COURSE CODE: MASOD 403

COURSE NAME: ENVIRONMENTAL SOCIOLOGY

CENTRE FOR DISTANCE AND ONLINE EDUCATION
TEZPUR UNIVERSITY

MASTER OF ARTS

SOCIOLOGY
BLOCK II

Tezpur University
Centre for Distance and Online Education
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Vision

To grow to be a leading centre for human resource development through distance, open and universal learning system.

Mission

To provide quality higher education at door step through barrierless, flexible and open learning mode in conformity with national priority and societal need.

Objective

- **To offer degree, diploma, certificate level programme of study through distance learning in various emerging subjects across the disciplines.**

- **To offer job oriented and vocational programmes in flexible terms in the line of the national and regional level demand of manpower.**

- **To offer various programmes under lifelong learning contributing to the local and regional level requirements and as per the need of the society at large.**

- **To undertake various research and academic activities for furtherance of distance education in the region.**

- **To contribute to conserve and promote cultural heritage, literature, traditional knowledge and environment conducting short programmes, workshops, seminars and research in interdisciplinary field.**

MSO-403: ENVIRONMENTAL SOCIOLOGY

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BLOCK II

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BLOCK INTRODUCTION

This Block comprises of Modules **III, IV** and **V** of MSO 402: Environmental Sociology. **Module III** focuses on the emerging issues in environmental sociology. **Unit 7** explores the contributions of Zavestoski, Dunlap, Catton and Allan Schnaiberg to the emerging theoretical parameters in environmental sociology. **Unit 8** deals with environmental disasters and hazards. The learner will be able to get a clear grasp of the causes and effects of environmental disasters and hazards. **Unit 9,** on the other hand, discusses the relationship between the environment, body and health.

Module IV explores some other emerging issues in environmental sociology. **Unit 10** explores the important topic of technology and the environment. **Unit 11** will help the learner to understand global environmentalism as a challenge to the post-materialism thesis. **Unit 12**, on the other hand, deals with the responses to environmental issues. The learner will get introduced to the concept of environmental justice in this unit.

Module V focuses on India. It explores the environmental policies and movements in India. **Unit 13** deals with India's National Environmental Policy. On the other hand, **Unit 14** deals with the different environmental movements in India and their impact on society.

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MODULE III: EMERGING ISSUES IN ENVIRONMENTAL SOCIOLOGY

UNIT 7: EMERGING THEORETICAL PARAMETERS IN ENVIRONMENTAL SOCIOLOGY: CONTRIBUTIONS OF ZAVESTOSKI, DUNLAP AND CATTON, ALLAN SCHNAIBERG

UNIT STRUCTURE

7.1 INTRODUCTION

In this unit, we will learn about the theoretical ideas of three scholars who have contributed a lot to the development of Environmental Sociology. The three scholars talk about the adverse effects of human actions on the environment, which as a consequence impacts human health. They have

also expressed the necessary actions that must be taken to tackle this degradation of the environment.

The scholars about whom we are going to learn today are namely, Stephen Zavestoski, William R. Catton and Riley Dunlap, lastly, Allan Schnaiberg. Here in this unit, we will attempt to learn about their scholastic work. Stephen Zavestoski's research areas include environmental sociology, social movements, and sociology of health and illness. He also looks at the role of the internet in environmental decision making. William R. Catton was an American Sociologist known for his work on environmental sociology and human ecology. Riley Dunlap too was an American Sociologist who worked together with Catton and together they produced much work contributing to the field of environmental sociology. Allan Schnaiberg was an American Sociologist known for his contribution to environmental sociology.

7.2 OBJECTIVES

By the end of this unit, you will be able to:

- Discuss the theoretical ideas of Zavestoski, Dunlap and Catton, and Allan Schnaiberg;
- Analyse the interrelation between human beings and the environment;
- Explain the role of health movements in forming environmental policies;
- Analyse the connection of economy, health and the environment.

7.3 STEPHEN ZAVESTOSKI'S IDEAS

Zavestoski's work focuses on an overview of the various Health Social Movements (HSMs) basically dealing with contested illnesses like asthma, breast cancer, and Gulf war diseases that have an environmental cause behind it. He brings in more detail in his work by undertaking case studies

that represent the varied work and also works towards applied research (Zavestoski et.al, 2012). His work primarily focuses on America but over the course of time, he has also looked into the Bhopal gas tragedy incident in India and its impact.

7.3.1 Science and Health Social Movement

In this section, we will look into the relationship between sciences and health policies, considering the role of social movements, especially in terms of health and the environment. In the field of study of diseases, there has been a kind of boundary work that goes on. This boundary is reflected in the sense of what counts as science and what does not, what falls under the jurisdiction of scientific study and what does not. This creates a gap in the understanding of a disease or its cause to the complete sense. This also leads to conflict in terms of policymaking.

The difference between the scientific work and policy analysis often results in gaps that have led to the emergence of HSMs that have for decades challenged political power and scientific and professional authority. The HSM focuses on contested illness, the origin or cause of which remains a debate. It also looks into the scientific disputes and public debates over the definition, causes, prevention and treatment of disease. As regards the dispute over scientific knowledge and policymakers, the HSM has demonstrated that scientific knowledge is "coproduced" by the different knowledge and scientific data generated by the government, industry, community advocates and academic researchers, which drive regulatory science and influence all parties. Thus, it can be said that HSMs shape and reshape science and science shapes and reshapes HSMs. These HSMs also had a collective influence on scientific fact-making in health, public policy and regulation (ibid.).

7.3.2 Importance of Embodied Health Movements

Over the course of time, the HSMs dealing with contested illness struggles have shifted their attention toward the environment, as many pieces of scientific evidence have identified a connection between the environment and human well-being. The contested illness research group, apart from studying scientific controversies, has also started actively engaging itself to the environmental and health enterprise using community-based participatory research (CBPR). This involvement of the community done as the first-hand experience of hazardous exposures and diseases can promote new lines of inquiry and analytical techniques (ibid.).

As mentioned above, Zavestoski's study revolves around health movements and the environment. The health movements have changed the landscape of state and scientific institutions and have contributed a lot to bring about change and equity in society. Many social movements, directly or indirectly connected with health, have come up to support health-related causes over the years.

In terms of environmental sociology, Embodied Health Movements (EHMs) have played a significant role in providing theoretical as well as applied insights and in bringing the environmental causes of the health issues to the forefront. These EHMs are a subset of the social movements that we term as Health Social Movements (HSMs). For example, if we look into the Gulf war and its after-effects, the veterans of the war struggled for years to get the government's acknowledgement that chemical and biological weapons were used during the war. The eventual evidence of it being used and the hazardous effects it had on the veterans permitted them to appeal for compensation for their health problems as well as for funds toward research regarding the same.

EHMs are rooted mainly in the illness experience of the individual. They align the illness experience of potential constituents with the illness

experience as defined by the movement and by doing that, transform the individual's experience from personal trouble to that of a social problem. This collective illness experience is then aligned with the policies of medicine, science and government for the purpose of gaining legitimisation and resources. Thus, they link the personal experience of illness with the collective experience and with the institutional and political-economic structures that can cause disease as well as treat it.

The EHMs concern themselves with aspects of scientific knowledge that covers issues related to natural resources, energy, genetically modified organisms and hydroelectric dams. These lead to the scrutiny of the intersection of health inequalities and environmental justice.

The relation between EHMs and environmental sociology is very close in the sense that environmental sociologists have addressed the problem of contaminated communities by explaining how conflicts emerge between social realities and a community's interpretation of contamination (ibid.).

7.3.3 Importance of Laypeople's Contribution

In similar lines with the EHMs, Zavestoski emphasises how laypeople contribute to discovery and knowledge production, how medical knowledge is shaped by diverse interests. The resulting conflicts often make science and government fail while providing adequately for illness sufferers. "A dominant epidemiological paradigm is produced by a diverse set of social actors who draw on existing stocks of institutionalized knowledge to identify and define a disease and determine its aetiology, proper treatment, and acceptable health outcomes" (ibid.). Though there might be different competing paradigms for any scientific issue, one is always dominant. This happened in the case of the contested illnesses like the Gulf war disease too. The veterans found themselves to be in opposition to an emerging belief system concerning the existence and cause of their disease. However, the dominant epidemiological paradigm is always

changing depending upon the contestations by various actors and institutions.

There was this belief too that Asthma was caused by psychogenic causes. However, over the years there has been shift attributing it to environmental causes, both indoor and outdoor. Here too, the laypeople are the ones who bring the environmental issues to the forefront in terms of the causes of Asthma. They point towards different sectors such as housing, transportation and economic development, leading to the rising cases of Asthma. They reject the view that individuals bear the primary responsibility of asthma control (ibid.). Environmental breast cancer research also has opened up many ways for its prevention such as endocrine-disrupter research and other preventable causes. These also include lay input and consider community and population-level factors. These have also brought attention to interaction effects, both those involving two or more chemicals or those involving chemicals plus other factors like smoking, alcohol, viruses (Zavestoski et.al, 2006).

CHECK YOUR PROGRESS

Can you identity a movement in your country that centres on health and the environment?

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7.4 DUNLAP AND CATTON'S IDEAS

7.4.1 Competing Functions of the Environment

Catton and Dunlap in their model 'three competing functions of the environment' describe precisely the ecological basis of environmental

destruction. In their model of the competing functions, they specify three general functions that the environment serves for human beings. These are - supply depot, living space and waste repository.

Looking at the first function of a supply depot, the environment serves as a source of renewable and non-renewable natural resources (air, water, forests, and fossil fuels) that are essential for the living of human beings. When these resources are overused, it leads to a shortage or scarcity.

The second function of living space or habitat provides housing, transportation systems and other essentials of daily life. When it is overused, it leads to overcrowding, congestion and the destruction of habitats for other species.

The third function, i.e. the waste repository serves as a 'sink' for garbage (rubbish), sewage, industrial pollution and other by-products. When the ability of the ecosystem to absorb waste exceeds, it results in health problems from toxic wastes and in ecosystem disruption.

Moreover, each of these three functions competes for space, often overlapping or impinging upon the others. For example, when a garbage landfill is placed in a rural location or near to a city, it makes both the sites unsuitable as a living space and destroys the ability of the land to function as a supply depot for food. Similarly, we can see that urban sprawl reduces the amount of arable land that can be put into production while intensive logging threatens the living space of native (aboriginal) people. We can see that in recent years, the overlap, and therefore conflict, among these three competing functions of the environment has grown considerably. This has led to the generation of environmental problems such as global warming that is said to have stemmed out from the competition among all three functions simultaneously. Furthermore, conflicts between functions at the level of regional ecosystems also have implications for the global

environment. This model, of competing functions, extends human ecology beyond an exclusive concern with living space – the central focus of urban ecology – to the environmentally relevant functions of supply and waste disposal (Hannigan, 2006).

7.4.2 The New Ecological Model

The ecological crisis arising out of scarcity became much apparent in the 1970s which led to some sociologists to pay attention to environmental issues and begin a process of conceptual retooling. The relationship between human beings and the biophysical environment, that was ignored earlier considering human beings to be dependent only on their culture devoid of the ecosystem, has now become an issue of prime focus. This led to the study of the impacts of human societies on the environment and the impact of the environment on social organisation and human behaviour. Thus, environmental sociologists by accepting the environmental variables as relevant for understanding human behaviour and social organisation, challenged the earlier Human Exemptionalism Paradigm (HEP). And postulated the New Ecological Model (NEP) that acknowledged the problems of ecological scarcity as well as the impact of ecology on human lives.

We can see that there are some similarities between HEP and NEP as well as differences too. The HEP and NEP both acknowledges that human beings are an exceptional species, but the NEP maintains that they are one among many interdependent species. Secondly, human beings though are influenced by social and cultural forces, the NEP states that they are also influenced by biophysical environment as a reaction to human action. Thirdly, NEP calls upon the constraints faced by human beings not only as a result of social and cultural forces but also as a result of the biophysical environment, for instance, in terms of health, human beings are affected by environmental conditions. The NEP also argues that however inventive humans may be, their science and technology cannot repeal the laws of

thermodynamics, thus, revealing the limits to the growth of human societies (Catton and Dunlap, 1980).

Dunlap and Catton say that there will be another form of competition that will arise subsequently in the coming years- the competition between the present and future generations for limited resources and other aspects of a finite ecosystem. This diachronic competition is likely to become increasingly intense and will make equity even more difficult (ibid.).

7.5 ALLAN SCHNAIBERG'S IDEA

7.5.1 Treadmill Model of Production:

The political economy of environmental problems and policies, according to Schnaiberg, are being organised within the structure or framework of modern industrial society, which he terms as the treadmill of production. By this method, he refers that there is an inherent need of the economic system to continually maximise its profit and this profit maximisation is done by creating consumer demand for new products. This means expanding the ecosystem to the level where it exceeds its physical limits to growth or its 'carrying capacity'. This creation of demand for the new products is fuelled by one particularly important tool that is advertisement. These advertisements compel, as well as, convince people to consume new products as much for reasons of lifestyle enhancement as for practical considerations. Schnaiberg projects the treadmill of production as a complex self-reinforcing mechanism whereby the politicians respond to the degradation caused to the environment created as a result of capital intensive economic growth by mandating policies that encourage yet further expansion of the ecosystem. For example, resource shortages are managed not by reducing consumption or by the promotion of adopting a more modest lifestyle but by opening up new areas to exploitation (Hannigan, 2006).

Sociology has been concerned with various forms of competition between different segments of society. Such competitions will heighten as ecological scarcities increase. Thus, Schnaiberg says that energy scarcity will result in more competition and possible conflicts between social classes (Catton and Dunlap, 1980).

7.5.2 Negotiation between Economic Growth and Environment Protection

As a consequence of the conflict between the treadmill of production and demands for environmental protection, Schnaiberg says that a dialectic tension builds up in advanced industrial societies. This tension, he describes, takes place as a clash between 'use values', for example, the value of preserving existing unique species of plants and animals, and 'exchange values' which characterise the industrial use of natural resources. He points out that as environmental protection has emerged as a significant item on the policy agendas of governments in recent times, the state has to act in a way to bring a balance between the economy as well as the environment. The state must increasingly balance its dual role as a facilitator of capital accumulation and economic growth on the one hand and its role as environmental regulator and champion on the other. The state in its bid to become responsible toward its citizens from time to time has to engage itself in a limited degree of environmental intervention in order to stop natural resources from being exploited injudiciously. This can be explained with an example from the progressive era of American politics in the late nineteenth and early twentieth centuries. The US government responded to uncontrolled logging, mining and hunting on wilderness lands by expanding its jurisdiction over the environment. This can be witnessed especially during the presidency of Theodore Roosevelt when he created national forests, parks and wildlife sanctuaries. This dual role played by government in the contradictory position as both promoter of economic development and as the environmental regulator can be seen to be often engaging in a process of 'environmental managerialism' (Redclift 1986, as cited in Hannigan, 2006). By this process, they manage

to legislate a limited degree of protection sufficient to curb criticism but not significant enough to slow down the growth of the expanding economy. Thus, by "enacting environmental policies and procedures that are complex, ambiguous and open to exploitation by the forces of capital production and accumulation (Modavi 1991: 270, as cited in Hannigan 2006) the state reaffirms its commitment to strategies for promoting economic development" (Hannigan, 2006).

7.5.3 Application of the Treadmill Model in Practice

Schnaiberg himself has expressed his dissatisfaction regarding the fact that the central tenets of the treadmill have not found their way into the environmental sociological literature in a way that it would be considered significant because according to him they are too 'radical'. That is, if the treadmill was indeed operating as he describes, then it can only be altered by a major and sustained political mobilisation, something that would be sharply resisted by politicians, government agencies and corporate America. Thus, regarding the model of the treadmill of production, it can be said that this model has the advantage of situating present environmental problems in the inequities of humanly constructed political and economic systems. Schnaiberg claims that he was writing about the political necessity of incorporating elements of social justice into any proposal for environmental action which he believes was not taken seriously to work for the cause of the environment (Hannigan, 2006).

7.6 SUMMING UP

From the above discussion, we have learnt about the importance of the environment in the lives of human beings. The fact that the entire existence of the living world revolves around the ecosystem can never be sidelined. We have also seen how the exclusion of environmental factors in making any policies related to health and economy would lead to an increase in risk factors for the present as well as future generations on earth.

Glossary:

- **HEP**- The full form of HEP is Human Exemptionalism Paradigm. This model of study considers that the human world is mainly influenced by social and cultural factors. It considers the biophysical influence to be completely irrelevant to understand the issues in the human world.
- **Renewable resources**- Resources that have an endless supply, like solar energy, wind energy.

7.7 QUESTIONS

1. How do Embodied Health Movements (EHMs) bring about changes?
2. What are the competing functions of the ecological model?
3. How is the NEP different from the HEP?
4. Discuss Schnaiberg's treadmill model of production.
5. Discuss the contribution of Zavestoski to environmental sociology.

7.8 RECOMMENDED READINGS AND REFERENCES.

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UNIT 8: ENVIRONMENTAL DISASTERS AND HAZARDS

UNIT STRUCTURE

8.1 INTRODUCTION

Environmental hazards refer to those events of the environment that cause harm to human and society. Environmental events like flood, volcanic eruptions, earthquake, drought, etc. become hazards if they threaten to affect human society or the environment. But if such events do not affect the society or environment then they are not treated as hazards but natural phenomena. The results of the environmental hazards on humans and environment such as mental illness, physical illness, scarcity of water, etc. are called disasters. Environmental hazards and disasters are the results of naturally occurring phenomena that have operated throughout earth's history. Geological processes are natural processes that occur but these become noticeable when these affect and destroy human life and property.

8.2 OBJECTIVES

The objective of this unit is to introduce to you with the types of environmental disasters and hazards and their causes. Environmental disasters and hazards are detrimental to the existence of both human society

and the earth as a whole. Since the very inception of the earth and human civilization, there has been environmental disasters and hazards affecting both. Perhaps, in the modern time with increasing pressure on the environment by human activities through the use of modern technology and exploitation of natural resources, the probability for environmental disasters and hazards has rather increased. By the end of this unit you will be able to:

- Explain the meaning and concept of environmental disasters and hazards;
- Analyse the causes of environmental disasters and hazards;
- Discuss the types of environmental disasters and hazards.

8.3 MEANING AND CONCEPT OF ENVIRONMENTAL DISASTERS AND HAZARDS

The term 'Disaster' has its origin in the French word 'Disastre'. This French word is a combination of two words 'Des' meaning 'bad' and 'Aster' meaning 'Star'. Therefore, the term Disaster refers to 'Bad' or 'Evil star'. Thus, in ancient times disasters were considered as a result of an unfavourable star.

Environmental disasters and hazards are those events of environment and nature that cause harm to human society. According to Burton (1978), "Environmental disaster refers to those elements of the physical environment, harmful to man and caused by forces extraneous to him". Environmental disasters and hazards have the potential to cause harm to people by causing death or injury, disease or stress, it may also cause harm to conventional human activities, may damage properties and other valuable things. Thus, it affects the environment where it becomes a menace for not only humans to exist but also animals and other life forms. An environmental disaster is a sudden event that brings calamities to a particular geographical area disrupting the supply of food, habitats, health, etc. Environmental disaster may have the following characteristics:

- Unpredictability
- Unfamiliarity
- Speed
- Urgency
- Uncertainty
- Threat

According to Disaster Management Act 2005, "Disaster means a catastrophic, mishap, calamity or grave occurrence in any area, arising from natural or manmade causes or by accident on negligence which results in substantial loss of life or human suffering or damage to and destruction of property or damage to or degradation of environment and is of such a nature or magnitude as to be beyond the coping capacity of the community of the affected area"

Stop and Read

Bhopal gas Tragedy:

On December 3, 1984, forty tons of toxic methylisocyanate gas was accidentally leaked from Union Carbide Plant in Bhopal, Madhya Pradesh. The gas soon spread and wreaked havoc throughout the city. Around 10,000 or more people died and about 500,000 more people suffered agonizing injuries with disastrous effects of the massive poisoning.

Environmental disasters and hazards are both natural and are also the effects of human activities. Natural environmental disasters are caused by natural calamities such as volcanic eruptions, droughts, floods, cyclones, hailstorms, landslides, avalanches, tsunami, etc. These natural calamities are caused due to various geological and environmental phenomena. These

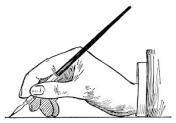
widely affect human society and the flora and fauna also gets largely affected. However, industrialization and increased abuse of the natural environment by human activities especially in the post-war period have led to various sorts of environmental disasters. Today, human society is faced with serious environmental concerns and global environmental changes. Therefore, environmental disasters are not spontaneous but rather results of long time vulnerability. Again, it is not that natural environmental disasters are not affected by human activities. In fact, the large scale deforestation and industrial pollution leading to less rainfall in the present millennium is inter-related. Even they cause floods, earthquakes, tsunamis, cyclones and others by making the environment imbalanced.

The environment is embedded with various natural resources like water, air, fire, mineral and others that provide life to both humans and other life forms on the earth. But environmental imbalances may give rise to environmental disasters and hazards. Environmental disasters may also vary in their area of impact and time of occurrence. For instance, some environmental disasters like volcanoes happen locally, while others like air pollution or global warming affect a large geographical area or even the whole earth. Again, cyclones occur only during monsoons but earthquakes or landslides may occur throughout the year.

Stop and Read

Environmental disasters are those activities of the environment that affects human society and the environment as a whole. Such activities may be caused by natural factors as well as manmade. Environmental disasters largely harm human health and properties and pose a threat to other lifeforms on the earth too. Human activities like industrialization, mining, disposal of human and industrial wastes in the oceans and rivers have also damaged the environment leading to long term disasters and hazards.

CHECK YOUR PROGRESS



1. What do you mean by environmental disasters?

8.4 CAUSES OF ENVIRONMENTAL DISASTERS AND HAZARDS

Environmental disaster results in large scale disruption of both the flora and fauna and human properties. Environmental disasters are the result of various factors ranging from natural to man-made. The various causes and factors responsible for environmental disasters and hazards are as follows:

(i) **Unchecked Population Growth**: Unchecked population growth leads to unchecked settlement. It also contributes to deforestation as the growing population needs space for settlement. Therefore, by clearing the forest areas they settle for both agricultural and livelihood purposes. Moreover, the increased population is also responsible for air pollution and water pollution even in rural areas. It puts excessive pressure on the economy as well as creating displacement and migration. Thus, migration to urban areas leads to the emergence of slums that negatively affects the environment.

(ii) **Rapid Urbanization and Migration**: Urban areas are relatively polluted and environmentally challenged than rural areas. Migration from various rural areas and sub-urban areas leads to overpopulation in the urban areas leading to the deterioration of

the environment as a whole. Often the poor migrate to the urban neighbourhoods and get settled in vulnerable settings causing harm to their health as well as to the environment. Simultaneously, urbanization results in industrial pollution, increased use of motor vehicles, disposing of waste materials in the drains, rivers, etc. The recent threat to the environment in New Delhi caused by excessive air pollution can be cited as a current instance of how rapid urbanization could lead to environmental disasters and hazards. The pollution of the Ganga River, Brahmaputra River, Bharalu river of Guwahati also shed light on the effects of rapid urbanization on the environment.

(iii) **Cultural Transitions:** Environmental disaster is also the result of the transition from traditional society to agricultural and then to a modern industrial society. In traditional societies, people were dependent on nature for survival. They also worshipped nature. However, even during that time, environmental disasters occurred, resulting in the displacement of humans and also the extinction of many lifeforms. But today human beings are at the edge of risk due to threats from the environment. Continuous abuses on the environment by human activities like mining, building dams, oil exploration in the deep water, etc. have caused harm to the environment. The desire for a modern lifestyle has also made human beings dependent on artificial and luxurious things. Thus, mining and dams have caused widespread environmental degradation leading to disasters in many places.

(iv) **Environmental Degradation:** The effects of industrial pollution, deforestation, mining etc. on the environment are very deep and have caused a decrease in seasonal rainfall or either acid rainfall. Due to deforestation, the occurrence of flood and land erosion by the river has increased.

(v) **Natural causes:** Besides, the various factors of environmental disasters caused by human activities, the earth itself is susceptible to changes and transitions due to natural geological processes. Natural causes or events have been occurring since the very beginning of the earth and factors like soil erosion, seismic activity, tectonic movements, air pressure, ocean currents etc have been responsible for various environmental disasters. Geological imbalances in the form of air pollution, noise pollution or water pollution result in many ways towards environmental disasters. Even these imbalances were there long before human beings were modernized or any of other activities had any negative impact on the environment. Movement of tectonic plates causes earthquakes, tsunamis and volcanic eruptions. Volcanic eruptions may contaminate the air by releasing various gases. Even the activity of the moon determines the ocean waves and there are probabilities of tsunamis due to such activities. The 2004 tsunami was one of the devastating environmental disasters that were caused by the collision of Indian and Burma plates. Similarly, change of ocean currents may result in a change in temperature leading to the death of the under ocean flora and fauna. Thus, natural causes are also responsible for the cause of environmental disasters.

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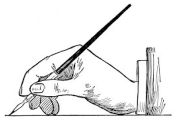

1. Write down the natural factors responsible for environmental disasters.

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2. What are some of the man-made factors responsible for environmental disasters?

8.5 EFFECTS OF ENVIRONMENTAL DISASTERS

Environmental disasters and hazards have various effects on the environment as well as on human society. The effects of environmental disasters may be short term and permanent too. The following are some of the effects of environmental disasters:

(i) **Human Health:** The most serious impact of environmental disasters is on human health. Disasters like earthquakes and tsunamis affect human health and body to a large extent. During the 2004 tsunami, more than 250,000 people were killed and about 1.7 million people were left homeless. Besides, many were severely injured leaving them to be paralyzed for their entire life. Besides, such calamities also cause epidemics as stagnant water allows breeding of waterborne bacteria and other germs. Simultaneously, human beings are also psychologically affected by such calamities. People may be victims of post-traumatic stress disorder, resulting from psychological side-effects after confronting traumatic situations like the destruction of their own homes and the death of near and dear ones.

(ii) **Food scarcity:** Environmental disasters cause destruction of farmland and agricultural crops, In fact, excessive droughts and floods stand as an obstruction towards agriculture and people are in no position to sow their seeds or till their lands. Moreover, such disasters also cause an economic emergency in a country dependent on the agricultural economy. Under such

circumstances, the people may go hungry and become victims of malnutrition.

(iii) **Economic Loss:** An environmental disaster causes economic loss as well as it hampers all sorts of economic activities and destroys the houses and neighbourhoods. It requires a lot of funds again to rebuild the loss and destroyed properties. For example, the Nepal earthquake cost a loss of approximately $10billion according to the Nepal Government and this amount is half of their GDP. It was estimated that nearly $5billion would be required for rebuilding roads, houses and bridges. Similarly, the 2004 Tsunami also cost an estimated loss of nearly $15 billion. Thus, environmental disaster affects the economy of a country on a large scale.

(iv) **Impact on the Flora and fauna:** Besides, affecting the human community and other tangible things environmental disasters also largely affects the flora and fauna. The various wildlife and wild trees are threatened by such disasters. Every year it can be seen how already endangered species like the Rhinoceros, Tigers, elephants, Deer etc. are affected due to flood in Assam. Their population gets shrink and this affects the natural lifecycle of the environment.

Stop and Read

Environmental disasters affect human health to a large extent. The effect may be physical as well as psychological. Environmental disasters also cause the destruction of human properties and loss of life too. These obstruct the regular business of human beings and largely affect the economy of a country. These even affect the environment and the flora and fauna by causing the death of wild animals.

CHECK YOUR PROGRESS

1. Write down a few effects of environmental disasters

8.6 SUMMING UP

Environmental disasters and hazards are a culmination of various factors that range from nature to manmade. However, in modern times the increased human activities through industrialization and disposal of human and industrial wastes have gravely affected the environment. The gradual transition of the environment due to such activities of human beings has resulted in the outbursts of various calamities in the form of annual floods around the world, soil erosions, droughts, cyclones, volcanic eruptions, earthquakes, tsunamis, etc. These natural calamities are largely affected by the activities of human beings today than in the past. Nevertheless, geological circumstances play an important role in instigating these calamities. Thus, both the environment and human beings including other lifeforms on the earth are largely dependent and influenced by one another's activities.

8.7 QUESTIONS

1. Explain the meaning and concepts of environmental disasters and hazards.
2. Describe in detail the various causes and factors of environmental disasters and hazards.
3. Mention in detail the various effects of environmental disasters and hazards.

8.8 RECOMMENDED READINGS AND REFERENCES

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UNIT 9: BODY, HEALTH AND ENVIRONMENT

UNIT STRUCTURE

9.1 INTRODUCTION

Human body and health are largely influenced by the environment. The environment consists of the geographical terrain, weather, climate, flora and fauna and other related things that culminate to form the larger human civilization. Human civilizations around the world took shaped mostly on the banks of rivers leading to the development of cultural richness and diversity. In this way, it has also evolved specific cultural practices and folk practices to cater to their daily livelihoods. Though at the nascent stage, human societies were hunter and gatherer but gradually transited to consolidated societies by practising cultivations and rearing of animals. Indeed, this transition from solely hunter and gatherer to consolidated human society has also contributed to the evolution and development of certain cultural and folk practices related to their agricultural practices and day to day to livelihood. For example, most of the traditional folk dances, songs and practices are directly related to the commencement of a new season and praying the nature for good health and agriculture. The celebration of the Bihu festival in Assam is also related to this myth and the folk practices of the festival directly reflect its evolution from the

relationship of human society with nature and the environment. In fact, the very myth of using a raw mixture of turmeric, black dal and other herbs on the body and consuming of wild herbs cuisine on the first day of the Bihu also reflects the importance of environment on human health and body through various cultural practices.

Simultaneously, traditional food habits of various communities had evolved depending on the environmental influences. The evolution of traditional food habits of various communities also reflects how the environment influences their popular traditional beliefs on food consumptions. For example, lack of natural vegetation in the desert areas and high mountain terrains had compelled the people to rear animals and sustain on milk products, whereas, the traditional food habits of Northeast India is quite contrast as the people here rely basically on meat, wild herbs and sour food items depending on the humid environment. Thus, indeed the human body and health are influenced by the environment.

9.2 OBJECTIVES

The objective of this unit is to introduce to you with the relationship between environment, human body and health and the effects of the environment on the human body and health. In fact, the physical structure of human beings is also influenced by the environment. For example, people living in cold regions are fairer than people living in warmer regions. The colour of the skin and the mental behaviour of human beings are also shaped and influenced by the environment. By the end of this unit, you will be able to:

- Analyse the relationship between body, health and environment;
- Discuss the effects of the environment on body and health.

9.3 RELATIONSHIP BETWEEN BODY HEALTH AND ENVIRONMENT

The relationship between human health, body and environment is manifold. As discussed above, the physical characteristics of human beings are largely shaped and influenced by the environment they live in. Again, various food habits and cultural norms practised by human beings are also related to the environment they live in. Therefore, human beings' body, health and well-being are also related to their proximity to the natural environmental settings. The World Health Organization (WHO) defines health as "a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity". Regarding the relationship of the human body with the environment, E.O. Wilson enunciated a theoretical basis for the concept that human beings' body and health are privileged by their contact with nature and he termed it as *Biophilia.* He further defined *biophilia* as the innately emotional affiliation of human beings to other living organisms. In fact, this concept of *biophilia* is based on the popular traditional folk practices of various social groups regarding the condition of the human body and health with their environmental settings. Even Howard Frumkin of Emory University has also emphasized the existence of popular folk belief about the wellbeing of the human body and health under the influences of the environment.

According to a survey in 1998 by National Gardening Survey of United States of more than 2000 randomly selected households, half of the respondents agreed with the view that presence of plants and flowers in parks, public places and restaurants makes them more lively and enjoyable, while 40% of them agreed to the view that proximity to plants and trees makes them more relaxed and calmer. Similarly, as discussed in the introductory paragraph regarding the relationship of the environment and the evolution of human civilization, it is also found in a study that human beings show compatibility with the natural environment like the African savannah where the first human society was nurtured. Beyond the scenic natural beauty of such environmental settings, it was found that human

beings' mental stress gets relieved and so they tend to be more calm and peaceful under such environmental settings. This emphasis on mental health apart from the physical wellbeing of human beings is quite compatible with the definition of health given by WHO.

Citing to the food habits and other traditional folk behaviours of human society, health and environment play an important role. Because food habits form an important deciding factor of human diet and health. Different environmental settings contribute to the growth of different vegetations and also the existence of different species of animals. These variations undoubtedly, contribute to the difference in food habits and folk practices. Moreover, human beings consume foods that they think are good for their body and health according to their environmental settings. For example, it is believed in traditional Assamese society that eating of wild bitter berries and flowers widely available during the spring cure physical ailments like stomach problems, skin diseases, diabetes and even cancer. Likewise, popular use of alkaline and sour cuisines also forms the myth within the larger population of the Northeastern region as good for body and health based on the environmental settings of the region. Similarly, depending on contrast environmental settings in desert areas and snowy mountainous areas, food habits tend to be different as those environmental settings demand different diet essential for the human body and health to sustain. Thus, eventually, such essentialities based on environmental settings make through the popular cultural and folk practices of human society.

However, today the human body and health are also affected by changing environmental conditions. The much-debated and popular discourse in academia i.e. global warming has been a challenge to not only the environmentalists but also the sociologists and policymakers regarding the way forward to deal with such menace. In this regard, apart from the natural transition of the environment increasing human activities like industrialization, deforestation, human settlements, agriculture etc. have

undoubtedly, affected the environment and its natural settings. Today, contamination of the environment is increasing, for example, water pollution, land infertility, air pollution and even food products. This has directly affected the human body and health more negatively than in a positive dimension. The alarming rise of various mental health issues, depression, suicides, cancer, diabetes, visual and hearing problems, etc. are the direct result of changing environmental settings and dependent of human beings more on artificial living conditions rather than on natural environmental entities.

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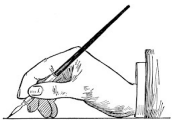

1. What is biophilia? Who introduced the term?

Stop and Read

The relationship between environment, body and health of human beings is very deep and profound. In fact, the evolution of human society and civilization is largely influenced by the environment. Food habit which forms an important part of human culture and also an important determinant of the human body and health is also largely shaped by the environment. Moreover, human health and body are also affected by the increasing degradation in the environment. The drastic changes in the environmental condition in recent decades have negatively influenced the human body and health leading to increasing rates of various physical and mental diseases.

9.4 EFFECTS OF ENVIRONMENT ON BODY AND HEALTH

Drawing references from the above discussions on the relationship between environment and human body and health, it is also a matter of important discourse on how the environment has an effect on the human body and health. In the previous section, it is discussed that human health encompasses both mental and physical dimensions and the wellbeing of both is a necessary effort of all human beings and in doing so, various human societies have evolved certain cultural and folk practices in the form of festivals, social norms and food habits that cure our body and health based on our environmental settings. In fact, such mutual influences show the relationship between environment, body and health.

From the nascent period of human evolution to the development of human civilization, human beings have always struggled against harsh environmental conditions in order to sustain. Opposite to modern times when the environment is affected by increasing human activities, natural geological activities have also been widely responsible for environmental change and transition. The volcanic eruptions, cyclones, earthquakes and other such natural environmental events result in environmental disasters that largely affect human existence. Therefore, it is not only the influence of human activities in modern times through industrialization and deforestation that have affected the environment and lately the human society itself, but the environment itself goes through periodic geological transition again affecting the human society.

Environmental degradation has a deep and serious impact on human health. Contamination of water, air and exposure to poisonous chemical gases are some of the concerning reasons for degradation of human health as well. A study on Organization for Economic co-operation and Development (OECD) countries found that about 2-6% of human disease is affected by environmental factors (Ruward and Krammers, 1998). Exposure to hazardous chemical gases and air pollution particularly in the urban areas

of the OECD countries has led to the degradation of human health. Simultaneously, chemicals get in touch with the environment through pesticides used in the agriculture, emissions from industries and transports, mining, medical wastes, feed additives and medication for livestock. Human beings can get unhealthy after consuming such meats, milk products and vegetables grown largely through artificial means. The continuous exposure to such food items even leads to the risk of cancer, neurological disorders, birth defects etc. The effects on health by environmental degradation like air pollution vary from allergies to cancer. But exposure to such polluting gases causes asthma, allergies, respiratory diseases, cardiovascular diseases, etc. which may very deeply affect the human generation as a whole. In recent years, the rise in human infertility, mental health, stress, suicide, birth defects and other many new health issues are the result of exposure to harsh environmental conditions. Simultaneously, in a broad discourse, the environment also refers to the working conditions of human beings or where one earns for living. In this case, deteriorating human working conditions have led to increased mental health issues. The acute competitions, limited job opportunity, declining human compassion and solidarity have also negatively affected the social environment affecting human health and body.

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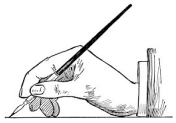

1. Name some diseases caused by environmental change.

Stop and Read

Environmental change is not new and it is not only influenced by increased human activities like industrialization and deforestation but also by natural geological causes. On the one hand, human activities in the modern industrial period have affected the environment, on the other hand, changing environmental phenomena have also affected the human body and health. The alarming rise in mental illness, respiratory diseases, cardiovascular diseases, asthma, anxiety, etc. are, directly or indirectly, the result of changing social and natural environment.

9.5 SUMMING UP

In this unit, we have learnt that the human body and health is deeply related to the environmental setting. Not only the environment shapes and influences the evolution and development of human society and civilization, but it has also affected the human health and body and vice-versa. In fact, the relationship between human body and health with the environment is paradoxical because it is not only the environmental activities that affect the human body and health but human activities have also largely affected the environment. However, as discussed above, both the physical and mental characteristics of human beings are largely and deeply influenced by environmental settings. Simultaneously, the environment also influences cultural and folk practices of human society to evolve and take new shape depending on the changing characteristics of environmental settings.

Glossary:

- **WHO:** It refers to the World Health Organization. It was founded on 7th April 1948 now as World Health Day and its Head Quarter in Geneva, Switzerland. The primary responsibility of WHO is to direct and coordinate the health within the United Nations system.
- **OECD:** it refers to the Organization for Economic Co-operation and Development and it was founded in 1961. There are 36 member countries and this organization basically works for economic progress and international trade.

9.6 QUESTIONS

1. Discuss the relationship between environment, human body and health.
2. Briefly discuss the effects of environmental change on human health.
3. Briefly discuss how the evolution of human cultural practices is related to the environment.

9.7 RECOMMENDED READINGS AND REFERENCES

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MODULE IV: EMERGING ISSUES IN ENVIRONMENTAL SOCIOLOGY

UNIT 10: TECHNOLOGY AND ENVIRONMENT

UNIT STRUCTURE

10.1 INTRODUCTION

The emergence of the industrial revolution in the 18th century in England and later to other European countries also led to the beginning of the use of manmade technology for production and also agriculture. Gradually, machines and other technologies had come to dominate the larger human society for not only production purpose but also for daily human needs. Even during the 19th century, industries for the production of food items, daily use items, vehicles, other pieces of machinery came up across certain European countries. Later, the demand for production and establishment of more industries also triggered the need for fuel and energy. The exploration of fuel and energy sources have led technologies to expand into the depth of the earth affecting the environment at large. Expansion of technologies and pieces of machinery deep inside the water bed and oceans, mountains and forests have deeply affected the environmental settings. Simultaneously, the gases and emissions released by the pieces of machinery contaminate the environment resulting in environmental degradation that affects human body and health. At present, the impact of

technology on the environment has increased so much that it has led to environmental imbalances. Indeed, without technology, even human society is motionless today as it has become a daily part of human sustainability as a living entity. Even today technology is largely used to counter various harsh and antagonistic environmental situations like the use of air-conditions, electric fans, heaters etc. Simultaneously, technology is widely used to extract energy from a natural environment like the use of windmill, the building of the dam, etc. for electricity and power. Though human beings use technology for their own comfort by exploiting the hidden energies of nature yet such use of technology on the environment also negatively affects the environment. Further, any such negative impact on the environment affects the human society.

10.2 OBJECTIVES

The objective of this unit is to introduce to you the need and evolution of technology and its effects on the environment. In fact, today it has become a great challenge for the environmentalists, sociologists, policymakers and industrialists to embark on the use of technology for development without affecting the environment negatively. Undoubtedly, human society has become dependent on technology for its sustainability, be it for agricultural production or industrial production or for daily use items. By the end of this unit, you will be able to:

- Explain the need and evolution of technology;
- Analyse the effects of technology on the environment.

10.3 EVOLUTION AND NEED OF TECHNOLOGY

When human beings began to understand the need to survive and the need to struggle for the same, the need for tools and techniques also gradually began to develop. In fact, the history of the evolution of technology is as old as the evolution of early raw tools for the survival of human society. The word technology was derived from the Greek word *Techne* meaning

art and craft. Therefore, at first, it was used to describe applied arts but now it is more commonly used to describe the advancement in all the tools and techniques that human beings use to produce, create and sustain in the world. However, technology developed in a systematically and more scientific way since the industrial revolution emerged in the 18th century in Great Britain. While Great Britain back then was an emerging colonial power that exercised both political and economic power in North America, many African and Asian countries. The growing economic power and expansion of trade had also sowed the seeds for the industrial revolution in the 18th century and gradually, machines and technology began to evolve and develop. The exploration of various natural resources in its colonies around the world also led to the discovery of new energy sources, materials for advancement like paper, cotton, precious stones, etc. that logically made the evolution of technology easier and also brought its necessity. Just like the development and expansion of trade and commerce around the world in the 18th century favoured the industrial revolution, the need to scientifically articulate the new discoveries for the betterment of human species, the need for technological development evolved. In fact, technological development had also brought another revolution within the human beings which helped the human society around the world to connect through various means of transportation and communication. This also led to further discovery of new things for scientific advancement.

Prior to the industrial revolution, the dark ages had engulfed human species in their daily social relationships and lifestyle. Although there were scholars and scientists who were successful in inventing and discovering the mystery of nature and environment, it cannot be denied that the industrial revolution had brought a sea change in the whole world. Simultaneously, as human beings have always been encountering harsh environmental conditions and natural disasters, the development of technology in the modern era have favoured them to use the same for taming unfriendly environmental conditions. Undoubtedly, technology has also been used by human beings to even measure the natural phenomena

like the speed of wind, rain, magnitude of earthquakes, probability of volcanic eruptions, distance between earth and the sun, distance between the earth and the universe, discovery of new planets and over and above all the new zeal to search for new planets compatible for human survival. All these new explorations beyond the earth have also scientifically elevated the human species and have scientifically established its relationship with nature in contrast to the superstitious beliefs of the dark ages. The study of nature and environment through technology has also helped human beings to know the hidden secrets and mystery of nature like now precautions can be taken before a storm or cyclone hits an area. Even peoples' lives could be saved before a volcanic eruption or tsunami by detecting through technology their gravity. Thus, technology has both been a saviour and also a bridge between human generations and species around the world. In fact, one of the most important technological discoveries is the discovery of means for transport and communication through which human beings have been able to establish social contacts with its own brethren dispersed worldwide resulting in interdependence and sharing of ideas and resources.

As discussed above, technology has assisted human beings in taming unconditional and unfavourable environmental conditions. For example, after the development of technology human beings have been able to use electric energy derived from nature itself to utilize especially during night hours for human needs, the same electric energy is also used to run fans and air-conditioners to comfort human beings during the summer. Likewise, refrigerators are used to preserve and cool food items as the lifestyle of human beings are also changing. In fact, with the changing lifestyle of human beings and the changing work culture today, more and more people are engaged in work surpassing the natural working time, i.e. daytime. Therefore, lack of time and hectic work schedule have also compelled them to rely completely on technology to manage their food, time and other daily usages rather on the natural environment. Hence, initially, technology evolved out of necessity to counter the harshness of the natural environment and now it has reached to such a stage that through

it human beings have the access to use the environmental energies for making life easy and comfortable.

Stop and Read

The word technology is derived from the Greek word 'techne' meaning art and craft. But now in English, it is widely used to describe the scientific advancement in tools and techniques that human beings use for production as well as for daily use. The industrial revolution in the 18th century was the milestone for the further advancement of technology as it created the need for machines for productions and also conversely, industries paved the way for technological advancement. Technology has also helped human beings to study the various hidden mysteries of the natural environment. Through it, human beings have been able to exploit the energies extracted from the environment.

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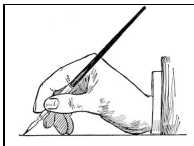

1. Fill up the gaps:

a. The word technology was derived from the Greek word_____.

b. Technology developed in a systematically and more scientific way since the _____ emerged in the 18th century in _____.

10.4 EFFECTS OF TECHNOLOGY ON THE ENVIRONMENT

In the above paragraphs, we have discussed the need and evolution of technology and how human beings have used it to counter adverse effects environmental phenomena. No doubt, technology has helped human species to evolve themselves from primitive to a modern world, but its effects on the environment are also alarming. The beginning of 21st century is both an era of technological upsurge and also a concern for the environment as human species apart from mere dependence on technology are now totally dependent on it, resulting in excessive pressure on the natural environment. The concern for environmental degradation has been scaled up globally due to decrease in bio-diversity, ozone depletion, air and water pollution, overpopulation, waste disposal, etc. The emission from industries, air-conditioners, etc. has largely affected the natural environment and the ozone layer. It also causes air pollution as hazardous gases are released in the atmosphere. The air and water pollution has reached such a stage that people in many big cities like Beijing, Delhi, etc. are facing serious health problems due to air pollution. Lack of accessibility to safe drinking water and proper sanitation in many developing and under-developed countries have also resulted in death and health concern for many.

With passing times, the dependence on technology has also increased from production to being part of daily routine. It has penetrated deep in domestic affairs and even in agriculture. The use of technology has no doubt helped in increasing agricultural production, thereby easing human labour but it has also come to light that excessive use of pesticides not only pollute the water, and affect the fertility of the land, but it also adversely affects the ecosystem. For example, earlier, while plough was used by the farmers with no pesticides for cultivation, there was the abundance of wild fishes and crabs in the local paddy fields of Assam but gradually, certain species of wild fishes and crabs have been disappearing due to adverse effects of technology. In fact, technology has not only affected the environment but also the cycle of life forms on earth. The biosphere, hydrosphere and

atmosphere are totally disturbed and affected by human activities done through technological help. The culmination of various micro human activities has caused a serious global environmental problem in recent decades. In a study on technological impact on environment in the USA, it was found that 46% of pollution in the atmosphere is caused by transportation, 29% of pollution is caused by fuel consumption in stationary sources, 16% is caused by industrial processes, 2 % is caused by solid waste disposal and 7 % is caused by miscellaneous. Again, the percentage breakdown of pollutant by weight is carbon monoxide (48%), nitrogen oxides (16%), sulfur oxides (16%), volatile organic compounds (15%) and particular matters (5%) (Eren, 2002). Thus, the above study on the technological impact on the environment in the USA reveals the gravity of the problem.

Today, industrialization has become a determinant factor of human civilization and it is one of the leading factors for global change. And it is due to industrialization that human beings have been able to artificially transform matter and energy for their own use. The amount of materials mobilized by industries is 20 billion tons annually in the form of fossil fuel, minerals and renewable raw materials. Again, 40 billion tons of solid waste is produced per year after extraction, conversion and disposal of the above quantities. However, the release of less than one ton of furans is responsible for causing environmental hazards. Though the development of communication technology has helped human species to establish contacts between them and ease their information supply and business yet the use of wave signals and the introduction of 5G have adversely affected the environment and birds. For example, it is observed locally how the production of areca nuts and coconuts has been reduced in the recent decade in Assam due to the adverse effect of wave signals of mobile towers. Thus, it is a matter of concern in the coming years as to how we keep a balance between technological upsurge and environmental preservation.

Stop and read

Though initially, human beings have used technology for their betterment in recent decades the whole human race has become completely dependent on technology. This excessive dependence on technology has made human beings more vulnerable to environmental degradation caused by technological impacts. The wave signals released by mobile towers are detrimental to not only human beings but also the whole living species on earth. Even the air we breathe and water we drink have become highly contaminated due to hazardous gases emitted by the industries and transports.

CHECK YOUR PROGRESS

1. Mention two reasons for environmental degradation ----------

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10.5 TECHNOLOGICAL RISK

By now, you have understood that technologies, despite their countless benefits, also have several risks. Technological risk, therefore, forms a debatable issue of contemporary times. It consists of two aspects- risk and hazards. Both these aspects are interrelated. While risk refers to the probability of some event or adverse effect, hazards refers to dangers that can produce adverse effects. Therefore, technological risk "refers to the probability and magnitude of adverse effects of technological hazards on human health and safety and the environment". (Dietz, Prey and Rosa,

2002) Such adverse effects include death and disease in human beings and climate change, threats to ecosystems, etc. in the context of the environment.

Though technological risk has been there throughout human history, its impact has increased manifold in recent years. Therefore, it is important to look for appropriate methods for managing technological risks. There are primarily three strategies to manage technological risks- direct regulation, indirect regulation, and alternatives to regulations. (ibid.).

Direct regulation has two forms:

- Reduction of risks to zero through elimination of a hazard
- Reduction of risks to an acceptable level through regulatory controls on a hazard.

The strategy for reducing risks to zero is seldom used in risk management while reducing risks to acceptable levels is most commonly used direct regulation.

On the other hand, indirect regulation has to do with the parties at risk. The parties at risk are informed about the risks associated with a hazard so that they can use their judgement to decide the acceptability of the risks. Warning labels is one of the standard techniques in this regard. The parties at risk are given recommended practices for safe use, transport and disposal of a hazard. This strategy is usually employed when it is observed that benefits of a technological hazard outweighs the risks associated with it.

Coming to the alternatives to the direct and indirect regulations, these may be implemented through different ways. For instance, people may voluntarily comply with recommendations for the safe production and use of a technological hazard. Similarly, another strategy may be in the form of incentives to the people for complying with or penalty for not complying with such recommendations.

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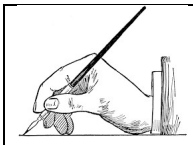

1. Mention two reasons for environmental degradation

10.6 SUMMING UP

The above discussion reveals how the need to deal with daily life challenges emanating from the environment had driven early human beings to evolve and develop tools and techniques to survive. Later, after centuries, imperialism gave rise to competitions between various powers leading to the development of industrialization. Thereafter, technology developed and it still continues to develop to cater to human needs. However, human beings have been so involved in the technological world that gradually, technology began to be used even to manipulate the natural environment. Therefore, the impact of manipulating the environment by technology is manifold, from an alarming rise in human diseases to environmental degradation. Hence, the need of the hour is to minimize our dependence on technology and to strive for a cohesive human-environment relationship.

10.7 QUESTIONS

1. Briefly discuss the factors responsible for the development of technology.
2. Discuss the relationship between technology and environment.
3. Discuss briefly the effects of technology on environment.
4. What is meant by technological risks? What are the strategies for their management?

10.8 RECOMMENDED READINGS AND REFERENCES

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UNIT 11: GLOBAL ENVIRONMENTALISM: A CHALLENGE TO POST-MATERIALISM THESIS

UNIT STRUCTURE

11.1 INTRODUCTION

In this Unit, we will discuss global environmentalism and try to look at how it stands as a challenge to the post-materialism thesis. We need to understand that ecological processes and environmental problems do not always remain confined to national boundaries; rather their impact goes beyond boundaries to become global in nature thereby leading to the emergence of global environmental concerns. The ability of human beings to act and think at a global scale also brings with it a new dimension of global responsibility. These ideas were central to the defining discourse of contemporary environmentalism in the 1960s and 1970s and to the concept of sustainable development that arose in the 1980s and 1990s. The links between the environment and globalization deserve our attention because ignoring these links means misunderstanding the full extent and the nature

of globalization. This might also lead us to overemphasize the critical opportunities to address some of the major environmental challenges faced by mankind.

The term 'globalization', however, cannot be reduced to a single definition. We are also not sure about which parts of it are good and bad, and for whom. For the most part, a polarized view of globalization, its potential and its pitfalls have taken hold of the public imagination. It has often been projected either as a panacea for all the ills of the world or as their primary cause (Najam, Runnalls & Halle, 2007). The discussion on the links between environment and globalization manifests many unjustified expectations and fears about the relations between these two domains. There are many definitions of globalization given by different scholars. Globalization indeed is a broad term that refers to the growth in international exchange and interdependence. It also implies removing restrictions on inter-country movements as well as the spreading of ideas and experiences of people globally. It may be noted here that in the process of spreading of ideas and experiences, a global culture has been shaped based on westernisation which has overshadowed local cultures. Globalisation also includes a process of reconfiguration of geography whereby the role of territorial borders is diminishing in the context of social space. Thus, globalisation is a multifaceted term that covers internationalisation, liberalisation, universalisation, westernisation or modernisation as well as deterritorialisation (ibid.).

11.2 OBJECTIVES

By the end of this Unit, you will be able to:

- Explain global environmentalism;
- Discuss the linkages between globalization and the environment;

- Analyze how global environmentalism stands as a challenge to the post-materialism thesis.

11.3 UNDERSTANDING GLOBAL ENVIRONMENTALISM

In the last few decades, environmental movements have emerged as one of the dominant movements shaping the realities of the world. Looking into these environmental movements, several questions come to our mind like why do people join these movements? What messages are they trying to convey? What brings people together? What are the common themes and ideas behind these movements?, etc. Taking into account such questions, we are going to discuss 'global environmentalism' in this section. You will also learn about the historical emergence of environmental movements and how it spreads to different parts of the world with the aim of environmental awareness. In a simple language, global environmentalism is the global awareness of environmental consequences, which also prescribes ways to protect and preserve the environment. It is a combined philosophy and ideology that have led to a social movement that concerns about the consequences and impacts of human activities on the environment and the urgent need to protect and improve the physical health of the environment at large. Environmentalism focuses on to preserve, restore, conserve and improve the health of the environment. Today, the world is more complex and complicated than ever before. Some say we live in a global disorder in a chaotic international system. Globalization, population growth, economic and social development, natural resource exploitation and scarcity, climate change and urbanization are external drivers in the world today. In the Anthropocene, an era marked by the central role played by humankind in geology and ecology, global sustainability appears as a civilizational imperative that has led to environmental issues that cut across security and economics, two areas of major importance to the state, and that is why, especially since 2007, they have come to play an important role in the international political agenda. Environmental issues, mostly those related to exploitation of natural resources, are perhaps the most global, both in their

essence and scale of action. The future of humankind largely depends on the ability to create an effective web of multilateral governance. Thus, one can argue the world will move towards a new global order or disorder based on environmental challenges and on our ability or inability to deal with them (Pereira, 2015).

However, environmentalism and environmental movements are closely related concepts. If we distinguish between the two, environmental movements are collective mobilizations concerning the environment where the basic aim is to preserve the environment, protest against the degradation of the environment and restore the health of the environment whereas, environmentalism is a political idea which brings people together for that collective mobilization. Environmentalism denotes a particular kind of idea or ideology or philosophy. It is an ethical approach toward nature and seeks to limit and undo the amount of human-generated negative impacts on nature. Ram Chandra Guha (2014) states, "Environmentalism must be viewed as a social programme, a charter of actions which seeks to protect cherished habitats, protest against their degradation and, prescribe less destructive technologies and lifestyles". According to him, it was in the 1960s that environmentalism took the shape of a popular movement, influencing public policy. However, he adds that the seeds of environmentalism were sown as early as in the last decades of the 18th century which saw the rise of the industrial revolution. He identifies two waves of environmentalism-

- The first wave- it emerged as a response to the emergence of industrialisation and it progressed with the changes brought in by the industrial revolution which had drastic impact on the environment
- The second wave- during this, an intellectual response shaped up with public support and mass mobilisation, thereby paving the way for environmental protests and movements (ibid.)

The agitations and ideologies of the environmental movements spread worldwide, creating an urge to save the environment among the global masses. Thus, these movements are not confined merely to local boundaries and emerge as "global-environmentalism".

11.3.1 Post-Materialism and the Environment

Post-modern societies emerged because of modernization. A post-modern society is based on the idea of the global marketplace. Post-materialism is considered to have led to the rise of issues such as environmentalism. The term 'post-materialism' was coined by Ronald Inglehart in 1977 in his book *The Silent Revolution: Changing Values and Political Styles among Western Publics.* Post-materialist theory suggests that, under conditions of continuously expanding economic and personal security, younger generations will be less oriented to acquiring material goods and more committed than their older peers to attaining post-material social goals such as increased free self-expression and a healthy natural environment (Booth, 2017). In simple language, the post-materialists are more concerned about the environment in comparison with the materialists. They are in much support with environmental issues. But for the materialists, the use of scarce resources is desirable as far as it is leading to economic growth and employment opportunities. Post-materialists have a more cosmopolitan sense of identity, which means that they are more concerned about political and environmental issues that transcend national boundaries than the materialists are (Inglehart, 1977).

Inglehart argues that consequently for this development the change in values is supposed to affect individual's orientation towards political issues, change the social bases of politics and affect the support for national institutions (ibid.). He also argues that the change in values is creating potential political counter-elites that are distributed more widely among the public than ever before at the same time challenging the traditional decision-making structures (ibid.). The change in values will result in

increased demand for participation in decisions that affect one's life, whether it is in welfare agencies, schools, factories, offices, universities or church. Although conservation of natural resources has been on the table for many decades already, the fact that environmental interests are valued higher than economic ones is something that is argued to occur because of the increasing share of post-materialists in societies according to him (ibid.). Inglehart further argues that this widespread concern and awareness about the environment has partly taken place because of the more environmentally sensitive public, and also because of the gradually rising level of political skills and education in post-material societies. And this environmental concern, according to him, is because of the change from material to post-material goals.

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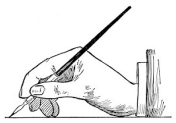

1. Who coined the term 'post-materialism' and when?

11.4 GLOBAL ENVIRONMENTALISM: A CHALLENGE TO THE POST-MATERIALISM THESIS

By now, you are familiar with the concepts of 'global environmentalism' and 'post-materialism'. In this section, you will learn how global environmentalism stands as a challenge to the post-materialism thesis. In the industrial West, there is a notion that people living in the developing countries do not care about nature or the environment and it is only the rich developed countries that care more about the environment. And somehow this view is uncritically accepted. The probable reason behind this is industrialization. It is used as a strategy by the developed countries to establish more industries in developing countries. Another notion is that it

is the affluent classes of people that show more serious concern towards the environment. Such views have been accepted stereotypically. A strong theoretical support to such views came from post-materialist thesis. Beginning in the 1960s, evidence began to show a shift in basic values in advanced industrial countries, that material values were being replaced by what has been called post-materialist values by Inglehart (1977), the leading proponent of this view defined this as a shift "from giving top priority to physical sustenance and safety towards a heavier emphasis on belonging, self-expression, and the quality of life". This argument that people place physical needs first, that has been discussed for some time in social science and is generally accepted (Brechin & Kempton, 1994).

Post-materialist values are said to have emerged in the post-war era of economic and physical security. With economic security trained by increasing proportions of the societies, the focus began to be shifted to concerns such as the quality of life. Inglehart located the shift in values as a consequence of the change among the younger generation who grew up with prosperity. The intergenerational shift that began during the student protest movement of the 1960s is seen by Inglehart as causing a fundamental change affecting the entire society in values as generation matures. Public environmental concern has often been cited as an illustration or a key example of post-materialism (ibid.). Brechin and Kempton (1994) have offered five possible explanations for environmental values and environmental movements in poor countries: (1) environmental justice and protest, (2) mass media diffusion of environmental values, (3) direct observation of environmental change and degradation, (4) institutional processes, and (5) the possibility that "environmentalism" itself has changed into a more materialist value.

However, with new findings and research, it was found that environmentalism is a global phenomenon, not limited only to those countries with sufficient wealth alone. This finding raises questions about

the relationship between environmentalism and the post-materialist thesis. The new findings, however, support a cultural shift within advanced industrialized countries without consequently challenging Inglehart's general thesis. On the contrary, the findings argue that environmentalism should not be viewed as a product of a post-materialist shift in values. Environmentalism appears to be a more complicated phenomenon, emerging from multiple sources in richer and poorer nations alike (ibid.).

11.4.1 Relationship between Globalization and the Environment

Till now, you have become familiar with the meaning of globalization and have understood that globalization is a complex set of dynamics offering many opportunities to better the human condition. However, it also has significant potential threats to mankind and the environment. Contemporary globalization manifests itself in various ways, three of which are of particular relevance to policy-makers. They also comprise significant environmental opportunities and risks. These are:

1. Globalization of the economy- The world economy globalizes as national economies integrate into the international economy through trade; foreign direct investment; short-term capital flows; the international movement of workers and people in general; and flows of technology. These have undoubtedly created new opportunities for many but not for all. It has also placed pressures on the global environment and on natural resources, straining the capacity of the environment to sustain itself and exposing human dependence on our environment. A globalized economy can also produce globalized externalities and enhance global inequities (Najam, Runnalls & Halle, 2007).

2. Globalization of knowledge- As economies open up, more people become involved in the processes of knowledge integration and the deepening of non-market connections, including flows of information, culture, ideology and technology. New technologies undoubtedly can solve old problems but, at the same time, they can also create new ones. Technologies of environmental care can move across boundaries quicker

but so can the technologies of environmental extraction. Information flows can connect workers and citizens across boundaries and oceans. Environmentalism as a norm has become truly global, but so has mass consumerism (ibid.).

3. Globalization of governance. Globalization places great stress on existing patterns of global governance with the shrinking of both time and space; the expanding role of non-state actors; and the increasingly complex inter-state interactions. The global nature of the environment demands global environmental governance, and indeed a worldwide infrastructure of international agreements and institutions has emerged and continues to grow. But many of today's global environmental problems have outgrown the governance systems designed to solve them (ibid.).

The relationship between the environment and globalization is very complex. The environment itself is inherently global, with life-sustaining ecosystems and watersheds frequently crossing national boundaries; air pollution moving across entire continents and oceans; and a single shared atmosphere providing climate protection and shielding us from harsh UV rays. Monitoring and responding to environmental issues frequently provoke a need for coordinated global or regional governance. Moreover, the environment is intrinsically linked to economic development, providing natural resources that fuel growth and ecosystem services that underpin both life and livelihoods. Therefore, the relation between the two domains is obvious but how these two domains interact is still not clear. Much of the interactions given in theoretical textbooks are vague and partial. It is important to highlight that not only does globalization impact the environment but the environment impacts the pace, direction and quality of globalization. At the very least, this happens because environmental resources provide the fuel for economic globalization, but also because our social and policy responses to global environmental challenges constrain and influence the context in which globalization happens (ibid.).

11.4.2 The Five Propositions

In this section, we will learn the five key propositions on how these two domains are interrelated, with special attention on those linkages that are particularly significant for policy-making and policy-makers. These five propositions are- 1. The rapid acceleration in global economic activity and our dramatically increased demands for critical, finite natural resources undermine our pursuit of continued economic prosperity. It means that the sound environment is essential to realizing the full potential of globalization. To its contrast, the absence of a sound environment can significantly undermine the promise of economic prosperity through globalization. 2. The linked processes of globalization and environmental degradation pose new security threats to an already insecure world. These impact the vulnerability of ecosystems and societies, and the least resilient ecosystems. The livelihoods of the poorest communities are most at risk. 3. The newly prosperous and the established wealthy countries will have to come to terms with the limitations of the ecological space in which both must operate, and also with the needs and rights of those who have not been as lucky that is, the developing countries. 4. The main challenge to the future of environment and globalization is consumption, not growth. 5. The global market and global environment will become even more intertwined and each will become more dependent on one another (ibid.).

11.5 SUMMING UP

In this Unit, we have discussed a major ideological approach, that is global environmentalism and how in a post-modern society it stands as a challenge to the post-modernist thesis. This approach is very significant in a post-modern world. Better global governance is an urgent need to bring a balance and managing both global environmentalism and globalization. However, it is manifested that both domains challenge the current architecture of international systems. Therefore here, the role of the state holds utmost importance in managing these international systems. It must

evolve with the needs of the present and though it is evolving to some extent but in a very contorted ways.

11.6 QUESTIONS

1. What is global environmentalism? Explain how it stands as a challenge to the post-materialism thesis.
2. Is there any relation between globalization and the environment? Explain.
3. Discuss the various propositions to show the linkages between globalization and the environment.
4. Write a note on post-materialism and the environment.

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UNIT 12: RESPONSES TO ENVIRONMENTAL ISSUES: ENVIRONMENTAL JUSTICE

UNIT STRUCTURE

12.1 INTRODUCTION

Everyone has the right to a healthy and sustainable environment that is inclusive of an ecological, social and political setting. Environmental Justice reveals that knowledge production is embedded in power and ideology that generate knowledge (Wilson & Cavender, 2005). The concept of environmental justice is to correspond to the risk borne by the communities of low-income groups that have resulted from unemployment, underemployment, and employment in hazardous jobs, poor housing, nutrition and access to health care (Foy, 2012). It can be twisted to serve the purpose of a governing institution in the façade of development. Studies have found that racial and ethnic minority and low-income populations are inequitably burdened by environmental hazard (Burke and Lauretta 1993).

Environmental injustice can occur when people are displaced from the land or lose access to natural resources such as clean water and healthy food. The agenda of development of sustenance for one country can be exploitation for others. For instance, in India and Madagascar, child labourers are used in unearthing mica, excavating deep mines involved in such hazardous occupation that is used for electronics, automobiles and makeup industry. People nowadays actively resist the forces of contemporary colonization by reconstructing native nationalism (Boyce, 2007) from a localized viewpoint. In the following sections, we are going to understand the dynamics that are central to people, environmental justice and survival of planet earth.

Stop and Watch
1. Exploitative Child Labour In Mica Mines Exposed August 4, 2016. Link for the video https://www.youtube.com/watch?v=i_1PJZhBxgo 2.Children Labour For Pennies Mining Mica In Madagascar | TODAY. November 18, 2019. Link for the video: https://www.youtube.com/watch?v=9BCe3MtO1Oo Source: YouTube.

12.2 OBJECTIVES

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

- Analyse the purpose of environment justice;
- Discuss the responses at the global level through various organisations;
- Explain the progress of current initiatives at the global level.

12.3 HISTORICAL MOVEMENT FOR ENVIRONMENTAL JUSTICE

The movement that involves policies and practices shows the history of environmental inequities and the means for future correction. The environmental movement for justice started in the USA when a Ward Transformer Company of Raleigh had illegally disposed 31000 gallons of polychlorinated biphenyls (PCB) along roadways of North Carolina, USA. The soil got contaminated relocating 40,000 cubic yards of contaminated soil in rural Shocco Township in Warren County (coloured poor communities). According to the Environmental Protection Agency (EPA) regulations, the water table in the area of Shocco was only about 7 feet below the landfill bottom, 43 feet shallower than required by the EPA. The people of the locality made public appeals, called for help from civil rights and environmental groups. In all, 523 protestors were arrested and that generated environment consciousness at the global level (Newton 2009).

With this event, two new terms were coined 'environment racism' and 'environment discrimination' in 1982 by Benjamin Chavis, the then executive director of the National Association for the Advancement of Coloured People (NAACP). Racial discrimination in environmental policy makes unequal enforcement of environmental laws and regulations. An important feature of both environmental racism and environmental discrimination is that environmental inequities occur not because of chance or randomness but as specific consequences of official public and corporate policies (Newton, 2009). There are three kinds of equity involved in generating environmental equality. The first one is procedural equity referring to questions of the fairness of applying governing rules and regulations in a non-discriminatory manner. The next is geographic equity which refers to the location of environmental hazards and thirdly, social equity which refers to the way in which race, ethnicity, class, and political power, have an impact on and are reflected in environmental decision making (Bullard 2000).

The World Commission on Environment and Development first met in October 1984 to work on the issues of environmental crisis and manmade hazard. The Brundtland Commission Report (1987) was an urgent document looking into the agreements made by various countries seeking greater co-operation among developing countries and between countries at different stages of economic and social development. It led to the achievement of common and mutually supportive objectives between people, resources and environment for a better world. In 1994, President Bill Clinton of USA issued 'Executive Order 12898' that all federal agencies develop a policy for dealing with environmental justice. In 2008. Hillary Rodham Clinton introduced legislation establishing the Interagency Working Group on Environmental Justice to provide guidance to all federal agencies on issues related to environmental justice (Newton, 2009). The UN Commission on Human Rights in 2001 has declared that every individual has the right to live in a clean environment. It is reflected in Goal No 8 (environment sustainability) of Millennium Development Goals (2000-2015). It is interlinked to Goal No 1 in eradicating poverty and hunger. In the next section, we are going to discuss the effect of the environment at the global level.

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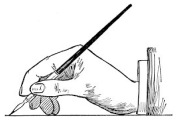

1. What are the three kinds of equity involved in generating environmental equality?

12.4 GLOBALISING ENVIRONMENTAL JUSTICE

Environmental degradation is a universal phenomenon. David Glick in his article, 'The Big Thaw' written for National Geographic mentioned that snows of Mt. Kilimanjaro have melted more than 80%. There is retreating of glaciers in Garhwal Himalayas, India and the threat is it can eventually vanish by the year 2035. The Intergovernmental Panel on Climate Change (IPCC) had projected in its 2001 report that sea level will rise anywhere between 4 and 35 inches (10 and 89 centimetres) by the end of the century. This is a concern at the global level that there will be a scarcity of land and its impact on people will be much more.

Here, we are going to cover three important organizations which are working on the issues of environmental degradation and responding to environmental justice. These are Greenpeace, Centre for Science and Environment and Aaranyak each located in different parts of the world.

Greenpeace

Greenpeace was founded in 1971 with a group of likeminded people trying to stop a nuclear test near Alaska. Everyone on every Greenpeace action is trained in the principles of nonviolent direct action (NVDA). It works on the issues of research, investigation and stopping environmental crime using satellite imageries, working with whistle-blowers, banning on plastic wastes. Another important role it plays is lobbying for influencing international treaties and conventions on environmental protection. The Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) has been possible due to the initiative of Greenpeace.

Centre for Science and Environment

The Centre for Science and Environment (CSE) was established in 1980. It was founded by Anil Agarwal. It is a public interest research and advocacy organization based in New Delhi. The prime work of CSE is research, advocacy, education and training and pollution monitoring. It also

contributes to research and other publications on issues like wastewater, habitat, industry, energy, climate, food and toxins, etc. CSE also carries lobbies for equitable and sustainable development.

Aaranyak

It was started in the 1980s with like-minded nature enthusiasts who started a club called 'Aaranyak'. Initially, it contributed to seeking protection of white-winged wood duck (state bird of Assam) that was prone to poaching. Aaranyak as an established organisation is on a mission to contribute towards the protection of nature by providing key inputs to biodiversity management based on quality research on ecosystems, environmental education, environmental restoration, capacity building, legal and policy research. It is a member of the International Union for Conservation of Nature (IUCN) which is the world's largest conservation organization. Aaryanyak is labelled as Scientific and Industrial Research Organisation (SIRO) by the Department of Scientific and Industrial Research under the Ministry of Science and Technology, Government of India and was awarded the prestigious 'Indira Gandhi Paryavaran Puraskar' in the year 2012.

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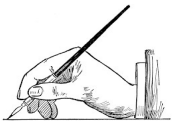

1. Fill up the gaps:

a. Greenpeace was founded in_____.

b. Initially, _____ contributed to seeking protection of white-winged wood duck that was prone to poaching.

12.5 CASE STUDIES

While the environment pollutants are increasing due to a consumerist culture and persistent organic pollutants (POP), there are case studies responding to environmental degradation.

12.5.1 Transportation

Plachimada Coco Cola Plant

The beverage giant Coca Cola operated a bottling plant in Plachimada, Kerala in March 2000. In the next few years due to continuous extraction of groundwater and releasing of toxic chemicals led to contamination and turning water unsuitable for drinking or carrying out daily activities. The area had suffered a loss of 21.626 million rupees due to pollution and water shortage caused by the operation of the plant. The struggle at Plachimada continues to this day as villagers seek to recover the loss of livelihood and counter the extreme damage to the water resources in the area. The struggle represents the efforts of villagers and activists to wage a battle against a multi-national company both at the level of the grassroots and the judiciary. It is also a testament to the ability of local self-governance bodies to effectively determine the nature of development in their respective areas, and their right to prevent undue extraction of their resources (Mathews, 2011).

Brahmaputra Crackers and Polymer Limited (BCPL)

It is a petrochemical complex founded in 2007, located in Lepetkata, Dibrugarh. It was investigated that the discharge of effluence from BPCL affected the local river and fish. Order of National Green Tribunal (Eastern Zone Bench Kolkata) in the matter of Saikhowa Sadiya Min Samabai Samiti Ltd and Dibrugarh Fishery Co-operative Society Ltd Vs Union of India & Ors dated 02.11.2017 reported that the sample wastewater collected on two dates i.e. on 07.08.2017 and 05.09.2017 found that the level of discharge of at least five components more than the permissible

standards. NGT directed Brahmaputra Cracker and Polymer Limited (BCPL) to remain closed till it reduced the emission charges (Centre for Science and Environment, 2017).

12.5.2 Health

Every year in New Delhi, India, a period of winter is troubled by smog deposits that result in pollutants and onset of dust allergies, asthma, etc. In November 2017, in an event known as the 'Great Smog' of Delhi, the air pollution spiked far beyond acceptable levels. Levels of PM (Particulate Matter) matter hit 999 micrograms per cubic meter. The safe limits for those pollutants are 60 and 100 respectively (Nov 1, 2016, The Indian Express). Intake of every 22 micrograms per cubic meter of polluted air is equivalent to smoking a cigarette. It does not make a difference of PM 2.5 level is 700 or 300 units, the impact is still as bad affecting those suffering from asthma, bronchitis or other respiratory tract infections. The Air Quality Index has also entered a severe or emergency category (Nov 1, 2019, The Economic Express).

Delhi mostly faces air pollution due to stubble burning in nearby farming areas and festive cracker burning during the months of October, November and December.

12.5.3 Housing

Poor communities do not have the choice of fair housing. In any housing projects, a Community Benefits Agreement (CBA) is a legally binding contract between a developer (public and private) and a community group. It is to ensure that a development project is also beneficial to the host community. However, there are no guidelines for what benefits can be negotiated. In exchange for benefits, the host community agrees to support the development project (Larsen 2009).

The components for a fair housing policy include access to safe and clean potable water, soil contamination, excessive air pollution, and indoor health hazards radiated by paints, moulds and other phthalates components. In

America, there are certain contributing factors to fair housing issues that include private and public investment, location for subsidized housing, affordability and quality and location of environmental hazards. Since 1970, Housing and Urban Department have implemented Site and Neighbourhood Standards for HUD-assisted newly constructed and rehabilitated housing, requiring, units to be located in areas with access to amenities like transportation, educational and health facilities. There has to be a balance in generating fair practices for assigning housing policies promoting economic justice (Heberle, 2017).

12.5.4 Safeguarding Island Countries

There are a lot of island countries situated in Indian, Pacific and Atlantic Oceans affected by the melting of ice caps and rising sea level. The Maldives is one of them**.** The Republic of Maldives comprises of 1,190 islands in 20 atolls with a population of 300,000 people. The rise of sea temperature has bleached the corals leading to a threat of marine ecosystem. The coral reefs stand for the first line of defence against sea storms and rise of seawater. There are more than 500,000 tourists each year. Poor solid waste management remains the main culprit of threatening the reefs. Each year, 510 tons of medical waste is produced which does not have a proper outlet. The EU has contributed $8.8 million to the multi-donor Maldives Climate Change Trust Fund. The World Bank will administer over the adaptation and mitigation on the issues of solid waste management, capacity building and technical assistance for the management of natural assets (World Bank, 2010).

12.6 RESPONSES TO AND FUTURE OF ENVIRONMENTAL JUSTICE

Environmental degradation can be slowed down when more research and energy-efficient products are used. A recent discovery of purple bacteria is used for sewage treatment lowering water pollution level. Technology and economic development have to go hand in hand but it has to meet the environmental standards. Clean energy mechanism through solar plants is

used to generate hot water and light in a lot of institutions but the usages have to be maximized as there is a limitation of cost and servicing. Based on the principle of 'environmental stewardship' and 'collective responsibility' on the part of the government, civil society, student communities can bring about a gradual shift from the idea of over consumption to minimalistic lifestyle. This idea has to start from the developed countries first as many developing countries are still struggling with the basic needs. It is not that choices should be based on the values of being rich hence more privileges. It should be that low-income group countries should be prioritized with best infrastructure meeting environmental standards.

12.7 SUMMING UP

This unit aimed to draw the various challenges to environmental issues and the efforts of the various organizations to battle economic degradation. The role of traditional knowledge system can play a significant mechanism for enriching biodiversity and food security like storing indigenous seed banks and restoration of community-based forests. This will ensure developing a balanced ecosystem in fragile zones. It is time to reduce the economic benefits totally depending on the natural resources putting the environment at stake. The environment should not be controlled by the government in totality but it should be accountable to the communities that are affected as mentioned through the various studies in this unit. There is only one blue and green planet and it should be sufficient for one's need not greed if this principle of minimalism can be followed.

12.8 QUESTIONS

1. What is environmental justice? Explain with examples.
2. What are the mechanisms to respond to environmental issues in current context?
3. "All people have a right to a clean environment, and all people have a right to accessible natural resources"—Elucidate.

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MODULE V: ENVIRONMENTAL POLICY AND MOVEMENTS IN INDIA

UNIT 13: INDIA'S NATIONAL ENVIRONMENTAL POLICY

UNIT STRUCTURE

13.1 INTRODUCTION

As concerns for environmental degradation has risen since the last century, the Governments around the world in the post-colonial period have stressed and focused on environmental preservation by formulating various national policies. Inevitable to this, the Indian Government in the post-colonial period have embarked on a policy called the National Environmental Policy of India. The National Environmental Policy is based on the Directive Principles of State Policy, of the Indian Constitution where it vividly says in Article.48 " the state shall endeavour to protect and improve the environment to safeguard the forests and wildlife of the country," again Art. 51-A states that "It shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers and wildlife and to have compassion for living creatures". Moreover, India is also one of the parties of the Convention on Biological Diversity Treaty (CBD) treaty. In fact, prior to the independence of India, the India Forest

Act, 1927 was enacted by the then British Government to protect the reserved forest areas. Later on, after the independence, the new democratic government have enacted and passed several acts and laws on environment and protection of forests. After the India Forest Act enacted in 1927, several other acts on environmental protection came like the wildlife protection act, 1972, national wildlife action plan, 1973, forest conversation act, 1980 with amendments made in 1988, environmental protection act, 1986, national forest policy, 1988 and foreign trade development and regulation act, 1992. However, since the 1980s, unlike other countries where the legislature and the executive play a pivotal role in articulating norms and laws for environment and forests protection, in India, it is the Supreme court that has emphasized on the mechanism for environmental protection through articulating new regulations, empowering the existing structures and by continuously monitoring the mechanism.

13.2 OBJECTIVES

The main objective of this unit is to introduce to you with the aims and objectives of India's National Environment Policy and also its historical background. Today, countries around the world are concerned about environmental degradation and climate change. Therefore, the United Nations have emphasized environmental protection along with mutual peaceful co-existence of the various countries around the world. Hence, in context to the above initiative globally, India too has enacted various laws and regulations for the protection of the environment. By the end of this unit you will be able to:

- Describe the historical background of India's National Environment Policy;
- Analyse the aims and objectives of India's National Environment Policy.

13.3 A BRIEF HISTORICAL BACKGROUND OF INDIA'S NATIONAL ENVIRONMENTAL POLICY

India's concern for the environment is not a post-colonial construction but it is rooted in the ancient civilization. The evidence of which can be seen in the *Arthashastra* by Kautilya (321-300 BC) where he described vividly about some regulatory provisions related to environmental protection. Therefore, the legacy of environmental protection in India is very ancient compared to recent global concerns for the same. However, since the early 1970s, the concern for increasing environmental degradation has become an important global issue that has influenced the environmentalists, academia, policy-makers, civil societies and even the business houses. The international concern for environmental conservation and sustainable development was first highlighted in 1972 at the UN Conference on Human Environment. The conference had stressed on limitation and minimization of excessive use of natural resources, industrialization leading to pollution, overpopulation, etc. as basic factors responsible for environmental degradation. Again, in 1979, a seminar was organized by the UN where the matter of discussion was unsustainable development and excessive exploration of natural resources for luxurious lifestyle as the basic issues of environmental degradation in the developed countries.

Similarly, the then Prime Minister of India Late Smt. Indira Gandhi had enunciated that development programmes and framework of all countries should be based on equality and the countries should follow sustainability as well in order to deal with environmental problems because unless poverty is dealt with, the environment alone cannot be saved in the underdeveloped countries. Now, after such emphasis on equity and sustainability, the Brundtland Commission had issued a report in 1987 titled- "OUR COMMON FUTURE" that formally articulated the concept of sustainable development necessary for environmental protection. Further, it also stressed on mutual interdependence of the idea of development, economic growth and environmental protection. Therefore, this new introduction had also replaced the old concept of growth at all

costs by sustainable development. Hence, the famous ' Earth Summit' held at Rio in 1992 had again emphasized the concept of 'Sustainable development' and it unleashed an important message to all the countries of the world that along with economic development the idea to save and conserve our natural resources and environment should also be the prime concern.

India has drawn influence from the Stockholm and Rio conference regarding the importance of environmental conservation and eventually with the 42nd amendment of the constitution in1976, the Directive Principles of State Policy included several measures for environmental protection. Likewise, Art. 48 A was added to the Directive Principles of State policy where it was emphasized that the state and constitution are liable to protect the natural environment and forests areas of the country. Based on these legacies the National Council for Environmental Planning and Policy was set up in 1972 and later this developed into Ministry of Environment and Forests in 1985. The history of environmental policy in India is very old and it falls in four broad categories:

(A) Pre-Independence Period:

(i) Shore Nuisance (Bombay and Kolkata), 1853
(ii) The Elephant's preservation Act, 1879
(iii) The Fisheries Act, 1879
(iv) The Factories Act, 1897
(v) The Bengal Smoke Nuisance Act, 1905
(vi) The Bombay Smoke Nuisance Act, 1912
(vii) Wild Birds and Animal Protection Act, 1912

(B) Post-Independence-Stockholm Conference (1947-1972):

In post-independence period, various legislations were passed that basically endeavoured to control the cutting of trees or deforestation for unplanned urbanization. During this period the following legislations were passed:

(i) The Factories Act, 1948

(ii) The Mines and Minerals (Regulation and Development) Act, 1957

(C) Post-Stockholm Conference-Bhopal Disaster (1972-1984):

Amidst all the above legislations the Stockholm Conference had a deep influence on National Environmental Policy of India and this conference led to an amendment of the Constitution. This amendment brought legislation to deal with wildlife protection, water pollution, etc. The legislation included:

(i) The Wildlife Protection Act, 1972

(ii) Water (prevention and control of pollution) act, 1974

(iii) Air (prevention and control of pollution) Act, 1981

(iv) The Forest (Conservation) Act, 1980

(D) Bhopal Tragedy to 2006 (1984-2006):

The Bhopal gas tragedy in 1984 was the worst industrial and environmental disaster that had influenced the policymakers to emphasize more on comprehensive legislation. The legislation brought during this period and before the National Environmental Policy, 2006 included:

(i) Environmental (protection) Act, 1986

(ii) The Motor Vehicles Act, 1988

(iii) The National Environmental Appellate Authority Act, 1997

(iv) National Environmental Tribunal Act, 1995

Stop and Read

The history of National Environmental Policy of India is not new and it can even be traced back to the period of Kautilya when he in his epic work *Arthasastra* mentioned the measures to be taken for the protection of the environment. Thereafter, during the colonial period, we can see how the British government passed certain legislation for

the conservation of the environment. Nevertheless, the Stockholm conference in 1972 was the pioneer based on which the constitution of India was amended to include more comprehensive legislation and regulations for environmental protection.

13.4 AIMS AND OBJECTIVES OF INDIA'S NATIONAL ENVIRONMENTAL POLICY

Human beings have to depend on natural resources and the natural environment for livelihood. Therefore, the need to keep a balance between the use of natural resources, livelihood and development are very important. For that matter, the need for a comprehensive and revised policy encompassing a large and diverse country like India has led to the evolution of National Environmental Policy (NEP). In contemporary times, the following three foundational principles are important:

1. There should be an environment where human beings can enjoy a decent quality of life.
2. The natural environment should be respected by human beings.
3. Lastly, neither the search for a good life nor the respect for the environment should alienate the people from getting justice in the world.

Hence, the NEP is the result of the legacies enshrined in the constitution of India in Art. 48(A) and 51 A (g) and also the endeavour of the various International conferences and previous acts and policies of the Indian government. Therefore, The NEP is intended to bridge the gap between the effort and behaviour of the common Indian citizens and the effort of the Government in dealing with environmental issues. The NEP is also intended to be a guiding force to the people who are dependent on natural resources for their livelihood to conserve the environment rather than destroy it for sustainability.

The growing competitions within the market economy and industrialization have led to excessive use of technology resulting in the exploitation of natural resources. The unchecked exploitation of natural resources in the deep sea and the hills and forest areas have drastically affected the environment arising concern among the environmentalists, sociologists and policymakers over how to balance between development and environmental preservation. In fact, without a legal framework and proper legislations, it is not possible to deal with the problem that has escalated globally. Moreover, apart from environmental degradation, human society at large has been adversely affected as a result of air and water pollution, food scarcity and diseases. In India, approximately 20% of the health problems are related to environmental factors. Hence, to deal with such a global menace, the Indian Government has always formulated various National level policies and acts since independence. The latest is the National Environment Policy (NEP), 2006 which is structured on the previous policies that had emphasized environmental protection. The various features of NEP, 2006 are as follows:

1. Importance of conversation of environmental resources so that human beings dependent on particular resources could derive more advantage for their livelihood from such conservations than depleting the resources.
2. The NEP emphasizes cooperation between different stakeholders like public and social organizations, civil societies, academia, international development agencies and PRIs to foster on for more consolidated resource and environmental management.
3. The NEP also emphasizes a more holistic environmental protection by revisiting the Coastal Regulation Zone notifications. By this, it focuses on ensuring the protection of the coastal ecosystem and vulnerability of certain coastal areas to extreme natural events and the potential rise in the sea level.
4. The NEP also emphasizes on environmental protection through sustainable development programmes.

Moreover, the various aims and objectives of the National Environmental Policy, 2006 are as follows:

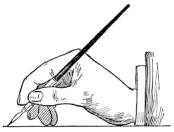
1. The NEP focuses on the protection and conservation of important environmental resources and natural and historical heritage essential for livelihoods and welfare of the society.
2. The Policy emphasizes on sustainable development so that the use of environmental resources at present does not affect the expectations of the future generations.
3. The Policy focuses on minimum use of environmental resources to reduce economic expenses and also excessive pressure on the environment.
4. The policy suggests good governance and transparency in governance in order to control environmental exploitation and illegal resource exploitation.

The policy also stresses on mutual use of both technology and traditional social knowledge for utilization of environmental resources.

Stop and Read

The National Environmental Policy, 2006 is a comprehensive environmental policy that was enacted in 2006 nationwide in order to protect natural resources and environment. The NEP was based on the earlier policies and regulations that were enacted at various times for the conservation of nature and environment. The NEP is basically focused on sustainable development and also conservation of traditional heritage.

CHECK YOUR PROGRESS



1. Write two features of National Environmental Policy, 2006.

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2. Write two aims and objectives of the National Environmental Policy, 2006.

13.4 PRINCIPLES OF INDIA'S NATIONAL ENVIRONMENTAL POLICY

The following are the principles laid down by National Environmental Policy, 2006 to guide the activities of different actors in relation to this policy:

i. Human beings are at the centre of sustainable development. They are entitled to a healthy and productive life in harmony with nature.

ii. The right to development must be fulfilled to meet the environmental and developmental needs of both present and future generations.

iii. Environmental protection shall constitute an integral part of the development process.

iv. Where there are threats of serious damage to key environmental resources, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

v. Economic efficiency would be sought to be realised in various public actions for environmental conservation.

vi. Significant risks to human health, life, and environmental life-support systems, and other unique natural and man-made entities, which may impact the well-being of large numbers of persons, may be considered as "Incomparable". Individuals or societies would not accept these risks for compensation in money or goods and services.

vii. There shall be equity in entitlements to, and participation of, the relevant publics, in the process of decision-making on the use of environmental resources.

viii. The principle of legal liability based on the "polluter pays" approach to be followed for environmental redressal mechanism.

ix. The State is not an absolute owner but a trustee of all the natural resources, which are by nature meant for public use and enjoyment, subject to reasonable conditions.

x. The principle of decentralization shall be followed. The transfer of power from a Central Authority to State and Local Authorities will empower public authorities having jurisdiction at the spatial level to address the environmental issues of that area.

xi. The principle of integration to be followed. Integration implies the inclusion of environmental considerations in sectoral policymaking, the integration of the social and natural sciences in environment-related policy research, and the strengthening of relevant linkages among various agencies at the Central, State, and Local Self Government levels, charged with the implementation of environmental policies.

xii. Environmental standards must reflect the economic and social development situation in which they apply.

xiii. Preference must be given to preventive action. Environmental damage should be prevented from occurring in the first place, rather than attempting to restore degraded environmental resources after the fact.

xiv. There is a general obligation to protect threatened or endangered species and natural systems that are of special importance to sustaining life, providing livelihoods, or general well-being.

13.6 SUMMING UP

The concern for environmental concern has always engulfed human beings, due to which it has always been stressed either through religious preaching or through proper legislation in modern time. During the colonial period, the political will of the then Government also led to the enactment of legislation for the same and in the post-colonial period the increasing industrialization, unequal economic growth, unchecked deforestation and other abuse on the environment have raised serious concern among the academicians, environmentalists and policymakers. This concern has resulted in the conclusion of various conferences like the Stockholm and Rio conference that have set down certain rules and norms for all the countries of the world to work upon environmental conservation through sustainable development. Thus, India's National Environmental Policy that was enacted is an endeavour on the part of the Indian Government to follow the guidelines of the International conferences by stressing on sustainable development and equal growth.

13.7 QUESTIONS

1. Discuss briefly the historical background of Environmental Policy in India.

2. Discuss briefly the salient features of National Environmental Policy, 2006.
3. Discuss briefly the aims and objectives of National Environmental Policy, 2006.
4. Write the principles of National Environmental Policy, 2006.

13.8 RECOMMENDED READINGS AND REFERENCES

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UNIT 14: ENVIRONMENTAL MOVEMENTS IN INDIA

UNIT STRUCTURE

14.1 INTRODUCTION

To conserve and save the environment from degradation has been always a concern for human society. Therefore, the same has been always ingrained in the traditional and cultural practices of various communities and social groups. Since the dawn of human civilization, people have always learned to live in close contact with nature. Simultaneously, people have also been largely dependent on nature for their livelihood and this dependence on nature has made them respect nature by associating various cultural practices with the concept of nature preservation. Indeed, the idea towards sustainable development and preservation of natural resources has always been a motto of human society. However, in modern times the detachment of human beings from their own society has to a great extent minimized such cultural practices. While, in the recent years, unchecked industrialization and modernization have influenced the traditional lifestyle of human beings leading to concern for environmental degradation and dwindling natural resources, the need to revive the traditional beliefs and practices have also been raised in order to have a cohesive relationship with

nature. Moreover, to add to this efforts and aspirations of the people many civil society organizations and NGOs have been relentlessly fighting towards conservation of natural resources and the environment. These organizations have demanded the cessation of illegal and unchecked mining, construction of big dams, deforestation and other assault on the environment. The government with the help from various corporate sectors have adopted various developmental projects but such unchecked efforts only make human life more vulnerable to development-induced destruction. Hence, there have been many environmental movements in India to save the ecology and the environment. Examples of such movements are the Chipko movement, Narmada Bachao Andolan, the movement against Lower Subansiri, dam etc.

14.2 OBJECTIVES

The objective of this unit is to introduce you to the historical background and also a brief account of the various environmental movements in India. In fact, environmental movements have become a necessary tool in the past decades especially when India had embarked on its journey towards industrialization and modernization. The unchecked mining in the deep forests of Jharkhand, Chhattisgarh and the construction of big dams have caused ecological imbalances and have changed the river courses posing a challenge to the livelihood as well as the cultural civilization of the local people. Therefore, in various periods and for various environmental reasons there have been environmental movements in India. By the end of this unit you will be able to:

- Explain the historical background of the environmental movements in India;
- Describe the various environmental movements in India

14.3 A BRIEF HISTORICAL BACKGROUND OF THE ENVIRONMENTAL MOVEMENTS IN INDIA

The environmental movements in India are also known as the green movements or green politics that are meant to save the environment from increased degradation. These movements are also an initiative on the part of civil organizations and common people to influence the state policy for environmental reasons. Brief historical backgrounds of some significant environmental movements in India are as follows:

Bishnoi Movement: The Bishnoi movement can be regarded as one of the oldest environmental movements in India that began in the pre-colonial period. However, Bishnoi initially began as a religious sect by Guru Maharaj Jambaji in 1485 AD in the Marwar (Jodhpur) desert region of Western Rajasthan. Now, people believing in this sect are found basically in the Western Thar Desert and the Northern States of India. The main ideology and principle of the sect are to worship nature and respect it as human society is dependent on it for livelihood as well as human beings will perish if there are no trees or plants as they provide oxygen. Guru Jambaji had introduced a set of 29 tenets and the name of Bishnoi is derived from these 29 tenets (Bish means 20 and Noi means 9). These 29 tenets are based on various principles and ideals- 10 are based on maintaining personal hygiene and basic health, 9 for good social behaviour, 4 are based on worshipping to God and 6 for the preservation of biodiversity and ecology. Among these 6 tenets, two are most important, i.e. *Jeev Daya Palani* that means to be compassionate to all living beings and *Runkh Lila Nahi Ghave* that means not to cut any trees. Thus, this religious sect is very important for not only maintaining a disciplined life among human beings but also for maintain an environment sustainable for all. In the latter period, i.e. in 1730AD, the religious sect initiated an environmental movement based on its principles of cohesiveness with nature. This movement was led by Amrita Devi, a Bishnoi woman when she came to know that some men had come to their village Khejarli, this name was itself derived from the word ‘ Khejri’ trees. These men had come

to their village to cut the Khejri trees in order to burn lime for the construction of a new Palace of Maharaja Abhay Singh. Thus, Amrita Devi had initiated the movement by embracing the trees and urging her village fellowmen and also folks from nearby villages to protest against the cutting of Khejarli trees. However, around 363 Bishnoi villagers were killed and when the King came to know about it, he ordered that the cutting should be stopped and the principles of the Bishnoi sect should be respected. Hence, in this way Bishnoi movement that is one of the oldest environmental movements in India became successful and it is still very important.

Chipko Movement: The Chipko movement started at Gopeshwar in Chamoli district, Uttarakhand in 1973 but later it spread throughout the Himalayan region of India. Chipko literally refers 'to hug' and in a larger context, it means to hug or embrace the trees as a symbol of how human beings are attached to the trees and forests and therefore there should be a stop in cutting down the trees. The post-1963 Sino-Indian border conflict period witnessed the involvement of various foreign-based logging companies in cutting the trees in the Himalayan region. This large scale cutting of trees greatly affected the environment and ecological balance of the region. This had also affected the livelihood of the rural people as they were dependent on the forest for food, firewood and various other related things. Hence, intrusion into the forest areas by the Government and other private companies alienated the rural people from access to their means of livelihood. Large scale felling of trees also affected their agricultural production, caused flood and soil erosion. The Chipko movement had its roots in the Gandhian philosophy of non-violence and non-cooperative movement and it was started in 1964 when a Gandhian social activist Chandi Prasad Bhatt led community organization Dasholi Gram Swaraja Mandal (DGSM) was denied access to a small number of trees with which they wanted to make some sort of agricultural tools as the DGSM was a community organization meant for rural livelihood and rural economy. Simultaneously, the deforestation by foreign-based companies caused large scale monsoon floods in 1970 that killed more than 200 people. Hence, this

paradoxical treatment of the Government led to the first Chipko protest near the village of Mandal in Alaknanda valley in April 1973. This protest at the Mandal was successful in making the Government ban logging in the area. Later, this local level protest emerged as a full-fledged environmental movement under the leadership of Sunderlal Bahuguna. A major protest occurred in 1974 near the village of Reni. Hence, this protest forced the Government to ban on commercial logging in the Alaknanda valley and a committee was also established to investigate the matter.

Appiko Movement: The Appiko movement is another important movement that started against deforestation and its effects on the ecology, local people and their livelihood. Similar to the Chipko movement, the Appiko movement also started initially against commercial logging in the Northern Karnataka region. The cutting down of trees led to ecological imbalances- flood, soil erosion and the local people who were dependent on the forest for their livelihood were adversely affected. Therefore, in protest against such anti-people and anti-environment commercial forest policy of the Government, the youth of Salkani village in Sirsi launched a movement similar to the Chipko movement in Northern India and locally they referred it as the *Appiko Chaluvali*. They used the same tactics of embracing the trees when they were about to be cut. This local-level protest in the Salkani village compelled the Government to withdraw their order and hence, this protest got spread to the entire Sirsi forest division in Northern Karnataka and Shimoga districts. Hence, in September 1983, the Appiko movement was finally launched by a youth organization known as the Yuva Mandali to conserve the ecological imbalances in the Western Ghats caused by the commercial logging.

Silent Valley Movement: The proposal to construct a hydro-electric dam in 1970 by the Kerala State Electricity Board (KSEB) across the Kunthipuzha River that has its origin in the Silent valley raised an outcry among the civil society organizations led by school teachers and especially the Kerala Sastra Sahithya Parishad (KSSP). These NGOs organized a

protest march and mobilized the public against the construction of the dam as that would submerge 8.3 sq km of virgin moist evergreen forest. The approval of the planning commission to construct the dam in February 1973 had finally led the announcement of the Save Silent Valley movement. As the proposed site of the hydro-electric project is home to the endangered lion-tailed macaque, therefore, it was raised by the protestors that the construction of the same would adversely affect the species. Among the protestors, it is noteworthy to mention the name of Romulus Whitaker, founder of the Madras Snake Park and the Madras Crocodile Bank as he was the first person to draw widespread public attention regarding the adverse effect of the construction of a hydro-electric dam in such a rich bio-diversity region. Moreover, the KSSP had organized various seminars and published self-research reports on the vulnerability of the project that created public consciousness and also compelled the Government of Kerala to stop the project work.

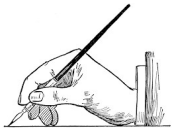
Narmada Bachao Andolan: The Narmada Bachao Andolan is again an important environmental movement in India because the Narmada River flows through the three states of India's North-Western territory- Gujarat, Madhya Pradesh and Maharashtra. In the post-independence period, India's quest for industrialization and development had opened the way for the construction of mega-dams to cater power. In fact, this notion was perpetuated by the then Prime Minister of India Pandit Jawaharlal Nehru who said mega-dams as 'the temple of modern India'. Following this policy of the post-independent India to achieve development, in 1978, the Indian Government took financial assistance from the World Bank for the construction of a complex of dams along the Narmada River as a part of Narmada Valley Development Project. Unlike other projects, this project included the construction of 30 large dams, 135 medium dams and 3000 small dams. Therefore, the Narmada project was seen as an imposition on Mother Nature and since the 1980s, several NGOs, victims of displacement, civil society organizations etc. of all the affected states began to protest against the project. In Gujarat, a youth protest group was formed

i.e. the Chatra Yuva Sangharsh Vahini, whereas groups like Narmada Ghati Navnirman Samiti in Madhya Pradesh and Narmada Ghati Dharangrastha Samiti in Maharashtra respectively had merged in 1989 to form the Narmada Bachao Andolan under the leadership of Medha Patkar.

Stop and Read

Environmental concern has always influenced human beings because they are dependent on the environment for their livelihood and to live as a whole. Any adverse effect on the environment either directly or indirectly affects human society as well. Therefore, religious sect like the Bishnoi had in its principles embodied rules of respecting the environment and also other living beings. In fact, the various environmental movements in the post-colonial period are inspired by the Bishnoi movement.

CHECK YOUR PROGRESS



1. Under whose leadership was the Bishnoi Movement started?

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2. Where did the Bishnoi Movement start?

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3. Where did the Chipko Movement start?

14.4 A BRIEF DESCRIPTION OF VARIOUS ENVIRONMENTAL MOVEMENTS IN INDIA

The above discussions regarding the historical background of some of the environmental movements in India give a glimpse of how the various movements started based on certain specific principles. The following paragraphs will further describe these movements:

Bishnoi Movement:

By now, you have understood that the basic principles of the Bishnoi religious sect are compassion and love towards nature and other living beings, a healthy life, healthy social behaviour and cohesiveness with nature and environment. There are even instances of how Bishnoi women feed milk to the babies of the black deer showing a superior cohesiveness with other living beings. Therefore, when in 1730, Maharaja Abhay Singh, the King of Jodhpur ordered his men to cut down the Khejri trees in the village of Khejarli village in order to burn lime required for the construction of the Maharaja's new Palace, Amrita Devi who was an ordinary woman of the village launched a protest against this act of the King. She appealed to all the people of the region to embrace the trees as a protest to not let the soldiers cut down the trees. But while more and more villagers came forward to protect the trees from felling down, the King's soldiers beheaded them and this protest continued until 363 Bishnoi villagers were martyred in their quest to protect their Khejarli forest. During this movement, volunteers form 49 villages sacrificed their lives, 294 of them were men and 69 were women. However, when the King came to know about the massive protest of the people and the violence involved, he went to apologize to the people and ordered his soldiers to refrain from cutting down the trees and declared the area as protected. Hence, the Bishnoi movement became successful after many bloodsheds and it became a reference movement in India in the post-colonial period.

Chipko Movement:

The basic principle of the Chipko movement is Gandhian philosophy of non-violent way to protest against injustice. The protest was initially started in 1973 under the leadership of environmentalist and Gandhian social activist Chandi Prasad Bhatt who mobilized the local people after their cooperative organization Dasholi Gram Swarajya Mandal (DGSM) was denied access to the forest resources. Meanwhile, in 1970 due to excessive industrial logging in the area, severe floods occurred and killed more than 200 people. After that, the DGSM had launched massive protest by hugging the trees and did not let the trees of the areas to be cut down. Initially, the DGSM achieved success because the Government withdrew its permission of commercial logging and also allotted permission to DGSM to access the forest resources for livelihoo of the people. Later, the success in Mandal had encouraged the DGSM workers and under the leadership of Sunderlal Bahuguna, the Chipko movement was spread throughout the region and in 1974 in a village called Reni, about 2000 trees were ordered to be cut down for commercial purposes, but a massive protest broke down and the Government imposed a ban on such logging. Meanwhile, the Chipko movement began to emerge as an important social movement and the role of women was very important in it. Apart, from hugging trees the movement also followed other Gandhian philosophy of non-violent resistance. There were instances of Sunderlal Bahuguna going for fasting for two weeks in 1974 to protest against the forest policy. Similarly, in 1978, Dhoom Singh Negi too fasted against such policy. Hence, the Chipko movement was at its peak between 1972 and 1979 and during this period more than 150 villages were involved with the Chipko movement. Thus, the movement became successful and the then Prime Minister of India Indira Gandhi imposed a ban of 15 years on commercial logging in 1980 in Uttarakhand.

Appiko Movement:

The Appiko movement in South India was a replica of the Chipko movement that began in North India. Therefore, the Appiko movement is also based on non-violent resistance and other protest tactics used by the Chipko movement. For every movement to be successful, it is very important for mass participation and their consciousness as well. Therefore, the Appiko movement adopted various campaigns to make the rural people aware about the importance of their movement, importance of forest conservation both for sustainable livelihood as well as maintenance of ecology through street plays, folk songs and dances, meetings, etc. Moreover, the Appiko movement stressed on forestation and planting of more trees and also to use an alternative source of fuel to minimize pressure on the forest. As commercial logging destroyed the ecology of Western Ghats, therefore, the main slogan of the movement was *Ubsu* (save), *Belesu* (grow) and *Balasu* (rational use) in Kannada.

Silent Valley Movement:

The Silent valley movement was yet another important environmental movement in India that was launched in Kerala in 1973 against the construction of a hydroelectric project in the Silent Valley. The Kerala Sastra Sahithya Parishad (KSSP) was a pioneer in launching the protest against this construction along with various other NGOs and civil society groups. The hydro-electric project was proposed to be set up in the Kuntipuzha River that has its origin in the Silent Valley and flows 15 Km Southwest from its source. The Silent Valley is home to the endangered lion-tailed macaque and the construction of such a big dam would submerge 8.3 sq km of virgin moist evergreen forest. Therefore, there was a widespread protest not only in Kerala but also in other parts of the country and there was a huge demand from all quarters to declare the area as a National Park. Hence, after much hue and cry and after pressure from various international organizations and NGOs in 1979, the Government of Kerala passed legislation to protect the larger area of Silent Valley and

stopped the hydro-electric project. Apart from the role of KSSP, the individual role of poet cum social activist Sugathakumari was very important and through her poem 'Marathinu Stuthi' (Ode to a Tree) both the common people and intellectual society were mobilized.

Narmada Bachao Andolan:

Among all the proposed projects discussed above that had impacted upon nature and environment, the Narmada Bachao Andolan is one of the most prominent as the Narmada Project included the construction of 30 large dams, 135 medium dams and 3000 small dams across the river covering the three states of Gujarat, Madhya Pradesh and Maharashtra. Therefore, since the initial period of the 1980s, various NGOs and civil society organizations began to stage protest against the project. Among them a youth protest group viz; Chhatra Yuva Sangharsh Vahini (CYSV) was formed by the 19 victim villages of the Sardar Sarovar Dam. Meanwhile, the merging of Narmada Ghati Navnirman Samiti in Madhya Pradesh and the Narmada Ghati Dharangrastha Samiti in Maharashtra into the Narmada Bachao Andolan in 1989 under the legendary leadership of Medha Patkar had opened a new era of protest. The NBA was very strategic in initiating its protest and from grassroots to global level it was successful in mobilizing public support and international organization against the project. Alike other environmental movements in India the NBA was also based on Gandhian philosophy of non-violence resistance and non-cooperative tactics like non-payment of taxes and ban on the entry of Government officials in the area were followed.

14.5 SUMMING UP

The above discussions on the historical background of various environmental movements in India and also a brief discussion about their tactics and nature reveal the fact that how since the pre-colonial period and even in Indian tradition the love and compassion towards nature and

environment have influenced the people. And in all these movements, the role of women is very noteworthy and the tactics of non-violence that all the protestors have used are very important form the point of view of democratic movements. Hence, over the years environmental movements have influenced the forest and environmental policy of the Indian Government and now it has also become essential for the Government to emphasis on sustainable development and conservation of the environment.

14.6 QUESTIONS

1. Give a brief historical background of the various environmental movements in India.
2. Discuss the role of women in any one of the environmental movements in India.
3. Explain in brief how Gandhian Philosophy has influenced the environmental movements in India.

14.7 RECOMMENDED READINGS AND REFERENCES

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