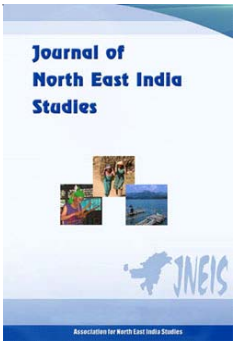

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Natural Resources and Socio-Economic Development in North East India

Mirinchonme Mahongnao, Noklenyangla & Subhash Kumar

The Northeastern region of India comprising eight states has enormous natural resources. Like the rest of the world, this region faces threat to biodiversity and river ecosystem owing to various developmental projects. This paper attempts to highlight the problems which are not impossible to solve: if only addressed, and identifies the existence of a gap between what policy for development for Northeast aims to achieve and what really happens. Since, development in northeast region is inevitable. We argued that a genuine and concrete social-environmental impact assessment must be properly done before the initiation of any developmental activities. The hydroelectric projects are more sustainable and cost-effective, and thus smaller dams should be constructed in lieu of large dams. Finally, we conclude with the assumption that instead of 'planning for the Northeast' the emphasis should be 'planning with the Northeast' for the benefit of its people through industrial prospects of this region, keeping in mind the basic determinates of such process in order to facilitate effective growth strategies.

Keywords: Northeast India, Natural Resources, Socio-Economic Development, Sustainable Development

Introduction

The term Northeast Region is used by writers, media persons, academics, the government and public. According to M.N. Karna (1999), the term region has two broad features, the physical and the social. The physical facets consist of its geographical terrains, as regards the social facet, it includes diverse ethno-linguistic groups; diverse customs, beliefs, and practices; and, poetically, it is divided into eight states-Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, and Tripura and Sikkim. Nonetheless, the term North-East India or North-Eastern Region implies both the physical and the social aspects. Setting up of the North Eastern Coun-

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cil (NEC) under NEC Act, 1971, as regional planning body has been another sincere step for balance development of the region (Nongkynrih, 2009). However, even within India, many people are not aware of this region. It is through school textbooks, newspapers and magazines, specially travel and tour magazines that one comes to know about this region.

Northeast India is full of hills, stream, and rivers. The hills are covered with dense forests because of the heavy rain fall. In some places, the ridges rise one after another. The valleys are deep, narrow and steep sided and the streams are deepening and cutting the valleys. As a consequence, communications between one hill and another is practically impossible (Rao, 1975). To those who love travelling, Northeast India is an exotic location, culture and festival opulence, the land is filled with greens, fresh air, blue sky, rich in flora and fauna, and rumors of having huge mineral deposits. However, apart from the great geographical and anthropological happenings, Northeast is known for a great mighty reason- 'The Tension Area'. Here the picture becomes less attractive, the insurgency movements, the killing, often depicted as brutal, rape, bombs, the infamous AFSPA. True, India's Northeast is the location of the most primitive and longest lasting insurgency in the country, where the separatist violence began in 1952 in the state of Nagaland. There have been a variety of engaging conflicts that have bred in the region which can be traced to the 1970s, also an era where the Naxalite movement was much in the talk. Out of eight states of Northeast India, four states namely Assam, Manipur, Nagaland and Tripura have witnessed scales of conflict which scholars are of the opinion that can it can be clipped under the category of '*low intensity wars'* (Sahni, 2001).

With this kind of scenario, the existence of Northeast differs from the mainstream India. It is right to say that there are instances where poverty, unemployment, and land alienation has been the reason for voicing out the banner of discrimination followed by the State, but most of the time it is the atrocities on the part of the security personals and the militants which has made the matter worse. Youths of these regions which roughly forms more than half of the total population are frustrated with the kind of life they lead, with little or no job opportunities, heavy unemployment, in such conditions they feel their life is wasted, catalyzing in use of alcohol and drugs to subside the anger and anxieties. Like a cycle, in such conditions, these youths embrace to choose the militant outfits which they believe will solve the problem (Nongkynrih, 2009). Apart from these, scholars have traced the issue of identity plays a major role if policies are made then the context of cultural diversity should be kept under consideration (Das, 2009).

Socioeconomic Development in Northeast India

Development is a comprehensive term. A developed situation means people not only have the basic necessities of life but equal opportunities are available to all (Singh, 2006). Massive poverty, illiteracy, ill health and regional disparities characterize Indian experience of development despite decades of centralized economic planning. Liberalization, deregulation, and privatization have been the main features of the economic reforms since 1991. Likewise, Northeast India has not been an exception

to such experiences. Rao (1975) identified following as main problems in the development of Northeast India. The composition of the population in this area, nowhere in India is there such a large number of tribes as in the Northeast. In this region, there are three distinct groups of people, the Hill tribes, the Plain tribes and the plains people. Each group is heterogeneous. In the Plains, there are Ahoms who ruled Assam aristocratically and autocratically for six centuries. The density of population in this region is much less than the national average. The low density acts as an invitation to the over-populated neighbors to invade this region. In Arunachal Pradesh, the density of population is just six per Km. It is 16 in Mizoram, 36 in the Mikir Hills, 15 in the North Cachar Hills while it is 180 in Assam. Lastly, in terms of economic development these tribal areas are backward, and of all the tribal areas, Arunachal Pradesh and Mizoram are in a disadvantageous position. In these places the fight against hunger, disease, ignorance, and isolation is tremendous (Rao, 1975).

Burman (1989) states that the problems and prospects of tribal development may be considered along two lines: (1) as ethnic entities and (2) as status-class. The issues involve development of tribes as ethnic entities are broad as follows: (a) meaning of ethnic identity in the contemporary world; the (b) process of identity expansion; and (c) problem of cultural autonomy and of political integration in the state process (Burman, 1989). Greetz (1963) has described ethnicity as an activated primordial consciousness not grounded in the demand for separate sovereign statehood. Ethnicity in today's world is thus one form of affirmation against vandalizing humanity. In this perspective, ethnic consciousness need not always be considered a closed road. It may also be a constituent element of social entities with wider and wider orbits, and continuously deepening human meaning (Burman, 1989). Concerns have been expressed about the fate of weaker sections, underdeveloped and isolated regions of the country like Northeast in the liberalized era. Secessionist, insurgency or separatist activities exist in the region, particularly in Manipur, Assam, Nagaland, and Tripura. These developments indicate the ineffectiveness of policies adopted by the Indian State for national integration and development since 1950 (Singh, 2006).

Education has been considered as one of the indicators of human resource development, but another challenge to the economic initiative is the lack of education system, which is not only a problem in Northeast but of the country as a whole. There are not enough governmental universities in the region and the infrastructure of the schools are highly commendable. Although Table 1 shows the average level of literacy in Northeastern states is above the national level and they also spend a higher percentage of their GDP on education, the representation of the indigenous teachers and students is poor, as most of the position is sucked up by the recruitment of the teachers from mainstream India.

Table No. 1 shows the percentage of state GDP expenditure on education. It can be seen from the Table1 that expenditure of All India average on education was 4.5 % of total GDP. There are some states like Arunachal Pradesh (7.1%), Manipur (6.4%), Meghalaya (4.7%), and Mizoram (9.1%), Tripura (94.6%) and Sikkim (9.8%) which is higher than the national average. Assam (4.1%) is the only Northeast state whose expenditure is below the national average. Overall Northeast states are spending

a sizeable amount of their state GDP on the education. In Northeast region, Mizoram (91.58%) has the highest literacy rate followed by Tripura (87.75%), Sikkim (82.20%), Nagaland (80.11%), Manipur (79.85%), and Meghalaya (75.48%). There are some states like Assam (73.18%) and Arunachal Pradesh (66.95%) having less literacy rate as against the national average of 74.05 %. As far as educational infrastructure is a concern, each Northeast state has one central university except Assam which has two central universities. Overall Assam, Meghalaya, and Nagaland have emerged as a hub of education in Northeast region. These two states possess the highest number of higher education institution including private institutions. As far as the universities are a concern, it is far beyond comparison with the other universities in the country. If the educational infrastructure is taken into account then the developmental initiatives can be implemented effectively through various channels of educational delivery.

Table 1: The following Table gives the comparative summary of the educational facilities available in Northeast India

Sr. No.	States	Literacy rate (2011)	% of state GDP spent on education	No. of Universities	Total no. of Private Colleges	Total No. of Govt. colleges
1.	Arunachal	66.95	7.1	3	3	6
2.	Assam	73.18	4.1	9	30	142
3	Manipur	79.85	6.4	3	7	12
4	Meghalaya	75.48	4.7	9	17	7
5	Mizoram	91.58	9.1	3	2	26
6	Nagaland	80.11	NA	4	32	20
7	Tripura	87.75	4.6	3	5	30
8	Sikkim	82.20	9.8	6	4	5
	All-India	74.04	4.5	621	12079	4420

Source: India Human Development Report, 2011

Natural Resources in Northeast India

Northeast India is a storehouse of natural resources. Important natural resources like land, forest vegetation, and livestock, etc., which are essential for creating employment and generation of GDP in Northeast India are either underutilized, unutilized, and mismanaged. Hence, strategy for proper utilization of resources should be adopted to improve the productivity of the natural resources and develop the capabilities of the Northeastern communities to make optimum use of these resources. Furthermore, the primary resources can regenerate secondary resources, which in turn can provide additional employment opportunities to rural people. Promoting sustainable develop-

ment through management of natural resources has good potential to provide employment opportunities. Moreover, it also helps in conserving the biodiversity. The following sections will highlight the natural resources which are accessible in Northeast India.

Water Resources

Brahmaputra and Barak rivers are the two largest river basins in Northeast India. The Brahmaputra is one of the world's largest (5, 80,000 sq km) rivers, of which 33% flows in India. At an elevation of 5,300 meters above sea level, the river originates from the glaciers of Chema-Yung-Dung in the Kailas range of southern Tibet. It travels 1,625 km through China, 918 km through India and 337 km in Bangladesh and finally flows into the Bay of Bengal through a joint channel with the Ganga River (Vagholikar, 2010; Mahanta 2006). In India, the river basin is distributed in Arunachal Pradesh (41.88%), Assam (36.33%), West Bengal (6.47%), Meghalaya (6.10%), Nagaland (5.57%) and Sikkim (3.75%). Out of the total area of the river, 50.5% flow in China, 33.6% in India, 8.1% in Bhutan and 7.8% in Bangladesh. Barak River originates from India (Manipur) and flows into Bangladesh and Myanmar. The river total stretch in India is 41,723 sq. km. In India, the river flows in the states of Manipur, Assam, Meghalaya, Nagaland, Mizoram, and Tripura with a total population of 6.2 million (Mahanta, 2006).

In Manipur, the upper Barak catchment area covers the entire north, northwestern, western and southwestern part. The middle portion of the river flows in Cachar in southern Assam and the lower deltaic portion flows in Bangladesh. Brahmaputra and Barak rivers are both an essential lifeline for the livelihood of the people living nearby its floodplains by engaging in fishing and agricultural activities. The river splits into Surma and Kushiara before entering Bangladesh and further down the river is called Meghna which joins the flow of Ganga and Brahmaputra rivers (Ibid).

The Northeast states have a potential of producing 60,000 MW of hydropower out of which only 2004 MW is harnessed. Northeast region has the highest hydropower potential with almost 42.54% of the country. However, it has harnessed merely 3.02% of the total capacity wherein the national average is 23.53. The region could be called the 'Power House of India' and it is the most promising region for hydropower generation in the world today (Handique and Dutta, 2012). The Northeast states primarily the Arunachal Pradesh, Meghalaya, and Sikkim have a huge potential for power generation. This potential if exploited at a maximum can be shared with other regions of the country. It could also be a benefit in the development of infrastructure, roads, communications, and others and also used to supply electricity to remote hilly areas of these regions (Das, 2013). Apart from the river resource, the Northeast states have abundant unutilized ground water resources. The water resources in Northeast region fall under stress when the region experiences heavy flood and other natural calamities occur. There is a need of infrastructural and technological development to mitigate the impact of these incidences for economic development.

Table 2 and 3 demonstrate the hydropower potential of Northeast region in India and among the Northeastern states. From the Table, it is clear that the western

region of India (Gujarat, Maharashtra, Madhya Pradesh, Chhattisgarh, and Goa) has harnessed the maximum (62.8) of the hydropower available in their respective region. The southern and eastern India stands at the second and third position while the Northeast regions occupy the least with a drastic percentage disparity.

Table 2: Hydropower Potential in five Regions of India till Oct 2013

Region	States and Union Territories	Potential Hydropower (MW)	Installed Hydropower (MW)	Installed Hydropower %
North	Jammu and Kashmir, Himachal Pradesh, Punjab, Haryana, Rajasthan, Delhi, Chandigarh, Uttaranchal, Uttar Pradesh	53395	15643.3	29.29
South	Andhra Pradesh, Karnataka, Kerala, Tamil Nadu, Pondicherry	16458	9426.9	57.27
East	Orissa, Jharkhand, Bihar, West Bengal	6663	2469.7	37.06
North East	Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Tripura and Sikkim	63257	1911	3.02
Western	Gujarat, Maharashtra, Madhya Pradesh, Chhattisgarh, Goa	8928	5552	62.18

Source: Central Electricity Authority, Ministry of Power, 2013

Table 3: Hydropower Potential Status in the Northeastern States till Oct 2013

Name of the States	Hydropower potential (MW)	Capacity under Construction		Capacity under Construction		Capacity Yet to be Developed	
		MW	%	MW	%	MW	%
Meghalaya	2394	282	11.8	40	1.67	2072	86.54
Tripura	15	0	0	0	0	15	100
Manipur	1784	105	5.89	0	0	1679	94.11
Assam	680	375	55.14	0	0	305	44.85
Nagaland	1574	75	4.76	0	0	1499	95.23
Arunachal Pradesh	50328	405	0.80	2710	5.38	47213	93.82
Mizoram	2196	0	0	60	2.73	2136	97.26
Sikkim	4286	669	15.60	2322	54.17	1295	30.23
Total	63257	1911	3.02	5132	8.12	56214	88.86

Source: Central Electricity Authority, Ministry of Power, 2013

The hydropower potential of Northeast region harnessed is severely low and it will slightly increase to 4.84% after the ongoing construction is completed. Arunachal Pradesh could be considered the 'Power House of India' with a hydropower potential of 50, 328 MW which constitutes 33.84% of the country and 79.56% of the region. The government of Arunachal Pradesh signed a 132 memorandum of understanding (MOU) with hydropower project developers to generate 40,140.5 MW till 2013. Out of which 120 are private companies. Sikkim stands at second largest hydropower potential of 6.77% and Meghalaya stands at third with 3.78% from the total potential of the region (Das, 2013).

With enormous hydro potential and with the least harnessing of it, the region faces a serious criticism and protests from local people, environmentalists, NGOs, and civil societies. The social and environmental impact of dam's construction mainly in Brahmaputra and Barak rivers has led to a conflict and debate in the society, legislative assemblies, and parliament (Vagholikar, 2010). Besides, the dam on Brahmaputra and Barak rivers the dams on Loktak and Tipaimukh in Manipur, and on Gomti rivers faces a fierce resistance from the people (Bhattacharjee, 2013). In Sikkim, the Tashiding Hydroelectric Project (THP) in Rathang Chu River, a tributary of Rangit River, was strongly protested by the local people, monasteries, and Buddhist monks. The reason being the river is considered sacred by the Buddhist monks and communities. The adverse impact to ecology and rivers ecosystem borne out of this hydroelectric project was another major concern of the communities. However, the project was scheduled and preceded along with two other Ting Ting HEP and Lethang HEP irrespective of stiff resistance from the communities (Yumnam, 2012).

The catastrophic impact on biodiversity, river ecosystem and environment at large owing to construction of large scale hydroelectric projects around the world is a matter of concern that needs to be addressed urgently. For instance, majority of dams in China have resulted in environmental degradation and great loss of associated ecosystem services (Li et al, 2009). Several negative impacts have been reported in many countries which include loss of fauna and flora community downstream in Zambia; loss of wetlands of the river Niger in Mali; increased coastal erosion in Ghana; changes in water tables-higher around the reservoir and lower downstream and frequent landslides in New Zealand; the settling of suspended particles thereby limiting storage capacity and at the same time limits the flow of sediments downstream which hampers the agricultural activities due to limited nutrient-rich sediments; and disruption of species migration along the river (about 5-14% of salmon fish are killed at each of the eight dams they pass while swimming up the Columbia River, Canada (Manatunge and Priyadarshana, Nakayama, 2006).

The north east region lies in the junction of Himalayan arc to the north and the Burmese arc to the east and it is one of the six most seismically active regions of the world, the other five are (being) Japan, Taiwan, Mexico, California and Turkey. Seismic factor must be in consideration of mega hydroelectric projects in north east. Many individuals and scholars have a genuine argument on the construction of such projects in high seismic zone of the region (Das, 2013).

Scholars have debated and argued upon the importance of environmentally sus-

tainable, cost-effective small dams in lieu of large dams (Das, 2013). This will reduce the area of submergence and bring a drastic change in displacement and deforestation. Construction of smaller dams may reduce the generation of power through hydropower projects; however, this can be supplanted through the use of clean energy technologies such as solar, wind energy and so on. For instance solar energy can be utilized at the maximum to supply power to small cities and villages.

Forest Resources

North Eastern Region (NER) is endowed with enormous forest resources. Out of the total geographical area of 25.5 million hectares 12.5 million hectares are forests. The forest cover was once 65.17% of the total geographical area but it was reduced to 46% in 2001. The forest coverage in all the state is quite high. In 2001, Mizoram has the highest forest coverage of 82.9% followed by Nagaland (80.4%), Arunachal Pradesh (80.2%), and Manipur (75.8%) as indicated in Table 4. One-third of the forest area in Northeast regions is considered reserved and sacred (Das, 2015). In Northeast India, the forest is historically controlled by the community living nearby and it continued to do so. Entering into an agreement with the state forest authority will reduce the control and conservation of the forest resources instead of enlarging the forest controlled area (Proffenbergerm et al., 2006). Table 4 below indicates the extent of forest controlled by communities in the Northeast state of India. More than 90% of the forests are covered in Nagaland by local institutions and norms followed by Meghalaya (90%), Manipur (68%), Arunachal Pradesh (62%) and others.

Table 4: Proportion of Forest Controlled in the Northeast States

Name of the State	Total Forest Area (%)	Total Forest Area Controlled by Community (%)
Arunachal Pradesh	82	62
Assam	30	33
Manipur	78	68
Meghalaya	70	90
Mizoram	87	33
Nagaland	85	91
Tripura	55	41

Source: Proffenberger et al 2006

Das (2015) study on the forest dynamics and assessment of degradation of the Northeast forests describes various plants, trees, and wildlife which are essential for their livelihood. The author found rich species of flora, valuable medicinal and ornamental plants, vegetable and fruits, valuable trees such as Sal, Teak, Champu, Sishu, Neem, Agaru, Halokh, Sarol, Bamboo, Cane, Simul, Gamari. The author found plenty

of birds and animals such as rhinoceros, golden langur, wild buffalo, elephants, hoolock gibbon, crapped langur, the four horn antelope, musk deer, bear, wild boar, Royal Bengal Tiger, musk deer, barking beer, bison, wild cats, civet cats, snow leopard, leopard, monitors, lizards, python, cobra, tortoise, turtle, fresh water gharial, peacock, stork, vulture, eagle, parrots, doves, ducks, pelican tec. The people of the region established small scale industries such as plywood mills, paper, and pulp mills saw mills, match manufacturing factory based on the available resources. Das (2013) describes that the Northeast region is famous for forest produce such as rubber, tea, silk, rubber, tobacco, bamboo, and fruits like pine apple, orange etc.

Table 5 below indicates the forest coverage change of Northeast region in a decade. Arunachal Pradesh, Manipur, Assam shows a negative change which indicates the degradation of forest which could possibly be because of forest fragmentation, forest fires, grazing, exploitation of forest for timber, shortening the cycle of jhum cultivation and unscientific method of forest management. The positive change in the state of Manipur, Meghalaya, Mizoram, Sikkim, and Tripura indicates the restoration, conservation, and replenishing of the forest resources among the states. The possible factors for these positive changes could be the social, institutional, cultural, religious belief of these communities who considered much of their forests as sacred and worshipped.

Table 5: Geographical and Forest Area in Northeast India

Name	Geographical Area (1997) Km^2	Forest Cover in 2001	Forest % Cover out of Geographical Area 2001	Forest Cover in 2011	Forest Area Change from 2001-2011
Arunachal Pradesh	84, 743	68, 045	80.2	67, 410	-635
Assam	78, 438	27, 714	35.3	27, 673	-41
Manipur	22, 327	16, 926	75.8	17, 090	+164
Meghalaya	22, 429	15, 584	69.4	17, 275	+1691
Mizoram	21, 081	17, 494	82.9	19, 117	+1623
Nagaland	16, 579	13, 345	80.4	13, 318	-27
Sikkim	7, 069	3, 193	45.1	3, 359	+166
Tripura	10, 486	7, 065	67.3	7, 977	+912
Total	2, 63, 152	1, 69, 366	64.3	1, 73, 219	+3853

Source: Forest survey of India

In the East Kameng district of Arunachal Pradesh, the Nishi tribe has established themselves to take complete control over the critical watershed and forests with enormous natural beauty and biodiversity. The protection of these natural resources includes the forests around the lakes and mountains, hilltop forests, forests near to

villages, and forests around niches and drainages. In addition to forest, many plants and animals are considered sacred and it is not harmed. In Tripura, the Jamatia tribe of the Killa district has a tradition of conserving forest and it has revitalized to replenish the forests that have been degraded in the past. The tribe in the Mokokchung district of Nagaland has historically divided forests into blocks wherein one of the blocks has been designated as a conserved area. In Meghalaya, the ethnic people of Mawphlang village are ordaining more sacred forest to 18 other villages to nurture and preserve their four hundred years old traditions of conserving the sacred forest. Besides these states, the worshipping of forest deities is practices in the state of Manipur, Arunachal Pradesh and Sikkim. Hunting, flogging, grazing and others destructive activities is a taboo to these indigenous people and are strictly adhere to their traditional norms and values (Proffenbergerm et al., 2006).

The conservation of sacred forest by adhering to customary laws is crucial for this contemporary world when it is facing the threat of global warming and climate change at hand. The forest act as a carbon sink by absorbing carbon released into the air through different anthropogenic activities. Deforestation is another factor rapidly increasing which contributes to release of carbon into the atmosphere. It is always better if the forest remains unharmed from human activities and this is only possible when the people have a spiritual and religious attachment to it. India has the largest number of sacred forest in the world and it is a place of worshipping deities. In Manipur, the ethnic group of people (Meitei) observed *Lai-haraoba* which means 'pleasing of god' as a celebration in the month of May by worshipping sacred forest deities (Khumbogmayum, Khan and Tripathi, 2004). Many scholars and wildlife organizations appreciate these traditional practices and this contributes a lot to the conservation of forest resources.

Mineral Resources

The Northeast region of India has an abundant mineral comprising chiefly of limestone, coal, natural oil and gas, uranium, feldspar, and others. The total hydrocarbon deposits (oil and gas) accounts for 20% of the total India. Assam and Tripura together estimated to have a combined reserve of 48 billion natural gases. Recently, it is reported that substantial amount of limestone, uranium, kaolin, graphite, quartz, clay, white clay and sillimonite etc., have been mined in this region (Geological Survey of India, 2015).

Assam and Meghalaya has a huge reserve of coal which is known as 'Black Gold'. The Northeast region is reported to have a reserve of 395 million tons of coal apart from other major minerals such as limestone, petroleum, natural gases and others (Jhimli, 2014). A number of minerals in all the state together is given in Table 6. Limestone has the highest mineral reserve in Northeast regions followed by coal, oil and natural gas. According to a survey of Geological Survey of India headed by Ministry of Mines, the Brahmaputra and Barak rivers and floodplains are a rich reservoir of oil and natural gas. Tripura is an another major reservoir of natural gas; Manipur has a huge reserved of platinum group of elements (PGE) massive chromite; Meghalaya is rich in minerals such as dolomite, phosphates, silimanite, kaolin and

China clay, carborundum which includes high quality uranium in west Khasi hills district (Domiasiat, Wakhyn, and Tyrnai); the deposits of iron ore is also found in the northern part of east Garo hills district (Shimray and Ramana, 2008).

Table 6: Amount of Mineral resources in Northeast Region

Name of the Mineral	Category	Amount
Coal	Proved	99 million tons
	Indicated	829 million tons
	Total	928 million tons
Crude Oil	Proved and indicated as of 1978	78.5 million tons
Natural Oil	Proved and Indicated as of 1997	63.6 billion tons
Limestone	Cement, Chemical and Flux Grade	3000 million tons
Iron Ore	Average Metal Content Above 40%	17.6 million tons
Fire Clay	Not Specific	2.1 million tons
Kaolin	Not Specific	6.4 million tons
Litho merge	Not Specific	71.5 million tons
Fullers Earth	Not Specific	17 million tons
Feldspar	Not Specific	40 thousand tons
Silliniamate	Not Specific	10 thousand tons

Source: Planning Commission, 1981

The Northeast region shows solidarity for protection of their mineral resources and forest when the concerned government leased out their resources for mining especially in the state of Assam and Meghalaya. For instance, in Meghalaya, the mining project funded by Uranium Corporation of India (UCIL) faces a fierce protest by the native people, NGOs, students (Khasi students Union) and opposition parties in the form of the bandh in 2007 fearing the environmental and livelihood impact from the project. The protest by the people was turned out to be successful. However, despite the strong opposition the state authority proceeds with the mining project (Ibid).

The coal mining in Assam followed the same fate. The adverse impact of coal mining on land, forest ecosystem and livelihood in Makum coalfield (Assam) came to the fore of the public only in 1980 when some students went to Patkai hills to study the environmental condition of the area. The villager staying close to area faces a huge loss of their crop fields as the land is no longer suitable for cultivation because of the drainage water emanating from Lakowa and Geleki. The students were unable to grab the attention of the villagers even if public meetings were organized in the village. The mining was done with a combined nexus of politician, po-

lice, and mafia. The villagers were threatened by this nexus. However, the students were able to attract the attention of the state government by which the government called the students organization such as All Assam Student's Union (AASU) and Yuva Chatra Porishad (YCP) to join the protests. With the combined pressure from all these students organizations the central body for forest conservation (MOEF) was forced to take up measures to restore the ecological loss of the region (Jhimli, 2014).

Mineral mining in northeast primarily coal mining in Assam, uranium and limestone mining in Meghalaya have been coupled with deforestation, air and water pollution. While environmental pollution is one the major reasons for people's protest towards such project, the other serious problem is the displacement of the tribal people in the region. It was revealed that a genuine and authorized environment impact assessment (EIA) was not done in many of the developmental projects (Jhimli, 2014). We argue that until and unless, there is a proper investigation of social and environmental impacts, it is not possible to usher social and environmental justice. Many scholars argued the importance of developmental activities going hand in hand with environment. However, we argue that developmental activities should go hand in hand with society and environment.

Although some initiatives have been taken to reduce the impact of any developmental activities, the government continues to embark on large scale hydropower projects without adequately considering the social and environmental impacts. The government policy generally comes with compensation, rehabilitation and resettlement in the form of homes and lands. However, the implication of these policies is meager and negligible as compared to the loss incurred to tribal's identity, land and homes and loss to biodiversity. For instance, the case of Karanpura village in Jharkhand where 10.18 percent of the 6,265 families were given jobs in mining sector (Jhimli, 2014). Furthermore, a delay in distribution of compensation and relief for resettlement and rehabilitation is a regular phenomenon in most of the developmental projects in India where the indigenous people are compelled to compromise on their means of livelihood and employment.

No doubt, the region is rich in natural resources, especially water and forests, and there are chances that it could be one of the wealthiest regions of India. However, the story does not end here, in spite of some progress in a few of the Northeastern states (for example Mizoram), overall growth rates over the past years have remained low, poverty incidence (like in Assam) is high, there are still a number of areas subject to continued violence, and there is an abundance of reports documenting natural resource degradation, depleting the very assets that are usually highlighted as offering the greatest potential for growth and development in the Northeastern Region. Thus, in recent years, the region has missed out on the economic growth acceleration witnessed in much of other parts of India. The region's agriculture sector has been declining, and diversification into services and manufacturing has been inadequate. Moreover, quite contrary to popular perceptions, the lack of development in the past has not been the consequence of any shortage of funds. In fact, sufficient resources were always provided to the region, but a substantial portion of the funds assigned for various schemes has not really gone into those schemes

(Human Development Report, 2011).

In the recent years, the Government of India has targeted critical sectors in Northeastern states and brought out initiatives for building capacities and competencies to enhance socio-economic development. The National Skill Development Corporation of India aims to facilitate preparation of Strategic Plans for key sectors such as Agriculture, Road, Civil Aviation, Railways, Inland Water Transport, Power, Telecommunication & IT, HRD, Health and Handloom & Handicrafts and implementation of the plans so prepared by the line-Ministries and the Northeastern States. Facilitate formulation of projects, schemes, and programmes by major Central Ministries in consonance with the requirement of the Northeastern Region. Increase the effectiveness of developmental expenditure in the Northeast Region through higher levels of transparency, systemic improvements, and independent monitoring mechanism. Create an in-house database on important socio-economic indicators in the Region and its periodic assessment. Facilitate preparation of Regional Plan by the NEC and providing critical support to the NEC for identification of appropriate regional projects and their implementation. Facilitate funding by external agencies in critical sectors in the Northeastern States (Government of India, 2015).

Conclusions and Recommendations

The exploitation of natural resources in Northeast India is still done in an unsustainable manner. The social-environmental impacts of mega projects are disdain following which people's disappointment in the form of movements is a common phenomenon in the region. Owing to underdevelopment, the need for developmental activities is inevitable; however, the approach should focus on sustainable and inclusive growth so that the fulfilment of the basic requirements of the society is sustained at a minimal level while safeguarding the existing rich environmental resources and culture of the indigenous people.

The regions that fall under Northeast India are sensitive from a strategic point of view, the policy makers, intellectuals and politicians are of the common opinion that the Northeastern region must be seen as a new route for development considering its political integration with the rest of India and economic integration with the rest of Asia, both East and Southeast Asia in particular. The policy of economic integration with the rest of India has not yielded many dividends. With the development of the Look East policy to Act East Policy, the Government of India directed its interest towards developing the Northeastern region. The Act East policy is expected to usher in a new era of development for the Northeast through various communication networks. The Government of our country and the Northeastern states must adopt an active role and provide not only infrastructural development but also good governance. The emphasis should be on industrialisation and growth through various participative measures. Promoting participation of the local people in production and distribution activities and raising agricultural productivity. However, the resources should be owned by the people of this region and governments should be the representative of the people, which implies that government should not authorize the misuse of public resources by the private

sector. The process of development might take time but efforts should be continued to push for development, however, it is not an impossible dream to reckon with. The following recommendations are crucial for sustainable exploitation of natural resources and socio-economic development of the north-east region.

1. Education system in northeast region should primarily focus on imparting quality education with focus on expansion, equity, and employability skills. The education system should be made in such a manner that the youth should be aware of the sustainable exploitation and conservation of natural resources. It should also promote skill development programs and training to utilize the potential of unemployed youth in the region.

2. Natural resources has always promoted emergence of local art crafts and associated local culture. In this regard promotion of small scale industry can trigger the growth momentum and provide employment opportunity to the youth.
3. Construction of big dams in highly seismic zone of northeast India primarily the state of Arunachal Pradesh and Sikkim exposes them to negative environmental impact. An alternative to large dam owing to hydropower potential and inevitability of power demands, it should envisage the construction of cost-effective and less destructive small dams in the rivers of the region.

4. The displacement, resettlement and rehabilitation due to hydropower projects and minerals mining results in the loss of land, home, fields, cultural identity, resilience, employment and so on. A sustainable approach towards any developmental projects should consider the rights, cultural identity and livelihood of the indigenous people. Hence, a genuine and concrete policy through the model of access and benefit sharing (The Convention on Biological Diversity, 1992 Rio Earth Summit) should be implemented so that benefits arising out of such projects are shared by local people.

5. Before the start of any developmental activities (hydroelectric projects and minerals mining), it should be made mandatory to conduct a genuine Environmental Impact Assessment (EIA) by joint task force (social scientist, engineer, environmentalist, policy makers) to assess the social-environmental challenges associated with the projects.

6. Lastly, any developmental activities cannot be successful without the participation of the local people**.** An inclusive policy framed on the basis of the local people's consensus is imperative. A continuous awareness campaign is required to run in the locality to enhance the participation of local people in any developmental projects.

References

Bhattacharjee, J. (2013). Dams and Environmental Movements: The Cases from India's North East. *International journal of Scientific and Research publication*s, 3 (11), 1-11.

Burman, B.K.R. (1989). Problems and Prospects of Tribal Development in North-East India. *Economic and Political Weekly*, 24 (13), 693-697.

Das, I. (2015). Forest Dynamics and Prospects of Forest Resource Management in North East India. *International Journal of Humanities and Social Science*, 3 (3), 32-41.

Das, N. K. (2009). Identity Politics and Social Exclusion in India's North-East: The Case for Redistributive Justice. *Bangladesh e-Journal of Sociology*, 6 (1).

Das, P.K. (2013). North-East: 'The Power House of India': Prospects and Problems. *Journal of Social Science and Humanities*, 18 (3), 36-48.

Geertz, C. (1963). The integrative revolution: primordial sentiments and politics in the new states. In Geertz, C (Ed.), *Old societies and new states: the quest for modernity in Asia and Africa* (p.105-157). New-York/N.Y./USA 1963: The Free Press of Glencoe & London/UK.

Geological Survey of India. *Geology and Mineral Resources of Manipur, Mizoram, Nagaland and Tripura* (Miscellaneous Publication No.30). Access on 28 Dec, 2015.

Gogoi, L. (2013). Degradation of Natural Resources and its Impact on Environment: A Study in Guwahati City, Assam, India. *International journal of scientific and Research Publications*, 3 (12), 1-7.

Handique, K., & Dutta, A. (2012). Power and North East: The Hydro Power Scenario of North East. *International Journal of Science and Research*. http://www.ijsr.net/archive/v3i12/U1VCMTQ0MDM%3D.pdf Access on 28 Dec, 2015.

Human Development Report 2011. *Towards Social Inclusion*. Oxford University Press. http://www.iamrindia.gov.in/ihdr_book.pdf Access on 28 Dec, 2015.

Indian Minerals Yearbook (2012), Indian Bureau of Mines, Government of India. http://ibm.nic.in/index.php?c=pages&m=index&id=176 Access on 11 Aug, 2017.

Jhimli, B. (2014). Mining and People's protest: A Study in India's North East. International Research *Journal of environmental Science*, 3 (11), 65-70.

Karna, M. N. (1999). Ethnic Identity and Socio-Economic Process in North-Eastern India. In Aggarwal (Ed.), *Dynamics of Identity and Enter-group Relations in North East India* (p. 29). Indian Institute of Advanced Study: Shimla.

Khumbogmayum, A.D., Khan, M.L., & Tripathi, R.S. (2004). Ethnomedicinal Plants in the Sacred Groves of Manipur. *Indian Journal of Traditional Knowledge*, 4 (1), 21-32.

Li, Y.Q., Chen, Y.N., Zhang, Y.Q., and Xia, Y. (2009). Rehabilitating China's largest inland river. *Conservation Biology*, **23(**3), 531-536.

Mahanta, C. (2006). Water Resources of the Northeast: State of the Knowledge Base (Paper Prepared for Discussion, Background Paper 2. http://siteresources.worldbank.org/INTSAREGTOPWATRES/Resources/Background_Paper_2.pdF. Access on 10 Oct, 2017.

Manatunge, J., Priyadarshana, T., and Nakayama, M. (2006). Environmental and Social Impacts of Reservoirs: Issues and Mitigation, Oceans and Aquatic Ecosystems 1, 1-13.

Nongkynrih, A. K. (2009). Problems of the Youth of North-East India: A Sociological Inquiry. *Indian Sociological Society*, 58 (3), 367-382.

Open Government Data (OGD) Platform India. *Forest Cover in the North-Eastern States*. Retrieved December 28, 2015, from https://data.gov.in/catalog/forest-cover-north-eastern-states.

Proffenbergerm, M., Barik. S.K., Choudhury, D., Darlong, V., Gupta, V., Palit, S.,

Roy, I., Singh,I., Tiwari, B.K, and Sanjay Upadhyay. (2006). Forest Sector Review of Northeast India (Paper Prepared for Discussion, Background Paper 12). Community Forestry international, USA: 1-90. http://siteresources. worldbank.org/INTSAREGTOPWATRES/Resources/Background_Paper_12.pdf Access on 5 Oct, 2017.

Rao, V. V. (1975). North East India: Problem and Prospects. *The Indian Journal of Political Science*, 36 (1), 1-12.

Report on Development of Northeast Region of Backward Areas. (1981). Government of India. http://planningcommission.nic.in/reports/publications/ pub_neregion.pdf Access on 28 Dec, 2015.

Sahni, A. (2001). Survey of Conflicts & Resolution in India's Northeast., http:// www.satp.org/satporgtp/publication/faultlines/volume12/Article3.htm Access on 28 Dec, 2015

Samuel, J. (1993). Language and Nationality in North-East India. *Economic and Political Weekly*, 28 (3/4), 91-92.

Sarmah, G.N. (2015). Human Population and the Environment of North East India, *International Journal in Commerce*, IT and Social Sciences, 2 (3), 52-61.

Shimray, U.A., & R.V Ramana. (2008). Uranium Mining in Meghalaya: Simmering Problem. *Economic and Political Weekly*, 42 (52), 13-17.

Singh, N.S. (2006). Integration and Development in North-East India: An Assessment. *The Indian Journal of Political Science*, 67 (2), 329-342.

Vagholikar, N. (2010). Dams and Environmental: Governance in North-East India. Kalpavriksh, Aaranyak, and Action Aid India, 361-369.

World Bank. (2007). Development and Growth in Northeast India: The Natural Resources, Water and Environment Nexus (Report No. 36397-IN). http:// siteresources.worldbank.org/INTSAREGTOPWATRES/FeatureStories/ 21702969/Northeast StrategyReport_20-3-08.pdf www.indiawaterportal.org/.../ Report_Manipur_Mizoram *Access on* 28 Dec, 2015.

Yumnam, J. (2012). An Assessment of Dams in India's North East: Seeking Carbon Credits from Clean Development Mechanism of the United Nations Framework Convention on Climate Change. Citizen's Concern for Dams and Environment, 1-64. http://www.internationalrivers.org/files/attached-files/ damsandcdm_ne_india_april__2012.pdf Access on 28 Dec, 2015.