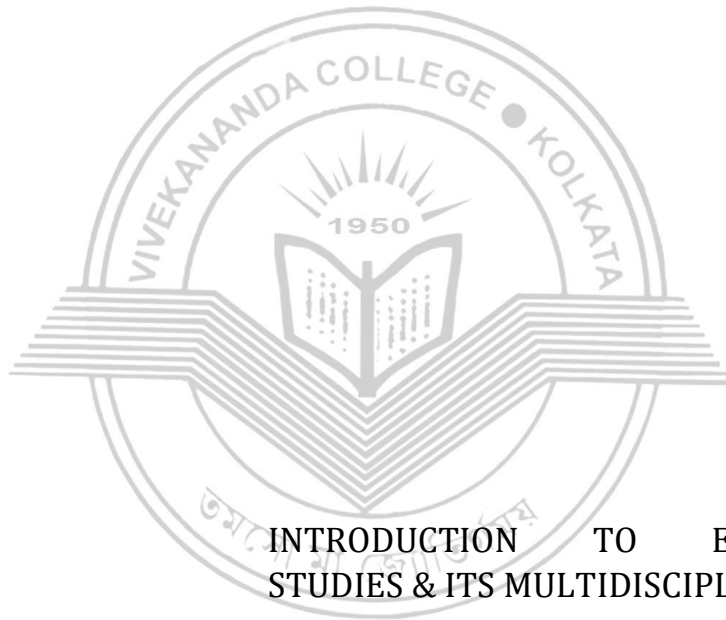


VIVEKANANDA COLLEGE  
THAKURPUKUR  
KOLKATA-700063

NAAC ACCREDITED 'A' GRADE



Topic: INTRODUCTION TO ENVIRONMENTAL  
STUDIES & ITS MULTIDISCIPLINARY NATURE

Course Title: Ability Enhancement Compulsory Course  
[Environmental Studies]

Paper: AECC - 2

Unit: 1

Semester: 2<sup>nd</sup>

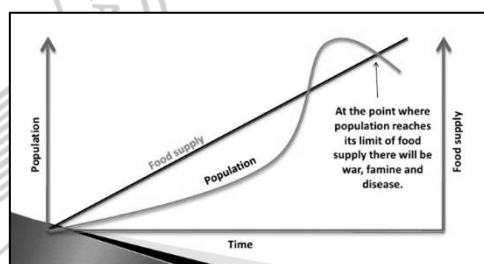
Name of the Teacher: Dr.Rajarshi Mitra

Name of the Department: ENVIRONMENTAL SCIENCE

## INTRODUCTION

Environmental Science or studies is the systematic study of the natural and manmade world. It has emerged as a major discipline in recent years, reflecting our growing concern about the impact of human activities on the natural world. If we look back to the history of the Earth and human civilization, we can easily realize the close relationships among the nature and man. However, since the time nearly 10000 years ago – the time when human being started the cultivation and initiated a proper social life leaving their nomadic habit, the alternation of the nature has started. Consequently, development of hamlets, followed by the business hubs and small towns formed, which later on flourished as large colonies and industrial townships leading to further pressure on the environment and natural resources. Till the pressure was bearable for the Earth, the degradation could not be perceived. But, as the pressure on natural resources and disturbance to the environmental system crossed the limit that the system can bear (known as **Carrying Capacity**), the degradation of the environment was witnessed and the feedbacks felt.

As early as in the 18<sup>th</sup> century Thomas Malthus (1798) perceived the forthcoming threats to the civilization and warned that population growth will always tend to outrun the food supply and that betterment of humankind is impossible without stern limits on reproduction. He also suggested that, otherwise the Nature will take over the control over population by means of famine, wars, epidemics etc. as per the theory the population grows in a rate of geometric progression, while the food supply and other resource availability flows an arithmetic progression growth rate. Although, the Malthusian theory was criticized a lot, but it is considered as the landmark theory to explain the problems of today. The point where the population growth overshoot the food supply capacity of the Earth is known as the overshoot or breakthrough point, and the post overshoot region is called **Malthusian Catastrophe**.



However, the major concern about environment has flared up in the postindustrial era after witnessing a few event of pollution led disasters like death of thousands of people due to suffocation in London air in 1962 (the event is known as London smog disaster) etc. A contemporary book, **The Silent Spring** by Rachel Carson on the effect of pesticide overuse on the Nature and ecosystem also rang the bell. **The Pollution Bomb** a book by Paul Ehrlich in 1969 and an article – **The Tragedy of the Commons** of Garret Hardin published in the journal **Science (1968)** etc. ultimately succeeded to break the silence of World leaders and in 1972 they agreed to take actions for environmental protection in the UN Conference on Human Environment, also known as the Stockholm conference, 1972, where India was also a signatory. This, actually marked the initiation of environmental awareness and education.

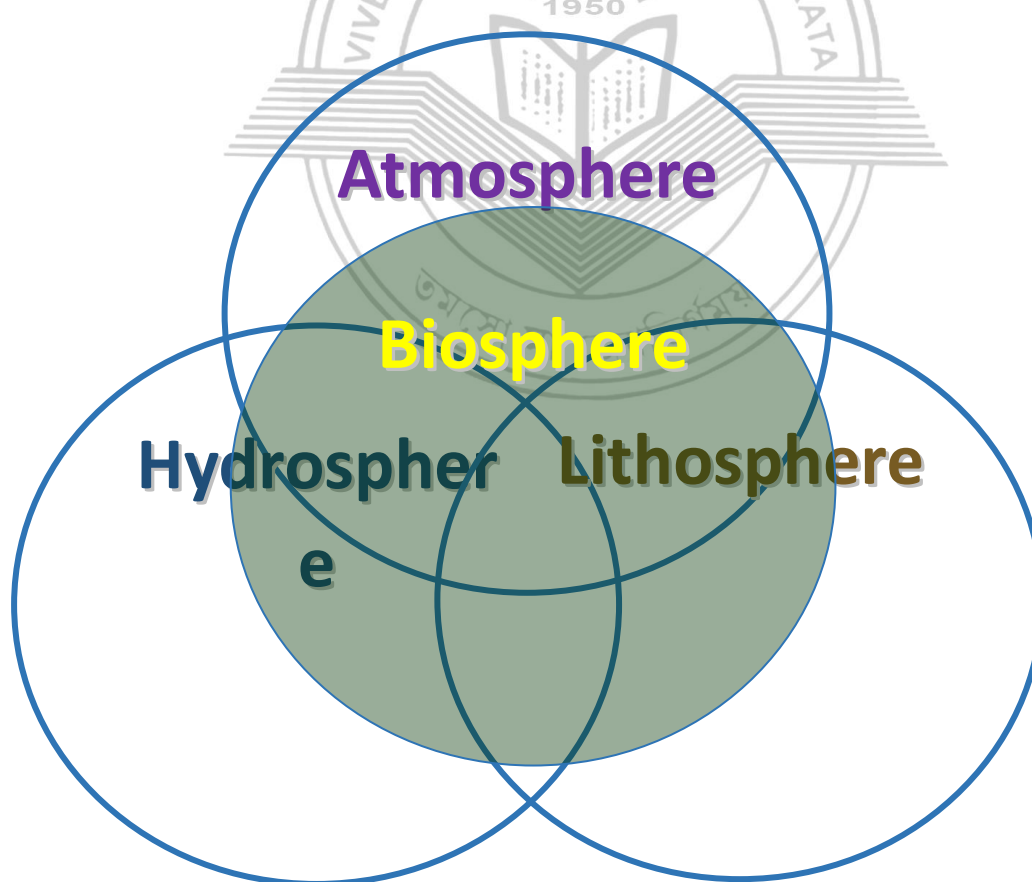
The environment may be conceptualized as being composed of a number of interconnected processes and phenomena. These include the formation of rocks, the climate system, cycling of important elements in the Earth and the interactions between different organisms and their surroundings. Although it is very tough to segregate the physical, chemical and biological entities of the environment as different spheres but, to make it easy to understand the interactions generally, Environment is compartmentalized in three spheres,

**Atmosphere**, that deals with all the aerial or gaseous elements on the Earth and believed to be extended in between the surface of the Earth and nearly 110 kms above it.

**Hydrosphere**, that demarcate the watery parts of the Earth including all the reservoir of water, viz. vapour, snow, icesheets, glaciers, rivers, ponds, groundwater and seas and oceans.

**Lithosphere**, that refers to the solid earth, and most specifically the region where all the earthly interactions take place.

The fourth component **Biosphere** is a sphere which does not have any independent existence, but have maximum interlinkages within all the other three spheres. The Biosphere is composed of all the living organisms from the single celled bacteria to the largest animal or plant on the earth surface, ocean bottom, air or within the interstices of the soil.

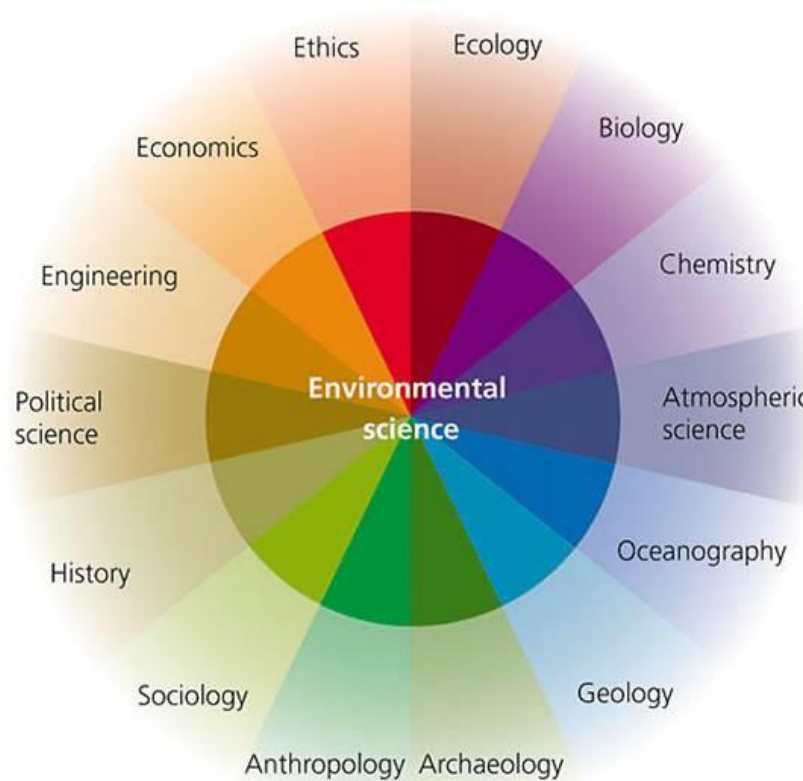


## *Multidisciplinary Nature of Environmental Studies*

As it has already been discussed, the environmental studies include the interactions between different components and processes of the earth-atmosphere system, its study invariably demand the integration of several disciplines of study. While study of the solid earth and its formation, rocks etc. involves **Geology**, the soil quality or structure demands involvements of soil science or **Pedology**. The **Climatology**, **Oceanography** space research includes theories of **Physics** and **Mathematics**, where as to understand the quality of water, air or soil we need have vivid knowledge of **Chemistry**. The study of **Biological sciences** including different branches of **Zoology**, **Botany**, **Toxicology** (study of poison) and **Micro-biology** is essential to study the ecosystem interactions of the environment or in other words the interactions of living world with the non-living aspects.

The disciplines of **Engineering and Technology** and **Management studies** are also essential for research development and management of the environment .

It seems apparently, that Environmental studies needs only knowledge of science, but in reality the study of human nature – **Sociology**, **Economics**, **History** and **Culture** of the society and the **Political and Legal set up** is very essential to understand the response of the society to the environmental processed.



Hence, the environmental studies is considered to be an idea multi-disciplinary subject that is critical for the long life of the civilization, which is formally known as **Sustainable Development**.