UNIT 13: ENVIRONMENTAL ISSUES IN NORTHEAST INDIA

UNIT STRUCTURE

13.1 Learning Objectives
13.2 Introduction
13.3 Colonial Era Policies
13.4 Post-colonial Environmental Issues
13.4.1 Mining of coal
13.4.2 Destruction of forest and shrinkage of forest cover
13.4.3 Deterioration of water quality
13.4.4 Depleting Wetlands
13.4.5 Soil Erosion
13.4.6 Construction of Dams
13.4.7 Extinction of Species
13.4.7.1 Why are the species endangered?
13.4.8 Exploitation of natural resources and biodiversity conservation
13.5 Let Us Sum Up
13.6 Further Reading
13.7 Answers to Check Your Progress
13.8 Model questions

13.1 LEARNING OBJECTIVES

After going through this unit, you will be able to-

- understand the North East region's ecology through its inhabitants - the various tribes
- explain the policies of the British era and its impact on the environment in the region
- describe the different developments of economic-political gain under the British affecting the environment.
- discuss the Post-colonial environmental issues in North East India

- analyse the impact of post-colonial policies on the environment and its endangerment to different species.

13.2 INTRODUCTION

India's North East falls under the eastern Himalayas, one of the two bio-diversity hotspots of the country, is known for its rare and exotic varieties of abundant flora and fauna. The rich and verdant rainforests spread over the hills and plains not only provides unique glimpses of nature's bounties they are also inseparably connected with the socio-cultural and economic life of the people. The region is the abode of different ethnic groups. About 25.81 percent of the region's population comprised tribal communities. In some states tribes constitute over 80 percent of the total population of the state. Many of these communities fall into what some describe as 'ecosystem people' who share symbiotic relationship with nature and depend on its bounty for their livelihood.

Interestingly, the North East with its diverse flora and fauna, mineral resources and subsistence livelihood is now facing a threat both to its environment and problem of livelihood of its people. The degradation of its environment is observed in terms of pollution of the environment, shrinkage of forest cover, demographic expansion, dying of wetlands etc. to get some of its glimpses certain issues can be consider for discussion. The issue of climate change can be the starting point for that. Though it is very difficult to give a final statement of climate change in the region there are certain marked instances which make even a lay person to worry about the manifestations of climate change in the region.

The defeat of Burma at the hands of the British East India Company in the first Anglo-British war and the singing of the treaty of Yandaboo in 1826, was a watershed moment in the history of Assam and the Northeast India in more than one ways. It led to the gradual annexation of Assam into the British Indian Empire and paved the way for the inevitable exit of the 600 years old Ahom rule in Assam. A lot of changes have taken place in the political-economic life of the Northeast during the colonial period. By the middle of nineteenth century the British Empire made substantial progress

in mapping and exploiting natural resources of the Northeast India. Along with the successful plantation of tea, the British government invested in the exploration of other mineral resources. With the formation of GSI in 1856, the nature of mineral exploration in the state acquired a more professional nature. The GSI undertook exploration of coal and oil in North East India.

The Northeastern part of India in the post-colonial age has seen the continuation of many colonial era rules and decisions. The region has seen deforestation, construction of dams, extinction of species, exploitation of natural resources by private players as well as the state. In the previous unit, we have discussed about Environmental Ethics and Environmental Laws. In this unit, we shall try to understand about the environmental issues in the context of Northeast India and how various policies, initiatives of different agents have altered the environmental setting of the region. In the following section, let us have a look at the history of the colonial era policies specially the 'Line System' and also study the different environmental concern.

13.3 COLONIAL ERA POLICIES

The post-independence Indian state in the North East had adopted and implemented the colonial strategies of governance in which the Inner Line was used tactically to control and monitor population mobility to these restricted and scheduled "disturbed areas."

So, on one hand we have the conventional discourse that the inner line was constructed by the British administrators to protect the identity of the tribes living in the hills, on the other hand, records of correspondences of the officials present us a different story. It shows that the line created a boundary between the administered and the un-administered areas and thus the hill people now cannot enter the plains for raids and vice versa. The purpose of creating such a divide was to prevent disturbances from the un-administered areas (people in the hills). The line was extended as per the requirements/interests (profit motives) of the British capitalists, miners and planters. Thus, under the veil of carrying out a noble ideal of protecting tribal

interests, the colonial administrators were protecting the interests of their own kind.

The key point being the colonizers left the hills untouched not because they cared much about the hill communities' rights but because they did not see those territories as fertile enough to generate surplus. They filled their cup up to the brink. That is to say they extended the boundary to wherever surplus generation was possible. They left out the hills not because of ethical reasons caring about the tribals rights but because they didn't see them as avenues of surplus creation or revenue generation or even if they did, the stakes were too risky. Now let us consider the forest cover in the northeast region.

To protect their interest in the Garo Hills the British passed a series of regulations in the district, viz. Regulation Act of 1876 imposed restrictions of un-authorized entry of non-tribal persons into the district for trading and other purposes. It also restricted other British subjects, save those who were native of Garo Hills, from acquiring any interest in land or anything contained therein without the sanction of the Chief Commissioner of Assam. Subsequent to this, Regulation 1 of 1882 authorized the latter to prohibit even the natives of the district from exploiting forest resources without possession of a licence. The prohibitions covered a wide spectrum of activities, ranging from the cutting of wood to hunting and collection of forest produce like ivory, rubber and wax; significantly, these materials constituted valuable items of exchange for the non-monetized Garo economy. By 1897 the Government had converted 14 forests into Reserves where all rights of the people were extinguished. In 1882 the areas populated by elephants were declared as Elephant mahal and rendered the free capturing of elephant as illegal. That these measures were directed at the 'generation of revenue' for the state exchequer than at conservation per se is demonstrated by the fact that rights to exploit natural resources can be obtained for fee.

Following the transfer of the district headquarter to Kohima the British authorities proposed to open up Namboor forest and settle it with people from the plains as it was not considered advisable to administer the plains portion of the district from Kohima which was far off. Further, to encourage

expansion of the tea industry it was decided to allow the new railway line to pass through the heart of Namboor forest and, after settling it with plains people, extend normal laws to it. According to the need of different contexts, large tracts of lands were announced as non-accessible (whether be the non-administered areas of the Naga Hills, for enabling autonomy of the hill tribes or be it the reserved forest areas, for preserving the forest cover) such that Colonial surplus generation and revenue creation was not in crisis. Colonial morality was thus a direct reflection of their economic interests.



CHECK YOUR PROGRESS

Q1: Why were many communities in North East India described as 'ecosystem people'?

Q2: When was the GSI formed?

Q3: What was the purpose of passing Regulation 1 of 1882 by the British in Garo Hills?

Q4: What was the purpose of the Inner Line System?

13.4 POST-COLONIAL ENVIRONMENTAL ISSUES

Though endowed with an extremely rich resource base in the form of biomass, hydro, solar, mineral resources and large area of fertile lands, the region is rated under special category states for its slow pace of economic development. The economy is primarily agrarian in character with majority of the rural workforce engaged in single crop settled cultivation in the plain lands and shifting cultivation in hilly areas. The climate in most parts of the region is hot and humid with high rainfall. The high altitude areas experience low temperature during winter. The region though receives more precipitation compared to other regions in India, the amount of solar radiation available in the region is sufficient enough for different end uses such as electricity generation, water heating, drying, space heating etc.

The exploitation of resources is not only associated with the exploitative motive of the British, it has a legacy in post-colonial era too. The focus of government of India on industrialization countrywide has left enough scope

for resource exploitation of the region. Though the country claims to be a welfare state, its continuing orientation to economic growth sometimes contradicts its approach. In the following subsections, we shall learn in details about how resource extraction for economic gain has led to severe environmental threat in the region.

13.4.1 Mining of coal

Northeast India has a good deposit of sub-bituminous tertiary coal. The northeast Indian coals have unusual Physico-chemical characteristics such as high sulfur, volatile matter and vitrinite content, and low ash content. Such characteristics are associated with more severe environmental impacts due to mining and its utilization in coal based industries. Environmental challenges include large scale landscape damage, soil erosion, loss of forest ecosystem and wildlife habitat, air, water and soil pollution.

As on April 2014, India's inventory of coal resource was 300 Billion Tons (BT). Northeast India contributes 105 Million Tons (MT) of the Gondwana coal and 1492 MT of tertiary coal reserves. Meghalaya and Assam in northeast India contain 73 % of the total tertiary coal reserves. Nagaland and Arunachal Pradesh contribute 21 % and 6 % of the total tertiary coal reserves, respectively.

Unscientific mining of minerals poses a serious threat to the environment, resulting in reduction of forest cover and loss of biodiversity, soil erosion and pollution of air, water and land. The primitive and unscientific 'rat-hole' method of mining adopted by private operators and related activities have caused large-scale environmental degradation and severe ecosystem destruction in Meghalaya large scale denudation of forest cover, scarcity of water, air and water pollution, degradation of soil and agricultural lands, land subsidence, haphazard dumping of coal and overburden are some of the conspicuous environmental implications of coal mining in north eastern coal mines of Meghalaya, India. Based on a study in the Nokrek Biosphere Reserve in Meghalaya, India, it is revealed that coal mining has adversely affected the vegetation and the density of trees, shrubs and herbs in mined areas.

Opencast mining operations contribute major air pollutants to the atmosphere and are responsible for environmental degradation by deteriorating the air quality in respect to dust, fine coal particles and other gaseous pollutant. The major sources of air pollution in coal mining area include: drilling and blasting, loading and unloading of coal and overburden, movements of heavy vehicles on haul roads, dragline operations, crushing of coal in feeder breakers, presence of fire, exposed pit faces, wind erosion and exhaust of heavy earthmover machinery.

Since coal mining and its utilization in coal based industries is associated with environmental issues, it is necessary to manage or mitigate its impact on environment or clean coal prior to its utilization. The main environmental acts that impact the mining industry in India are: The Wildlife (Protection) Act, 1972 (amended in 1991); The Water (Prevention and Control of Pollution) Act, 1974 (amended in 1988); The Forest (Conservation) Act, 1980 (amended in 1988); The Air (Prevention and Control of Pollution) Act, 1981 (amended in 1988); and The Environment (Protection) Act, 1986. Separate pollution standards for air quality and coal mine effluents has been laid down by Central Pollution Control Boards for coal mining in India. In order to achieve sustainable utilization of coal resources integrated approach considering various aspects to reduce its environmental impacts is necessary. Proper implementation of regulatory rules and policies is as important as other management strategies to deal with environmental issues.

13.4.2 Destruction of forest and shrinkage of forest cover

Depleting forest cover is yet another environmental problem of North East India. While the region continues to be perceived by outsiders as full of greenery and thick forest cover, a look into the forest statistics talks about a dismal reality about the region. An analysis of the status of forests and change of forest cover in the region reported in Forest Survey of India (FSI) report, shows that in comparison to the other states of the country the region records a loss of 783 sq. km of forest cover in the year 1995, whereas the states of the rest of the country record a gain of 276 sq. km altogether. The region also records loss of forest cover in the FSI report of 1997 and 1999 which is

316 sq. km in case of former and 216 sq. km in case of later. While the region is harbored with tropical forest and rain forest, the bio-diversity of the region are in great threat. A number of species are becoming extinct day by day.

According to State of Forest report of 1999, the percentage of actual forest cover to geographical area in North East India is 56.93 percent against 65.3 percent reported in official documents. In terms of percentage the actual forest cover is 8.38 percent higher than officially reported figures. This is true of all the hilly states of the north eastern region. In Assam and Tripura the officially reported forest cover is higher than the actual forest cover. The reason for actual forest cover being higher or lower than the officially recorded forests is that in the hilly areas of the region which are inhabited by the different tribal communities, the forests are owned by the village communities, religious groups, individuals (private) and forest departments, a substantial portion of the forests not owned by the state government has not been included in the official statistics.

13.4.3 Deterioration of water quality

Water like air, is an indispensable and most precious natural resources on this planet. There is a marked deterioration in the water quality, increase in turbidity or opacity, reduction in plant life at the bottom, qualitative changes in the physico chemical environment of the water, disturbance in the benthic environment of the river, disturbance in spawning / breeding areas of aquatic fauna and so on. Hence there is an overall depletion in the quantity and quality of aquatic life. It has been seen that before 1950, the rate of siltation was very rapid and it has been observed that within a few years, the river bed rose by three meters in several areas. The situation has been aggravated due to further cutting of trees in the catchment areas resulting into washing away of the soil to the Brahmaputra River. Again water pollution in the region also shows a marked degradation of its environment. Though there is plenty of water, the quality of drinking water is deteriorating day by day. Especially in north eastern region, the number of water supply devices in comparison to population is insufficient. The refineries,

petrochemical industries, sugar mills, paper mills, are causing water pollution in the region. The Digboi refinery has been discharging its effluents without any treatment in the nearby rivers, thus polluting the biggest water sources of North East Region. The Noonmati Refinery and Assam Petrochemical Limited, at Namrup have been polluting many rivers which ultimately pollute the river Brahmaputra. Following an investigation by Assam Pollution Control Board in August 2006, it was found that the oil industries have been polluting the rivers of the state and destroying the rainforests. It says Assam produces 15 percent of India's onshore crude supplying crude oil to state-run Indian oil refineries. The investigation found refineries were discharging bio-chemical wastes such as oil and grease, phenolic compound and sulphide into the Brahmaputra River and its tributaries.

The drainage of fertilizer plants at Namrup goes into the Dilli River that flows in to Disang in Assam, which has been causing destruction to the aquatic life and fishes in that river. The effluents of Jogigopa paper mill are directly drained to the river Brahmaputra. Similar is the case with Cachar paper mill, the effluent of which is polluting the river Barak and the Nagaland Paper mill discharges its effluent into Tipak Nala, which ultimately reaches to the river Brahmaputra. The Kamrup paper mill is also continuously polluting the river Brahmaputra. Apart from these, Spun silk mill at Jagiroad and other industries like Indian Carbon, Assam Carbon, Bokajan Cement, Dimapur Sugar mill and distillery situated in Bhutan are discharging their effluent in the tributaries of Brahmaputra which has direct impact on the water pollution in North East. According to the Meghalaya State Pollution Control Board, water of the Ward's Lake (situated in a park at the center of Shillong town) is chemically unsuitable for human consumption. Similarly the Umiam Lake is also extremely polluted. The Shillong Times, a regional newspaper, in its report in 1990 puts its water in class 'c'. Acid mine drainage from coal mines, besides other harmful effects, is also known to release various heavy metals into the ecosystems.

13.4.4 Depleting Wetlands

Another significant deterioration of the environment in the region is seen in case of dying wetlands. The dying of wetland is a very commonly reported phenomenon in the region. Presence of wetland is a boon to ecology of an area for it helps in the specific transfer of energy and matter in the ecosystem through the interaction with the physical environment. The wetlands maintain ecosystem diversity, as they are the natural storehouse of valuable flora and fauna of an area. But the degradation and decline of the wetlands in the country and globally is an awesome problem to the environmentalist here. The wetlands are reported to get dried up and the water of the wetlands is getting polluted leading to the death of the diverse biota of the wetland.

The wetlands of Assam and those around Guwahati city are under threat. Two wetlands Silsako and Numalijalah wetland around Guwahati city are reported to suffer threat to their existence because of the encroachment by the people. It has been reported that in 1912-13 the original total wetland area of the Silsako was 17.5847 ha. and the total water spread and total wetland area have declined to 407.07 ha and 150.36 ha, respectively. It means that 23.15 percent of the total wetland area was left. In case of Numalijalah wetland the total wetland area and total water spread area has shrinked to 22.62 percent and 19.66 percent of the original respectively.

13.4.5 Soil Erosion

Problem of soil erosion and land degradation in the northeast India is widely visible both in the valleys and in the hills. After the great earth quake that visited the region in 1958, the frequency and intensity of siltation and floods have taken a new dimension due to the disturbance and imbalance caused to the river courses and surrounding land mass. Soil erosion, silt deposition and rising of the river beds level have also been accelerated due to the changes taking place in the hills. Increase in population growth and its ever rising demand for basic necessities for survival as well as for other comforts of life necessitated expansion of jhum lands in the hills. Besides

settled agriculture in the valleys, industrial growth, road construction, mining, urbanization etc., added to the problem.

The decreasing jhum cycles, landslides, the hill features have started to take a new and unaesthetic and ecologically unfriendly look. The significance of soil erosion and resultant siltation in the river beds is manifold. There is a vertical and a horizontal increase in river beds and increasing frequency and intensity of floods is the perennial problems of plains of north east. There is a marked deterioration in the water quality, increase in turbidity or opacity, reduction in plant life at the bottom, qualitative changes in the physico chemical environment of the water, disturbance in the benthic environment of the river, disturbance in spawning I breeding areas of aquatic fauna and so on. Hence there is an overall depletion in the quantity and quality of aquatic life. It has been seen that before 1950, the rate of siltation was very rapid and it has been observed that within a few years, the river bed rose by three metres in several areas. The situation has been aggravated due to further cutting of trees in the catchment areas resulting into washing away of the soil to the Brahmaputra River.

13.4.6 Construction of Dams

Out of the major resources that are vital for industries, the water resources can be worth mentioning. The region is considered to have a potential to be the future: power house of the country. The harnessing of the hydroelectric energy from the river system has been given highest marks for its hydroelectric potential by the October 2001 Central Electricity Authority (CEA) (preliminary ranking study). The 168 schemes considered by a ranking study have a cumulative installed capacity of 63, 328 MW and 149 of these were given ranks A and B, indicating higher viability. These schemes were developed by agencies such as National Hydroelectric Power Corporation (NHPC) and North Eastern Electric Power Corporation (NEEPCO), the Brahmaputra Board and the State Electricity Board and a major portion of this power will be evacuated to other parts of the country.

This emphasis on power generation has been anticipated to create a major environmental havoc in the region being seismically sensitive zone.

The inter linking of river for optimum development of water resources envisaging inter basin water transfer from surplus to deficit areas has been another exploitative measure by the government of India which has received lot of criticisms from the environmentalists and hydrologists. The Brahmaputra is one of the world's largest rivers, with a drainage basin of 580,000 sq. km, 33 per cent of which is in India. Originating in the great glacier mass of Chema-Yung-Dung in the Kailash range of southern Tibet at an elevation of 5,300 metres, it traverses 1,625 km through Chinese territory and 918 km in India, before a final stretch of 337 km through Bangladesh, emptying into the Bay of Bengal through a joint channel with the Ganga.

One of the major arguments put forward to argue for large hydroelectric projects in the North-east, is that there is relatively 'small displacement' by submergence as compared to that in other parts of the country and therefore these projects are benign. But a careful perusal of the ground situation indicates that displacement, particularly of livelihoods and rights, is grossly underestimated. The region is home to a rich diversity of indigenous communities, with a substantial portion of the population dependent on natural resource-based livelihoods. This diversity of communities comes with unique socio-cultural, agro-ecological, and landholding systems (such as different forms of community control over forests in various parts of the region). Considering the unique features of the region and the scale of intervention planned, it is critical that the social and environmental impacts are carefully assessed before deciding on the feasibility of large dams.

A major catalyst in triggering the larger debate on downstream impacts of dams in Assam, has been repeated incidents of dam-induced floods across the state from upstream projects (for example, the 405 MW Ranganadi in Arunachal Pradesh) in recent years. Concerns about downstream impacts raised in the North-east include loss of fisheries; changes in beel (wetland) ecology in the floodplains; impacts on agriculture on the chapories (riverine islands and tracts); impacts on various other livelihoods due to blockage of rivers by dams (for example, driftwood

collection, sand, and gravel mining); increased flood vulnerability due to massive boulder extraction from riverbeds for dam construction and sudden water releases from reservoirs in the monsoons and dam safety and associated risks in this geologically fragile and seismically active region. Flow fluctuations in rivers, such as Lohit, Dibang, Siang, and Subansiri will seriously impact breeding grounds of critically endangered grassland birds, such as the Bengal Florican, foraging areas of the endangered wild water buffalo, habitat of the endangered Ganges river dolphin, and important national parks, such as Dibru-Saikhowa and Kaziranga.

13.4.7 Extinction of Species

Northeast India is part of a global biodiversity hotspot and also two Endemic Bird Areas. The region has the highest faunal diversity in India. Many among these are threatened. The categories included here are 'Critically Endangered', 'Endangered' and 'Vulnerable'. Of the 11 'Critically Endangered' species of mammals listed for India, seven have been recorded in this region. Of the 57 'Vulnerable' species of birds in India, 42 have been recorded in the Northeast. Among reptiles, 10 species in India are included in the 'Vulnerable' category of which eight are found in this region. Overall, 54% of threatened mammals, 68% of birds and 63% of reptiles in the country have been recorded in the Northeast. Many species have become endangered because of habitat loss and fragmentation, poaching, small original range, habitat alteration, pollution, disturbance in specialized habitat and diseases.

13.4.7.1 Why are the species endangered?

- Habitat loss: For most species the loss of their natural habitat is the main reason for the decline of the population. The forest cover in northeast India is disappearing at an alarming rate.
- Habitat fragmentation: While fragmentation of the natural habitat has threatened many species, arboreal mammals are worst affected. Examples of these are the Hoolock Gibbon and the flying squirrels
- Poaching: Although most species are poached for food and trade, some have been particularly affected by this despite the availability

of a good habitat. Tiger, Gangetic Dolphin, Rhinoceros, Elephant, Chiru, Bear, Otter, and turtles and tortoises, are typical examples. While a systematic record of many species are not maintained, at least a thousand rhinoceros fell prey to poachers since 1980.

- Habitat alteration: Alteration of some specific parts of a habitat may endanger the species. The Greater Adjutant may vanish from an area if dumping grounds and nesting / roosting sites in urban areas are altered. Tree plantation in grasslands will result in the decline of the Bengal Florican and Black-breasted Parrot among many other species.
- Small original range: Some species have become threatened because of their small original distribution or very restricted range. Some obvious examples are the Pygmy Hog, Golden Langur and Manipur Thamin. Any small intervention in their habitat can be disastrous.
- Pollution: This affects all species at various levels, but water fowl and birds of prey are particularly vulnerable.
- Specialized habitat: Species such as Elephant, Tiger, Macaques and forest birds may survive well in a variety of habitats and can adapt well to habitat changes while some species such as the Pygmy Hog, Bengal Florican and White-winged Duck cannot.

13.4.8 Exploitation Of Natural Resources And Biodiversity Conservation

Natural resources are those that our planet offers us without the need for human intervention. They are essential for survival, but if they are consumed at a faster rate than their natural regeneration, as is currently the case, they can be exhausted. The North Eastern region is considered a geographic gateway for much of India's flora and fauna, and harbors exceptional biodiversity and has relatively complex biogeography. Roughly, the region contains more than one-third of the country's total biodiversity. Besides representing the Himalayan Biodiversity Hotspot, the region also represents an important part of the Indo-Burma (Myanmar) global biodiversity hotspot, amongst the 34 recognized global biodiversity hotspots.

Human survival and wellbeing depend on biodiversity and healthy ecosystems, and the goods and services they provide. Yet, in recent decades, the world has experienced unprecedented biodiversity loss and ecosystem degradation. The loss of ecosystems and biodiversity is a challenge for us all, but it is a particular challenge for the world's poor, many of whom depend directly on nature for the provision of food, clean water, fuel, medicine, shelter and reduced vulnerability to climate change and natural disasters. Biodiversity loss and ecosystem change impact human health and well-being, which may include among other factors increased risk of emergence or spread of infectious diseases in animals, plants and humans. Conserving biodiversity, maintaining ecosystem services, and sustainably managing natural resources are fundamental to sustainable development.

The primary vegetation in extensive areas of the Northeast India has been disturbed and modified both through natural and anthropogenic causes. However, the first one has contributed only marginally to the change in vegetation type; human induced activities have led to irreversible transformation in the landscapes and resulted in colossal loss of biodiversity in the entire region. Shifting agriculture or slash-and-burn agriculture is the major land use in Northeast India. This traditional practice has largely been blamed for deforestation in the region. Encroachment situation of forest land is alarming in some areas of NE region. This has not only caused loss of forest area but has also created a tool for perpetual degradation of forest resources. Grazing pressure on forests and grassland of the region far exceeds the carrying capacity and is one of the major factors for degradation of forests especially near human habitations. Grazing therefore constitutes a threat to forest conservation and biodiversity in the State. Replacement of original mixed vegetation with monoculture plantations like rubber in Tripura, Tea plantations in Arunachal Pradesh, etc. are also posing threats to the unique biodiversity of the region. Unplanned activities of development infrastructure is resulting into a great pressure on fragile ecosystems of NE region.

Till date, a total of 16 National Parks and 53 Wildlife sanctuaries have been designated in different NE states covering an area of 6912 km2 and 11,261 km2, respectively. A total of five biosphere reserves to conserve the representative habitats, biota and to support the harmonious coexistence of man and nature have been established in the Northeastern region.

CHECK YOUR PROGRESS

Q5: Which two wetlands around Guwahati city are reported to suffer threat to their existence?

Q6: What are the various reasons, which are threatening species in North East India?



13.5 LET US SUM UP



- From this unit we have learned that it the pristine north east is continuously attacked by a system of production foreign to it.
- It distorted the economy and the ecological set up which began to take place vehemently with the entry of British to the region and continues with the post independent Indian state's resource exploitative path of development.
- Whether be dam building projects or coal mining, the negative impact on environment in Northeast India and its ecosystem are evident.
- Extinction of species and depletion of flora and fauna are happening at an alarming rate.



13.6 FURTHER READING

1) Dutta, P. C. (2011). Globalisation, Growth and Inequality in North East India. New Delhi, India: Kalpaz Publications.

2) Hazarika, J. (1996). Geopolitics of North-East India: A Strategical Study. New Delhi, India: Gyan Publishing House.



13.7 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q No 1: Many communities in North East India are described as 'ecosystem people' because they share symbiotic relationship with nature and depend on its bounty for their livelihood.

Ans to Q No 2: The GSI was formed in 1856.

Ans to Q No 3: Regulation 1 of 1882 authorized the British to prohibit the natives of the Garo Hills district from using forest resources without possession of a licence. The prohibitions covered a wide spectrum of activities, ranging from the cutting of wood to hunting and collection of forest produce like ivory, rubber and wax; significantly, these materials constituted valuable items of exchange for the non-monetized Garo economy.

Ans to Q No 4: On one hand we have the conventional discourse that the inner line was constructed by the British administrators to protect the identity of the tribes living in the hills, on the other hand, records of correspondences of the officials present us a different story. It shows that the line created a boundary between the administered and the un-administered areas and thus the hill people now cannot enter the plains for raids and vice versa. The purpose of creating such a divide was to prevent disturbances from the un-administered areas (people in the hills). The line was extended as per the requirements/interests (profit motives) of the British capitalists, miners and planters. Thus, under the veil of carrying out a noble ideal of protecting tribal interests, the colonial administrators were protecting the interests of their own kind.

Ans to Q No 5: Silsako and Numalijalah wetland around Guwahati city are reported to suffer threat to their existence because of the encroachment by the people.

Ans to Q No 6: Small original range - Some species have become threatened because of their small original distribution or very restricted range.

Some obvious examples are the Pygmy Hog, Golden Langur and Manipur Thamin. Any small intervention in their habitat can be disastrous.



13.8 MODEL QUESTIONS

Short Questions (Answer each question in about 150 words)

Q1: Which type of coal is found in North East India?

Q2: Why is the water quality of the Northeast region deteriorating?

Long Questions (Answer each question in about 300-500 words)

Q1: How did the British exploit their economic interest in Northeast India?

Q2: According to you what are the biggest environmental hazards in Northeast India? Comment.

Q3: How does construction of dams pose as a threat to the people and the environment?

Q4: How does mining impact the environment? Discuss.

Q5: What are the reasons for extinction of species in Northeast India?

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REFERENCES

- Fearnside, P. M., & Laurance, W. F. (2004). Tropical Deforestation and Greenhouse-Gas Emissions Author (s): Philip M . Fearnside and William F . Laurance Published by?: Wiley on behalf of the Ecological Society of America Stable URL?: https://www.jstor.org/stable/4493598 REFERENCES Linked referen, 14(4), 982-986.
- Hardoy, J. E., & Satterthwaite, D. (1991). "Environmental problems of third world cities: A global issue ignored?": Public administration and development (1991). Public Administration and Development, 11, 341-361.
- Koop, S. H. A., & van Leeuwen, C. J. (2017). The challenges of water, waste and climate change in cities. Environment, Development and Sustainability, 19(2), 385-418. https://doi.org/10.1007/s10668-016-9760-4
- Giddens, A. (2009). The Politics of Climate Change. Cambridge, U.K : Polity Press
- Weart, S. R. (2003). The Discovery of Global Warming. Cambridge, U.S.A. : Harvard University Press
- Ament, R, Clevenger, A P, Yu, O, and Hardy, A (2008): "An assessment of road impacts on wildlife populations in US National Parks." Environmental Management, vol 42, issue 3, pp 480-496.
- Forman, R. T. (2003): "Road ecology: science and solutions" Island Press.
- Herndon, C N, and Butler, R A (2010) "Significance of biodiversity to health" Biotropica, Vol 42, Issue 5, pp 558-560.
- Perz, S G, Caldas, M M, Arima, E, and Walker, R J (2007): "Unofficial road building in the Amazon: socioeconomic and biophysical explanations." Development and Change, Vol 38, Issue 3, pp 529-551.

- Haynes, J. (1999). Power, politics and environmental movements in the Third World. Environmental Politics, 8(1), 222-242. https://doi.org/10.1080/09644019908414445
- Swain, A. (1997). Democratic Consolidation?? Environmental Movements in India Author(s): Ashok Swain Published by?: University of California Press Stable URL?: https://www.jstor.org/stable/2645699 University of California Press is collaborating with JSTOR to digitize , 37(9), 818-832. Retrieved from https://www.jstor.org/stable/2645699
- Panjabi, R. K. L. (1997). The Earth Summit at Rio: Politics, Economics, and the Environment. New Hampshire, U.S.A.: Northeastern University Press.
- Shearman, R. (1990). The meaning and ethics of sustainability. Environmental Management, 14(1), 1-8. https://doi.org/10.1007/BF02394014
- Dutta, P. C. (2011). Globalisation, Growth and Inequality in North East India. New Delhi, India: Kalpaz Publications.
- Hazarika, J. (1996). Geopolitics of North-East India: A Strategical Study. New Delhi, India: Gyan Publishing House.
- Victor, D. G. (2001). The Collapse of the Kyoto Protocol and the Struggle to Slow Global Warming. Princeton, U.S.A.: Princeton University Press.