices and condiments; 54 vegetables; 24 fiber crops; 12 oil seeds, tea, coffee, tobacco and sugarcane; and 3,000 medicinal plants.<sup>65</sup>

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<sup>63</sup> UNEP, 2001, *India: State of Environment 2001*, United Nations Environment Programme, p. 81.

<sup>64</sup> MoEF, 2009, *India: State of Environment Report-2009*, Ministry of Environment and Forests, Government of India, New Delhi, p. 50.

<sup>65</sup> MoEF, 2009, *India's Fourth National Report to the Convention on Biological Diversity*, Ministry of Environment and Forests, Government of India, New Delhi, pp. 23-26.

*Annual Report 2014-15* by Ministry of Environment, Forests and Climate Change, Government of India, portrays that different regional centre units of Botanical Survey of India has conducted 98 field tours for collection of plant specimens or materials for floristic, ethno-botanical and pharmacognostical studies on flowering and non-flowering plants and three biodiversity hotspot, viz. the Himalaya, the Indo-Burma and the Western Ghats-Sri Lanka. These include 36 Protected Areas and 7 Sacred Groves. In addition, 12 tours were undertaken for the collections of live germplasm in these areas. Through such extensive field survey, 1 genus and 37 species have been discovered as new to science; apart from that 2 genera and 31 taxa were found as new to India and 56 new distributional records have been made for different geographic regions or states.<sup>66</sup> These are the new discoveries of floral resources. About the faunal resources, the *Annual Report 2014-15* also reports that in the country, there are 668 Protected Areas including 102 National Parks, 515 Wildlife Sanctuaries, 47 Conservation Reserves and 4 Community Reserves Covering a total of 1,61,221.57 km<sup>2</sup> of geographical area which is approximately 4.90% of the country. In addition, there are 47 Tiger Reserves, 18 Biosphere Reserves, 25 Elephant Reserves, 5 Natural World Heritage sites and 25 Ramsar Wetland sites in India. Of these Zoological Survey of India surveyed and documented 52 Protected Areas. After the survey, the scientists discovered 4,806 new species and more than 3,000 species as new records.<sup>67</sup>

According to the *IUCN (International Union for Conservation of Nature) Red List Version 2012.2: Table 1*, a total of 9,390 plant species is threatened. The plants include mosses, ferns and allies, gymnosperms, flowering plants, green algae and red algae. In 2000, the total number was 5,611. While, in 2000, a total of 3,507 vertebrates were threatened, in 2012, it became 7,250. The vertebrates include mammals, birds, reptiles, amphibians and fishes. In 2012, 3,570 species of invertebrates were calculated as threatened, whereas, in 2000, this number was

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<sup>66</sup> MoEFCC, 2015, *Annual Report 2014-15*, Ministry of Environment, Forests and Climate Change, Government of India, New Delhi, pp. 2-4 available at <http://www.moef.gov.in/sites/default/files/Environment%20Annual%20Report%20%20Eng..pdf> accessed on 14<sup>th</sup> December 2015.

<sup>67</sup> *ibid.*, p. 12-13.

1,928. The invertebrates include insects, mollusks, crustaceans, corals, arachnids, velvet worms, horseshoe crabs and others.<sup>68</sup> In 2012, IUCN calculated 132 floral and faunal species, including 60 plants and 72 animals, as critically endangered. As many as 141 plants and 310 animals are endangered.<sup>69</sup>

In accordance with the *IUCN Red List* (2008), India has 246 globally threatened floral species which constitute approximately 2.9% of the world's total number of threatened floral species (8457). Out of 246 threatened species, 89 are vulnerable, 45 are critically endangered and 112 are endangered. Furthermore, it has been reported that 7 Indian plants come under the extinct category and 2 Indian plants come under the category of extinct in the wild.<sup>70</sup> G. S. Rawat edited *Special Habitats and Threatened Plants of India* informs about the threatened plants of different parts of India. Through extensive survey it has been explored that, in the Kashmir valley, Himalayan Elm and 9 plant species including herbs and flowering plants are threatened due to fragile habitats, grazing pressures, overexploitation for wood and lopping pressure, overexploitation of medicinal purposes, extremely shrunk and restricted populations etc.<sup>71</sup> Sacred groves of Western Himalaya and many parts of India are threatened because of the following reasons:

- a) Erosion of traditional beliefs and rapid socio-economic advancement has led to the deterioration of sacred groves. Fading respect towards traditional knowledge among youngsters is one of the causes of concern,
- b) Developmental projects such as roads, dams, highways and encroachment by people migrating from outside having no respect for traditional values,

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<sup>68</sup> *IUCN Red List version 2012.2: Table 1 [Numbers of Threatened Species by Major Groups of Organisms (1996-2012)]* available at [http://www.iucnredlist.org/documents/summarystatistics/2012\\_2\\_RL\\_Stats\\_Table\\_1.pdf](http://www.iucnredlist.org/documents/summarystatistics/2012_2_RL_Stats_Table_1.pdf) accessed on 29<sup>th</sup> October, 2015.

<sup>69</sup> TERI, 2013, *TERI Energy Data Directory and Yearbook 2012/13*, The Energy and Resources Institute, New Delhi, p. 372.

<sup>70</sup> MoEF, 2009, *India's Fourth National Report to the Convention on Biological Diversity*, Ministry of Environment and Forests, Government of India, New Delhi, p. 25.

<sup>71</sup> Dar, G. H., 2008, "Special Habitats and Threatened Plants of Kashmir Himalaya" in G. S. Rawat edited *Special Habitats and Threatened Plants of India*, ENVIS Bulletin: Wildlife and Protected Areas, Vol. 11 (1), Wildlife Institute of India, Dehradun, India, pp. 32-35.

- c) Transformation of traditional worship of nature into formal Hindu practice, which is called 'sanskritization' like shifting the focus to idols than a simple stone, building temples which include clearing of the area,
- d) Heavy tourism sometimes a burden to sacred groves, if the tourists are not aware of the fragile aspect of the nature,
- e) Fragmentation or split among families owning sacred groves.<sup>72</sup>

North-eastern region of India represents about 50% of the floristic wealth of the country and contains about 8000 species of flowering plants including several representatives of primitive or ancient angiosperms. But, in this biodiversity hotspot, more than 700 taxa of plants are threatened due to high population pressure and ruthless exploitation of the forest resources.<sup>73</sup> From the Western Ghats, 38 species of *Ceropegia* have been reported. *Ceropegia* is a genus of plants within the family of Apocynaceae. In Northern Western Ghats, out of 38 species of *Ceropegia*, 15 are narrow endemic and all of them are highly threatened because of excessive exploitation of tubers by the cowboys, cattlemen and the tubers of *Ceropegias* are also eaten by wild animals. And there are also other natural factors behind the threat, for example, many of the seeds of *Ceropegias* are worn out as they do not reach to proper place for seed germination and seeding establishment.<sup>74</sup> In Thar Desert of Rajasthan, a total of 6 shrubs are threatened because of drastic changes in the land use in recent decades and changes in habitat conditions due to invasion of alien invasive species.<sup>75</sup> In Kachchh Desert of Gujarat, a total of 19 plants including herbs,

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<sup>72</sup> Dhaila-Adhikari, Seema and B. S. Adhikari, 2008, "Sacred Groves: People's Contribution to conservation" in G. S. Rawat edited *Special Habitats and Threatened Plants of India*, ENVIS Bulletin: Wildlife and Protected Areas, Vol. 11 (1), Wildlife Institute of India, Dehradun, India, p. 226.

<sup>73</sup> Prabhu, Swapna, 2008, "Special Habitats and Threatened Plants of Meghalaya" in G. S. Rawat edited *Special Habitats and Threatened Plants of India*, ENVIS Bulletin: Wildlife and Protected Areas, Vol. 11 (1), Wildlife Institute of India, Dehradun, India, p. 83.

<sup>74</sup> Yadav, S. R. and Mayur Y. Kamble, 2008, "Threatened *Ceropegias* of the Western Ghats and Strategies for Their Conservation" in G. S. Rawat edited *Special Habitats and Threatened Plants of India*, ENVIS Bulletin: Wildlife and Protected Areas, Vol. 11 (1), Wildlife Institute of India, Dehradun, India, pp. 123-133.

<sup>75</sup> Kotia, Amit, 2008, "Threatened Plants and Their Habitats in Indian Thar Desert" in G. S. Rawat edited *Special Habitats and Threatened Plants of India*, ENVIS Bulletin: Wildlife and Protected Areas, Vol. 11 (1), Wildlife Institute of India, Dehradun, India, pp. 95-99.

shrubs and climbers are threatened due to high intensity of grazing pressure, soil erosion, mining and industrial development etc.<sup>76</sup>

As per the quantitative evaluation (2011) done by IUCN, there are 57 critically endangered species of animals in India. A total of 13 bird species, 10 mammals, 6 reptiles, 19 amphibians, 5 fishes, 2 spiders and 1 coral species are critically endangered in context to India. Because of the clearing of jungle, loss of forest and wetlands, conversion of grassland habitat, indiscriminate hunting, human disturbance etc. few rare species of birds like Siberian Crane, Jerdon's Courser, Forest Owlets etc. are facing threat. Four species of vultures are threatened due the use of painkiller diclofenac by the veterinarians to treat cattle. Due to the loss and degradation of grasslands, livestock grazing, loss of habitat due to selective logging, drastic weather change, conversion of forests, overgrazing of vegetation disturbance from tourism and recreational activities, illegal hunting, deforestation and commercial plantation etc. Rhinoceroses, shrews and few other animals have become critically endangered. Combined effects of dams, barrages, artificial embankments, change in river course, pollution, riparian agriculture, conversion of habitat etc. Gharials are now critically endangered species. Because of the turtle shell trade, egg collection, slaughter of meat, water pollution, destruction of foraging habitats, water development projects, human disturbance and poaching etc. few turtle species have been threatened. Conversion of forest land and developmental projects are threatening the amphibians. Due to overfishing, water pollution and construction of dams and barrages Indian sharks are facing threat.<sup>77</sup> India's draft National Biodiversity Strategy and Action Plan identifies nine prime reasons behind the loss of biodiversity. These are:

- a) **The Model of Development:** For economic development, India is following the models like – large scale industrial expansion, commercial (monocultural)

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<sup>76</sup> Joshua, Justus, S. F. Wesley Sunderraj and Pankaj N. Joshi, 2008, "Status Survey of Threatened Plants in Kachchh Desert, Gujarat" in G. S. Rawat edited *Special Habitats and Threatened Plants of India*, ENVIS Bulletin: Wildlife and Protected Areas, Vol. 11 (1), Wildlife Institute of India, Dehradun, India, pp. 102-104.

<sup>77</sup> MoEF, March 2011, *Critically Endangered Animal Species of India*, Ministry of Environment and Forests, Government of India, New Delhi, pp. 1-23.

agricultural production and increase in the consumption of goods and services through exploiting natural resources with scant regard for sustainability.

- b) **The Erosion of Customary Rights and Management System:** Common property rights over forests, pastures and common lands and water bodies administered by customary resource management are replacing by state owned rights or state administered individual (private) rights. Unsustainable and reckless harvesting from forests, wetlands and other ecosystems are ensuing partly due to such erosion of traditional management systems of resource use.
- c) **Increasing Social, Political and Economic Inequalities:** Inequities between land-owning peasants and forest-dwellers in the past have led to severe deforestation. The ongoing process of market driven economic liberalization and globalization is enhancing the inequities and destruction.
- d) **Inappropriate and Unclear Tenurial Arrangements and Inter-departmental Conflicts:** Conflicts between government and people regarding the rights over natural resources are very sharp. Many tenurial conflicts are rooted in the blanket processes of state acquisition of forest and revenue lands as well as communal water management systems without detailed surveys of existing uses and users.
- e) **Changes in Cultural, Ethical and Moral Values:** Changes in the cultural and ethical value system causes alienation of local communities from natural resources; the spread of homogenous attitudes such as the notion that wheat and rice are the only grains worth eating; the devaluation of their traditional or indigenous knowledge; displacement of local communities due to large scale development projects and inadequate or non-existent rehabilitation measures; and urban consumerist lifestyles, that often set the model for rural and semi rural areas, which are largely bereft of cultural or ethical links with biodiversity.
- f) **Lack of Recognition of the Full Values of Biodiversity:** *Ethical and Cultural undervaluation* is taking place as is evident in the rapid decline in

the protection being accorded to sacred groves and landscapes, and to species. *Productivity undervaluation* is also occurring because of myth that traditional cultivars which are essential for a diverse cropping system are low yielders. *Non-appreciation of water and other ecosystem services* by today's planners is leading to a lack of understanding of the critical role that ecosystems play. Modern India's health policies and programmes are consistently ignoring the *health value* that elements like medicinal plants and traditional crops have provided. Agricultural policies and programmes do not even acknowledge the role of agro-biodiversity in nutrition and health. Economic planning and budgeting in India is not taking adequate account of the enormous *economic value* of biodiversity, especially of 'services' like water security and soil productivity.

- g) **Inappropriate, Inflexible, Weak and Contradictory Laws and Policies:** These are causing contradictions between policies and laws relating to environment on the one hand, and those relating to industrial development, commerce, and welfare on the other; lack of an adequate integration of biodiversity concerns into most policies and laws; centralizing tendency of some laws; weak enforcement; inadequate empowerment of citizens to use the existing policies and laws or to challenge them when inimical to biodiversity conservation; and no holistic land use plan and policy that can specify fragile areas as off-limits to development processes like mining.
- h) **Demographic Changes:** These include the growth in population since the time of Independence; the localized demographic movements, of which the most dramatic, yet least recognized is being the movement of several million people displaced by large development projects, including large dams; illegal immigration from within and outside the country; and unrecognized refugees of policies that have forced people off the land.
- i) **Inappropriate Trade Regimes:** This is the focus on export of natural resource based products without caring about the sustainability of the resource or the livelihoods of those already dependent on this resource. Impacts on biodiversity from trade are likely to significantly increase in the

next few years, with India's acceding to the World Trade Organization's treaties. Export policies are spreading monocultures and export oriented cash crops are being encouraged, at the cost of bio-diverse farming system.<sup>78</sup>

Global concern about loss of species and ecosystems found expression in the International Convention on Biological Diversity (CBD). The CBD is one of the key agreements adopted during the Earth Summit held in Rio de Janeiro in 1992. CBD is the first comprehensive global agreement which addresses all aspects relating to biodiversity. Pursuant to ratification of CBD, following an extensive consultative process with various stakeholders, a National Policy and Macro-level Action Strategy on Biodiversity was developed and approved by Committee of Secretaries in 1999. After the submission of prepared policy to the CBD Secretariat, the MoEF implemented an externally-aided project on National Biodiversity Strategy and Action Plan (NBSAP) from 2000-2004. Following approval of the National Environment Policy by the Cabinet in 2006, preparation of National Biodiversity Action Plan (NBAP) was taken up, by revising and updating the National Policy and Macro-level Action Strategy on Biodiversity developed in 1999, and by using the final technical report of the NBSAP project, so that the NBAP is in consonance with the National Environment Policy.<sup>79</sup> *Draft National Biodiversity Action Plan (2007)* admitted that India was facing problems in matters of the proper management of biodiversity. Several constraints, threats and failures have been reported. These are: a) 70% of the country's land area has been surveyed and around 46,000 species of plants and 89,000 species of animals have been described. Nearly 50% of the aquatic plants of the world are recorded in India. More than 400,000 species in India needs to be recorded. Lack of experts is affecting identification, b) measures to conserve its rich biodiversity have not been sufficient. Despite many laws in place (Wildlife Protection Act, 1972, Forest (Conservation Act), 1980, Biological Diversity Act, 2002), the report admits that there is lack of effective enforcement of the laws to protect biodiversity, c) much of India's forest land has been given away for industrial

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<sup>78</sup> Kothari, Ashish and Anuprita Patel, 2006, *Environment and Human Rights: An Introductory Essay and Essential Readings*, National Human Rights Commission, New Delhi, pp. 25-26.

<sup>79</sup> *Convention on Biological Diversity, Ministry of Environment and Forests*, available at <http://envfor.nic.in/division/convention-biological-diversity-cbd>, accessed on 9<sup>th</sup> November, 2015.

and infrastructural activities. Since the enactment of the Forest (Conservation) Act, 1980, about 15,000 projects involving 1.14 million hectares of forest have got official clearance, d) over 40% of India's forests face different levels of degradation. The plan blames domestic demand for timber, fuel-wood and grazing for the crisis. About 80 per cent of the forest area faces heavy grazing while fire affects 50% of the forest cover, e) India now has just 12 varieties of food, which provide 80% of the food energy. Changing lifestyles have affected variety, taste and nutritional value of food, f) agricultural biodiversity has been declining in India with more number of crops being commercially cultivated. Number of varieties grown under different agricultural systems has also fallen. Over 300,000 samples of indigenous plants kept in the National Gene Bank have gone out of cultivation, g) nearly 140 native breeds of farm livestock are facing survival threat. Low genetic diversity in natural conditions has affected the evolutionary development of indigenous wild species, h) about 90 per cent of India's traditional herbs are being traded. India's share in the global complementary medicine market valued at 62 billion US\$ is only 0.3%, out of which 70% comes from the export of raw materials, i) grasslands, rivers, wetlands and coastal and marine ecosystems are under threat causing widespread damage in support system for various species, j) despite bio-safety concerns, genetically modified crops like Bt cotton have got official approval for commercial use etc.<sup>80</sup>

Silent Valley movement of 1970s was a reactionary social movement for the protection of biodiversity in the northern part of Kerala. At that time, radical environmentalism emanated through the combined efforts of many non-governmental organizations like Bombay Natural History, World Wildlife Fund – India and *Kerala Sastra Sahitya Parishad* and even international organization like IUCN also played an important role for the protection of biodiversity and to oppose the construction of dam over Kunthipuzha River. Silent Valley movement exposed the destructive nature of commercially motivated state development projects and

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<sup>80</sup> MoEF, August 2007, *Draft National Biodiversity Action Plan*, Ministry of Environment and Forests, Government of India, New Delhi, pp. 13-33; *National Biodiversity Plan admits India has failed to conserve biodiversity*, available at <http://www.downtoearth.org.in/news/national-biodiversity-plan-admits-india-has-failed-to-serve-biodiversity-6650> accessed on 9<sup>th</sup> November, 2015.

demanded scientific studies of environmental and social impacts of development projects. Thus a holistic critique of development projects emerged from this environmentalism.<sup>81</sup> Since 1980s, Navdanya is organizing social movements for saving seed and protecting biodiversity and also keeping seed and agriculture free of monopoly control. Navdanya family was started taking 16 community seed banks in six states in India.<sup>82</sup> Today Navdanya is a NGO, a solidarity network, a militant cooperative movement, a private venture, a university and an environmental activist group with multiple international connections. 16 Indian states and more than 500,000 farmers with small and marginal farms are the primary members of Navdanya. It has set up 65 community seed banks across the country to preserve indigenous seeds and to offer an alternative to patent controlled resources and production. Navdanya took the stand for ‘small is beautiful’ converges with that of ‘slow food’. It stood up for bio-safety and warned against the danger of genetically modified organisms.<sup>83</sup> In India, several Governmental organizations have been established to protect, promote and preserve the individuals of different animal species, for example – The Ministry of Environment and Forests, The Zoological Survey of India, Society for Prevention of Cruelty to Animals, Tiger Task Force, The Animal Welfare Board of India, Indian Board of Wildlife or National Board of Wildlife, The Wildlife Crime Control Bureau, National Tiger Conservation Authority, Central Zoo Authority, The National Biodiversity Authority, Indian Council of Forestry Research and Education, Environmental Information System and Centre for Environmental Education etc. Similarly, for the protection of wild animals or animal welfare and to deal with the problems related to wildlife, there are a number of non-governmental organizations in India; these are: Association for Species Conservation in India, Bombay Natural History, Centre for Science and

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<sup>81</sup> Deb, Debal, 2009, *Beyond Developmentality: Constructing Inclusive Freedom and Sustainability*, Earthscan, New York, p. 247; Swain, Ashok, 2010, *Struggle Against the State: Social Network and Protest Mobilization in India*, Ashgate Publishing Limited, England, pp. 59-62.

<sup>82</sup> Shiva, Vandana, 2000, *Stolen Harvest: The Hijacking of the Global Food Supply*, Zed Books, London, p. 3.

<sup>83</sup> Virmani, Arundhati and Francois Lepineux, 2015, “Spiritual-Based Entrepreneurship for an Alternative Food Culture: The Transformational Power of Navdanya” in Laszol Zsolnai edited *The Spiritual Dimension of Business Ethics and Sustainability Management*, Springer, New York, pp. 130-140.

Environment, Centre for Wildlife Studies, CPR Environmental Education Centre or C. P. Ramaswami Aiyar Foundation, Dasholi Gram Swarajya Mandal, Friendicoes – Society for Eradication of Cruelty to Animals, Gandhi Peace Foundation – Environment Cell, Global Tiger Petrol, Indian Association for Environmental Management, “Jumbo Wildlife” Fund, Kalpavriksh, “Narmada Bachao Andolan” The Wildlife Research and Conservation Trust, Travel Operators for Tigers, Wildlife Conservation Society, Wildlife Trust of India etc. These NGOs mobilize people for global social movement for the protection of animals, disseminate environmental awareness for securing the life span of the animals and conduct surveys for the evaluation of the current status of the wild animals etc.<sup>84</sup> Few other private environmental organizations like Tata Energy Research Institute (TERI) (presently The Energy and Resources Institute), Community Led Environment Action Network (CLEAN), World Wide Fund for Nature (India), Sulabh International Social Service Organization etc. have been successful in promoting environment protection, conservation and sustainable development.<sup>85</sup>

Environmental movements often raise the issue of property rights of the individual or community; more clearly the social movements for ecological protection or conservation take radical position in defence of the rights of the people over the natural resources of the country. Several environmental NGOs are the defenders of the rights of the people; especially rights over the natural environment. Basically, conservationists, nature lovers, social activists, urban intellectuals, wildlife enthusiasts form the environmental NGOs and they prescribe models for biodiversity conservation and also suggests for the protection of community rights over natural resources. For example – Kalpavriksh is a non-profit environmental action group and NGO which works for environmental awareness, litigation, research and other areas on local, national and global level. It established a 15 member Technical and Policy

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<sup>84</sup> Sharma, B. K., Seema Kulshreshtha and Asad R. Rahmani (eds.), 2013, *Faunal Heritage of Rajasthan, India: Conservation and Management of Vertebrates*, Volume 2, Springer, New York, pp. 491-495.

<sup>85</sup> Guan, Benny Teh Cheng and Zhiqun Zhu, 2014, “Introduction: Foreign Policy and Security in an Asian Century” in Benny The Cheng Guan edited *Globalization, Development and Security in Asia: Volume 1: Foreign Policy and Security in an Asian Century: Threats, Strategies and Policy Choices*, World Scientific Publishing Company, Singapore, pp. 9-10.

Core Group (TPCG). However, Ministry of Environment and Forests (MoEF) controls the whole process. But in practice the NGO has an unprecedented level of independence from MoEF during the planning process. The TPCG expertise includes community based conservation, agro-biodiversity, forestry, gender and livelihood issues, community based enterprise, relevant laws, biotechnology, tribal rights, medicinal plants and local health traditions, wildlife conservation and oceanography. TPCG's mandate is to conceptualize and coordinate the preparation of the National Biodiversity Strategy and Action Plan.<sup>86</sup> The intellectuals suggest that the introduction of formal property rights would solve the prolonged environmental problems in India because people generally take more care of private property than the public property. Simultaneously, environmental governance should be based on the principle of rule of law. In many contexts, several governmental regulations have failed to control the pollution in the country. Therefore, advocacy of free market logics like rule of law and property rights would resolve different environmental problems. Free market concept of pollution control would involve both polluters and recipients of the discharge to bargain over the level of pollution. The bargaining would take place as in the way of an exchange of property rights where discharger pays the recipient for disposal of the true facts or in the ways of payments for damages paid after the facts has been proved.<sup>87</sup> Many environmental NGOs in India follow free market approach to enact protective legislation and to arrest biodiversity loss or ecological destruction. They advocate free market environmentalism at the global periphery than the political environmentalism. Political environmentalism relies on the regulations and permits to prevent overexploitation of natural resources. If too many natural resources are extracted, regulators can limit the extractions. For example – if monitoring of total fish catching is too difficult, regulators can impose season restrictions, thereby limiting the harvest. If fishers respond by using bigger boats, regulate the size of boats. On the contrary, free market environmentalism

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<sup>86</sup> Bhatt, Seema and Tejaswini Apte, 2010, "How Thousands Planned for a Billion: Lessons from India on Decentralized, Participatory Planning" in Anna Lawrence edited *Taking Stock of Nature: Participatory Biodiversity Assessment for Policy, Planning and Practice*, Cambridge University Press, Delhi, p. 215.

<sup>87</sup> Chandrasekaran, B., 2006, "A Case of Free Market Solutions to India's Environmental Problems" in B. S. Sahay, Roger R. Stough, Amrik Sohal and Sonu Goyal edited *Green Business*, Allied Publishers Pvt. Ltd., New Delhi, pp. 445- 456.

relies on well defined and enforced property rights to prevent overexploitation. For example – if fishers are assigned shares in the sustainable catch, they have an incentive to husband the stock of fish rather than race to catch as many fish as they can, as fast as they can. Thus free market environmentalism connects to self-interest to resource stewardship by establishing private property rights of environmental resources. Property rights compel owners to account for the costs and benefits of their actions and facilitate market transactions that create efficiency-enhancing gains from trade.<sup>88</sup> Free market environmentalism is known as an approach defended by a school of environmental or resource economists who argue that most of our environmental problems can be solved by the creation and enforcement of tradeable property rights in environmental ‘goods’ and ‘bads’. The proponents of free market environmentalism, like Terry L. Anderson, R. Leal Donald, Jeff Bennett and Walter Block, Alan Moran and others, claim that this approach is far superior to what they variously refer to as ‘command and control’ solutions or ‘state environmentalism’ or government regulations which they see as leading to the ‘political’ and hence inefficient allocation of environmental resources. Free market environmentalism is not synonymous with market-based instruments or regulatory instruments such as taxes, penalties, charges, deposit-refund systems, financial assistance and subsidies that are designed to use economic incentives to encourage certain kinds of behaviour. The advocates of market-based instruments merely seek to modify existing markets by determining the costs of various environmental services and ensuring that these are incorporated into prices but the advocates of free market environmentalism seek the full privatization option wherever possible by creating a market in previously free services or activities.<sup>89</sup>

### **Social Resistance over POSCO and Tipaimukh Projects: New Environmentalism?**

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<sup>88</sup> Anderson, Terry L. and Donald R. Leal, 2015, *Free Market Environmentalism for the Next Generation*, Palgrave Macmillan, New York, pp. 2-3.

<sup>89</sup> Eckersley, Robyn, 2006, “Free Market Environmentalism: Friend or Foe” in Piers H. G. Stephens, John Barry and Andrew Dobson edited *Contemporary Environmental Politics: From Margins to Mainstream*, Routledge, New York, p. 147.

Social protests against POSCO mining/industrialization project in Jagatsingpur district of Odisha and Tipaimukh multipurpose dam project in Churachandpur district of Manipur basically were the products of environmental activism. It cannot be denied that the source of new century environmentalism is rooted in the anti-displacement movement and movement for natural resource based economic rights or survival related movements of the last century. Anti-displacement movement of the last century, for instance, *Narmada Bachao Andolan* became a critique of modern economic developmental project<sup>90</sup>; survival related movement of the last century, for instance, Chipko movement was raising the issues of soil, water and pure air.<sup>91</sup> These traditions are outstretched in recent anti-industrialization and anti-dam movements which carry the core tenets of environmentalism. On the contrary, reactions and resistance over POSCO and Tipaimukh projects have also highlighted new environmental education, environmental science and environmental management. It is to be noted that, new environmentalism has three facets: education, science and management. It employs them in new ways. It is ends-oriented and not means-oriented.<sup>92</sup>

In 1970, a joint UNESCO/IUCN *International Working Meeting on Environmental Education in the School Curriculum* defined environmental education on the following way:

‘Environmental education is the process of recognizing values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the interrelatedness among man, his culture, his biological surroundings. Environmental education also entails practice in decision-making and self-formulation of a code of behaviour about issues concerning environmental quality’.<sup>93</sup>

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<sup>90</sup> Oommen, T. K., 2010, “Protest against Displacement by Development Projects” in T. K. Oommen edited *Social Movements II: Concerns of Equity and Security*, Oxford University Press, New Delhi, pp. 323-326.

<sup>91</sup> Shah, Ghanshyam, 2004, *Social Movements in India: A Review of Literature*, Sage Publications, New Delhi, p. 252.

<sup>92</sup> Fanning, Odom, 2002, *Opportunities in Environmental Careers*, VGM Career Books, New Delhi, pp. 4-6.

<sup>93</sup> IUCN, 1970, *Environmental Education Workshop*, Nevada, USA, p. 28.

Environmental science, on the other hand, is an 'interdisciplinary field' which is 'concerned with our environments and the interaction between the environment and man. Understanding environmental processes and the influence, man has on these processes requires knowledge of a wide spectrum of natural sciences. Obviously biology, chemistry and physics are basic disciplines for understanding the biological-chemical-physical processes in the environment. But environmental science draws also upon geology for an understanding of soil processes and the transport of material between the hydrosphere and lithosphere, on hydrodynamics for an understanding of the transport processes in the hydrosphere, and upon meteorology for an explanation of the transport processes in the atmosphere just to mention a few of the many disciplines applied in the environmental science.<sup>94</sup> Odom Fanning defined environmental management as:

'Environmental management is an interdisciplinary, integrated effort, involved with the very fabric of people's lives, focused on interrelated environmental problems and employing the findings of science, the teachings of engineering and the understanding of the social sciences to preserve the human environment, to utilize natural resources, and to better society'.<sup>95</sup>

Fanning says, in the definition of environmental management, there is the 'chain of I's', i. e. the notions of 'interdisciplinary', 'integrated' and 'involved'. Environmental management should be 'interdisciplinary' because biology, chemistry, ecology, physics and other scientific disciplines are linked as in a chain and must be employed together in the solution of complex environmental problems. It is 'integrated' because it is argued that, to the sciences must be added such other disciplines as engineering, business management and public administration, communications, economics, education, history, the humanities, law, philosophy, political science, psychology, sales and marketing and the social sciences. Lastly, to clarify the applicability of the term 'involved', it has been said that the environmental managers must be involved in the broader society; they must be good environmental citizens, whether or not their profession has a code of ethics, requires

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<sup>94</sup> Jorgensen, S. E. and I Johnsen, 1981, *Principles of Environmental Science and Technology (Studies in Environmental Science 14)*, Elsevier Scientific Publishing Company, New York, p. 1.

<sup>95</sup> Fanning, Odom, 2002, *ibid*, p. 5.

a license, or confers a title such as ‘doctor’. Environmental management must be undertaken with the full appreciation that they are focused on the human environment.<sup>96</sup>

The reactions over POSCO and Tipaimukh projects have provided the new environmental education through the radicalization of social activism. Resistance over POSCO and Tipaimukh projects highlighted several political values such as liberty and justice on the grounds of ecology and environment. The movements argued for securing the rights of the people to access natural resources for survival and subsistence. This is the deliberation of liberty. Both the movements raised the voice to abandon the projects for saving the biodiversity at their respective zone. This is the deliberation for ecological justice. These two movements clarified several concepts related to the development and sustainability; even underlined the human behaviour for improving environmental quality. This is the educational part of the movement. There is also the part of interdisciplinary science in the movements. Anti-POSCO movement and Tipaimukh anti-dam movement reiterated the intricate relationship between the man and environment. From the radical point of view, the movements referred the negative impacts of the mining industry and the dam over the local communities, topography, and biodiversity. The movements preferred a holistic approach – emphasizing upon the environment centric social, economic and cultural issues and even raised the points of biodiversity conservation and pollution control. Understanding the availability of natural resources and biodiversity of the proposed sites for mining industry and dam, the movement supporters opposed the government to stop the process for setting up of industry and the construction of dam. Many social scientists, social activists, journalists, environmentalists, geologists, conservationists and even the government officials conducted the surveys and reviewed the matters related to the setting up of industry and the construction of dam. It seems that the movements seek better environmental management abandoning the developmental projects like huge industrialization and mega dam. The movements endeavoured to designate that the human society is linked with the

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<sup>96</sup> Fanning, Odom, 2002, *ibid*, p. 6.

nature for economic and cultural purposes. Therefore, the so called developmental projects, keeping in view the natural resource extraction, are not the development as such, rather the threats for the human society and natural environment. The movement supporters always claim that the people, basically the traditional communities whose economic and cultural lifestyle revolve round the nature, play a vital role for environmental management if they enjoy the rights over natural resources and most importantly if the government do not intervene into the matters related to their access of natural resources. Therefore, they further assert to secure people's rights over natural resources through governmental initiative and, to them, that initiative would also come under the purview of environmental management.

The question of environmental management was very acute in context to both the movements against POSCO and Tipaimukh project. Initiative to set up POSCO mining industry in Jagatsinghpur district of Odisha has been thrown away basically due the complexities regarding the land acquisition process and the flaws in matters of forest management. A total of 4,004 acres of land was sanctioned for the steel-power-port component of the POSCO project. Out of this figure, 3,566 acres of land was 'Government Land' and 438 acres was 'Private Land'. Out of 3,566 acres of government land, 3004 acres was forest land and 561 acres was other government land. Additional 6,100 acres of land was required in Kandadhar Hills of Sundergarh district for mining project and 2,000 acres of land (1,500 acres at steel plant and 500 acres at mine) was required for townships.<sup>97</sup> One third of the local people belong to the Scheduled Caste group. 40% of the families have less than one hectare of land, 30% have 1-2 ha, 8% have 2-4 ha, 3% have more than 4 ha land and 19% people are landless. The proposed site is famous for betel vine cultivation that forms an important component of agro-biodiversity and the livelihood support system. Furthermore, local ecology supports a wide diversity of food sources. Available local fishes contain high protein which helps to reduce the level of malnutrition. Therefore, it has been observed that the land is very fertile for few cash crops

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<sup>97</sup> Saldanha, Leo F. and Bhargavi S. Rao, May 2011, *Tearing Through the Water Landscape: Evaluating the Environmental and Social Consequences of POSCO Project in Odisha, India*, Environment Support Group, Bangalore, p. 18.

cultivation like betel vine and cashew cultivation and the place is also a high nutrition zone as the place is suitable for fisher management and prawn cultivation.<sup>98</sup>

A crucial part of betel vine production involves the transfer of sand into the betel vine plot and mixing the same with mustard husk dust and re-layering the plot. Every betel vine plot is dependent on an adjacent plot of forest land for the sand which is required to re-

layer plot. Such process happens once in a month on all betel vine plots and is a central part of the production process. Another crucial aspect is that the *paan kheti* (betel cultivation area) is the availability of sweet water



**A Betel Farmer near POSCO Steel Project Site**

to irrigate the plot. In

almost all plots, the water source can be observed within 20 meters of the plot and is accessed through a simple *kaccha* (unsecured) well dug adjacent to the plot. It has been estimated that 32 villages of Keonjhar district will be impacted by the POSCO because POSCO would have the access in the Khandadhar region which is close to Keonjhar and Sundergarh district. Out of 32 villages, the residents of 12 villages will face displacement and the residents of remaining 20 villages will lose their sources of livelihood and access to water. In accordance with 2001 census, there are 5886 persons in the likely to be affected villages. Out of 5886 persons, 171 persons come under scheduled caste category, 4,830 are the scheduled tribes and 885 belong to the other category. In Sundergarh district, 84 villages would face the negative consequences. The villages are inhabited by the Bhuiyan, Juang and Munda tribal communities. In the hilly areas of the region, they are likely to practice shifting cultivation and settled cultivation.

*Source:*

[http://www.telegraphindia.com/1140706/jsp/odisha/story\\_1858446](http://www.telegraphindia.com/1140706/jsp/odisha/story_1858446)

<sup>98</sup> *ibid.*, pp. 41-42.

Apart from that they are also dependent upon the minor forest produce which are extracted for household consumption as well as for market economy. Mahua flower, Mahua seed, Char seed (with cover), Sal Seed, *Bana Tusli*, Dry Log Mushroom (5-7 varieties available), Shiny Mushroom, Golden Mushroom, Gum (*Bahada* and *Nahada*), *Amla*, *Harida*, *Jhuna*, *Kusum* Seed, *Bhalia* and Honey. The food products collected from the forest include 14 types of roots, 60 varieties of greens, 19 varieties of mushrooms and 52 types of nuts. These products are the primary types of foods mainly during the monsoon months from June to September.<sup>99</sup> Thus, the land and forests have become the vital sources of income for the local people. On the contrary, water resources of the proposed site also provide the option for earning. Nearly about 50% of the local families are engaged in pisciculture, mostly in prawn cultivation. An acre of farm ponds yields worth Rs. 7 lakh a year. All 108 families in Noliasahi hamlet of Gadkujanga village depend upon Jatadhari estuary for fishing for a livelihood.

**Women Fishing in a waterlogged field on the proposed site of a Posco steel plant in Dhinkia, Odisha**



**Source:** <http://www.gettyimages.in/event/images-from-the-areas-of-the-proposed-posco-steel-complex-as-singh-speeds-up-site-approval-process-464611223#women-fish-in-a-waterlogged-field-on-the-proposed-site-of-a-posco-picture-id464146739>

Average daily fishing for a person is about 20 kg. The hamlet sells around 1.5 quintals of fish every-day. Daily earnings per family range from Rs. 100 to Rs. 5,000.<sup>100</sup>

Survey reveals that, the betel cultivators and the fishermans were not ready to give up their traditional mode of occupation. Simultaneously, they were not satisfied

<sup>99</sup> Mining Zone People's Solidarity Group, October 20 2010, *Iron and Steel: The POSCO-India Story*, pp. 37-39.

<sup>100</sup> Asher, Manshi, 2009, *Striking While the Iron is Hot: A Case Study of the Pohang Steel Company's (POSCO) proposed Project in Orissa*, National Centre for Advocacy Studies, Pune, pp. 12-13.

with the policy of Rehabilitation and Resettlement prescribed by the state government. Consequently, they expressed their resentment against the step of land acquisition taken on behalf of the state government of Odisha. There was an acutely limited definition of the term ‘displaced family’. Orissa Resettlement and Rehabilitation Policy (ORRP), 2006 focuses almost entirely on families ‘displaced’ by acquisition of land and very little on families ‘affected’ by acquisition of land. Under ORRP, a family is classified as a ‘displaced family’ only if its homestead lands (the land on which its dwelling unit is located) is acquired and the family relocated. The loss of agricultural land, either partly or fully, does not entitle a family to be classified as a ‘displaced family’, unless its homestead is also acquired.<sup>101</sup>

Meena Gupta committee report highlighted that the project area shows a typical ecological succession of non-mangrove vegetation. Earlier, in the proposed site, there were mangrove forests but due to the establishment of Paradeep Port a lot of mangroves were cut in the 1960s and remaining mangroves were uprooted due to the super cyclone of 1999 in the proposed area. The upland area, which is free from tidal influx, is covered with sub humid evergreen vegetation dominated by *Phoenix sylvestris*, *Acacia Arabica*, *Azadirachta indica*, *Albizia lebbeck* and *Ficus bengalensis* etc. Plant species diversity index is medium indicating a diverse type of vegetation with *Casuarina equisetiflora* and *Anacardium occidentale* dominating in the area of project villages.<sup>102</sup> The setting up of POSCO steel plant and port at the cost of Rs. 55,000 crores required a diversion of 1,253.255 hectares of forest land for the non-forest use and it is a mandatory procedure to be followed as per the Forest Conservation Act, 1980. The grant of forest clearance meant the felling of about 2,80,000 trees. In accordance with the procedure, the proposal for the diversion of forest land was considered by the Forest Advisory Committee (FAC) under the MoEF on 9<sup>th</sup> August 2007. FAC recommended the grant of forest clearance. But it was not the final green signal because of the *T. N. Godavarman vs. Thirumulpad*

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<sup>101</sup> Saldanha, Leo F. and Bhargavi S. Rao, May 2011, *ibid*, p. 44.

<sup>102</sup> *Report of the Committee Constituted to Investigate into the proposal submitted by POSCO India Pvt. Limited for establishment of an Integrated Steel Plant and Captive Port in Jagatsinghpur District, Orissa*, October 18, 2010, submitted by Meena Gupta to the Ministry of Environment and Forests, New Delhi, p. 76.

case related Supreme Court's order issued on 27<sup>th</sup> April, 2007. All the decisions involving diversion of forest land must be approved by the court. The court placed the matter for the approval of Central Empowered Committee (CEC) which was set up as a monitoring body. CEC submitted a report on 14<sup>th</sup> November, 2007 linking all three components of mining, steel plant and captive port. The report establishes that POSCO's proposal is only for the forest land for the integrated steel plant and captive minor port. Furthermore, the proposals for the forest land required for the other components like mines, railways, road, corridor etc. are in the process of finalization. CEC made two clear recommendations concerning to these facts:

- a) "The CEC is of the view that instead of piecemeal diversion of forest land for the project, it would be appropriate that the total forest land required for the project including for mining is assessed and a decision for diversion of forest land is taken for the entire forest land after considering the ecological importance of the area, number of trees required to be felled, adequacy and effectiveness of the R&R (Rehabilitation and Resettlement) plan for the project affected persons and benefits accruing to the state. The diversion of forest land for the plant, without taking a decision for the linked uses particularly the mining project may not be in order".
- b) "Since the number of trees involved is about 2.8 lakhs, it would be in order that an independent expert committee including representatives of the NGOs should undertake a site visit in order to assess the impact of the cutting of such a large number of trees and suggest mitigative measures for the area, specially since there is a large dependence of local population on these forests. Subject to the compliance of the above observations the proposed diversion of forest land may be permitted".<sup>103</sup>

In 2010, after a careful direction by Mr. Jairam Ramesh, a sub-committee of the Saxena committee was constituted as part of the MoEF and Ministry of Tribal

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<sup>103</sup> "Article on Central Empowered Committee Report Related to POSCO Steel Plant and Port, Orissa" in *Forest Case Update*, Issue 43, February 2008, pp. 8-10, available at <http://forestcaseindia.org/forest-case-updates/updates-2008/Issue%2043.pdf> accessed on 5<sup>th</sup> November, 2015.

Affairs involving three members Arupjyoti Saikia, Ravi Rebbapragada and Ashish Kothari to visit the proposed site of the POSCO project and report if the Forest Rights Act had been complied with. The committee members brought the following facts to the attention of MoEF:

- a) “There are Other Traditional Forest Dwellers (OTFDs) in the area, contrary to what the district administration is saying. Both documentary and oral evidence exists to this effect. A sample of the documentary evidence has been attached with the letter sent by the Committee to the Ministry of Environment and Forests, on 3 August 2010.
- b) The FRA process has not been completed; in fact it has not proceeded beyond the initial stages, for various reasons. It is therefore incorrect and misleading for the district administration to conclude that there are no OTFDs “in cultivating possession of the land since 3 generations” in the area. Firstly, this cannot be concluded without having gone through the process of claims; secondly, the FRA provides for dependence on forest land also as criteria for eligibility, not only “cultivation possession of land”.
- c) Some palli sabhas have given resolutions refusing to consent to diversion of forest land on which they are dependent. These palli sabhas were convened by the district administration itself, after receiving instructions relating to the MoEF circular of July 2009, which indicates that the administration was aware of the possible presence of forest rights claimants in the area. (It is interesting that this was done after the District Collector had given the opinion that there are no STs and OTFDs in the project area). To the best of our knowledge these palli sabha resolutions have not been sent by the state government to the MoEF, which is tantamount to deliberate withholding of relevant information/documents. Only the palli sabha resolutions setting up FRCs in March 2008, have been sent to MoEF (which MoEF has asked the state government to translate, in April 2010)”.<sup>104</sup>

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<sup>104</sup> Saldanha, Leo F. and Bhargavi S. Rao, May 2011, *ibid*, pp. 36-37; “N. C. Saxena’s Letter to Jairam Ramesh, Union Minister of Environment and Forests, on FRA Violation at POSCO site” in

The contention of the Odisha Government was that the current residents of the project site are neither resident nor dependent on forests for a period of 75 years. But it has been reported that in Dhinkia, Nuagaon and Gobindapur there were few cultivators who were the residents of the forest land of proposed site in 1927-1928. Documentary evidence was produced by villages before the committee (constituted by MoEF) relating to the dependence on forests and forests lands. The most important of these types of evidence was receipts for payment of forest cess, or *bonkar*. Receipts have been submitted to the committee that belonged to people whose current descendants are still residing in Govindpur village. The government also claimed that there is no tribal household in the proposed site. But as per the Census 2011 and the voter list, it has been documented that there are 21 adult Scheduled Tribe persons residing in Polanga village of Gadkujanga GP and the ward member was female ST, even the seat is reserved for STs. The tribal family belonged to the Santal community (as their surnames were Hembram and Murmu).<sup>105</sup>

The question of Coastal Regulation Zone management was another anxiety. In 2006, POSCO-India submitted a proposal to Orissa Coastal Zone Management Authority seeking Coastal Regulation Zone (CRZ) clearance for establishment of a captive port on the Jatadharmohan Creek located at about 12 km south of Paradeep port which will be the integral part of the proposed steel plant. The clearance was given in May 2007.<sup>106</sup> On January 2014, MoEF revalidated the Environmental Clearance and provided the condition that, CRZ clearance shall be obtained for discharge of waste water into the sea through pipeline.<sup>107</sup> But it has been apprehended that the proposed POSCO project would destruct the natural habitat of the Olive Ridley Turtles (*Lepidochelys olivacea*) and Horse Shoe Crabs

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*Red Banner: Voice of Democratic Movements in South & South-east Asia*, Volume I, Issue 2, June – October 2010, p. 27.

<sup>105</sup> *Majority Report of the Committee Constituted to Investigate into the proposal submitted by POSCO India Pvt. Limited for establishment of an Integrated Steel Plant and Captive Port in Jagatsinghpur District, Orissa*, October 18, 2010, submitted by Urmila Pingle, Devendra Pandey and V. Suresh to the Ministry of Environment and Forests, Government of India, New Delhi, pp. 40-43.

<sup>106</sup> *ibid*, pp. 119-130.

<sup>107</sup> Letter from MoEF, with a subject on *Integrated Iron & Steel Plant (4.0 MTPA) with Captive Power Plant (4x100MW) at Kujang, Near Paradip, Jagatsinghpur in Odisha by M/s POSCO India Private Limited – regarding revalidation of Environmental Clearance*, F. No. J-11011/285/2007- IA II (I), Dated: 7th January, 2014.

(*Carcinoscorpius rotundicauda*). The proposed site for port is highly sensitive zone ecologically as the beaches are the nesting grounds of the endangered Olive Ridley Turtles and critically spawning areas for the endangered Horse Shoe Crabs, both these species are protected under the Wildlife Protection Act.<sup>108</sup>

Tipaimukh dam was designed to construct at about 500 m downstream of the confluence of river Barak with Tuivai in Churachandpur district of Manipur with the objective of generating 1500 MW hydropower and controlling flood on 2039 Square Kilometer. The state government of Manipur submitted a proposal to obtain prior approval of Central Government under Forest Conservation Act for diversion of 20,464 hectares of forest land which they revised to diversion of 25,822.14 hectares of forest land. Later, with respect to the consideration of the recommendations made by the North Eastern Regional Office of the Ministry of Environment & Forests, the area of proposed for diversion was reduced to 22,777.50 hectares in Manipur. Another approval was received for the diversion of 1551.60 hectares of forest land in Mizoram for the same project. Therefore, a total of 24,329 hectares of forest land is required for the project and that amount land is more than one-fifth of the total 1,18,184 hectares of forest land diverted for execution of 497 hydel project in the entire country after the Forest Conservation Act came into force. The proposed forest land which is to be diverted in Manipur, contains 78,16,931 trees and 0.27 lakh bamboo culms. It is also home of several endangered species of flora and fauna, including the species listed in the schedules to the Wildlife (Protection) Act, 1972. The Principal Chief Conservator of Forests, Manipur has observed that ‘no compensatory measures would help in mitigating the adverse impact caused by loss of such large forest tracts on the habitat, flora, fauna, biodiversity, micro-climate and environment unless additional non-forest areas in affected districts or adjoining districts are taken up for compensatory afforestation’. The proposed forest land, which is to be diverted, is the habitat of several wildlife species such as Jungle Fowl, Barking Deer, Wild Boar, Assamese Macaque (*Macaca assamensis*); the animals such as Leopard (*Panthera pardus*), Clouded Leopard (*Neofelis nebulosa*), Slow

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<sup>108</sup> Saldanha, Leo F. and Bhargavi S. Rao, May 2011, *ibid*, p. 2.

Lorries (*Nycticebus coucang*), Golden cat (*Felis temmincki*), Hoolock Gibbon (*Hylobates hoolock*), Capped Langoor (*Presbytis pileatus*), Pangolin (*Manis crassicaudata*), Hog Badger (*Arctonyx caloris*), Himalayan Black Bear (*Selenarctos thibetanus*) etc. and the birds like Great Indian Hornbil, Bamboo Partridge etc. 12 villages consisting of 557 families having a population of 2,027 Scheduled Tribes in Manipur will be displaced.<sup>109</sup> Memorandums on Tipaimukh Dam highlights that the Tipaimukh Hydroelectric Multipurpose Project will directly affect fourteen tribal Hmar villages in Sinlung Hills in Mizoram. The Tribal Hmar villages are: Sawleng, Darlawn, New Vervek, Sailutar, Sakawrdai, Khawlek, Vaitin, Vanbawng, Khawpuar, Suangpuilawn, Ratu, Phullen, NE Tlangnuam and Lungsum.<sup>110</sup> The proposed area is basically Sub-tropical ever green or Semi-evergreen forest. Large part of the catchment, including the submergence areas, appeared to have been subjected to shifting cultivation at one time or the other. These areas are dominated by *Melocana baccifera* (*muli* bamboo). It is also observed that a significant stretch of the bamboo brakes have been affected by Gregarious flowering of *muli* bamboo and have dried up. Flora of the proposed submerged area include *Artocarpus chaplasha*, *Mesua ferrea*, *Adina cordifolia*, *Ailanthus grandis*, *Albizia spp.*, *Terminalia myriocarpa*, *Gmelina arborea*, *Cinamomum spp.*, *Phoebe spp.*, *Michelia champaca*, *themea arundinarea*, *Salix spp.*, *Musa paradisisca*, *Ficus semicordata*, *Duabbanga sonneratodes*, *Ferns* etc.<sup>111</sup>

Scholars like Monirul Hussain, Vibha Arora and Ngamjahao Kipgen and others have highlighted the economic and cultural relationship between the nature and the tribal communities of the proposed site for Tipaimukh project. Monirul

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<sup>109</sup> Proceedings of the Forest Advisory Committee Meeting Held on 11<sup>th</sup> -12<sup>th</sup> July, 2013, *Agenda No. 3: Diversion of 22,777.50 hectares of forest land in Manupur for construction of Tipaimukh Hydroelectric Project in Manipur* (File No. 8-63/2005-FC), Ministry Environment and Forests, Government of India, New Delhi.

<sup>110</sup> *Memorandums on Tipaimukh Dam to the Jude Sekhar by Joint Submission of Citizens Concern for Dams and Development and Committee on the Protection of Natural Resources in Manipur Against Forest Clearance for Proposed 1500 MW Tipaimukh Multipurpose Hydroelectric Project for Forest Impacts in Mizoram to the Forest Advisory Committee*, Ministry of Environment and Forests, government of India, Scheduled on 13-14 August, 2013.

<sup>111</sup> Agenda – 3, File No. 8-63/2005-FC, p. 14 available at <http://forestsclearance.nic.in/writereaddata/AdditionalInformation/AddInfoReceived/7115124112111Agenda632005Chaudhary.pdf> accessed on 5<sup>th</sup> November, 2015.

Hussain shows that the proposed site is very rich in horticulture products. The local tribal communities are dependent on land and forest for their economic needs. Many of them practice shifting cultivation.<sup>112</sup> Vibha Arora and Ngamjahao Kipgen draw attention to the cultural aspects. They viewed that the Barak River is holy to the Hmars. An individual from Hmars community expressed that:

‘Our (Hmar) community is like this great river Tuiroung (Barak). It has been flowing before any of us can remember. We take our strength and our wisdom and our ways from the flow and direction that has been established for us by our ancestors, many years ago. Their wisdom flows through us to our children and our grandchildren to generations we will never know. We will live out our lives as we must and we will die in peace because we will know that our people and this river flow on after us’.<sup>113</sup>

A leader of the Hmar People’s Convention Democratic categorically stated that:

Our rich culture, tradition, history, language and memory flow in these rivers. We cannot allow the rivers to be disturbed. We are obliged to see that no outsiders, their forces and might will dam, destroy or disturb the natural flow of the rivers of life. Whoever steps in shall do so at their risk. They shall pay for their own action’.<sup>114</sup>

Aram Pamei, Secretary of Naga Women’s Union, underlined the psychological attachment of the Zeliangrong people with the natural environment. She said:

#### Local People’s Protest against Dam Construction in Manipur



Source: <http://imphaldispatch.blogspot.in/2012/09/high-tipaimukh-dam-negotiations-sans.html>

<sup>112</sup> Hussain, Monirul, 2008, *Interrogating Development: State Displacement and Popular Resistance in North East India*, Sage Publications, New Delhi, p. 127.

<sup>113</sup> Arora, Vibha and Ngamjahao Kipgen, 2012, “‘We can live without power, but we can’t live without our land’: Indigenous Hmar Oppose the Tipaimukh Dam in Manipur” in *Sociological Bulletin*, 61 (1), p. 113.

<sup>114</sup> *ibid*, pp. 113-114.

‘Their (Zeliangrong people) ancestral emotional bonds to their land, the mother-earth, constitute their cultural and psychological frame of mind and they cannot be compromised or negotiated. The submergence of the Ahu (Barak) waterfalls, the biggest and the most beautiful natural gift in Manipur, will destroy an important aspect of their heritage - the innumerable myths and legends woven around the waterfalls, which are an inalienable part of their bank of memories, inherited through centuries. The high watermark of the dam will also destroy five most important lakes located just above the Ahu waterfall where the magical sword of Jadonang, the national hero of the Nagas, is believed to be hidden. All these priceless and inalienable parts of their cultural heritage cannot be left to mindless destruction by the dam project authorities’.<sup>115</sup>

The local tribals are used to live with the harmony of nature; any attack on the natural environment indicates the attack on the cultural mind set of the Hmars and Zeliangrongs. They formed many platforms to spear the local natural resources from the threats of modernization. These communities prefer the pre-modernization society or state which would safeguard people’s rights over the nature for their daily needs. Through social mobilization against the dam construction, they have provided the environmental education that people’s dependence over nature cannot be denied. Moreover, authority concerning the environmental management shall be vested in the hands of people who are the original dependants because they only know the necessities of the environment and ways to protect it.

Here it would be pertinent to mention the bright, light and dark green perspectives illustrated by Alex Steffen. Bright green environmentalism relies upon sustainable innovation as the best path for lasting prosperity. ‘Bright green environmentalism is a call to use innovation, design, urban revitalization and entrepreneurial zeal to transform the systems that supports our lives’. Light green environmentalists emphasize on the lifestyle/behavioural/consumer change as the key to sustainability. Light green environmentalism, on the other hand, is the ‘call for individuals to change’, and it has helped to ‘spread the idea that concern for sustainability is cool’. As for dark green environmentalism, it claims that

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<sup>115</sup> Pamei, Aram, 2001, “Havoc of Tipaimukh High Dam Project” in *Economic and Political Weekly*, Vol. 36, No. 13, pp. 1054+1148.

consumerism and even sometimes industrialism are only the responsible factors behind environmental degradation. Dark green environmentalism emphasizes on 'local solutions, short supply chains and direct connection to the land' and it strongly advocates 'change at the community level'. In contrast, the grays are those people who deny that there is a 'need to do anything at all, whether as individuals or as a society'. The grays range from the most blatantly dishonest and self-interested persons to principled, smart people who lack the facts (an increasingly small minority) or whose worldviews are just too set in an earlier way of thinking to understand the present day realities of living on planet in overshoot.<sup>116</sup> Bright green perspective can be found in both the contexts, Odisha and Manipur. It is important to note that; bright green environmentalism 'forgoes the bleakness of protest and dissent for the energizing confidence of constructive solutions'.<sup>117</sup> Anti-POSCO movement and Tipaimukh anti-dam movement were emphasizing on the social innovation and regulatory mechanisms for the fulfillment of the economic interest of the potential displacees. Here the argument was that the sustainability can be maintained by enjoying the rights over natural resources generation after generation. The politics of environmentalism at the both contexts opposed the initiative for natural resource diversion. Economic issues were primary linked to the grassroots non-party based politics and the potential displacees were not ready to give up their traditional mode of livelihood system; hence the micro movement organizations criticized the modern economic developmental paradigm. At the initial phase of starting the process for POSCO steel plant, it was stated that there is no tribal community in the proposed area but the members of social action group and environmental action group, like Ravi Rebbapragada of Samanta and Ashish Kothari of Kalpavriksh, played an important role to detect the tribal communities and other traditional forest dwellers in the proposed area and after an extensive survey they viewed that the project would violate the forest rights act for the tribal communities

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<sup>116</sup> Steffen, Alex, 27<sup>th</sup> February, 2009, "Bright Green, Light Green, Dark Green, Gray: The New Environmental Spectrum" in *World Changing* available at <http://csj.wikispaces.com/file/view/CSJ+Environmental006.pdf> accessed on 24<sup>th</sup> July, 2016.

<sup>117</sup> Robertson, Ross, 2007, "A Brighter Shade of Green: Rebooting Environmentalism for the 21<sup>st</sup> Century" in *Big Think* available at <http://bigthink.com/the-evolution-of-enlightenment/a-brighter-shade-of-green> accessed on 24<sup>th</sup> July, 2016.

and other traditional forest dwellers.<sup>118</sup> Like the light greens, the Hmars raised their voices for the private responsibility to maintain the existing natural harmony at their locality. They opposed the initiative for dam construction that would disrupt the natural order. Most importantly, the dark green perspective was immensely vivid in both contexts because these two movements were against industrialization, modernization and any form of overconsumption. Both the movements followed widely radical programmes and expressed a popular worldview to change a developmental paradigm for halting environmental deterioration.

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<sup>118</sup> MoEF/MoTA Committee on Forest Rights Act, 4<sup>th</sup> August, 2010, *Report of visit to Jagatsinghpur (site of proposed POSCO project), Orissa, 23-14 July 2010* available at [http://www.kalpavriksh.org/images/LawsNPolicies/POSCOVisit%20Report\\_Final\\_Aug42010.pdf](http://www.kalpavriksh.org/images/LawsNPolicies/POSCOVisit%20Report_Final_Aug42010.pdf) accessed on 24<sup>th</sup> July, 2016.