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# **ENVIRONMENTAL SOCIOLOGY**

**B.S.O.E.-143**

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# QUESTION PAPER

June – 2024

(Solved)

## ENVIRONMENTAL SOCIOLOGY

B.S.O.E.-143

Time: 3 Hours ]

[ Maximum Marks : 100

Note: Answer any five questions. All questions carry equal marks.

**Q. 1. Examine some of crucial environmental concerns of our times.**

**Ans. Ref.:** See Chapter-1, Page No. 3, 'The Environmental Predicament'.

**Q. 2. What do you understand by the term 'deep ecology'? Explain.**

**Ans. Ref.:** See Chapter-3, Page No. 20, Q. No. 3, Page No. 21, Q. No. 1 and Q. No. 2.

**Q. 3. Examine the emergence of social ecology as a perspective in India.**

**Ans. Ref.:** See Chapter-4, Page No. 25, 'Social Ecology – The Indian Scenario', and Page No. 26, 'Social Ecological Concerns in India'.

**Q. 4. Discuss the impact of treadmill of production on the environment.**

**Ans.** The treadmill of production was a theory of economic exchange that argues that rapid economic development and growth after World War II led to a huge demand for natural resources. New technologies require more and more energy use. Every time new investments were made or new industries popped up, they use more and more natural resources. With the increase of use of natural resources, environmental degradation got worse. It also means higher-level of natural resource extraction with no corresponding increase in wages and social expenditure.

**Also add: Ref.:** See Chapter-5, Page No. 34, 'Impact of the Treadmill of Production'.

**Q. 5. What are the similarities and differences between Beck's and Giddens's understanding of risk?**

**Ans.** The sociological concept of risk has been widely debated, leading to two primary approaches: One within the nation-state framework and the other within the broader context of modernity. The nation-state framework focuses on risks that are primarily confined within political and geographic boundaries, with the state playing a central role in managing and

mitigating these risks through policy and governance. This approach deals with traditional risks, such as economic downturns or security threats, which are often localized and more easily controlled by nation-states. On the other hand, the modernity framework deals with global, more diffuse risks that transcend national borders, such as environmental degradation, climate change, and global pandemics. These risks are products of modern industrial and technological advancements and are harder to contain within specific political units. Sociologists like Ulrich Beck and Anthony Giddens both worked within the modernity framework but diverged in their perspectives on risk due to their intellectual backgrounds. Beck's notion of the "risk society" emphasizes the unintended global consequences of modernization, while Giddens focuses on how modern institutions manage these uncertainties through processes like trust and reflexivity. Their differing sociological inquiries—Beck on global risks and Giddens on institutional responses—illustrate how intellectual backgrounds shape their risk discourses.

**Also add: Ref.:** See Chapter-7, Page No. 54, 'Parallels between Ulrich Beck and Anthony Giddens'.

**Q. 6. Write a note on Vandana Shiva's contribution as a Eco-feminist.**

**Ans. Ref.:** See Chapter-8, Page No. 62, 'Ecofeminism and the contribution of Vandana Shiva'.

**Q. 7. What do you understand by the term political ecology? Explain.**

**Ans. Ref.:** See Chapter-9, Page No. 72, 'What is Political Ecology'.

**Q. 8. Discuss the impact of Sardar Sarovar Project on the ecology and social environment.**

**Ans. Ref.:** See Chapter-14, Page No. 120, 'Introduction' and Page No. 121, 'Assessing the Impact of the Sardar Sarovar Project on the Ecology and Social Environment' and 'Swallowing the Villages in A Gulp'.



# QUESTION PAPER

December – 2023

(Solved)

ENVIRONMENTAL SOCIOLOGY

B.S.O.E.-143

Time: 3 Hours ]

[ Maximum Marks : 100

Note: Answer any five questions. All questions carry equal marks.

**Q. 1. Examine the nature of human and environment interaction.**

**Ans. Ref.:** See Chapter-1, Page No. 2, 'Conceptualisation of Society – Environment Relationship'.

**Q. 2. What do you understand by the term ecological complex? Explain.**

**Ans.** Ecological complexity refers to the complex interplay between all living systems and their environment, and emergent properties from such an intricate interplay. The concept of ecological complexity stresses the richness of ecological systems and their capacity for adaptation and self-organization. The complex, non-linear interactions (behavioural, biological, chemical, ecological, environmental, physical, social, cultural) that affect, sustain, or are influenced by all living systems, including humans. It deals with questions at the interfaces of traditional disciplines and its goal is to enable us to explain and ultimately predict the outcome of such interactions. Ecological complexity can also be thought of as biocomplexity in the environment" (Li, 2004, editorial in Ecological Complexity).

"Complex system is a system with numerous components and interconnections, interactions or interdependence that are difficult to describe, understand, predict, manage, design, and/or change" (Magee and de Weck, 2004).

The study of complex systems requires a system approach. Such an approach "focuses on the arrangement of and relations among the parts, which connect them

into a whole (von Bertalanffy, 1968). This approach is necessary for two reasons: first, system properties emerge at a higher level as the result of interactions among system components (Von Bertalanffy, 1968; Holland, 1998) and second, the emergent pattern itself exerts a downward causation on the lower level from which it has emerged.

Complex systems consist of a large number of mutually interacting and interwoven elements, parts or agents defined by the structure of the system, the types of interactions between system elements, and the dynamics and patterns of the system that emerge from these interactions (Herbert, 2006, in Earth & Mind, Manduca and Mogk eds.).

A complex system is a group of "agents" (individual interacting units, like birds in a flock, sand grains in a ripple, or the individual units of friction along a fault zone), existing far from equilibrium, interacting through positive and negative feedbacks, forming interdependent, dynamic, evolutionary networks, that are sensitive dependent, fractally organized, and exhibit avalanche behavior (abrupt changes) that follow power-law distributions.

Complex systems are those with many strongly interdependent variables. This excludes systems with only a few effective variables, the kind we meet in elementary dynamics. It also excludes systems with many independent variables; we learn how to deal with

# **Sample Preview of The Chapter**

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# ENVIRONMENTAL SOCIOLOGY

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## BLOCK-1: ENVISIONING ENVIRONMENTAL SOCIOLOGY

### Environmental Sociology: Nature and Scope



#### INTRODUCTION

Environmental sociology is typically defined as the study of relations between human societies and their physical environments or more simply, “societal-environmental interactions”. Such interactions include the ways in which humans influence the environment as-well-as the ways in which environmental conditions influence human affairs and the manner in which such interactions are socially constructed and acted upon.

Environmental sociology is a combination of two words environment and sociology. Environment means a close interconnection between human, animals and other non-living things like land, water and air which are necessary for life on earth. Sociology is a systematic study of the social life, social change and the social causes and consequences of human behaviour. Sociologist investigates the structure of groups, organizations, and societies and how people interact within these contexts. Since all human behaviour is social, the subject-matter of sociology ranges from the intimate family to the hostile mob; from organized crime to religious cults; from the divisions of race, gender and social class to the shared beliefs of common culture. Few fields have such broad scope and relevance for research theory and application of knowledge.

Environmental Sociology is the study of relations between human societies and their physical environments or societal-environmental interactions.

In this unit, we will discuss the emergence of Environmental Sociology as a discipline. Later, we will examine some of the theoretical accounts of the nature of the relationship between humans and their environment. Various factors such as industrialization,

urbanization and globalization led to the environmental problems which gave rise to various environmental movements such as Chipko, Narmada Bachao Aandolan and Earth Hour, etc. These movements try to bring a balance in the relationship between society and environments.

#### CHAPTER AT A GLANCE

##### EMERGENCE OF ENVIRONMENTAL SOCIOLOGY

Before the emergence of Environmental Sociology, Conservationist such as George Perkins Marsh, Gifford Pinchot, etc., and Preservationists such as Robert Marshal and others highlighted the deteriorating condition of biosphere and ecosystem. Unsustainable encroachments on the natural environments and over exploitation through resource extraction and waste addition led to the environmental degradation and destruction.

Before the 1970s, western countries had not paid a lot of attention to the biophysical environment. They were restricted to rural sociology with a two pronged interest in – communities dependent on nature for their livelihood and in parkland as wilderness areas. With the rise of concern about the environment in 1960s and 1970s, these turned out to be environmentally turbulent decades – socially, politically and economically that led the intellectuals to rethink their standpoint about the environment.

Riley Dunlap and William Catton (1978) claim that sociology largely ignored the natural environment. Their belief stands on the assumption that all social sciences are based on the separation of the natural world. Dunlop and Cotton called this “Human



exemptionalism Paradigm” and with this theory they laid the foundations for the formulation of the Environmental sociology. Other key contributors to this field have made a distinction between – Sociology of environmental issues, Environmental Sociology. Sociology of environmental issue is, tactics and strategies employed by environment groups etc. Environmental Sociology emphasis on the study of environment – society interaction. The underlying relationship between modern industrial societies and the physical environments they inhabit.

Love Canal tragedy of America was identified as the ‘federal health emergency’ by the US President Jimmy Carter. Congress passed the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) 1978 in response to such environmental hazards also known as Superfund Act. The rise of the green movements can be traced back to a famous report first published in the early 1970s. ‘The Limits to Growth’ published by the club of Rome. The green philosophers suggest that economic development should be severely curtailed in order to protect the environment. Anthony Giddens also supported this idea. By the 1980s empirical research in the fields of environment flourished due to the establishment of Global Environmental Change Program. In Netherland, environment sociology focused on agriculture and risk assessment as 26% of its land area falls below sea level.

In Japan, environment research started in 1950s after the identification of Minimata disease as a man-made environmental casualty. But, Environmental Sociology as a discipline emerged in the early 1990s in the East and in 1992. Japanese Association for Environmental Sociology was established. Whereas research and teaching of environmental sociology began in the early 1990s in Korea and Korean Association for Environmental Sociology was set-up in 2000.

#### CONCEPTUALISATION OF SOCIETY – ENVIRONMENT RELATIONSHIP

Intelligence and creativity have led man to discover, to invent, to manipulate, to exploit, to construct and to destroy things around him. Civilization and rapid growth of human population have engaged man in various constructive and destructive activities with nature. So, it becomes necessary to understand the nature of relationship between biophysical environment and the society undergoing a continuous change due to imperatives of development.

#### Human Ecology Model

Robert Ezra Park’s major sociological contribution was human ecology which related Darwin’s ‘web of life; in natural ecology and other naturalists to the human social system. He gave human ecology model in 1920s by deriving his understanding of the interrelation and interdependence between plants and animals in nature and related to interrelations and interdependence between individuals and communities in human societies. He explained ‘web of life’ establishing a ‘biotic balance’ or ecological balance in natural system.

An important principle of ‘web of life’ denotes competition and struggle for survival which disrupts the equilibrium established in nature or society. The disruption can be overcome by finding their place in the physical and social environment and by division of labor among different species in the ecosystem. Disequilibrium in the human society is due to famine, disease, war, excessive urban development and industrial pollution. These factors break the chain of web of life in the social environment.

Park identified similarities and difference between human ecology and biophysical ecology. According to him, human society is organized at two levels –biotic and cultural whereas natural environment is organized at biotic and abiotic levels.

#### Society – Environment Interactions

Society–environment interactions are best explained by W. Cotton and R. Dunlop’s model of three competing functions of the environment.

*First* the environment provides us with the resources that are necessary for life, ranging from air and water to food to materials needed for shelter, transportation and the vast range of economic goods we produce. Human ecologists thus view the environment as providing the sustenance base for human societies and we can also think of it as a supply depot. Some resources such as forest are potentially renewable while other like fossil fuels is non-renewable or finite. When we use resources faster than the environment can supply them even if they are potentially renewable, we create resource shortage or scarcities.

*Second*, environment provides us living space. But overuse of this function results in overcrowding and congestion. It also affect the ability of the environment to sustain other species.

*Third*, the environment functions as a sink or waste repository. While consuming various resources humans produce vast quantities of waste products.

ENVIRONMENTAL SOCIOLOGY : NATURE AND SCOPE / 3

Then the environment must serve as a sink or waste repository either by absorbing or recycling them into useful or at least harmless substances. Modern societies generate more waste than the environment can process and the result is the various forms of pollution that are prevalent worldwide.

When humans overuse an environment's ability to fulfill these three functions environmental problems in the form of pollution, resource scarcities and overcrowding or overpopulation are the result.

**Society-Environment**

Dialectic Rise in environmental problems made the need to examine the structural relationship between societal organization and physical environment. A study by Allan Schnaiberg, *Social syntheses of the Societal-Environmental Dialectic: The Role of Distributional Impact* to address the issue led to an understanding of dialectical relationship between the society and the environment due to the modern industrial society's excessive extractive demands from the natural surroundings, and the consequent environmental degradation which followed. It focuses on following points:

- (a) Economic expansion of societies necessarily requires increased environmental extraction;
- (b) Increased levels of environmental extraction lead to ecological problems
- (c) These ecological problems pose potential restrictions on further economic expansion.

Schnaiberg also identifies a dialectic tension between the demands for increasing economic expansion and environmental protection during the process of policy formulation in advanced industrial societies. Here, the state plays dual role – a promoter of economic development and environmental regulator.

**THE ENVIRONMENTAL PREDICAMENT**

Due to the adverse effect of modern industrial society on the environment, there is an urgent need to pay close attention to the potential challenges to sustainability. Awareness about the environmental problems and the extent to which the well-being of societies are being impacted by them needs to be examined. Some potential threats to sustainability are:

**Global Warming**

Global Warming occurs when carbon dioxide (CO<sub>2</sub>) and other air pollutants collect in the atmosphere and absorb sunlight and solar radiation that have bounced off the earth's surface. Normally this radiation would escape into space, but these pollutants which can last for years to centuries in the atmosphere,

trap the heat and cause the planet to get hotter. The heat-trapping pollutants – specifically carbon dioxide, methane, nitrous oxide, Chlorofluorocarbons (CFCs), ozone, soot or black carbon released by various human activities are known as green house gases and their impact is known as the greenhouse effect.

Some of the effect of Global warming are: broiling hot summers, drought alerts, melting glaciers, rising sea levels, changes in rainfall patterns and weather conditions, increasing hurricanes, forest fires, heavy precipitation, etc.

**Ozone Depletion**

The ozone layer is found in the upper atmosphere. It has the potential to absorb around 97-99% of the harmful ultraviolet radiations coming from the sun that can damage life on earth. If the ozone layer was absent, millions of people would develop skin cancer, cataracts in the eyes, damage to the immune system and disruption in the ecosystem.

Some compound release chlorine and bromine on exposure to high ultraviolet light, which then contributes to the ozone layer deletion. Such compounds are known as Ozone Depleting Substances. Chlorofluorocarbons (CFCs) generated through refrigerant, fire suppression systems in aircraft and aerosols and other pollutants escape into the atmosphere and affect ozone layer. Scientists have discovered a hole in the ozone layer over the Antarctica in 1985. The area of depletion of ozone layer might spread to heavily populated areas which can cause harmful consequences.

**Smog is a consequence of air pollution**

The term smog was used in the 1905 by H.A.Des Voeux to describe a mix of smoke and fog over many British towns. It was popularized in 1911 by Des Voeux's report to the Manchester Conference of the Smoke Abatement League of Great Britain on the more than 1000 smoke fog deaths that occurred in Glasgow and Edinburgh during the autumn of 1909. There are two kinds of smog:

**1. Photochemical:** Smog or the brown smog is found in all the cities of the world as a brown haze. The brown clouds contain ozone and other hazardous pollutants. Ground level ozone is formed when sunlight comes in contact with the polluted air on the earth's surface. Nitrogen oxide compounds released due to fossil fuel combustion, cars and factories discharge react with volatile organic compounds in the presence of sunlight and form photochemical smog the brown haze. Ozone found in the upper atmosphere is important in preserving life forms on

the earth but presence on the earth can irritate lung tissue, exacerbate asthma and reduce lung function even damage leaf tissue of plants. It also reduces crop yields and damage forests.

**2. White Smog:** White smog contains fine particular in the air. These are microscopic and deeply penetrate the lung tissue. Half of these particulates are comprised of dust released due to poor fuel combustion in vehicles and factories and are tiny pieces and droplet of sulfates, nitrates ammonium compounds and volatile organic compounds also known as secondary particulates. These particulates deeply penetrate the lung tissue and causes decrease lung capacity, asthma and increased heart attack rates.

Acid Rain is rain possessing a pH of about 5.2 or below mainly produced from the emission of sulfur dioxide (SO<sub>2</sub>) and nitrogen oxides NO<sub>x</sub> from human activities, mostly the combustion of fossil fuels. Acid rain damages plant tissues, depletes soil of important plant nutrients leading to decrease in crop production, acidification of water bodies, decrease in the population of fish, frogs, marine life and wildlife in the forest. Acid rain contributes to the corrosion of surface exposed to air pollution and is responsible for the deterioration of limestone and marble buildings and monuments.

#### **Other Ecosystem Disruptions**

Due to increased activities such as expansion in agriculture and industry in the name of development posed threat to land and water resources.

**(a) Soil erosion:** Soil erosion is a process in which soil particles are loosened or washed away in valleys, oceans, rivers or faraway lands. Soil erosion takes place through the action of wind or water. Soil erosion exceeds replacement rates through ecological processes. Soil erosion decreases agricultural production, degrades the quality of water as the fertilizers washes off from fields into water bodies and groundwater.

**(b) Salinisation and Water-logging:** Due to increasing demand of food in the world agriculture activities expanded. All agriculture activities require irrigation. The practice of irrigation results in consumptive uses of water through evapotranspiration, leaving behind salts, concentrated in a smaller volume of water. In irrigated agricultural land, water logging is often accompanied by soil salinity as waterlogged soil prevents leaching of the salts imported by the irrigation water. Many regions of the world such as Egypt and China suffer from excessive salinisation.

So, over irrigation can lead to creation of swamps and salinisation.

**(c) Water Shortage:** Today several parts of the world do not have sufficient water resources to fulfill their agricultural or industrial needs, not even for their population's residential everyday needs. Falling water tables result from rapidly depleting groundwater resources. Ground water is extracted for everyday uses in urban areas and for agricultural purposes in rural areas far exceeds the rate of replenishment. Due to over extraction of ground water it led to the depletion of water tables to the bottom of the aquifer and degraded the quality due to increase in salinisation.

**(d) Water Pollution:** Water pollution refers to the release of harmful substances in the groundwater, lakes, streams, rivers, oceans to the extent that these substances interfere with the natural functioning of the ecosystems. Pollutants could be from various sources such as domestic sewage, toxic waste from industries or hospitals, oil spills, etc. Water pollution lead to shortage of usable water.

**(e) Loss of Species or Biodiversity Loss:** Charles Darwin in this theory of natural selection explained that species have always come and gone, whether of plants, animals, insects or others. But the rate of this loss has increased after the Industrial revolution. Some of the species of plants and animals disappeared due to habitat loss, pollution or even no defense against animals, plants and diseases brought about by human activities unintentionally.

**(f) Deforestation:** Deforestation refers to cutting down of trees on a large scale due to human activities such as agriculture, urbanization or mining. According to a study, about 30 million hectares of forests during 2000 and 2005 have been lost with their richness of species and habitat. So, natural ecosystems, biodiversity and the climate have been negatively affected by deforestation.

#### **THE SOCIETAL RESPONSE: THE WAY FORWARD**

Overusing the ecosystems and altering their environment have created ecological disruptions which later become ecological problems. There are two ways in which environmental problems have been conceptualized – at the level of ideas and at the level of practice.

Environmentalists at the level of ideas, have been thinking through ideas to explain the problematic condition of the environment theoretically through – conservationism, preservationism, the New Ecological