

## 1. Details of Module and its Structure

Module Details	
Subject Name	Economics
Course Name	Economics 01 (Class XI, Semester - 1)
Module Name/Title	Environment and Sustainable Development
Module Id	keec_10901
Pre-requisites	Knowledge about environment, climate, development, growth and sustainable development.
Objectives	After going through this lesson, the learners will be able to understand the following: <ol style="list-style-type: none"><li>1. Concept of environment.</li><li>2. Relation between environment and development.</li><li>3. Major environmental issues in India.</li><li>4. Global warming and ozone depletion</li><li>5. Measures taken to deal with environmental issues in India.</li></ol>
Keywords	Environment, Development, Resources, Bio-diversity, Global Warming, Degradation, Ozone Layer.

## 2. Development Team

Role	Name	Affiliation
National MOOC Coordinator (NMC)	Prof. Amarendra P. Behera	CIET, NCERT, New Delhi
Program Coordinator	Dr. Mohd. Mamur Ali	CIET, NCERT, New Delhi
Course Coordinator (CC) / PI	Prof. Neeraja Rashmi	DESS, NCERT, New Delhi
Subject Matter Expert (SME)	Prof. Neeraja Rashmi	DESS, NCERT, New Delhi
	Ms Nidhi Gupta	Lecturer of Economics in ICAI, Delhi
Review Team	Dr. Bharat Bhushan	Shyam Lal College, University of Delhi

---

## Table of Contents :

1. Concept of Environment.
2. Environment and Development.
3. Major Environmental Issues.
4. Global Warming.
5. The State of India's Environment.
6. Environment Protection Programmes.
7. Sustainable Development and SDGs

### 1. Introduction

Environment is closely linked to economic development. Development has led to degradation of environment and depletion of resources on a large scale. Many of natural resources that are non-renewable are on the verge of near extinction. This is likely to put the future generations at stake, as they will be left with little resources to meet their needs. Hence, study of environment is necessary to understand as to how we can maintain a balance between environment and the needs of our society.



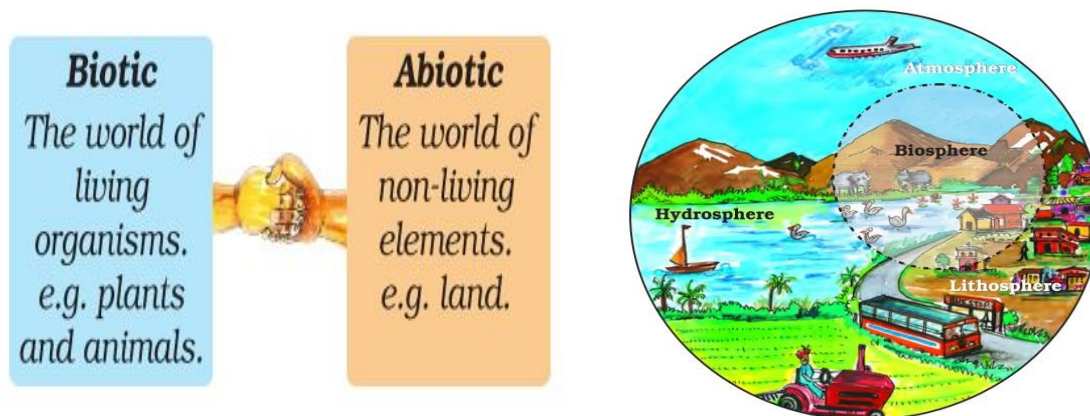
<https://pixabay.com/en/environmental-protection-environment-683437/>

<http://www.incirlik.af.mil/News/Article-Display/Article/301150/earth-day-a-reminder-to-protect-environment/>

### 2. Environment and Development

Let us first understand the concept of Environment. Environment is defined as the sum total of water, air and land and inter-relationship that exist among them and with human beings, other living organisms and materials (Environment Protection Act 1986). It includes all the biotic and abiotic factors that influence each other. All living elements like birds, animals and plants, forests, fisheries etc. are biotic elements. Abiotic elements include air, water, land etc. Rocks and sunlight are abiotic elements of the environment. Environment consists of the

inter-relationship between these biotic and abiotic components of the environment. Study of environment calls for a study of the inter relationship between biotic and abiotic components of environment.



*NCERT Geography Class VII, Chapter 1 'Our Environment'*

Society benefits from certain vital functions performed by environment. Environment supplies resources, both renewable and non-renewable. Renewable resources are those which can be temporarily used or exhausted but replenished over a period of time, i.e., forests, rivers, groundwater etc. Non-renewable resources, on the other hand, are those which get exhausted permanently, with extraction and use, i.e., fossil fuel. Environment sustains life and provides several eco-system services to us such as clean air, water, genetic and biodiversity etc. These are not valued in economic sense but are important for our existence.

Even those resources that can be replenished cannot be extracted arbitrarily. Environment has a limited carrying capacity in terms of use and extraction of such resources. If the depletion of such resources takes place at a rate faster than the rate of their regeneration, environment will fail to provide the benefit of sustaining life. Unfortunately, this is the situation developing throughout the world today. The rise in population and indiscriminate extraction of resources for affluent consumption has placed huge stress on the environment. On the one hand, it has led to adverse impact on the supply of resources and, on the other, it has led to accumulation of waste. Not only have many resources and species of animals become extinct, the quantum of wastes generated is also beyond the absorptive capacity of the environment. Absorptive capacity is the capacity of the environment to absorb degradation. Moreover, industrial waste pollution has dried up rivers and other water bodies. Intensive extraction of renewable and non-renewable resources has exhausted some of these vital resources and we are compelled to spend huge amount of money in searching for new technologies for exploring new resources.

---

Forests are an integral part of natural eco-system and play an important role in protecting environment. Conservation of forests preserve ecological diversity and our life support-systems, i.e., water, air and soil. They also preserve the genetic diversity of plants and animals for better growth of species and breeding. They protect soil from erosion, enrich the soil, attract rains, maintain the climate and influence flows of surface and groundwater. it preserves ecological and environmental balance and maintain biodiversity. They also provide livelihood to people and forest dwellers being nature worshippers are culturally attached to the forests.

### 3. Major Environmental Issues

Major environmental problems can be categorised as follows:

- **Water Pollution:** Water pollution is the most serious environmental problem in developing countries. Pollution of water leads to waterborne diseases. Industrial waste is the most prominent source of water pollution. The aquatic life is also endangered. Not only surface water, but ground water is also contaminated.



<https://en.m.wikipedia.org/wiki/File:IndiaPollution.jpg>



<https://www.flickr.com/photos/mckaysavage/3059530914>

- **Air Pollution:** Air pollution resulting from energy use, emissions from vehicles and industrial production is another major environmental problem. Air pollution affects public health and leads to serious respiratory disorders and other serious diseases.





<https://www.flickr.com/photos/jepoirrier/5543835085>



[https://en.wikipedia.org/wiki/Air\\_pollution](https://en.wikipedia.org/wiki/Air_pollution)

- **Solid Waste Generation:** Generation of solid waste is become alarming in bigger cities and towns. The collection mechanism of solid waste is unsatisfactory. There is also a problem of safe disposal of these wastes. In addition to spreading diseases, solid and hazardous waste pollutes ground water resources.



[https://commons.wikimedia.org/wiki/File:Sustainable\\_sanitation\\_\(9042955446\).jpg](https://commons.wikimedia.org/wiki/File:Sustainable_sanitation_(9042955446).jpg)



[https://commons.wikimedia.org/wiki/File:Santragachi\\_Lake\\_-\\_Howrah\\_2012-01-26\\_1594.JPG](https://commons.wikimedia.org/wiki/File:Santragachi_Lake_-_Howrah_2012-01-26_1594.JPG)

- **Soil degradation:** Soil Degradation is another major problem which is a result of human activities such as agriculture and deforestation. One of the forms of soil degradation is soil erosion. It has led to denuding the top layer of agricultural land, siltation in rivers and dams, and damaging of fisheries. Salination and water logging are other serious forms of soil degradation.
- **Loss of Forest Cover:** Large scale development projects have also contributed significantly to the loss of forests. Since ----, over -----sq. kms of forests have been cleared for large development projects including river valley projects. Mining is

---

another important factor behind deforestation. Industrial development also has done considerable damage to forests. The industrial pollution of sulphuric oxides and nitric emission are a source of great risk for forest. In India, presently, only 21.54 percent of country's land surface is under forest cover as a result of large scale deforestation.



<https://www.flickr.com/photos/crustmania/233523196>



<https://www.flickr.com/photos/crustmania/233523196>

- **Loss of Bio-diversity:** Loss of forests and occupation of land for agriculture and industries has resulted in loss of species and bio-diversity. It has contributed to environmental problems to a great extent. Biodiversity is a composite of flora and fauna and species and eco-systems. Bio diversity is important is because variety of plants, trees, herbs, and species provide us with food, fibre, medicine and input for industries. Loss of biodiversity has resulted into disappearance of many species and ecosystems. In India, approximately 103 species of mammals and birds have been listed to be endangered under the Wildlife (Protection) Act, 1972 and five such species are known to have extinct in recent past.
- **Climate Change:** Indiscriminate industrialisation, urbanisation and environmental pollution have caused growth of greenhouse gas emissions. This has led to increase in surface temperature of earth during the last two centuries and large-scale unwelcome changes in weather and climate pattern. The atmosphere is composed of certain gases and aerosols (very small particles). Greenhouse gases (GHGs) such as water vapour, carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), Ozone (O<sub>3</sub>) and nitrous oxide (N<sub>2</sub>O) are naturally present in the atmosphere. But, these gases have seen a tremendous jump in their atmospheric concentration because of human activities, primarily the large scale burning of fossil fuel for meeting our energy and

transport needs. The gases released from human activities have greatly amplified the natural greenhouse effect. GHGs trap temperature of sunrays and cause warming of earth's surface leading to unpredictable climate change and adverse impacts in form of floods, disasters, droughts, storms, crop losses etc. It is felt that the capacity of earth's eco-systems to adopt to global warming beyond warming of 2<sup>0</sup>C is not sustainable. International negotiations on climate change are trying to work out strategies to limit global warming to 2<sup>0</sup>C.



<https://www.maxpixel.net/Polar-Bear-Bear-Predator-Water-Climate-Change-2750604>  
[https://commons.wikimedia.org/wiki/File:Climate\\_Change.png](https://commons.wikimedia.org/wiki/File:Climate_Change.png)

#### 4. Global Warming

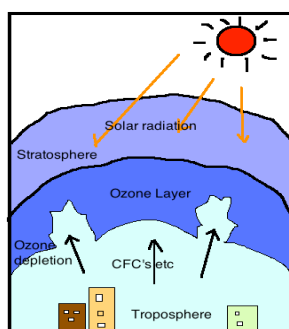
Global warming is a gradual increase in the average temperature of the earth's lower atmosphere, as a result of the increase in greenhouse gases. It is caused by increase in carbon dioxide and other greenhouse gases through the burning of fossil fuels and deforestation. The atmospheric concentrations of carbon dioxide and CH<sub>4</sub> have increased by 31 percent and 149 percent respectively above pre-industrial levels since 1750. During the past century, the atmospheric temperature has risen by 1.10F (0.60C) and sea level has risen several inches. As a result of global warming, melting of polar ice with a rise in sea level and coastal flooding; disruption of drinking water supplies dependent on snow melts; extinction of species as ecological species, frequent tropical storms and incidence of diseases are growing environmental concerns. The major factors leading to global warming are burning of coal and petroleum products, deforestation (leading to increase in the amount of carbon dioxide

in the atmosphere); methane gas released in animal waste, deforestation and use of fossil fuels.



<https://pixabay.com/en/climate-change-global-warming-2063240/>

- **Ozone Depletion:** Ozone depletion results from atmospheric concentration of chlorine-based gases that are largely used by the air conditioning and foam industry. The chemicals used in cooling are useful for industrial production, but they do not dissolve in rain and cause substantive damage to ozone layer in atmosphere that protects us from ultra violet rays of sun. Thus, indiscriminate use of such chemicals like CFC and HCFCs by industries are a threat to life support system on earth. Hence, these gases are being phased out from use.



[https://commons.wikimedia.org/wiki/File:Ozone\\_depletion.png](https://commons.wikimedia.org/wiki/File:Ozone_depletion.png)

## 5. The State of India's Environment

India is rich in terms natural resources. The soil is very fertile and there are hundreds of rivers and tributaries, lush green forests, plenty of mineral deposits beneath the land surface, next stretch of India Ocean, ranges of mountains etc. Black soil of the Deccan Plateau is particularly suitable for cultivation of cotton, leading to setting up of textile industries in this region. The Indo-Gangetic Plains- spread from the Arabian Sea to the Bay of Bengal- are one of the most fertile, intensively cultivated and densely populated regions in the world. India's



---

forests, though unevenly distributed, provide green cover for a majority of its population and natural cover for its wildlife.

Large deposits of iron-ore, coal and natural gas are found in the country. India alone accounts for nearly 20 percent of the world's total iron-ore reserves. Bauxite, copper, chromate, diamonds, gold, lead, lignite, manganese, zinc, uranium, etc. are also available in different parts of the country.

These natural resources are being used in our country in course of development and economic growth. This is unavoidable. But, indiscriminate developmental activities have often resulted in pressure on its finite natural resources, besides creating impacts on human health and well-being. In India, the environmental problems are caused by unregulated use of resources by deprived sections of society on the one hand and overuse by the affluent and rapidly growing industrial sector on the other. Air pollution, water contamination, soil erosion, deforestation and wildlife extinction are some of the most pressing environmental concerns of India. Land in India suffers from varying degrees and types of degradation stemming mainly from unstable use and inappropriate management practices. The priority issues for our consideration are (i) land degradation (ii) biodiversity loss (iii) air pollution with special reference to vehicular pollution in urban cities (iv) management of fresh water, and (v) solid waste management.

## **6. Environment Protection Programmes**

With a view to protect environment and keep a check on adverse impact of developmental activities on environment, the Government of India passed the Constitution (42nd Amendment) Act of 1976. This amendment inserted Article 48 A into the Directive Principles of State Policy which states "The state shall endeavour to protect and improve the environment." The Ministry of Environment and Forests (MoEF) was set up in 1985, to deal with environmental issues and concerns. The broad objectives of Ministry are (i) conservation and survey of flora, fauna, forests and wildlife. (ii) prevention and control of pollution; and (iii) protection of the environment and (iv) ensuring animal welfare. A comprehensive National Environment Policy was also announced in May 2006.

The Environmental (Protection) Act, 1986 was enacted for protection and improvement in the quality of environment and preventing, controlling and abating environmental pollution. It empowered the Central Government to take all the essential measures for protecting and improving the quality of the environment and preventing and controlling environment pollution. It empowered the government to make legislation for the entire country. The

---

government subsequently framed many laws for pollution control, waste disposal and management and ecological protection.

Government set-up the Central Pollution Control Board (CPCB) in 1974 to enforce pollution control measures by industries, local bodies, state and central governments. The board has legal powers to initiate legal action against all those who violate the law and indulge in pollution of air, water and land pollution.



[https://en.wikipedia.org/wiki/Central\\_Pollution\\_Control\\_Board](https://en.wikipedia.org/wiki/Central_Pollution_Control_Board)

Government has also made rules for management of hazardous waste, under which local bodies have been empowered to evolve measures for segregation of waste, collection and its disposal.

In course of development process, it has been realised that environmental impact assessment is essential for allowing activities and projects related to mining, exploration, power generation, manufacturing, construction etc. The Government has therefore made environmental clearance from the Central or state government mandatory for all developmental projects above a certain threshold.

Conservation and sustainability of bio-diversity is also the focus of the government. For checking wildlife related crimes and protecting wildlife, Wildlife Protection Act was passed in 1972 and Project Tiger was launched in 1973. For conservation and protection of forests as well as promoting afforestation, Joint Forest Management (JFM) and National afforestation programmes were initiated by the government. JFM is based on people's involvement in forest conservation and management. The objectives are to involve people in forest management and pay attention to the regeneration of forests and degraded lands like parks, sanctuaries etc.

The Disaster Management Act, 2005 was passed for implementation and monitoring of disaster management programmes.

With a view to redress the grievances of people affected by adverse impact on environment and to protect their interests, the government has set up the National Green Tribunal (NGT)

---

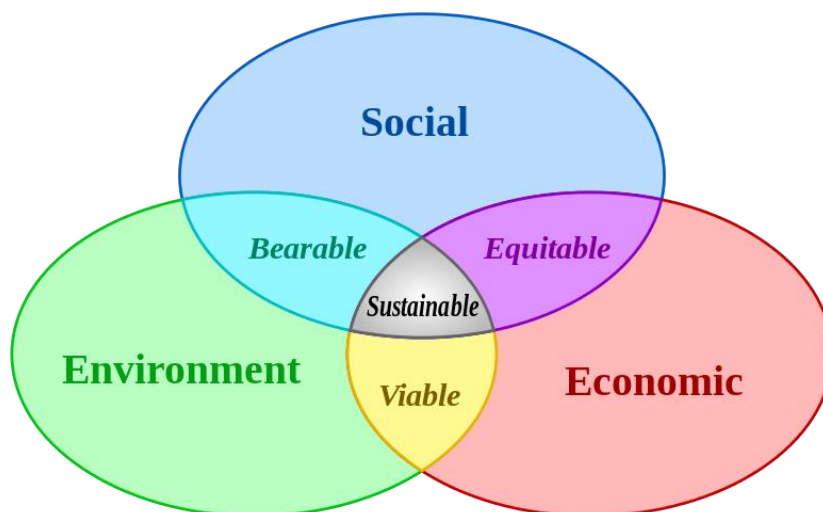
in 2010 under the NGT Act, 2010, The Tribunal has the powers to take actions for environmental protection and conservation of forests and other natural resources.

## 7. Sustainable Development

Sustainable development can be achieved only if the environment is conserved and improved. It is needed that the stock of resources, physical as well as natural, does not get depleted. According to World Development Report, 1992, quality of environment is integral to the welfare of people, which the development attempts to bring. If the benefits from rising incomes are offset by the costs imposed on health and quality of life due to pollution, this cannot be called development. Second, environmental damage can undermine future productivity. Soils that are degraded, aquifers that are depleted, and ecosystems that are destroyed in the name of rising income today can jeopardise the prospects of earning income tomorrow.” Therefore, environmental protection should be the focus of any developmental programme.

### Sustainable Development and Sustainable Development Goals (SDGs)

#### 1. Sustainable Development



[https://commons.wikimedia.org/wiki/File:Sustainable\\_development.svg](https://commons.wikimedia.org/wiki/File:Sustainable_development.svg)

#### 2. Sustainable Development Goals (SDGs)

The Sustainable Development Goals are a set of 17 goals set by United Nations in 2015 under the title, “Transforming Our world: The 2030 Agenda for Sustainable Development.” The SDGs cover social and economic development issues including poverty, hunger, health, education, global warming, gender equality, water, sanitation, energy, urbanisation, environment and social justice. These goals are set for progressing on the path of

development, which is sustainable. These goals include availability and sustainable management of clean water and sanitation for all. Ensuring sustainable consumption and production patterns have also been emphasised by using eco-friendly production methods and reducing waste. Recycling should be emphasised. Actions for combating climate change and its impact by regulating emissions and promoting use of renewable energy have also been focussed under these goals. There is also a need to use ocean, seas and marine resources for sustainable development. Oceans cover 71 percent of earth's surface. Rainwater, drinking water and climate all are regulated by oceans. SDGs also stress on preservation and sustainable management of forests, deserts and mountain ecosystems. There is a need to restore degraded forests and land lost to drought and flood and protect the endangered wildlife.

### Sustainable Development Goals



### Conclusion

We have seen that if environmental issues are ignored in course of development, there is bound to be environmental destruction. We need to follow the principle of sustainable development. The term sustainable development was first defined in Brundtland Report, 'Our Common Future (1987)' prepared for the United Nations in the following words, "Sustainable development seeks to meet the needs and aspirations of the present without compromising the ability of future generations to meet their own needs". Development can be sustainable only if the stock of natural resources is maintained or increased. They should not be degraded further and a minimum level needs to be maintained. Resources are common heritage for all future generations. Destroying natural resources for short term gains compromises the gains of future generation.



---

## Summary:

- Environment is defined as the sum total of water, air and land and inter-relationship that exist among them and with human beings, other living organisms and materials.
- Development has led to degradation of environment and depletion of resources on a large scale.
- There have been many environmental problems in the recent past. Some of them are – Air pollution, water pollution, soil degradation, loss of forest cover, global warming, ozone layer depletion, climate change, etc.
- Environment has a limited carrying capacity in terms of use and extraction of natural resources. If the depletion of such resources takes place at a rate faster than the rate of their regeneration, environment will fail to provide the benefit of sustaining life.
- Greenhouse Gases trap temperature of sunrays and cause warming of earth's surface leading to unpredictable climate change and adverse impacts in form of floods, disasters, droughts, storms, crop losses etc.
- The Environmental (Protection) Act, 1986 was enacted for protection and improvement in the quality of environment and preventing, controlling and abating environmental pollution.
- Quality of environment is integral to the welfare of people, which the development attempts to bring. If the benefits from rising incomes are offset by the costs imposed on health and quality of life due to pollution, this cannot be called development.
- The Sustainable Development Goals are a set of 17 goals set by United Nations in 2015 under the title, “Transforming Our world: The 2030 Agenda for Sustainable Development.”
- Sustainable Development seeks to meet the needs and aspirations of the present without compromising the ability of future generations to meet their own needs

## References:

1. Economic Survey, GOI, 2017-18, Vol; I &II
2. Puri, V.K.; Indian Economy; 36<sup>th</sup> Edition, Himalaya Publishing House, 2018
3. Indian Economic Development, NCERT, 2018
4. India 2018; Publication Division; GOI.