



BULE HORA UNIVERSITY
COLLAGE OF SOCIAL SCIENCES AND HUMANITIES
DEPARTMENT OF CIVICS AND ETHICAL STUDIES

Module Title: Environmental Ethics and Sustainable

Development--

for undergraduate summer student

Module Code: _____

Acronyms and abbreviations ---put on separate page

ESCAP **Economic and Social Commission for Asia and the Pacific**

Set Table of Contents?...on separate page

Course Description

This course begins with an introduction that exposes learners to the definitions of key concepts in the study of environment ethics and the reasons behind learning the field. It then goes on to the discussion of theories/perspectives on environment ethics and justice. Next, it raises the agenda of environment as an ethical problem and entertains various debates/discussions from politics, economics, and science/technology and ethics perspectives. It also deals with an overview of international practices of environment ethics ranging from Rio to Mexico discussions. Finally, it tries to analyze environment policies of Ethiopia in light of thoughts in environmental ethics.

Course objectives

After having successfully accomplished this course, learners should be able to;

- Explore the meanings and conceptualizations of key concepts and issues in the study of environment ethics;

- Expose themselves to various discussions, debates and outlooks on the agenda of environment as ethical problem so as to be able to evaluate each;
- Examine various environment policies and practices of their own country or that of others from the perspective of values and principles in environment ethics; and
- Develop a reasonable environmental ethic of their own

CHAPTER ONE:

INTRODUCTION

Nature affects mankind and human pursuits interact with nature in every part of the globe. Nature has not suddenly stepped up its activities, but human populations have increased rapidly and various technologies we use today require ever-increasing inputs, space and resources. Before 1900 no city with population of five million existed. The tremendous impact of human activities has changed the physical environment and has put it out of balance with nature. Understanding our environment and the process that control it is one part of the puzzle. Sustainable solutions should accommodate the present, social, economic and cultural needs without compromising those of the future generations. The problems faced today are directly or indirectly related to our environment and solutions need a sound environmental knowledge. Today the issues of global warming, climate change, pollution control and natural resource conservation

increasingly require the crossing established boundaries among different disciplines- Environment ethics, development, ethics, environment science, environment economy, environment technology. For the sake of more understanding, we will see each concept one by one.

Objectives of the chapter:

After the completion of this chapter, you will able to:

- ✧ Define the term environment and environmentalism;
- ✧ List the components of environment;
- ✧ Understand the concepts of environment ethics, environment justice, environment economics, environment politics, environment science;
- ✧ Know the scope of environment ethics; and
- ✧ Recognize the significance of the study of environment ethics

Definition of Environment¹

Brainstorming: Dear Students! How you define the term environment?

¹ Tsegai Berhane and Merhatbeb Teklemedhn. Environmental Law Teaching Material: Prepared under the Sponsorship of the Justice and Legal System Research Institute,2009.

Different scholars defined the term environment differently. Nevertheless, there is no hard and fast definition of environment, most scholars agreed on the following definitions;

- Etymologically, the word environment is derived from the French word “**Environner**” meaning to “encircle”. Environment denotes the surroundings of an organism eventually the ecosystem where an organism lives. Environment can include the aggregate of natural, social and cultural conditions that influence the life of an individual or community directly or indirectly.
- The Declaration of the 1972 Stockholm Conference on the Human Environment (UNCHE) defined environment as “*both aspects of man’s environment, the natural and man-made, are essential for his well-being and enjoyment of basic human rights*”.
- The **W**orld **C**ommission on **E**nvironment and **D**evelopment (WCED) defined the term *environment as where we live*”.
- The Council of Europe Convention on Civil Liability for Damage Resulting from

Activities Dangerous to the Environment defines it as the following;

“Natural resources both abiotic and biotic, such as air, water, soil, fauna and flora and the Interaction between the same factors; property which forms part of the cultural heritage; and

the characteristic aspects of the landscape”.

1.2 Environmentalism

Basically, environmentalism is a social movement of people coming together in an endeavor to do something to save our environment. The main focus of environmentalists is on different ecosystems and how our interactions affect these ecosystems and ultimately the ecology. The rate of depleting natural

resources and losing vegetation through deforestation is growing at an alarming rate. As environmentalists feel that all degradation of ecology is taking place because of mankind's greed and eagerness to make use of natural resources of the world. People should work to save our environment from the harmful effects of human interactions with ecosystems.²

1.4 Environmental ethics

Brainstorming Questions:

-  *Do you think cutting tree is morally right so as to get fire wood?*
-  *Do you think is it possible to use the environment without damaging it?*
-  *What are the possible remedies to protect the environmental crisis?*
-  *Does the earth exist for the benefit of humanity?*
-  *Do humans have any ethical obligation towards other living species?*

1.4.1 Definition of Environmental Ethics

Numerous philosophers have written on environment ethics throughout history but it is really developed into a specific philosophical discipline since 1970s. Environmental ethics was emerged the result of increased awareness of how the rapidly growing world population was impacting the environment as well as the environmental consequences that come with the growing use of pesticides, technology and industry. Environmental ethics is defined as the follows;

-  Environmental ethics is the philosophical discipline that studies the moral and ethical relationship of human beings and also the value and moral status of the environment and its non-human contents.
-  It is concerned with the issue of responsible personal conduct with respect to natural landscapes, resources, species, and non-human

² Richard T. Wright and Bernard J. Nebel Environmental Science: Toward Sustainable Future, 2002.

organisms. It is cluster of beliefs, values and norms regarding how humans should interact with the environment.

- 👉 Environmental ethics aims to provide ethical justification and moral motivation for the cause of global environmental protection. In other words, it considers the ethical basis of environmental protection.
 - 👉 Environmental ethics is attempts to provide the cause and consequences of global environmental crisis and also attempts to provide how to mitigate this environmental crisis in the future.
 - 👉 Human effects on the environment today have consequences for the future, and therefore, discussions of environmental ethics also involve the rights of future generations.
 - 👉 Environment ethics helps to define man's moral and ethical obligations towards the environment. It emphasizes the ethical relationship between people and the natural world and the kind of decisions people have to make about the environment [including/like/](#):
- ❖ Should we cut down the main forest for the sake of human consumption?
 - ❖ Should we knowingly cause the extinction of other species?
 - ❖ Should humans be forced to live a simpler life style in order to protect and preserve the environment?³

In short, environmental ethics is concerned with the issue of responsible personal conduct with respect to natural landscapes, resources, species and non-human organisms. Man's relationship to nature has changed from harmony to hostility to man's attempt to re-design nature's

³ Mayuri Barman. Importance of Environmental Ethics and its Approaches in our Present Society XVIII Annual International Conference Proceedings, 2017.

formation and order. When man lived in harmony with his environment, everything was regarded as good but when man started manipulating nature, the relationship turned to bad.

The major factors that necessitate environmental ethics are:⁴Major Factors Necessitate for Environmental Ethics

As a discipline environmental ethics developed due to increasing concern for;

(i) New effects on nature: Because our modern technological civilization affects nature severely, we must examine the ethical consequences of these new actions.

(ii) New knowledge about nature: Modern science demonstrates how we have changed and are changing our environment in ways not previously understood, thus raising new ethical issues. For example, until the past decade, few people believed that human activities could be changing the Earth's global environment. Now, however, scientists believe that burning fossil fuels and clearing forests have changed the amount of carbon dioxide in the atmosphere, and this causes changes in our climates, and hence the need for global action. This new perspective raises new moral issues.

(iii) Expanding moral concerns: Some people argue that animals, trees and even rocks have moral and legal rights, and that it is a natural extension of civilization to begin including the environment in ethics. These expanded concerns lead to need for new ethics.

1.4.2 Functions of Environmental Ethics⁵

⁴ Reena Patra (2014). Environmental Sustainability: *International Journal of Humanities Social Sciences and Education (IJHSSE)* Volume 1, Issue 8, August 2014, PP 35-40.

Environmental ethics has played an important role in influencing the growth of ideas and opinions that seek to express genuine beliefs and values that should ideally govern decision-making for the benefit of humans as well as the rest of the living world. In addition, it outlines s our moral obligations in the face of such concerns.

1.4.3 Features of Environmental Ethics⁶

Learning Activity

Write the features of environment ethics on the following space provided.

There are several distinctive features of environmental ethics that deserve our attention. These are given below;

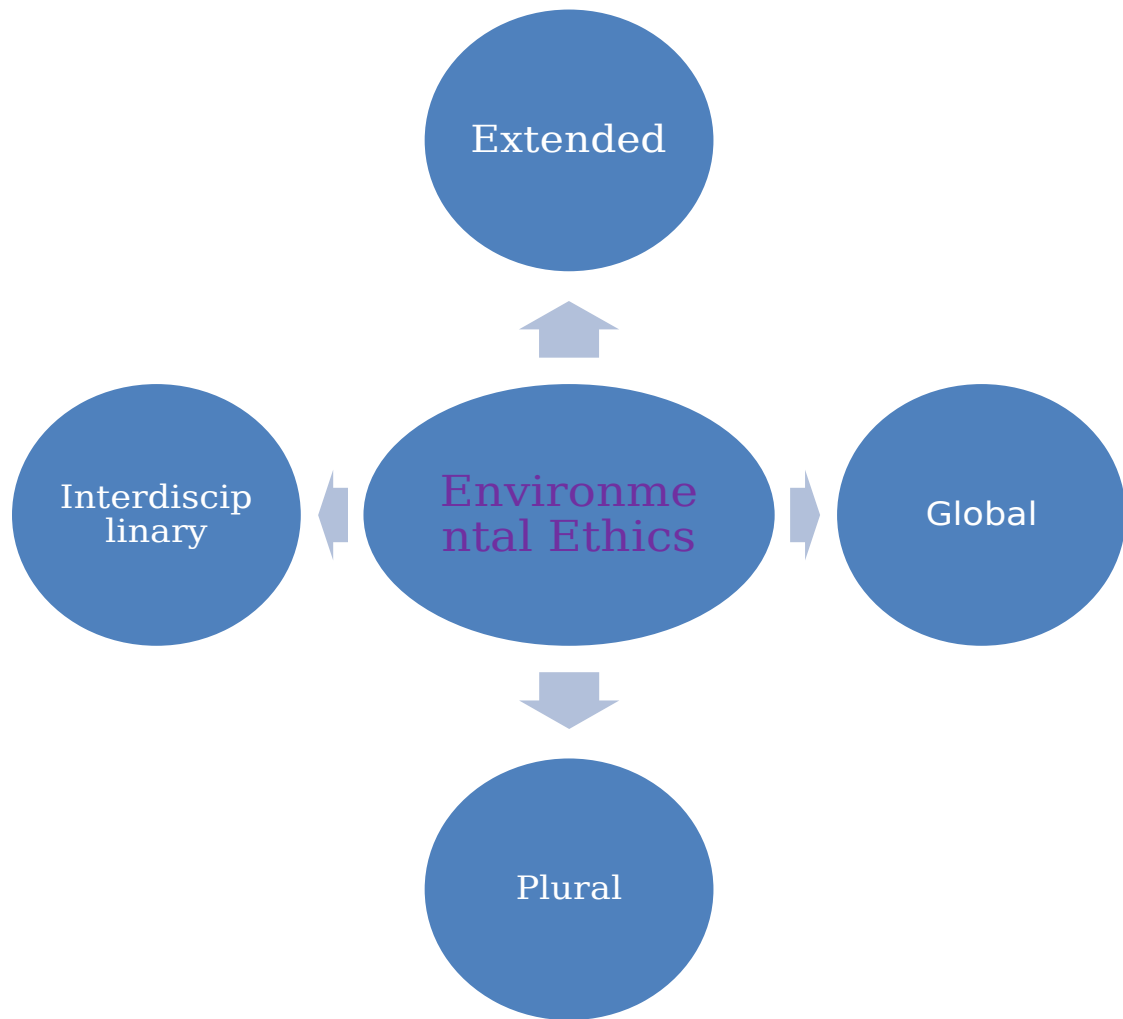
⁵ Mayuri Barman 2017 Importance of Environmental Ethics and its Approaches in Our Present Society, *XVIII Annual International Conference Proceedings; January 2017 ISBN no. 978-81-923211-9-6*

⁶ Environmental Ethics (Internet Encyclopedia of Philosophy - www.iep.utm.edu)

- 📖 ***Environmental ethics is extended:*** Environmental ethics extends the scope of ethical concerns beyond one's community and nation to include not only all people everywhere, but also animals and the whole of nature – the biosphere – both now and beyond the imminent future to include future generations.
- 📖 ***Environmental ethics is interdisciplinary:*** There are many overlapping concerns and areas of consensus among environmental ethics, environmental politics, environmental economics, and environmental sciences. The distinctive perspectives and methodologies of these disciplines provide important inspiration for environmental ethics, and environmental ethics grants value foundations for these disciplines. They reinforce and support each other.
- 📖 ***Environmental ethics is plural:*** From the moment it was born, environmental ethics has been an area in which different ideas and perspectives compete with each other. Anthropocentrism, animal liberation/rights theory, biocentrism and eco-centrism all provide unique and, in some sense, reasonable ethical justification for environmental protection. Their approaches are different, but their goals are by and large the same, and they have reached this consensus i.e it is everyone's duty to protect the environment. The basic ideas of environmental ethics also needs support from and are embodied in various well-established cultural traditions. The pluralism of theories and multicultural perspectives are ~~is~~—critical for environmental ethics to retain its vitality.
- 📖 ***Environmental ethics is global:*** Ecological crisis is a global issue. Environmental pollution does not respect national boundaries. No country can deal with this issue alone. To cope with the global environmental crisis, human beings must reach some value consensus and cooperate with each other at the personal, national, regional, multinational and global levels. Global environmental protection

depends on global governance. An environmental ethic is, therefore, typically a global ethic with a global perspective.

👉 ***Environmental ethics is revolutionary:*** Ideally, environmental ethics challenges the dominant and deep-rooted anthropocentrism ethics and extends the object of our duty to future generations and non-human beings. At the practical level, environmental ethics forcefully critiques the materialism, hedonism and consumerism and capitalism and calls instead for a 'green lifestyle' that is harmonious with nature. It searches for an economic arrangement that is sensitive to earth's limits and to concerns for quality of life. In the political arena, it advocates a more equitable international economic and political order that is based on the principles of democracy, global justice and universal human rights. Environmental ethics calls for a new, deeper moral consciousness.



Source: Own Construction

1.4.4 Principles of Environmental Ethics⁷

Brainstorming Question: What are the basic principles of environmental ethics? List down some of them?

The basic ethical principles need to be seen in light of addressing the global environmental problems are the following:

⁷ Cunningham, Saigo. Environmental Science, 1990

- 📖 **Duty for future generation:** Every economic activity that is being taken in this generation should not adversely affect the future generation. It is a plain fact that, renewable and non-renewable resources are getting depleted due to the irresponsible acts of human beings. It is the duty of human beings to save resources for the future generation. It is the moral compulsion of the existing generation to care for the forth coming generation.
- 📖 **The duty to limit over consumption:** As the earth's resources are finite, there should be a limit in the production and consumption pattern of resources. The consumption style of lives in industrialized countries and developing countries is not comparable. Data indicates that the industrialized societies that constituted $\frac{1}{4}$ of the global population consume $\frac{3}{4}$ of the natural resources of the planet earth.
- 📖 **The right to livable environment:** Every human being has inherent right to live in an environment which is free from pollution, subjugation, exploitation. In this regard, article 25 and 26 of the universal Declaration of Human Rights/UDHRs/ proclaims that;

“Everyone has the right to standard of living adequate for the health and well-being of himself “.

In the similar vein Article 44 of the 1995 FDRE constitution states that;

- All persons have the right to a clean and healthy environment.
 - All persons who have been displaced or whose livelihoods have been adversely affected as a result of State programmes have the right to commensurate monetary or alternative means of compensation, including relocation with adequate State assistance.
- 📖 **The polluter pays principles:** This principle hold that those actors who affects the environment need to pay the cost and value in proportion to the damage. With regard to climate change regimes,

The UN Framework Convention on climate change accepted the principle of common and differentiated responsibilities. It has been recognized that the largest share of historical and current global emissions of green house gases has originated in developed countries. The Framework convention also accepted that the share of global emissions originating in developing countries will grow to meet their social and development needs.

1.5 Development Ethics

Brainstorming Questions: What is the term development ethics? Is there any relationship between development and ethics? Please put your answer on the space provided below?

1.5.1 Definition of Development Ethics⁸

There is no hard and fast definition of development ethics. Different scholars define it differently.

For instance, according to Nigel Dower, former president of International Development Ethics Association (IDEA), defined development ethics as;

“International development ethics is the ethical reflection on the ends and means of local, national and global development”.

Crocker defines development ethics as;

⁸ Nikos Astroulakis. Ethics and International Development: The Development Ethics Paradigm East-West Journal of Economics and Business Vol. xvi , no 1 (99-117), 2017.

“An ethical deliberation on the ends and means of socioeconomic change in poor countries and regions and mainly focuses on the element of poverty and the division between rich and poor countries – North and South – under moral issues”.

Moreover, the French economist Louis Joseph Lebret and his student American Denis Goulet define development “as the basic question of values and the creation of a new civilization”.

Development ethics incorporated different agendas such as social and human rights, poverty reduction, the gap between rich and poor, and planned international intervention by some nations in the development of others.

Focus: The rationale for attention to development ethics is that processes of social, political, economic and environmental development bring both enormous opportunities and threats for humankind, individually and collectively, and that the associated benefits and costs are highly unequally

The Three Goals of Development⁹

Denis Goulet could be considered the father of development ethics. He poses a conceptual frame of an ethical conflict in the process of development and his contribution to the study of development is not only normative but also practical. He offers a comprehensive analysis of development by formulating general principles in almost all relevant aspects of development such as technology for development, ecology and ethics, culture and tradition, the ethic of aid, etc. More precisely, according

⁹ Nikos Astroulakis. Ethics and International Development: The Development Ethics Paradigm East-West Journal of Economics and Business Vol. xvi , no 1 (99-117), 2013.

to Goulet, three ancient ethical questions should be incorporated in the ethical concept of development. These are;

1. What is the good life?
2. What are the foundations of justice in society?
3. What stance should human groups adopt towards nature?

Goulet identifies three development goals, namely;

- a) life *sustenance*,**
- b) *esteem*, and**
- c) *freedom***

Life-sustenance- One of the most important development goals is to prolong men's lives and render those men less stunted by disease, extreme exposure to nature's elements, and defenselessness against enemies. The importance of life sustaining goods e.g. food, shelter, healing or medicine is generally acknowledged by all societies. Because of life-sustenance as a value of universal significance, life-sustaining indices are also used as a measurement of development.

Esteem: All human beings in all societies feel the necessity for respect, dignity, honor and recognition. The discussion involves esteem values and material prosperity, and, particularly, how esteem contends with development in a sense of high rate of well-being, economical and technological advance. The more the material prosperity becomes the centre task of the development of a society the greater is the subordination of esteem to material affluence. The reaction of a society to the aforementioned material approach to development and its need for esteem can lead these societies to opposite directions, either towards development or towards resistance of it. In the first case, society tries to gain esteem via development, while at the latter it try to protect its profound esteem from inward development. Both acts seek to gain esteem. Therefore, esteem is a universal goal whether development is accepted or not.

Freedom- is valued both from developed and non-developed societies as one of the components of the good life. Development ought to free humans from all servitudes. Even though there is a vast philosophical discussion on the term and the claim that freedom is enhanced by development is not self-evident, freedom is widely accepted as something beneficial and desirable. The debate lies again between freedom and material well-being. In a consumer society it can be accepted that the degree of freedom rises by material expansion, and thus constitutes an increase of well-being. On the other hand, in traditional societies, the value system may adopt a completely different confrontation over needs and wants. In any case, the point is that the matter of opinion is freedom. Furthermore, in the discussion over freedom, a significant distinction should be made between freedom **from wants** and freedom **for wants**. The former refers to the situation where human needs are adequately met, while the latter to the case where the gestations of new wants are controlled and individuals possess multiplied wants.

Ethical Strategies of development¹⁰

In development ethics, strategic principles are normative judgments which provide both the notional and practical framework under **within** which development goals should be discussed and policy recommendations over those goals ought to be formulated. Accordingly, the three ethical strategies are:

- Abundance of goods as a prerequisite to people's humaneness,
- Universal solidarity, and
- Populace representation to the matters of public interest and people's control over their destiny.

¹⁰ David A. Crocker and Stephen Schwenke .The relevance of development ethics for USAID. 600 Water Street: Washington, DC, 2005.

Goulet's ethical analysis sets development on two basic concepts that of **“existence**

rationality” and **“vulnerability”**. Both concepts overlap his study on development ethics. It can be perceived as a theoretical ethical umbrella that involves his development ethics to conceptual navigation.

Existence

Existence rationality is defined as the process by which a society devises a conscious strategy for obtaining its goals, given its ability to process information and the constraints weighing upon it. It is considered to be the system of meanings (customs, norms, beliefs, social attributes) within the economic, social and political structure that exists in any society and determines the course of action undertaken to serve societal aims. More specifically, existence rationality refers to how societies evaluate, employ and apply particular strategies in order to assist to universal goals of development, those of life sustenance, esteem and freedom. In general, Goulet accepts the taxonomy of the societies to traditional, transitional and modern. Each of them has built an alternative system of meanings under a historical and social process. Development should not be perceived as an alien body to the existed system of meaning of any societal type. If development is to be addressed, three conditions ought to be followed. These are;

- ⇒ New capacities for handling information must be generated;
- ⇒ Vital recourses hitherto not available must become exploitable; and
- ⇒ The alien rationality implicit in modernization must be re-interpreted in terms of traditional existence rationalities” Goulet calls this progress as expanded existence.

The core value of existence rationality is to be concerned of the provision of those ingredients that ensure what any society defines as the good life. Thus, any change should be integrated in the principle of “existence

rationality” or differently the system of meanings determined by each society.

Vulnerability

The second key attention to Goulet’s study of an ethical founded development is that of Vulnerability. It is mainly analyzed within a debate between developed and developing in terms of growth and industrialization nations. It refers directly to underdeveloped and indirectly to advanced developed conditions. It is better explainable if we can perceive it as an initial state. In developing societies vulnerability implies to the situation of the barriers to meet their development goals. The dualism of the global economic system explains to a large extent the vulnerability of developing nations. Or as economic history has shown that the Industrial Revolution of Western capitalist economies not only accentuated the spread and aggravated the lag, but actually propelled industrial economies, on the one hand, and non-industrialized economies on the into diverse paths . More precisely, industrialization in developed world has in many cases been associated with exploitation of resources, economic involvement and political patron to non-industrialized nations. Intervention from advanced to developing nations at the economic, social and political environment makes developing countries vulnerable to discover and meet their development goals. Further, vulnerability is a matter of power as well an ethical matter. It is a matter of power for the reason that less vulnerable societies has a better advantage of asserting their own development aims because less vulnerable societies can better affect the meaning of the good life based on their historical and societal needs.

1.5.2 Functions of Development Ethics¹¹

¹¹ Des Gasper . Paper for conference on Rethinking Development: Ethics and Social Inclusion, 2011.

Activity:

List down some functions of development ethics

As with most areas of applied ethics, development ethics has diverse functions;

- It helps to identify and make ethical choices about societal development
- It helps to identify and assess the explicit and implicit ethical theories
- Aims to give precise understanding of the key issues surrounding socioeconomic development

Environment Economics¹²

Brainstorming Question: How you define environment ethics? Write your answer on the space provided below?

Definition of Environment Economics

Environmental economics is concerned with the impact of economic activities on the environment, the significance of ecosystem to the economy, and suggests the appropriate ways of regulating economic activity, so that cosmic balance is achieved in the society. It is the subset of economics that is concerned with the efficient allocation of environmental resources. The

¹² Lenka Camrova. The Role of Ethics in Environmental Economics - Why environmental economists often do not speak the same language?

environment provides both a direct value as well as raw material intended for economic activity, thus making the environment and the economy interdependent. For that reason, the way in which the economy is managed has an impact on the environment which, in turn, affects both welfare and the performance of the economy.

Environmental economics describes human actions that directly interfere with the environment, i.e. particularly satisfying needs for which environmental assets are needed for the production or consumption of goods. It solves conflicts between individuals competing for scarce natural resources and it explains the reasons and consequences of human actions under different institutional arrangements.

Environmental economics originated in the 1960s the early years of the so-called environmental movement. The growing popularity of this field of inquiry parallels the increasing awareness of the interconnectedness between the economy and the environment- more specifically, the increasing recognition of the significant roles that nature plays in the economic process as well as in the formation of economic value. Environmental economics is a market-based approach to achieving a sustainable economy that integrates long-term economic growth, environmental quality and social fairness through innovative taxes, tax incentives, auctioned permits and other market-based mechanisms.—

The nature and scope of the issues addressed in environmental economics are quite varied and all-encompassing. Environmental economics address the following issues;

- 📖 The causes of environmental degradation
- 📖 The need to re-establish the disciplinary ties between ecology and economics
- 📖 The difficulties associated with assigning ownership rights to environmental resources

- 📖 The trade-off between environmental degradation and economic goods and services
- 📖 The ineffectiveness of the market, if left alone, in allocating environmental resources
- 📖 Assessing the monetary value of environmental damage
- 📖 Public policy instruments that can be used to slow, halt and reverse the deterioration of environmental resources and/or the overexploitation of renewable and nonrenewable resources
- 📖 The macroeconomic effects of environmental regulations and other resource conservation policies
- 📖 The extent to which technology can be used as a means of ameliorating environmental degradation or resource scarcity, in general – that is, limits to technology
- 📖 Environmental problems that transcend national boundaries, and thus require international cooperation for their resolution
- 📖 The limits to economic growth
- 📖 The extent to which past experience can be used to predict future events that are characterized by considerable economic, technological and ecological uncertainties
- 📖 Ethical and moral imperatives for environmental resource conservation – concern for the welfare of future generations
- 📖 The interrelationships among population, poverty and environmental degradation in the developing countries of the world
- 📖 The necessity and viability of sustainable development.

- Environment Science

Brainstorming Questions: What is the term environmental science to you? What is/are its importance for protection of ecosystem?

Definition of Environment Science¹³

The term environmental science refers to a grouping of scientific disciplines that are all concerned with the physical, chemical and biological characteristics of the surroundings in which organisms live. The precise meaning of environmental science refers to a type of scientific discipline with a broad range of insights from other branches of science are brought together synthesized to inform the understanding and management of contemporary environmental issues. The environmental sciences contain two main sub-groupings. These are the life sciences such as biology and the earth sciences such as geology. Furthermore, the environmental sciences include disciplines that are focused on present-day phenomena such as meteorology as well as on conditions that existed in the past such as [palaeoclimatology](#)[paleoclimatology](#).

Environmental science was developed from the science of ecology. Ecology is the study of;

- **Interaction of organisms to the environment**-These interactions involve energy and matter. Living things require a constant flow of energy and matter to ensure their survival. If the flow of energy and matter ceases, the organism dies.
- **The impact of environment on organisms**- it deals how they use these surroundings, and how an area is altered by the presence and activities of organisms. All organisms are dependent on other organisms in some way. One organism may eat another one and in this way, use it as a source of energy and raw materials. Or an organism may temporarily use another living thing without harming it. Sometimes organisms may provide a service for another, such as

¹³ Cunningham, Saigo. Environmental Science,1990

when animals distribute plant seeds or when bacteria break down dead organic matter that is then reused by other organisms.

Environmental Justice

Learning Activity: *what do you think about environmental justice? What are the principles of environmental justice?*

N.B:- *Dear learner! Please put your answer on the following space provided*

Definition of Environment Justice¹⁴

Environmental justice can be said to embrace equity, equality and democracy. It can be more specifically defined in terms of a healthy environment (substantive environmental justice), an equitable distribution of environmental goods (distributive environmental justice); and fair, participatory and inclusive structures and processes of environmental decision making (procedural environmental justice).

Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Environmental justice is achieved when everyone regardless of race, culture, or income, enjoys the same degree of protection from environmental and health hazards and equal access to the

¹⁴ Ronald Sandler and Phaedra C. Pezzulo (Eds). Environmental Justice and Environmentalism: The Social Justice Challenge to the Environmental Movement. The MIT Press: England, 2007.

decision-making process to have a healthy environment in which to live, learn, and work.

In contrast to this, unjust social frameworks maintain and reinforce environmental injustice, with the result that the privileged permanently enjoy the benefits of the environment while the disadvantaged bear disproportionately the burdens of the environment. Everyone has the right to a live in healthy environment. A right to the environment is one of the basic human rights, and everyone and every state has a duty to protect it. International environmental injustice is especially worrisome today. The developed countries should change their policies of transferring heavily polluted industries to developing countries, stop exporting hazardous waste to developing countries and adjust the high-consumption lifestyle of their population. Consensus on global environmental justice is urgently needed.

Inequality also undermines procedural environmental justice because wealth enables control over environmental decision-making. The richest have the most resources with which to defend their interests and so they are able to subvert local and national environmental democracy through funding anti-environmental movements and election candidates and forming powerful lobbies to shape government policies to protect their economic interest.

Environmental justice movement has benefited thousands of people. It has changed government policies and laws and has helped specific communities protect their home places from the depredations of corporate polluters. For its many successes, for its dedication, and for its effective redress of race and class discrimination, the environmental justice movement is to be celebrated.

-The Principles of Environmental Justice¹⁵

¹⁵ Ronald Sandler and Phaedra C. Pezzulo (Eds). Environmental Justice and Environmentalism: The Social Justice Challenge to the Environmental

- ⇒ Environmental justice affirms ecological unity and the interdependence of all species, and the right to be free from ecological destruction.
- ⇒ It demands that public policy be based on mutual respect and justice for all peoples, free from any form of discrimination.
- ⇒ It mandates the right to ethical, balanced and responsible uses of land and renewable resources in the interest of a sustainable planet for humans and other living things.
- ⇒ It calls for universal protection from nuclear testing, extraction, production and disposal of toxic/hazardous wastes and poisons and nuclear testing that threaten the fundamental right to clean air, land, water, and food.
- ⇒ It affirms the fundamental right to political, economic, cultural and environmental self-determination of all peoples.
- ⇒ Environmental justice demands the cessation of the production of all toxins, hazardous wastes, and radioactive materials, and that all past and current producers be held strictly accountable to the people for detoxification and the containment at the point of production.
- ⇒ Environmental justice demands the right to participate as equal partners at every level of decision making, including needs assessment, planning, implementation, enforcement and evaluation.
- ⇒ It affirms the right of all workers to a safe and healthy work environment without being

Movement. The MIT Press: England, 2007.

forced to choose between an unsafe livelihood and unemployment. It also affirms the

right of those who work at home to be free from environmental hazards.

⇒ Environmental justice protects the right of victims of environmental injustice to receive full compensation and reparations for damages as well as quality health care.

⇒ Transparent decision-making that discloses who the decision makers are, what information was provided to assist in the decision-making process, the rationale for decisions made, and identifies the influence of outside

| **— Environment Technology**

| **Environment Technology is a**

| According to Ken Ruffing, Deputy Director, OECD Environment Directorate, induced technical change could be the answer to a wide range of environmental problems, but technology policy needs to be closely integrated with environmental policies. While the role of government policies in technological development is vital, radical and continuous technological change can only be achieved by coordinating environmental policy and technological/innovation policy and exploiting their complementarity. A range of tools should be used to steer technology development towards greater sustainability, including public support to basic research, green government procurement, maintaining appropriate intellectual property right regimes, getting prices right by removing government subsidies and using economic instruments, and improving regulatory regimes through use of approaches such as best available technologies (BAT).¹⁶

| **-- Sustainable Development**

¹⁶

The World Commission on Environment and Development (WCED), in 1987 Brundtland Report Our Common Future defined sustainable development as “development that meets the needs of the present generation without compromising the ability of future generation to meet their own needs”. Later the concept of sustainable development has been changed from a mere concentration on environmental problems towards comprehension of three different factors: social, economic and environmental. Ability to meet the needs of present as well as of future generation depends on our ability to balance all three elements, so that not a single one is neglected. ¹⁷

Principles of Sustainable Development ¹⁸

- ☞ Decision-making process should depend on the best available scientific information and risk analysis.
- ☞ In case of uncertainty and threat of serious risks, the precautionary principle should be involved.
- ☞ Environmental impact should be taken into account, especially in cases of nonrenewable resources or possible non-reversible effects of human activities.
- ☞ Polluters should be responsible for effects of their activities according to polluters pay principle (PPP).

Dimensions of sustainability¹⁹

¹⁷ Richard T. Wright and Bernard J. Nebel Environmental Science: Toward Sustainable Future, 2002.

¹⁸ John Morelli (2011). Environmental Sustainability: A Definition for Environmental Professionals, Journal of Environmental Sustainability.

¹⁹ Mayuri Barman. Importance of Environmental Ethics and its Approaches in our Present Society XVIII Annual International Conference

There are four main ~~types of~~ dimensions of sustainability. These are;

- i) Environmental sustainability
- ii) Ecological sustainability
- iii) Economic sustainability and
- iv) Social sustainability

Environmental sustainability

Environmental sustainability is defined as the maintenance of natural capital and as a concept apart from but connected to both social sustainability and economic sustainability. In fact it becomes a subset of ecological sustainability. Broadly speaking, the concept of environmental sustainability might be seen as adding depth to a portion of the meaning of the most common definition of sustainable development, i.e., “meeting the needs of the current generation without compromising the ability of future generations to meet their needs,” by taking on the general definition “meeting the resource and services needs of current and future generations without compromising the health of the ecosystems that provide them,” (“Our Common Future”). More specifically, environmental sustainability could be defined as a condition of balance, resilience, and interconnectedness that allows human society to satisfy its needs while neither exceeding the capacity of its supporting ecosystems to continue to regenerate the services necessary to meet those needs nor by our actions diminishing biological diversity.

Ecological sustainability

Ecological sustainability as a useful concept for conservation biologists; ~~In~~
~~Ecological~~ ~~sustainability~~ as a ~~Conservation~~ ~~Concept~~, these authors

Proceedings, 2017.

advance an ecological definition of sustainability that connects human needs and ecosystem services: “meeting human needs without compromising the health of ecosystems”. They propose this concept as a guiding principle for areas where human activities take place.

-Economic Sustainability

Economists will allocate environmental assets as only part of the value of natural and manmade capital, and their preservation becomes a function of an overall financial analysis. In contrast, the ecologist will seek to preserve minimum levels of environmental assets in physical terms. He suggests that since an ecological approach will better characterize the present situation, it should serve to limit conventional economic reasoning to ensure sustainability. Economic sustainability should involve analysis to minimize the social costs of meeting standards for protecting environmental assets but not for determining what those standards should be.

-Social Sustainability

McKenzie identifies several attempts to define social sustainability and concludes it generally to be a positive condition within communities, and a process within communities that can achieve that condition. This definition is supplemented with a list of corresponding principles;

- equity of access to key services
- equity between generations
- a system of relations valuing disparate cultures
- political participation of citizens, particularly at a local level
- a sense of community ownership
- a system for transmitting awareness of social sustainability mechanisms for a community to fulfill its own needs where possible
- political advocacy to meet needs that cannot be met by community action

| Green Economy, Green Growth and Low Carbon Development²⁰

Green Economy

The term green economy was first coined in a pioneering 1989 report for the Government of the United Kingdom by a group of leading environmental economists, entitled *Blueprint for a Green Economy*. The report was commissioned to advise the UK Government if there was a consensus definition to the term “sustainable development” and the implications of sustainable development for the measurement of economic progress and the appraisal of projects and policies. Apart from in the title of the report, there is no further reference to green economy and it appears that the term was used as an afterthought by the authors. In 1991 and 1994 the authors released sequels to the first report entitled *Blueprint: Greening the world economy* and *Blueprint: Measuring Sustainable Development*. Whilst the theme of the first Blueprint report was that economics can and should come to the aid of environmental policy, the sequels extended this message to global problems – climate change, ozone depletion, tropical deforestation, and resource loss in the developing world. All reports built upon research and practice in environmental economics spanning back several decades. In 2008, the term was revived in the context of discussions on the policy response to multiple global crises. In the context of the financial crisis and concerns of a global recession, UNEP championed the idea of “green stimulus packages” and identified specific areas where large-scale public investment could kick-start a “green economy”. It inspired several governments to implement significant ‘green stimulus’ packages as part of their economic recovery efforts.

²⁰ O’Neil, Onora.(1997). *Environmental Values: Anthropocentrism and Speciesism, Journal of Environmental Values Vol. No 2,PP (127-142).*The White Horse Press: UK.

In October 2008, UNEP launched its Green Economy Initiative to provide analysis and policy support for investment in green sectors and for greening resource- and/or pollution-intensive sectors. As part of this Initiative, UNEP commissioned one of the original authors of *Blueprint for a Green Economy* to prepare a report entitled a *Global Green New Deal* (GGND), which was released in April 2009 and proposed a mix of policy actions that would stimulate economic recovery and at the same time improve the sustainability of the world economy. The GGND called on governments to allocate a significant share of stimulus funding to green sectors and set out three objectives:

- | [(i)] Economic recovery;
- | [(ii)] Poverty eradication; and
- | [(iii)] Reduced carbon emissions and ecosystem degradation; it also proposed a framework for green stimulus programs as well as supportive domestic and international policies.

In June 2009, in the lead up to the UN Climate Change Conference in Copenhagen, the UN released an interagency statement supporting the green economy as a transformation to address multiple crises. The statement included the hope that the economic recovery would be the turning point for an ambitious and effective international response to the multiple crises facing humanity based on a global green economy. In February 2010, Ministers and Heads of Delegation of the UNEP Global Ministerial Environment Forum in Nusa Dua acknowledged in their declaration that the green economy concept “*can significantly address current challenges and deliver economic development opportunities and multiple benefits for all nations.*” It also acknowledged UNEP’s leading role in further defining and promoting the concept and encouraged UNEP to contribute to this work through the preparatory process for the UN Conference on Sustainable Development in 2012 (Rio+20). In March 2010,

the General Assembly agreed that green economy in the context of sustainable development and poverty eradication would form one of the two specific themes for Rio+20 (resolution 64/236). This led to a great deal of international attention on green economy and related concepts and the publication of numerous reports and other literature aiming to further define and demystify the concept. One of the key reports was the flagship *Green Economy Report* released by UNEP in November 2011 under its Green Economy Initiative. UNEP partnered with think tanks and commercial actors (including Deutsche Bank), lending credibility to its economic analyses. Importantly, the report also provides a working definition of 'green economy' which has since been cited in numerous other publications. A series of other publications by UNEP, UNCTAD, UNDESA and the UNCSD Secretariat have attempted to elaborate on the concept and outline guiding principles, benefits, risks and emerging international experience⁵. In December 2011, the UN Environment Management Group (a system-wide coordination body of over 40 specialized agencies, programmes and organs of the United Nations) also released its system-wide perspective on green economy – *Working Towards a Balanced and Inclusive Green Economy* – which identifies and clarifies the use of green economy and other related terms. This report adopts the definition provided by UNEP in its 2011 *Green Economy Report*. A number of non-government organizations and partnerships have also developed in recent years which aim to promote green economy as a concept and undertake research, analysis and outreach. There is no internationally agreed definition of green economy and at least eight separate definitions were identified in recent publications. For example, UNEP has defined the green economy as;

“One that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. It is low carbon, resource efficient, and socially inclusive”
(UNEP, 2011).

This definition has been cited in a number of more recent reports, including by the UNEMG and the OECD. Another definition for green economy offered by the Green Economy Coalition (a group of NGOs, trade union groups and others doing grassroots work on a green economy) succinctly defines green economy as *“a resilient economy that provides a better quality of life for all within the ecological limits of the planet.”*

Different publications have cited and found online. For instance; Building an Equitable Green Economy – Danish 92 Group-This paper lays out how a ‘green economy’ must be designed to contribute to – rather than distract from – sustainable development. The authors define the *equitable* green economy as one that is ‘not a state but a process of transformation and a constant dynamic progression. The Green Economy does away with the systemic distortions and dis-functionalities of the current mainstream economy and results in human well-being and equitable access to opportunity for all people, while safeguarding environmental and economic integrity in order to remain within the planet’s finite carrying capacity. The economy cannot be Green without being Equitable.’ The paper proposes five key working principles that aim to help inform policy and market decisions in progressing the green economy and providing the link between an equitable green economy and sustainable development. These principles are given below:

- 📌 Links to policies specifying clear goals for key cross-cutting pre-requisites (enabling conditions) to address systemic distortions and dis-functionalities in order to establish the

foundation for equitable transformation and achieving sustainable development.

- ▮ Establishes clear objectives for the necessary means for action to be mobilized (technology, capacity, finance) and defines the approach, nature and profile of these means, e.g. the role of technology within the context of building an equitable Green Economy.
- ▮ Creates the necessary aligned framework of institutions at all levels with clearly defined roles and mandates to enable them to actively advance an equitable Green Economy.
- ▮ Is transparent and engages all involved and affected actors, with powerful actors having clearly defined responsibilities and forms of accountability, while making sure other stakeholders are empowered to act both as beneficiaries of and contributors to the Green Economy.
- ▮ Includes clear timelines for action to achieve objectives, introduce new systems for measuring progress and success, and integrate the tracking of the well-being of people, places, and the planet.

Green Growth

Different definitions of green growth by key international actors forwarded as follows:

UNESCAP(date): Growth that emphasizes environmentally sustainable economic progress to foster low-carbon, socially inclusive development.

OECD (date): Fostering economic growth and development, while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies.

World Bank(date): Growth that is efficient in its use of natural resources, clean in that it minimizes pollution and environmental impacts, and resilient in that it accounts for natural hazards and the role of environmental management and natural capital in preventing physical disasters.

GGGI: Green growth is the new revolutionary development paradigm that sustains economic growth while at the same time ensuring climatic and environmental sustainability. It focuses on addressing the root causes of these challenges while ensuring the creation of the necessary channels for resource distribution and access to basic commodities for the impoverished.

The concept of green growth has its origins in the Asia and Pacific Region. At the Fifth Ministerial Conference on Environment and Development (MCED) held in March 2005 in Seoul, 52 Governments and other stakeholders from Asia and the Pacific agreed to move beyond the sustainable development rhetoric and pursue a path of “green growth”. To do so, they adopted a Ministerial declaration (the Seoul Initiative Network on Green Growth) and a regional implementation plan for sustainable development (UNESCAP, 2008). This commenced a broader vision of green growth as a regional initiative of

UNESCAP, where it is viewed as a key strategy for achieving sustainable development as well as the Millennium Development Goals (in particular and relating to poverty reduction and environmental sustainability). The green growth approach adopted by the MCED sought to harmonize economic growth with environmental sustainability, while improving the eco-efficiency of economic growth and enhancing the synergies between environment and economy. As with green economy, green growth attracted significant attention as a way out of today's economic doldrums in the aftermath of the 2008 financial crisis.

In 2008, partly in response to the global financial crisis, the Republic of Korea (RoK) adopted 'low carbon green growth' as the country's new development vision, which was followed shortly after by the release in 2009 of their *National Strategy for Green Growth* and *Five-Year Plan for Green Growth* (which were accompanied by the enactment of a *Framework Act on Low Carbon Green Growth*). The RoK has since been instrumental in promoting the concept more broadly, including through the OECD. At the OECD Ministerial Council Meeting in June 2009, 30 members and five prospective members (comprising approximately 80% of the global economy) approved a declaration acknowledging that green and growth can go hand-in-hand, and asked the OECD to develop a green growth strategy bringing together economic, environmental, technological, financial and development aspects into a comprehensive framework. Since then, the OECD has become a major proponent of green growth and supports efforts of countries to implement green growth.

In April 2010, the Association of Southeast Asian Nations (ASEAN) summit in Hanoi adopted the ASEAN Leaders' Statement on Sustained Recovery and Development, which highlighted the leaders' determination to promote green growth, including investments in long-term

environmental sustainability and sustainable use of natural resources in order to diversify and ensure economic resilience.

In May 2010, at its sixty-sixth session, UNESCAP countries adopted the Incheon Declaration on Green Growth, in which members expressed their intent to “*strengthen efforts to pursue green growth strategies as part of [their] response to the current crisis and beyond.*” Later that year, support to pursue green growth was also stated in the 6th MCED Declaration in Astana in October 2010. The main focus of green growth in this context was for developing countries in Asia and the Pacific region to harmonise economic growth with environmental sustainability, while improving the eco-efficiency of economic growth and enhancing the synergy between environment and economy.

In June 2010, the RoK was instrumental in the establishment of the Global Green Growth Institute (GGGI) as a non-profit foundation (which was elevated to a new international organization at the Rio+20 Conference in June 2012). The GGGI is dedicated to diffusing green growth as a new model of economic growth, targeting poverty reduction, job creation, social inclusion, and environmental sustainability, climate change mitigation, biodiversity loss, and security of access to clean energy and water. The board of the GGGI reflects a “who’s who” of economic thinkers (including Nicholas Stern and Jeffrey Sachs) and its placement in RoK reflects a broader regional interest – led by UNESCAP – in helping the Asia and Pacific region to “leapfrog” over the industrialization patterns of the developed world, and avoid the trap of “growing first, cleaning up later”.

In November 2010, at the G20 Seoul Summit, leaders also recognized green growth as an inherent part of sustainable development which could enable countries to leapfrog old technologies in many sectors. They agreed to take steps to create enabling environments for the development of energy efficiency and clean energy technologies. This was also clearly evident in the response of G20 countries to the global financial crisis and recession of 2008-09, where some governments adopted expansionary policies that incorporated a “green fiscal” component. In fact, almost the entire global green stimulus was made by G20 countries, with measures including support for: renewable energy; carbon capture and sequestration; energy efficiency; public transport and rail; improving electrical grid transmission; as well as other public investments and incentives aimed at environmental protection. Of the US\$ 3.3 trillion allocated worldwide to fiscal stimulus over 2008-09, US\$ 522 billion (around 16%) was devoted to green expenditures or tax breaks. In 2012, the Mexican Presidency of the G20 introduced ‘inclusive green growth’ as a cross-cutting priority on the G20 development agenda.

| Low Carbon Development

The concept of low carbon development has its roots in the UNFCCC adopted in Rio in 1992. In the context of this convention, low carbon development is now generally expressed using the term *low-emission development strategies* (LEDS – also known as low-carbon development strategies, or low-carbon growth plans). Though no formally agreed definition exists, LEDS are generally used to describe forward-looking national economic development plans or strategies that encompass low-emission and/or climate-resilient economic growth. LEDS have attracted interest in the climate negotiations as a soft alternative to voluntary or obligatory GHG emission reduction targets in developing countries. The initial proposal to introduce LEDS was put forward by the EU in 2008, highlighting how information on planned low-carbon pathways can help to

inform the international community about funding needs and priorities and to help gauge the level of global climate change action.

The concept has been included in the negotiating texts under the UNFCCC since the run up to COP15 in Copenhagen in 2009 and is part of both the Copenhagen Accord and the Cancun Agreements, which recognize that a LEDS is indispensable to sustainable development and that incentives are required to support the development of such strategies in developing countries. Though not clearly implied by the terminology, LEDS are understood to also include provisions to reduce vulnerability to climate change impacts. The discourse of integrating climate change and development builds on a large body of literature, which was assessed by the IPCC in its fourth assessment report, and distinguished between the traditional “climate-first” approach and a “development-first” approach. The concept of low carbon development takes a “development-first” approach which rethinks development planning and proposes structural solutions (such as alternative infrastructure and spatial planning) with lower emission trajectories. It focuses on addressing and integrating climate change with development objectives and is therefore a more useful approach for developing countries. In practice, the plans are often combinations of new and existing elements; all combined in a new way to address pre-existing policy objectives along with the need to slow climate change and prepare for its impacts.

Summary

Environment means surroundings. Environmentalism is a social movement of people coming together in an endeavor to do something to save our environment. Environmental ethics is a discipline that studies the moral relationship of human beings to the values and moral status of the environment. The distinctive features of environmental ethics are; extended, interdisciplinary, plural, revolutionary and global and the

principles of environment ethics; duty for future generation, duty to limit overconsumption, polluter pays principle and duty to livable environment.

Environmental economics is concerned with the impact of economic activities on the environment and significance of environment to the economy. It also suggests the appropriate ways of regulating economic activity to resolve conflict over scarce resource to raise better peoples living standard.

Environmental science is a discipline that studies various issues in relation to environment. It starts by understanding how natural world in which we live works. It studies the interaction of organisms to organisms and to the environment to obtain energy and the impact of organisms on environment and vice versa.

Environmental justice is defined as the fair treatment and meaningful involvement of all people, regardless of race, color, economic/political status etc with respect to development, implementation of environmental laws. The principles of environment justice are; affirms the interdependence of all species and against ecological destruction, seek mutual respect for all peoples and against discrimination, assure sustainable resources use, calls universal protection from nuclear testing, production and disposal of toxic wastes etc.

Environment technology is concerned with the impact of technological innovation on the environment and significance of technology to protect or reduce environment pollution. It also suggests searching and innovating alternative ways of technology which less harmful to environment.

Sustainable development constitutes a core agenda in the issues of environment ethics. Polluter pays principle, precautionary principle, cost-benefit benefit analysis are its principles.

Review Questions

Part I. If the statement is correct write True if the statement is wrong write False.

1. Environment ethics is a discipline that developed due to increasing concern for the environment and the impact of human actions put upon it.
2. Development ethics aimed at to raise the quality of living standard of people without damaging the environment.
3. Environment ethics stress for protecting the environment to satisfy current generation by overlooking the values of future generations.
4. Environmental justice affirms the right of all people to live in healthy and balanced environment.

Part II. Match the appropriate answer

'A'

'B'

5. Environment ethics environment

A. It affirms the right to enjoy on healthy

6. Development ethics

equally

7. Environment ethics

B. Life sustenance

8. Environment justice tie between

C. A science which studies the moral

9. Environment science

environment & human being

10. Environment technology interactions of organisms

D. A science which study the

E. BAT

Part III. Define the following terms or phrases

11.Environment

12.Environmentalism

13. Sustainable development

14. Green economy

Part IV. Discuss over the following concepts

15. What is sustainable development? Discuss over its principles
16. Illustrate the principles of environment justice

CHAPTER TWO: THEORIES OF ENVIRONMENT^{al} ETHICS

Introduction

Dear students! Welcome to the second chapter of this module, which states theories of environment ethics. The issues of environmental ethics are momentous and involve moral choices of enormous importance that we can make and which we must make. Our moral responsibility to nature and to the future is of great significance and urgency, and it is a responsibility that we cannot escape. That is the essence of environmental ethics. However, extending moral standing to non-human entities also leads to the formulation of particular types of environmental obligations. Animal welfare is relevant to environmental ethics because animals exist within the natural environment and thus form part of environmentalist's concerns. Essentially, these ethics claim that when we consider how our actions impact on the environment, we should not just evaluate how these affect humans (present and/or future), but also how they affect the interests and rights of non-human entities. For example, even if clearing an area of forest was proven to be of benefit to humans both in the short and long-term that would not be the end of the matter as far as animal ethics are concerned. The welfare of the animals residing within and around the forest must also be considered. Many environmental philosophers have been dissatisfied with these kinds of animal-centered environmental ethics. Indeed, some have claimed that non-human entities such as animals and plants cannot even be considered a legitimate environmental ethic while others said. For these thinkers, all animal centered ethics suffer from two fundamental and devastating problems: first of all, they are too narrowly individualistic; and secondly, the logic of animal ethics implies unjustifiable interference with natural processes. As for the first point, it is pointed out that our concerns for the

environment extend beyond solely worrying about individual creatures. In this chapter you will deal the theories of environment ethics namely, Anthropocentrism, Biocentrism, Eco-centrism, Eco-feminism, Deep Ecology, and Divine command theory in detail.

Objectives of this chapter

After the successful completion of this chapter, you will able to:

- Identify the various theories of environmental ethics;
- Distinguish the distinction between/ among each theories;
- Explain different theories of environment ethics respectively with their arguments;
- Describe these theories in order to analyze the human-nature relationship.

2.1 Anthropocentrism

Brainstorming Questions

- 👉 Do we have the right to take all the earth's resources for our own use?
- 👉 Do we have the right to kill all other species for human needs?
- 👉 Do other species have an intrinsic right to exist?
- 👉 How do religions view humanity's relationship with the rest of living things?

N.B:-Please put your answer on the following space provided.

The anthropocentric view focuses on the utility and function of the environment to human well-being. Scholars in this category advised us to use natural resources properly to fulfill the existing and future needs and demands of human generation. In this respect, Aristotle maintains that “nature has made all things specifically for the sake of man”. The statement clearly indicates the instrumental value of environment to human beings. For the anthropocentrist, only humans possess intrinsic value; all else is valuable only for its utility for people. Anthropocentrists, then agree with Immanuel Kant, who argues that “all duties towards animals, towards immaterial beings and towards inanimate objects are aimed indirectly at our duties towards mankind”.

The idea of a human-centered nature/ anthropocentrism, explicitly states that humans are the sole bearers of intrinsic value and all other living things are there to sustain humanity’s existence.

| The existentialist philosopher Wolfgang Schirmacher [\(date\)](#) had claimed that the authoritarian attitudes about nature, with humans at centre stage, cannot be considered a kind of natural attitude, but are instead a distortion of civilization that can occur in any social system. Some typical manifestations of anthropocentric thinking are the assumptions that only Homo sapiens is capable of thinking, the only ones who can speak, the only ones with personality. Man is the sole creature who is not controlled only by its instincts and the one who can be meaningful. Many people also assume that humans are not part of the animal kingdom. Man is thus prone to significantly distance himself from nature and look for those aspects that reinforce and repeatedly conform his assumptions. Anthropocentrism also thoroughly questions and gives much significance to whether it is possible at all for other living being’s to possess personality, intelligence, emotions. Rankings are formed among creatures. The morphological similarities and differences, the putative genetic relationships between human beings and other organisms also play an important role. Thus in human-centric thinking

these factors decide how we may feel responsible for the fate of the natural creatures and to whom we can say: "It's a lovable creature". Many living beings may derive some benefits from being similar to us in some respects or as they adapt to our human world and become good organisms. Others are simply cast as evil. ²¹

An anthropocentric case for environmental protection will therefore be justified instrumentally in terms of the consequences that pollution or resource depletion might have for human interests.²² Anthropocentrism cares for the environment as an instrument for the well-being of human beings; while biocentrism cares for every living creature and assigned intrinsic values to them. The first view believed to have reflected the tradition of west philosophy where-as the second reflects East religious and philosophical foundation.²³

2.2 Biocentrism

Biocentrism refers all environmental ethics that extend the status of moral object from human beings to all other living things in nature. It emphasis the values and the rights of organization individuals believing that moral priority should be given to the survival of individual living beings. Thus, it is a kind of ethics of individualism. Biocentric ethics considers that all living things have their own good and thus, possess the status of moral object.

²¹ Reena Patra (2014). Environmental Sustainability: *International Journal of Humanities Social Sciences and Education (IJHSSE) Volume 1, Issue 8, August 2014, PP 35-40.*

²² O'Neil, Onora. Environmental Values: Anthropocentrism and Speciesism, *Journal of Environmental Values Vol. No 2,PP (127-142).*The White Horse Press: UK,1997.

²³ Mayuri Barman 2017 Importance of Environmental Ethics and its Approaches in Our Present Society, *XVIII Annual International Conference Proceedings; January 2017 ISBN no. 978-81-923211-9-6*

In short, biocentrism focused on the following three points;

- All living things have an instinct to resist to the process increasing entropy for keeping their own organization, maintaining their own survival and wholeness of life
- Maintaining their own survival is a central aim for all living things that is an intrinsic value.
- Although different things have their own ways of organization and survival (different way of self-organization and maintaining survival with different organisms) their values are intrinsically the same and thus they should have equal rights in morality.

2.2.1 Albert Schweitzer: Reference for Life²⁴

Albert Schweitzer one of the proponents of biocentric view. In his book *“Philosophy of Civilization: Culture and Ethics”* which was published since 1923, he advanced the ethics of respecting life i.e. **reverence for life** which laid a foundation for contemporary western ecological ethics. His main ideas can be analyzed as follows:

A. The nature of the ethic of reverence for life

Schweitzer considered that people are ethical only when they obey the compulsion to help all life they are able to assist, and to the degree it is capable of feeling. Although the ethics concerning humans was very profound and vibrant, it was incomplete. An integrated ethics calls for kindness (benevolence) to all living things, which is in accordance with thinking people's natural reverence for life. Thus, the integrated ethics essentially has a depth, energy, and function that differ from the ethics that merely involved humans. It urges everyone to care for all people as well as all living things, to lend a hand to those who need it, and to give moral care

²⁴ John Morelli (2011). Environmental Sustainability: A Definition for Environmental Professionals, Journal of Environmental Sustainability.

to all other living things. Schweitzer said that, what reverence for life demands accords with the ethical principle of love. Reverence for life *per se* includes order and a foundation of love, and appeals to feeling for all living beings. So the ethics of reverence for life is a new ethics, because it is not only an extension of ethics, but also a transformation of the nature of ethics.

B. The Function of the Ethic of Reverence for Life

In order to resolve cultural crisis, it is necessary to merge life and morality into a single whole. The goal is to make progress and create all kinds of values beneficial to individuals or human development in terms of the material, spiritual, and ethical. Therefore, the function of the ethic of reverence for life is above all to establish a positive worldview and to abandon negative worldviews. The former demonstrates that—all living things in the world exist significantly. The latter demonstrates a loathing of the world, and distances it self from all things. However, ethics essentially affirm the world, and play a role in the sense of “good.” It is obvious that a positive worldview can be profitable for the development of ethics. Conversely, negative worldviews will confound. In the former case, a corresponding ethic can be developed, but in the latter case an ethic becomes abnormal. Our natural sensitivity conforms to this positive worldview that makes us see the world as our “home” in which we act. But a negative worldview finds us living in the world as strangers; it denies the significance of action in the world. This idea obviously conflicts with our natural sensitivity. It is the ethics of reverence for life that allows us to avoid such a contradiction. We build up a civilized relationship with the universe through our ethical behavior to all living things.

C. Expanding the principle of love to Animals is a revolution in ethics

In Schweitzer’s eyes, if we acknowledge only the ethic of loving people, we may disregard the fact that ethic cannot be regularization due to the

acceptance of ethical principles. But if we expand the principle of love to all animals, we admit that the ethic is limitless. People can be convinced that the ethic is limitless and this makes us assume limitless responsibility and obligation.

However, generally speaking it is quite easy to expand such ethics, while it is very difficult to develop specific behavior rules, let alone to carry them out. Thus, the ethic of reverence for life or loving all life forms must make us realize that we cannot avoid destroying and harming life. If we are not callous, we will experience considerable mental conflict. To avoid such conflict, we should be fully aware that life is sacred and all lives are an inseparable whole and have the desire to survive, which we should respect. This is the basis of the ethic of reverence for life. The protection, flourishing, and an increase of the value of life should be regarded as the basis of morality, and as the starting point of the ethic of reverence for life as well. Schweitzer once said that people are truly ethical only when they regard the life of plants and animals as being as important as their own lives. This is a revolution in ethic.

D. Principles of the ethic of reverence for life

Schweitzer first advanced the ethical principle of reverence for life in 1919, when he maintained that life is good, whereas destroying and obstructing life is bad. In 1963, he expanded on this saying:

“There we have given us that basic principle of the morality which is a necessity of thought. It is good to maintain and to encourage life; it is bad to destroy life or obstruct it.” The basic ethical principles of reverence for life are absolute.

E. All life forms are sacred without distinction between high or low, rich or poor

The ethic of reverence for life denies distinguishing between high and low, more valuable or less valuable life forms. Such a distinction is extremely

subjective for its merely based on people's feelings. In addition, such a distinction seems to suggest the existence of life which has no value and which injured casually. This view is wrong ended. A truly virtuous person believes that all life forms are sacred.

The ethic of reverence for life is a new positive worldview. According to Schweitzer, only this worldview has the power to make humans give up ego interests in their actions and encourage humans to regard realizing spiritual and moral perfection as the ultimate aim of civilization. By the same token, to ponder a positive world, life, and ethics is to ponder real and integrated cultural ideals and make them come true.

2.3 Ecocentrism²⁵

The term Ecocentrism first coined by Aldo Leopold since 1949 and but different scholars such as Callicott (1990) and Taylor (1981) were defenders of this approach. Eco-centrists try to extend moral consideration to encompass all non-human animals.

It recognizes intrinsic value in all living things on earth regardless of their usefulness to humans. It also encourages people to respect and care for animals and plants for their own sake. It is believed that the human race have the responsibility to all biological life on earth because, aside from being the most consuming specie of all, they are capable of thinking and perceiving earth as a whole. Humans' ill-treatment towards the environment is not only drastically altering the ecosystem, but also threatening humans' survival; researchers and scientists are aware that the end of the world is present some point in the future, and the only thing people can control is the rate of facing humanity's extinction. Eco-centrism

²⁵ O'Neil, Onora.(1997). *Environmental Values: Anthropocentrism and Speciesism, Journal of Environmental Values Vol. No 2,PP (127-142).*The White Horse Press: UK.

further provides how the human-nature relationship should flow in order to prevent possible exploitation.

Leopold pointed out that conservation is a state of harmony between man and land. The notion of land ethic broadens the borders of moral obligations towards the land, which includes animals, plants, water and many other non-human organisms.

In another hand, the major aim of Taylor's contribution was 'to try to establish a base point from which we can start working toward a solution to the problem'. As Taylor forwarded, in order to achieve this, he suggests respecting the interests of non-human organisms, controlling population growth and also being willing to share the earth's abundance with members of other species. He stated that humans as moral beings should display moral commitment by respecting nature.

Similarities and Differences between Ecocentrism and Biocentrism

Similarity

Biocentric and ecocentric philosophies have a lot in common. Both are adopted by people who have concern for the environment and its well-being. Both theories place great importance on the lives of all creatures and value the preservation of life over human gains in power and financial wealth.

Differences

It is important to note that ecocentrism is often confused with biocentrism. The primary difference between ecocentric and biocentric philosophies lies in their treatment of the abiotic environment. Ecocentrism uses the study of ecology to demonstrate the importance of non-living elements of the environment. Biocentrism focuses on living elements of the environment. For example, in the climate change debate, biocentrists would focus on how climate change influences living things by causing migration of species and alterations in wildlife habitats. Biocentrists locate intrinsic value or

intrinsically value individual animals and plants. In contrast, ecocentrists locate intrinsic value more than just individual organisms.

Focus:

Instrumental value is the value which something has *for someone* as a *means to an end* which they desire. So, a word processor is valuable to me in so far as it enables me to write, when writing is something I want to do.

Inherent value is the value something has *for someone*, but not as a means to a further end. A beautiful landscape has value for me, but not because it enables me to do something further. It is something which I find valuable in itself.

Intrinsic value is simply the value which something has. No appeal

2.4 Ecofeminism

The Oxford Dictionary has defined the term Ecofeminism as—a philosophical and political theory which combines ecological concerns with feminist ones. They argued, female dominated by male which is cause of environment crisis. It is said that prior to the seventeenth century, nature was conceived on an organic model as a benevolent female and a nurturing mother. After the scientific revolution, nature was conceived on a mechanistic model as mere machine, inert, and dead. On both models, nature was female. It has been said that the move from the organic to the mechanistic model permitted the justified exploitation of the female earth, by removing the sorts of barriers to such treatment that the metaphor of nature as alive previously prevented; the mechanistic worldview of modern science sanctioned the exploitation of nature, unrestrained commercial

expansion, and socioeconomic conditions that perpetuated the subordination of women. Ecofeminism represents the union of the radical ecology movement, or what has been called 'deep ecology', and feminism.²⁶ Ecofeminism came into being in the early 1970s in the United States, when a number of women became disillusioned with the mainstream environmental movement and sought to create more awareness among feminists about environmental concerns. Feminists before this had seen it as important to deemphasize the differences between men and women, but eco-feminists embarked on a study of particularly female ways of being and thinking about nature throughout history.²⁷

Eco-feminists argue that female oppression and environmental degradation are both inextricably tied up with the power structures of capitalist society. These writers argue that it is women's gender – the nature of women's work and their roles in society rather than their biology that brings women closer to nature. Both women and nature are materially exploited by patriarchy and by capitalist institutions and mechanisms. It is through their social location that women frequently bear the brunt of ecological devastation particularly in less developed nations where women's issues and poverty go hand in hand. Indeed, women have initiated many collective grassroots struggles to defend their environment, as illustrated by the protests of the Chipko women in India who famously used the non-violent strategy of 'tree-hugging' to protect their forests from multinational timber companies. Wider solutions to these problems would require the transformation of

²⁶ Neil Carter, 2001

²⁷ O'Neil, Onora. Environmental Values: Anthropocentrism and Speciesism, *Journal of Environmental Values* Vol. No 2, PP (127-142). The White Horse Press: UK, 1997.

capitalist society, but eco-feminism, with its predominantly philosophical orientation, has only slowly engaged with these issues.²⁸

Like social ecology, eco-feminism points to a link between social domination and the domination of the natural world and like both deep ecology and social ecology, they calls for a radical overhaul of the prevailing philosophical perspective and ideology of western society. However, eco-feminism is a broad church, and there are actually a number of different positions that feminist writers on the environment have taken. Val Plumwood offers a critique of the rationalism inherent in traditional ethics and blames this rationalism for the oppression of both women and nature. As Plumwood claims the fundamental problem with rationalism is its fostering of dualisms. For example, reason itself is usually presented in stark opposition to emotion. Plumwood argues promote reason as capable of providing a stable foundation for moral argument because of its impartiality and universalizability. However, emotion lacks these characteristics and because it is based on sentiment and affection makes for shaky ethical frameworks. Plumwood claims that this dualism between **reason** and **emotion** grounds other dualisms in rationalist thought i.e **mind/body** **human/nature** and **man/woman**. In each case, the former is held to be superior to the latter. So, for Plumwood, the inferiority of both women and nature have a common source (i.e rationalism). Once this is recognized, it becomes clear that simple ethical extensionism is insufficient to resolve the domination of women and nature. After all, such extensionism is stuck in the same mainstream rationalist thought that is the very source of the problem. Eco-feminists have developed insightful analogies between the historical oppression of nature by humans and that of women by men. They have suggested that Western environmental problems should be understood in light of a larger historical attempt to bifurcate the world in such a way that women and nature are linked with what is morally degraded and that

²⁸ Mouchang Yu and Yi Lei Biocentric Ethical Theories, *Journal of Environment and Development* Vol. II

men and the non-natural are conceptually tied to the morally relevant or superior.²⁹

Women have vital role in conservation and management of sustainable eco-system. Since time immemorial women are traditionally involved in protecting and conserving their natural resources. If we talk of natural resource management from a global perspective, whom do we find in the forefront of the race for protection and preservation of the resources. The answer comes very naturally, it is the women. Women particularly those living in rural areas or mountain areas have special relationship with the environment. They are more close to the nature than men and this very close relationship makes them perfect managers of an eco-system. The life of mountain women is so much interwined with the environment that whole ecosystem revolves around her and she can't even think of her survival without it. For her forest is her mother's home as she is entirely dependent on the forest to meet her daily needs such as water, fodder, fuels, minor forest produce etc. With their extraordinary skills and traditional knowledge women have proved how land, water, forest and other natural resources can be used and managed. They have their own devised system and ways to sustain and manage the resources which are the basis of survival for their families and communities.³⁰

Focus: Eco-feminists claim that to solve ecological problems we must first remove patriarchy.

environmental

impact of property development, HTS Theologese Studies/Theological Studies.

³⁰ Jane Freedman. Concepts in the Social Sciences: Feminism Open University Press, 2001.

2.4 Deep Ecology

Deep ecology first coined by George Sessions and Arne Naess. It is a radical movement that collaborates with some of the non-anthropocentric approaches like ecocentrism and biocentrism which against anthropocentric attitudes towards nature. It argues that the Western egocentric and individualistic perception of self-realisation poses a real danger to the natural environment. Deep ecology promotes a deep spiritual connection with nature because entities in the universe are fundamentally connected with each other. In short, things are valuable as fragments of the whole scope of nature.³¹

Nature and humanity are devastated when anthropocentrism is practiced; and the conversion to ecocentrism overnight is impossible especially in the developed societies because of their heavy reliance on resources and generation of waste. Deep ecologists' platform claims that justification is made upon people only when their intervention in the natural wildlife is vital to human needs, i.e. for survival not for luxury. George Sessions and Arne Naess encircled anthropocentrism and ecocentrism by acknowledging intrinsic value in all nature's beings and allowing consuming species to benefit from what the environment offers to fulfill vital needs. For instance, interfering with the environment to build a golf course or a house patio is unethical because they are hardly essential for survival, not to mention the alteration caused to earth and vegetation.³²

³¹ Ranjeeta Mukherjee. Eco-feminism: Role of Women in Environmental Governance and Management. Galgotias, *Journal of Legal Studies Vol. 1, No. 2, 2013*.

³² Neil Carter . *The Politics of the Environment: Ideas, Activism, Policy*. Cambridge University Press: UK, 2001.

Ethical decisions related to environment can be very paradoxical. In order to make the decision that would benefit humans and harm to nature, people must weigh up the possible consequences and determine which one is ought to take precedence. For example, extracting oil to produce energy is harmful to the ecosphere yet beneficial to humans for various applications like producing fuels and pesticides aside from economical gain. Setting forth the possible damages, it is conspicuous that choosing to use oil excessively as an energy resource is not an environmental-friendly action; therefore, striving to find an alternative energy resource is more of a deep-ecological mentality. After researches and efforts for a solution, scientists in this field were able to recycle restaurants' waste vegetable-oil to produce biodiesel to power automobiles. Applying the recycling process, we -reduce natural resources consumption, and therefore regard the inherent value of nature. Some might complain that alternative energy resources, such as solar power, are expensive to obtain; however, using nanotechnology, flexible sheets of solar cells were invented with a much reduced cost than photovoltaic cells used today. Looking at the industrious development humanity has arrived to, it is agreeable to conclude that people are smart enough to find solutions for many challenges, yet sacrificing the effort is the step to take; unfortunately, it is not always possible because at times political and ~~eeconomica~~economic factors alter our inner decent choice. As globally recognized, people fail to take care of one another, and that is observed evidently through wars, where many lives are regarded worth less, and through the remarkable difference between social classes. Unless people recognize the inherent value in every human being and transform this respect towards the environment, earth will remain under threat.³³

³³ Ranjeeta Mukherjee. Eco-feminism: Role of Women in Environmental Governance and Management. Galgotias, *Journal of Legal Studies Vol. 1, No. 2, 2013.*

Deep ecology is perhaps most easily understood when considered in opposition to its 'shallow' counterpart. According to deep ecologists, shallow ecology is anthropocentric and concerned with pollution and resource depletion. Shallow ecology might thus be regarded as very much the mainstream wing of environmentalism. Deep ecology, in contrast, rejects anthropocentrism and takes a 'total-field' perspective. In other words, deep ecologists are not aiming to formulate moral principles concerning the environment to supplement our existing ethical framework. Instead, they demand an entirely new worldview and philosophical perspective. According to Arne Naess, the Norwegian philosopher who first outlined this shallow-deep split in environmentalism, deep ecologists advocate the development of a new eco-philosophy or '**ecosophy**' to replace the destructive philosophy of modern industrial society.³⁴

Principles of Deep Ecology³⁵

George Sessions & Naess have compiled a list of eight principles that are basic to deep ecology:

1. The well-being and flourishing of human and non-human life on earth have value in themselves i.e. intrinsic value and inherent worth. These values are independent of the usefulness of the non-human world for human purposes.
2. Richness and diversity of life forms contribute to the realization of these values and also values in themselves ~~also values in themselves.~~
3. Humans have no right to reduce this richness and diversity except to satisfy vital needs.
4. The flourishing of human life and cultures is compatible with a substantially smaller
population. The flourishing of non-human life requires a smaller human population.

³⁴ Ibid

³⁵ Ibid

5. Present human interference with the non-human world is excessive, and the situation is rapidly worsening.

6. Policies must therefore be changed. These policies affect basic economic, technological and ideological structures. The resulting state of affairs will be deeply different from the present.

7. The ideological change will be mainly that of appreciating life quality (dwelling in situations of inherent value) rather than adhering to an increasingly higher standard of living. There will be a profound awareness of the difference between bigness and greatness.

8. Those who subscribe to the foregoing points have an obligation directly or indirectly to try to implement the necessary changes.

Generally, there are two notable basic ethical principles in deep ecology. The first one is ~~T~~the principle of **ecosphere egalitarianism** -which argues that all organisms and entities in the ecosphere as parts of the interrelated whole are equal in intrinsic value. And all things in the ecosphere have an equal right to live and blossom and to reach their own individual forms of unfolding and **self**-realization. Second, ~~T~~the principle of **self-realization** holds that for the morally mature person, the authentic self is the self that is at one with nature, not the isolated self that focuses on egoistical satisfaction. The process of Self-realization is one of enlarging our notions of ourselves to include identification with nature. To harm nature is to harm ourselves, and to defend earth is self-defense.

2.5 Holistic ~~Perispectives~~Perspectives³⁶

The most radical approaches adopt a holistic analysis of the human-nature relationship: they include all ecocentric perspectives, notably **deep ecology**, and the group of intermediate approaches known as '**ethical holism**'. Holism is concerned with the way the different parts of nature interact with each other in ecosystems and the biosphere – the interdependence and reciprocity that make up the '**whole**' rather than atomistic accounts of nature that focus on individual parts in isolation. A holistic view of nature holds that everything is connected to everything else, that the whole is greater than the sum of the parts, that process takes primacy

over the parts and that there is unity of humans and non-human nature. Broadly speaking, holistic theories are prepared to extend the boundaries of moral consideration well beyond humans by according intrinsic value to a range of non-human entities including animals, plants and even rocks and to whole categories such as species and ecosystems. Holists are engaged in two kinds of exercise: a quest for an ethical code of conduct based on the existence of intrinsic value in nature and the development of an ethics based on a changed ecological consciousness or 'state of being'. Both approaches can be found in the work of Arne Naess, one of the founders of deep ecology, whose ideas have shaped the development of ecocentrism. The claim that nature possesses intrinsic value is clearly stated in the eight-point platform for deep ecology drawn up by Naess and Sessions: The flourishing of human and non-human life on Earth has intrinsic value. The value of non-human life forms is independent of the usefulness these may have for narrow human purposes. Naess is informed by the idea of symbiosis that every entity has value because it is needed by at least one

³⁶ Environmental Ethics (Internet Encyclopedia of Philosophy – www.iep.utm.edu)

other entity. Nothing and no one is entirely independent, so everything has value. He also extracts a principle of equality from the holistic thesis that everything is interdependent. This principle – Naess calls it **‘biocentric egalitarianism’** – states that all forms of life have ‘the equal right to live and blossom’. Naess does not attempt to produce a scientific case for intrinsic value; instead, biocentric egalitarianism is justified as simply an ‘intuitively clear and obvious value axiom’. Thus, with this first theme, Naess seems to be offering the basis for a green theory of value.

2.7 Pluralist Perspective³⁷

Environmental pragmatism is a pluralist paradigm. It attempts to conserve the environment by incorporating some ideas developed by classical pragmatists (e.g. Charles Sanders Peirce; William James and John Dewey) within environmental ethics. This perspective takes into consideration:

- the usefulness of a theory should be based on its practical implication;
- the practicality of an idea should be guided by an action; and
- the perception of truth should be verified by practical conviction.

The classical pragmatists, therefore, offered a comprehensive paradigm, but did not anticipate the environmental problems experienced today.

The promise of environmental pragmatism is that it can assist decision-makers and practitioners to integrate different values in order to enable them to reform institutions and practices. When standing values evolve into practice, that is policy discussion platforms, new perspectives and stronger values can emerge. In this regard, environmental pragmatism does not commence with theory but with practice. This is because, by merely focusing on theoretical arguments and debates, progress in environmental policy discussion can be obstructed. With the pragmatic turn, the split between ethical theories and environmental values, as well as between theories and practices can no

³⁷ Sentle Mokori . Ethical perspectives on the environmental impact of property development,2016.

longer be emphasised, because these previous antagonists are now perceived to be in need of each other. As a huge number of different values are now coming together, the framework of ethical decision-making can, therefore, be viewed as a large toolbox which is available when making ethical decisions. This toolbox, according to Weston serves as ecology of values: a multiplicity of ideas. These ideas are available whenever needed and 'through engagement with practical problems, we can also shape new tools as values for this kit, adding to it or refining it as we go along'. This is because the ecology of values as a network of ideas allows interaction between diversity of values. As Weston pointed out, 'values so conceived are resilient under stress, because, when put to question, a value can draw upon those other values, beliefs, etc. which hold it in place in the larger system'. This approach is consistent with a participative approach to decision-making. This means that, even though values influence each other reciprocally in decision-making conversations, most values are exposed to criticisms and transformation because they are different. In spite of this, pragmatism provides a practical, supportive framework where the diversity of values can co-exist and where new, robust and concrete values can emerge and flourish. Furthermore, pragmatism offers Norton's *adaptive management principle* which entails a multi-scalar analysis on the basis of time and location, as well as tolerance. Tolerance is essential when it comes to avoiding incompatible disagreements between overlapping theorists in policy decision-making. A multi-scalar evaluation, according to Norton, puts emphasis on the importance of conceptualizing environmental concerns and values within the multiple frameworks of time and space. Norton makes a distinction between time scales.

- ▶ The first scale is from 0 to 5 years. This is a time scale where various profitable decision-making processes take place. For example, this is where human values, as tools, are given the highest priority to estimate the natural environment.

- ▶ The second time scale starts from 5 to 200 years. This represents the assessment of the transition from the individual towards the community. It is through a considerable time scale where interaction between values has effect.
- ▶ The third time scale represents an open-ended process. This presupposes the survival of the community of life on earth. As human actions keep on polluting the environment without restrictions, such as when humans burn fossil fuels which trigger an escalation of greenhouse gases in the atmosphere, the ecological system will be influenced negatively. As noted, the community of life will remain threatened until there is a change of direction.

Now, it is vital to reflect on the multi-scalar analysis in terms of locality. In order for different species to adapt to certain conditions, they require certain locations. In other words, the survival of particular species is entirely determined by particular locations. This also applies to a diversity of values. Values are contextual. They can transform practices once they are situated within a particular locality within a framework of time. Values are therefore temporal, provisional and conditional.

In this light it is, therefore, suggested that ethical decision making should incorporate the diversity of values, for example the utilitarian approach, the rights approach or the eco-centric approach when considering a possible course of action. It should, over a long scale of time, take environmental as well as social concerns into consideration. The notion of truth is an open-ended development which surfaces within a certain frame of time and place. It can always be revised and modified. To this end, the diversity of values is not a problem to be resolved but rather should be seen as a resource by which the claim for truth can be operational in transforming short-term practice into long-term scales.

2.8 Divine Command/Natural Law theory³⁸

³⁸ Ibid

Divine command theory suggests that ethical precepts are the product of divine or revealed dictate (i.e, ethical rules are dictated from above by God or Krishna or Allah). For example, we may believe that our stewardship of the land (or even our malicious impact upon it) is the morally correct course of action because it is what God intended; or we may believe it is morally right because humans are by nature stewards, caretakers, and nurturers and that the land is a proper object of this natural caretaking role. A variant of this theory—natural law—suggests that ethical precepts are a result of uncovering and then following the dictates of nature: in other words, that which is moral is often seen as that which is natural.

In Jewish law (*halakhah*) ecological concerns are reflected in Biblical protection for fruit trees, rules in the *mishnah* against harming the public domain, talmudic debate over noise and smoke damages, and contemporary response on agricultural pollution. The earth must be cared for as there are other inhabitants both presently as well as in the future, that will be living there.

A central belief in Judaism is that man whose root comes from earth should keep the earth in the same state as he received it from God, that is, its actual owner. The people should avoid polluting the earth and keep it clean for the future generations. This opinion reinforces the fact that Judaism is clearly in line with the principle of environmental protection and sustainable development.

For Islamic religion, the Holy Quran and the prophets equally make the environment to be sacred. Quran 17:78 informs that Muslim believers should establish regular prayers at sun's decline till the darkness of the night, and the morning prayer and reading in the morning carry their testimony'. God did not create the environment for a random reason, but rather a reflection of truth. Many chapters in the Quran refer to the beauties of nature as well as the headings of many chapters indicating the

importance of it such as: *Fajr*: prayer service at dawn is between 5.30 and 5.45 a.m. *Zuhr*: prayer service at noon between 1.10p.m and 2p.m. *Asr*: prayer service in the afternoon between 3.30 p.m and 4p.m. *Maghrib*: prayer service between 6.45 and 7p.m. *Isha*: prayer service at nightfall 7.30 p.m downward p.m. In Islam, the concept of a *hima* or 'inviolable zone' refers to a piece of land that has been set aside to prevent cultivation. An environmental ethics is in the Quran but leaves an opening for Muslims to incorporate creative and innovative solutions in the contemporary context.



Critical Thinking:- From each theory which one you argue or against? Why? Justify your own view.

Summary

There ~~are~~ different theories on environment ethics are discussed above. These theories are ~~are~~ summarized below;

Anthropocentrism argued man is the sole possessor of intrinsic value but other non-human entities are treated instrumentally. In contrast to the former theory, Biocentrism extended the status of moral object from human beings to all other living things in nature.

Another theory is ecocentrism. The same with biocentrism, it tries to extend moral consideration to encompass all non-human animals. It recognizes intrinsic value in all living things on earth regardless of their usefulness to humans. Ecocentrism is believed that the human race have the responsibility to all biological life on earth because they are capable of thinking and perceiving earth as a whole.

Ecofeminism ~~argued~~ argues that the current global environmental crisis is an outcome of patriarchal culture- the domination of women by male. As eco-feminist, in order to overcome this challenge any gender bias should be ended from the society.

Deep ecology is another theory of environmental ethics which affirms that humans are a part of nature not isolated from nature. Like to biocentrist and ecocentrist, it ~~extend~~extends the moral value of non-human entities. Thus, they are holist, non-anthropocentrist. Deep ecologist forwarded the pollution of environment can be reduced when that human being consume resource for survival needs not for luxury, environmental-friendly energy planted and population growth minimized.

Pluralist Perspective of environment ethics takes in to consideration over the practicality of theory in to practice and integration of different values by policy makers to reform environmental damage.

Lastly, as divine Command theory, what ethical is what maintain the Gods will and unethical what disobey order of the God, God and nature is highly interconnected, God created the earth and its resources for man to use it but over extortion is banned and not the will of God. So,as many religious faith, man is responsible entity to protect the environment from its pollution.

Review Questions

I. If the statement is correct say “True”, if the statement if incorrect say, “False”.

1. Anthropocentric argued that environment has an intrinsic value for human being.
2. As both biocetric and ecocentric argued animals and plants have intrinsic value as human being has.
3. The ethic of reference for life denies distinguishing between high and low, more valuable or less valuable life forms.

4. Intrinsic value is the value which something has for someone as a means to an *end* which they desire.
5. As deep ecologist both human and non-human have an intrinsic value.

Part II. Matching item

“A”

6. Anthropocentric view
7. Biocentric view
8. Ecocentric view
9. Ecofeminism view
10. Deep ecology
11. Pluralist view
12. Holistic view
13. Religious Ethics

“B”

- A. Argued as both women and nature are materially exploited
- B. God/Allah create land and man responsible to protect it
- C. Give priority for individual animals
- D. Give priority for Collective organisms
- E. The whole is greater than the sum of the parts
- F. Ecosphere egalitarianism and self-realization
- G. Only human being possess moral value
- H. Principle of tolerance

Part III. Give brief and precise answer for the following questions

14. List the eight principles of deep ecology as George Sessions & Naess
15. Compare and contrast biocentrism and ecocentrism theories of ethics
16. Discuss the Albert Schweitzer's reference for Life

CHAPTER THREE: THE ENVIRONMENT AS AN ETHICAL QUESTION

Introduction

Dear students! Welcome to the third chapter on the environment as an ethical question. The problems regarding environmental protection currently hold special significance, not only in terms of the technical aspect, but also

morally. The idea that man is the owner of his nature turned into the perspective that man must ensure a balance between consumption and use of resources. Currently, environmental issues evolve as fast as mankind develops and we get to face increasingly more destructive consequences of this development. Unfortunately, environmental issues are complex, specific and complicated because of their economic, social, cultural, technical size that we need to consider when trying to solve them. This complexity can be reduced only by changing human behavior towards the environment. Thus, it is necessary for humanity to adopt and harmonize ethical dimensions with scientific, economic, social and legislative aspects in order to control the environmental pollution and aiming at achieving an effective protection of the environment. The environment is affected by a number of factors that generate destructive effects in the long-term or even permanently. Everything starts from the lack of minimum ethical principles and it continues with items that have a negative impact on the environment as directly as possible. Among the factors that most often bring damage

to the environment are:

- ☆ The lack of research responsibility - the desire to achieve profit regardless of the environment;
- ☆ The technology - a growing consumption of energy, having as main consequence the weakening of the environment;
- ☆ The religious orientation - it is considered that the only reason of nature's existence is to serve man;
- ☆ The lack of environmental education - too few educational institutions give due consideration to showing environmental protection principles among children and adolescents;
- ☆ The overdevelopment - its main effect in the long term is an economic downturn

- ☆ The over consumption - the main factor generating destructive effects on the environment;
- ☆ The lack of social responsibility of most organizations - which had as main objective the achievement of profit by any means.

Objectives of this chapter

After the successful completion of this chapter, you will able to:

- Know the relation between environment science and environment ethics;
- Identify the relationship between environment and economy
- Analyze the impact of economy on the environment
- See the tie between politics and environment
- Analyze the cause and consequence of policy change on environment

3.1 Environment Sscience and Eenvironment Eethics³⁹

Brainstorming Question: What appear in your mind when you hear the term environment science? Use the following space!

Environmental science is the study of the interactions between the physical, chemical, and biological components of the natural world, including their effects on all types of organisms and how humans impact their surroundings.

³⁹ Ibid

Environment is everything that affects an organism during its lifetime. In turn, all organisms, including people, affect many components in their environment. From a human point of view, environmental issues involve concerns about science, nature, health, employment, profits, law, politics, ethics, fine arts, and economies. Therefore, environmental science is by its nature a multidisciplinary field. The word environmental is usually understood to mean the surrounding conditions that affect people and other organisms.

Some people consider themselves **conservationists**. A conservation ethic focuses on sustainable resource use, allocation, and protection. The primary focus is on maintaining the health of ecosystems and their biological diversity. Other people may be termed **environmentalists**. The environmental ethic is a diverse scientific, social, and political movement. An environmentalist is someone who actively works to preserve the environment from destruction or pollution.

Environmental decision making often involves compromise. A decision that may be supportable from a scientific or economic point of view may not be supportable from a political point of view or vice versa. Generally, the parties involved debate and argue their viewpoints. Ultimately, when decisions are finally made, each party may have given grounds, but hopefully, all parties are willing to accept the compromises they have made.

3.1.1 Definition and components of Ecosystem

3.1.1.1 Definition of Ecosystem

An ecosystem is defined as a space in which interactions take place between a community, with all its complex interrelationships, and the physical environment. Thus, an ecosystem is the basic functional unit and includes both biotic and abiotic environment, each influencing the properties of the other and both necessary for maintenance of life on the

earth. The cycling of materials between living and non-living factors is an ecological system or ecosystem.⁴⁰

3.1.1.2 Components of Ecosystem⁴¹

An ecosystem is composed of four components: the atmosphere (air), the hydrosphere (water), the lithosphere (soil and rock), and the biosphere (life). The first three comprise the *abiotic* or nonliving components of the ecosystem, whereas the biosphere is its *biotic* or living component.

A. Atmosphere

The cover of the air, that envelope the earth is known as the atmosphere. Atmosphere is a thin layer which contains gases like oxygen, carbon dioxide etc. and which protects the solid earth and human beings from the harmful radiations of the sun. There are five concentric layers within the atmosphere, which can be differentiated on the basis of temperature and each layer has its own characteristics. These include the troposphere, the stratosphere, the mesosphere, the thermosphere and the exosphere.

Troposphere-is the layer of air nearest to the ground. Temperature decreases with height. The average temperature drops from 15°C at sea level to -56.5°C at 11,000 m above sea level. Mixing of the air molecules due to their constant movement (winds) keeps the composition of the gases more or less same throughout the troposphere. An exception to this is water vapor. Most water vapor evaporates from the surface of the Earth and is found in

⁴⁰ Neil Carter. The Politics of the Environment: Ideas, Activism, Policy. Cambridge University Press: UK,2001.

⁴¹ Ibid

the lower troposphere.

Focus: Tropopause is a transition layer between Troposphere and Stratosphere

Stratosphere- is the layer of air above the troposphere where temperature increases with height. The average temperature rises to -2.5°C at 50,000 m above sea level. Ozone is found in higher concentrations between 20 and 30 km above the surface. Hence sometimes *Stratopause is the top of the stratosphere, which is a transition layer* ed to as the “ozone layer”. Ozone absorbs radiant energy from the sun and hence warmer temperatures are encountered in the stratosphere.

Mesosphere- is the layer of air above the stratosphere where temperature decreases with height. The average temperature decreases to -90°C at 90,000 m. This is the coldest layer of the atmosphere.

Mesopause is the top of the mesosphere, which is a transition layer between Mesosphere and Thermosphere

Thermosphere- is the layer of air above the mesosphere. The temperatures in the thermosphere increase with increasing height, but there are not many molecules in this layer. The air becomes less and less dense as we reach space.

B. Hydrosphere

This comprises all water resources both surface and ground water. The world's water is found in oceans and seas, lakes and reservoirs, rivers and

streams, ponds, glaciers and snowcaps in the Polar Regions in addition to ground water below the land areas. Hydrosphere functions in a cyclic nature, which is termed as hydrological cycle or water cycle.

C. Lithosphere

Lithosphere means the mantle of rocks constituting the earth's crust. The earth is a cold spherical solid planet of the solar system, which spins in its axis and revolves around the sun at a certain constant distance. Lithosphere mainly, contains soil, earth rocks, mountain etc. Lithosphere is divided into three layers-crusts, mantle and core.

D. Biosphere

Biosphere is known as the life layer which refers to all organisms on the earth's surface and their interaction with water and air. It consists of plants, animals and micro-organisms, ranging from the tiniest microscopic organism to the largest whales in the sea. Biology is concerned with how millions of species of animals, plants and other organisms grow, feed, move, reproduce and evolve over long periods of time in different environments. Its subject matter is useful to other sciences and professions that deal with life, such as agriculture, forestry and medicine. The richness of biosphere depends upon a number of factors like rainfall, temperature, geographical reference etc. Apart from the physical environmental factors, the man made environment includes human groups, the material infrastructures built by man, the production relationships and institutional systems that he has devised. The social environment shows the way in which human societies have organized themselves and how they function in order to satisfy their needs.

Critical Thinking: Why organisms in ecosystem are interacting

Ecology

The term ecology derived from the Greek word *oikos* that means dwelling place and *logos* means study, this means the study of *organisms in their home*.

- It is the science which looks at the interrelationship between living species and their environment/ habitats.
- Ecology involves collecting information about organisms and their environment.
- It also deals with the ways in which organisms are adapted to their surroundings.

It is important to recognize that the living and nonliving components of an ecosystem interact with each another. The dynamic interaction of these components is critical to the survival and functioning of the ecosystem, just as breathing and eating are essential to the survival of animals. Furthermore, these components are capable of co-existing so that the ecosystem itself is in a sense alive.

Abiotic Component (Physical or Non- living) -includes external physical factors like air, water, and land etc. Abiotic component has a major influence on the life of organisms. Abiotic components are classified in to two types. These are;

Climatic factors- It consist of temperature, rainfall, snow, wind, light, humidity etc. The climate of an area is the result of several factors such as latitude, elevation, nearness to the sea, and monsoon activities and ocean currents. Temperature influences the rates of biochemical reactions in plants, with the reaction rates approximately doubling with every 10°C increase. Plant species require a range of temperature to survive. Below a minimum temperature they are inactive, and above a maximum temperature biochemical reactions stop. Normally in many plants growth is possible above 6°C. In areas with extremes of temperature, such as the tundra and

tropical deserts the plants have mechanisms to adapt to such conditions. Light levels decide the magnitude of photosynthesis reactions. Different plants have their characteristic light requirements in respect of light intensity, duration and wavelength. Some plants, termed heliophytes, require high levels, whereas sciophytes can grow in shady, low light conditions. Water is an essential factor for biochemical plant processes, including photosynthesis. Plants growing on lands obtain their water requirements from the soil through their roots by the osmosis process. Plants called Hydrophytes grow in fresh water and they cannot withstand drought. Xerophytes survive long periods of drought, and halophytes are able to survive in saline water. Mesophytes require moderate conditions (neither waterlogged nor drought).

Edaphic factors or soil factors- are mineral and organic matter in soil and texture of soil. Soil is the major source of nutrients and moisture in almost all the land ecosystems. Soil is formed when a rock weathers. The rocks brake down into a collection of different inorganic or mineral particles. The climate influences the type and rate of the weathering of the rocks as well as the nature of the vegetation growing on it. Nutrients are recycled in the soil by the plants and animals in their life cycles of growth, death and decomposition. Soil texture is the different size range of mineral particles varying from fine clay to coarse gravel. The varying percentages of each size range produce soils with different characteristics. Soil organic matter is called humus that is formed by the decomposition of plant and animal matter. The rate of decay depends upon the nature of the material and the climate. The humus produced and incorporated into the soil, is known as clay-humus complexes which are important soil nutrients.

Biotic Components (living ecosystem)-On the basis of their nutritional (trophic) status, organisms in an ecosystem are broadly divided into producers /autotrophs, consumers/ heterotrophs and decomposers/ Sapotrophs.

The **producers** are those organisms capable of photosynthesis: the production of organic material solely from solar energy, carbon dioxide and water. In effect the plants convert solar energy into chemical energy using water and carbon dioxide. This organic material serves as a source of both energy and mineral nutrients, which are required by all living organisms. Examples include terrestrial plants and aquatic plants, such as phytoplankton.

The **consumers** are organisms whose very survival directly or indirectly depends on the organic materials manufactured by the producers for their food. The consumers comprise animals of all sizes, ranging from large predators to small parasites such as mosquitoes. The nature of the consumers' dependence on the producers may take different forms. Some consumers (herbivores such as rabbits) are directly dependent on primary producers for energy. Others (carnivores such as lions) are indirectly dependent on primary producers. They are grouped in to;

Primary Consumers or Herbivores: They are also called first order consumers. They eat the producers or plants. Examples; cow, goat, sheep, deer, rabbit etc are primary consumers.

Secondary Consumers or Primary Carnivores: They are also called second order consumers. They eat herbivores. Examples are snakes, cats, foxes etc are secondary consumers.

Tertiary Consumers: They are also called third order consumers. They feed on secondary consumers. They are large Carnivores such as wolf, lion, tiger etc.

Focus:

-  Produces constitute the first trophic level in food chain
-  Herbivores constitute the second trophic level in food chain
-  Carnivores constitute the third, fourth and fifth trophic level in food chain

The **decomposers** include micro-organisms such as fungi, yeast, bacteria, etc., as well as a diversity of worms, insects and many other small animals that rely on dead organisms for their survival. In their efforts to survive and obtain energy, they decompose material released by producers and consumers to their original elements or they convert the complex organic substances into simple organic compounds. These are further broken down by bacteria and converted into inorganic forms, which are taken up by green plants.

However, decomposition may not always be complete. The oxidation process involved in decomposition depends on the availability of oxygen and the energy present in a given environment. For example, oxidation takes place at a much faster pace in a tropical forest than at the bottom of a lake or in a desert. Thus, in nature, material recycling is not 100 percent efficient, and some amounts of organic matter may remain only partially decomposed. This incompletely decomposed organic matter, accumulated and aged over long periods of time, will develop peat, coal and petroleum – that is, fossil fuels. Such matter forms the basis of the energy resources so crucial to the modern human economy. It also constitutes a large reserve of carbon that is rapidly released when fossil fuels are burned thereby contributing to global warming by releasing CO₂ to the atmosphere at an unprecedented rate.

Food chain, Food Web and Trophic level

A **food chain** is the transfer of energy from the autotrophs (i.e., plants) through a series of organisms that consume and are consumed. It indicates who eats whom in an ecosystem. A simple food chain is like the following;

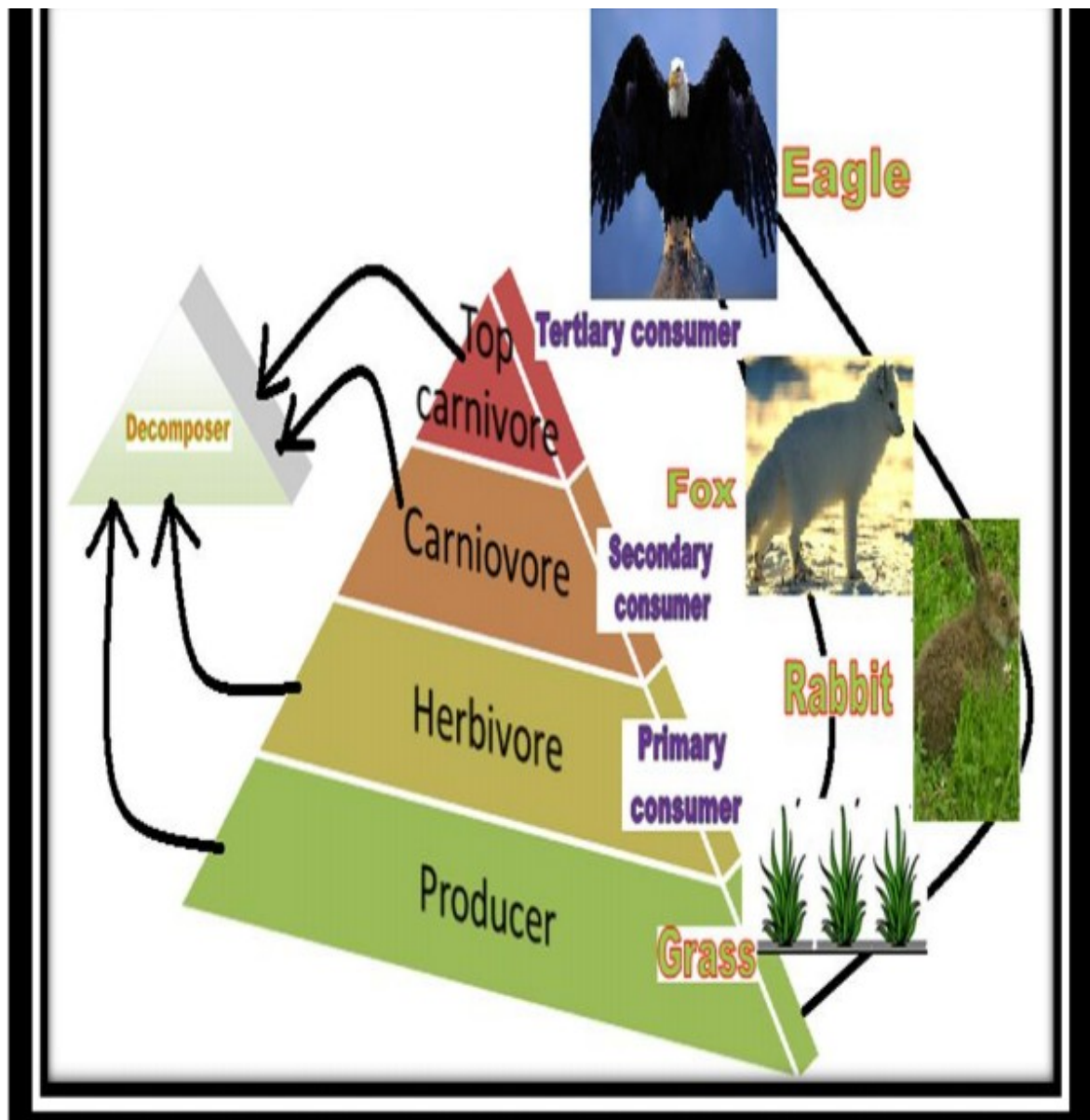
Grass → Rabbit → Fox → Eagle

Each organisms occupies a separate trophic level. In below diagram, the grass is primary producer (1st trophic level I). The rabbit is primary consumer (2nd trophic level II) because they eat the the grass (primary producer). The fox is the primary carnivore (3rd trophic level III) because it eats the rabbit. The

eagle is the secondary carnivore (trophic level IV), eats the fox. The eagle eventually dies and decay-causing microorganisms breakdown the remains.

Food web is representation of the interlocking food chains that connect all organisms in an ecosystem or the combination of all feeding relationships that exist in an ecosystem.

Figure 1.1: Trophic levels in an Ecosystem



Source: Shushmitha and Baskar, 2009

In short, the functioning of the ecosystem as a whole is characterized by a network of mutual interdependencies among many species of organisms at each level- a food web. As shown in Figure 1.1, the consumers depend on the producers for energy, various nutrients and oxygen. The oxygen is a by-product of photosynthesis. The producers, in turn, depend on consumers and decomposers for carbon dioxide (CO₂) and on decomposers and abiotic processes for mineral elements. All members of the biotic component, through respiration, release CO₂. Finally, in the process of consuming the dead plants and animals, the decomposers convert organic compounds to inorganic minerals, which plants can use. Thus, in a natural ecosystem, survival and 'proper' ecosystem functioning require mutual interactions (interdependence) among organisms and between them and the abiotic environment.

FOCUS:

- Autotrophs (For example: green plants, seaweeds, and lichens) are called producers because only they can use energy to manufacture food from inorganic raw materials.
- Herbivores, carnivores and omnivores are consumers because they can't produce their own food rather they depend on either on producers or each others.
- Herbivores are called primary consumers because they use producers as source of food.
- Carnivores that are called secondary consumers because they feed on herbivores.
- Carnivores that feed on other carnivores are tertiary (or higher) consumers. E.g tiger and lion

3.2 Environment Technology and Environment Ethics

Learning Activity: Can you explain the positive and negative impact of technology on environment and vis-à-vis.

Technological developments have provided important benefits to health and the environment. Energy provision, waste and water treatment systems, modern housing, transport, modern food production and distribution systems, immunization, pest control and telecommunications have played important roles in improving health and the quality of life while increasing life expectancy and protecting the environment. Nevertheless, societal change and rapid technological development over the last century have also produced an increasing variety of

agents and circumstances whose consequences are partly unknown, are difficult to predict, and capable of posing irreversible risks to human health and that of the ecosystem. While our understanding of environmental and health risks has advanced greatly, so has the complexity of the factors that can affect health such as toxic chemicals or radiation, social circumstances such as exclusion and deprivation, limited access to clean natural resources. Thus, large uncertainties remain of the effects on health of many activities.⁴²

Decisions taken in domains apparently distant from health often have the potential to affect people's health positively or negatively because of the great number of connections and exchanges in modern life. Health is a function of highly complex systems, which can be unintentionally disrupted

⁴² Ibid

in unpredictable ways and result in adverse health consequences that may be serious and irreversible.⁴³

📖 **Critical thinking:** How human societies can continue to obtain the great benefits of development while promoting a clean and healthy environment and ensuring an adequate standard of living

3.2.1 Environmental pollution and Technology⁴⁴

Environmental pollution usually occurs as a result of energy conversions and the use of resources which leaves their by-products behind in water, soil or air. Technology has begun to solve some pollution problems, and public awareness of the extent of pollution will eventually make government bodies to be more proactive rather than reactive and also undertake more effective environmental planning and adopt more effective antipollution measures. Environmental technologies are technological solutions of environmental problems, and they mitigate the impact of production on the environment. Environmental technologies are used in such sectors as industry, agriculture, services and transport, as well as in everyday housework.

The impact of production on the environment is determined by the fact that during the process of production, raw materials, water and energy are used, making products and waste.

Classification of **E**nvironment **T**echnology

- a. Clean production technologies
- b. End-of-pipe environmental pollution reduction technologies

⁴³ Ibid

⁴⁴ Timothy O’riordan. Environmental Science for Environmental Management, 1995

C. Climate technologies

Clean production technologies

Clean production is a process in which hardly any waste is produced, but all the raw materials are used up for the end product. In order to implement clean production, technological processes in enterprises are changed or enhanced. It is possible to make production more efficient with lesser input (materials, energy and water), producing the same output of the same or higher quality. The simplest way to implement cleaner production in an enterprise is to use the best available technology.

Products are called environment-friendly if the impact on the environment and natural resource consumption is minimal during the process of their production, use and discharge into the waste flow. Clean production can be achieved by implementing the following conditions:

- minimal use of water, and no waste water,
- minimal use of energy, or the use of energy generated during the production process for the production needs,
- economical use of raw materials, and
- no waste.

End-of-pipe Environmental Pollution Reduction Technologies

Environmental technologies of this group are purification technologies. Pollutants are separated as soon as they have been formed, then they are treated before they are released into the environment

Climate Technologies

Those technological processes reduce greenhouse gas emissions in the atmosphere. Climate technologies include also clean production technologies and end-of-pipe environmental pollution reduction technologies when they reduce the impact on climate change, as well as

those technological processes that reduce greenhouse gas emissions into the atmosphere.

Conception for Pollution Reduction

Environmental pollution reduction measures can be ranked according to their priority. The first stage includes the identification and classification of environmental pollution types and their impact.

Focus:

Environment-friendly products- Products are called environment-friendly if the impact on the environment and natural resource consumption is minimal during the process of their production, use and discharge into the waste flow.

Eco-design-The aims of eco-design are to reduce the consumption of resources, to use environment-friendly materials, to optimize the production, distribution and use of the product as well as to ensure proper management at the end of its life cycle, i.e. renewal, recycling or disposal.

Methods of Waste Reduction⁴⁵

Waste production can be minimized by adopting the R's:

Reduce- Reducing the amount of waste you produce is the best way to help the environment. There are lots of ways to do this. For example:

- Consuming less
- Purchasing durable items and free toxic products

⁴⁵ **Richard T. Wright and Bernard J. Nebel Environmental Science: Toward Sustainable Future, 2002.**

- Buy products that don't have too much packaging. Some products are wrapped in many layers of plastic and paperboard even though they don't need to be.
- Instead of buying something you're not going to use very often, see if you can borrow it from someone.
- Cars use a large amount of energy and cause pollution. Some ways to reduce the environmental damage caused by cars include carpooling with friends, walking, taking the bus, or riding your bike instead of driving.
- Start a compost bin. Some people set aside a place in their yard where they can dispose of certain food and plant materials. Over time, the materials will break down through a natural process called decomposition. The compost is good for the soil in your yard and means that less garbage will go to the landfill.

Replace

- To substitute a thing that is broken or inefficient or lost or no longer working for another. To put in the place of another and switch seemingly equivalent items that can be interchanged:
- Use water-based paints instead of solvent-based paints,
- Use durable items instead of one-off disposable items (e.g. replace paper/plastic cups with mugs/glasses),
- Replace paper towels with hand-dryers or cloth towels,

Reuse

It is a way to reuse products by repairing, donating and selling them. E.g pottery and blacksmith

- Coffee cans, shoeboxes, plastic food containers, and other types of containers people throw away can be used to store things or can become fun arts and crafts projects.

- Don't throw out clothes, toys, furniture, and other things that you don't want anymore. Somebody else can probably use them. You can bring them to a centre that collects donations, give them to friends, or even have a yard sale.
- Use all writing paper on both sides.
- Use paper grocery bags to make book covers rather than buying new ones.
- Use silverware and dishes instead of disposable plastic utensils and plates.

Recycling

It is reprocessing of discarded materials into new useful products.

E.g Steel cans become automobiles and construction materials, Kitchen wastes become fuel pellets, Ethanol become fuel etc

Recycling is usually better alternative to either dumping or burning wastes.

❖ *It saves money, energy, raw materials, land space and also reducing pollution.*

Recover

After collection, the residual waste is disposed of (either through landfill or incineration), the recyclables are remanufactured and/or energy is recovered (if energy is recovered from waste it is classed as recovery rather than disposal). To recover is a new technology that prepares and treats waste materials in order to generate energy. The energy produced by this special method is used as power. Energy can be recovered from waste either by direct waste incineration (typically mass burn incineration plants, taking unsorted waste) or by using waste as a fuel.

Reject

You always have the choice. Do not buy anything you don't really need.

Pesticides and Biocides: Consequences of Environmental Pollution⁴⁶

These are organic and inorganic chemicals originally invented and first used effectively to better the human environment by controlling undesirable life forms such as bacteria, pests, and foraging insects. Their effectiveness, however, has caused considerable pollution. The persistent, or hard, pesticides, which are relatively inert and non-degradable by chemical or biologic activity, are also bio-accumulative; that is, they are retained within the body of the consuming organism and are concentrated with each ensuing level of the biologic food chain. For example, DDT provides an excellent example of cumulative pesticide effects. Although DDT use has been banned in the United States since 1972, and in Nigeria more recently, it is still a popular pesticide in much of the rest of the world. Its continued use in several countries results in ingestion by higher forms of life: algae, fish, shellfish, birds, or humans. The resultant increased concentration in the higher life forms (bio-enhancement) may reach levels of thousands to millions of parts per billion. Pesticides affect birds nesting habits and nervous system of animals and fish; they can cause instability, disorientation, and, in some cases, death. These examples are generally a result of relatively high body residuals producing acute (short-term) readily recordable results. The long-term (chronic) effects of persistent pesticides are virtually unknown, but many scientists believe that they are as much an environmental hazard as are the acute effects. Non-persistent (readily degradable) pesticides or substitutes, insect sterilization techniques, hormone homologues that check or interfere with maturation stages, and introduction of animals that prey on the pests present a potentially brighter picture for pest control with significantly reduced environmental consequences.

⁴⁶ **Ahmed Hussen Principles of Environmental Economics, Routledge, 2004**

3.3 Environment **E**conomics and **E**nvironment **e**thics

Brainstorming Questions: Dear learner! How you define environment economics? Why economy rely on environment? What are the impacts of economic growth on environment? Put your answer on the following provided spaces.

Economics is an important tool for making decisions about the use, conservation, and protection of natural resources because it provides information about choices people make, the costs and benefits of various proposed measures, and the likely outcome of environmental and other policies.

The study of natural resources is subdivided into two major subfields. These are environmental economics and resource economics. The difference between these two subfields is primarily a matter of focus. In environmental economics the primary focus is how to use or manage the natural environment (air, water, land-mass) as a valuable resource for the disposal of waste. In natural resource economics the emphasis is on the inter-temporal allocation of extractive nonrenewable resources such as petroleum, iron ore, potash, etc. and the harvest of renewable resources such as fish, forest products, and other plant and animal species.⁴⁷

⁴⁷ Cunningham, Saigo. Environmental Science, 1990

Environmental economics developed in its present form in the 1960s as a result of the intensification of pollution and the heightened awareness among the general public in Western countries about the environment and its importance to our existence.

The growth of environmental economics in the 1970s was initially within the neoclassical paradigm. In general, this approach to the environment is concerned with issues of market failure, inappropriate resource allocation, and how to manage public goods. There was little concern for the underlying relationships between the economy and the environment. Concerns about the limits of this approach to environmental economics led some environmental economists to develop what is now referred to as **ecological economics**.⁴⁸

Any study on the economic content of production, distribution, development, etc., cannot be completed without touching upon the environmental aspects like externality, pollution, damage, exhaustion, depletion etc. Environmental economics can therefore be defined as that part of economics which deals with interrelationship between environment and economic development and studies the ways and means by which the former is not impaired nor the latter impeded.” It is thus a branch of economics which discusses about the impacts of interaction between men and nature and finds human solutions to maintain harmony between men and nature. Environmental economics teaches us how to promote economic growth of nations with least environmental damage. In general, the fundamental to the study of

⁴⁸ Marco Martuzzi and Joel A. Tickner. The precautionary principle: protecting public health, the environment and the future of our children, **World Health Organization, 2004.**

environmental economics is the problem of scarcity – the trade-off between economic goods and the preservation of environmental quality.⁴⁹

Focus: External cost is cost that is external to the market price of the product is considered to be forms of market failure - when a free market does not allocate resources efficiently. For example, pollution

3.3.1 The Economy and the Environment: Interaction⁵⁰

The economy is assumed to directly depend on the natural environment for three distinctive purposes. These are;

A. The extraction/harvest of Natural resources

Extraction of nonrenewable resources and the renewable resources are used as factors of production. These resources are important inputs to production. These resources frequently vary between countries and so will affect the country's economy. Some countries will have large stocks of minerals, while others have good arable land.

 What kind of natural resource is found in your area? Can you tell for your classmates?

Natural resources are generally grouped into two major categories: renewable and nonrenewable natural resources.

⁴⁹ Abdul Ghafoor Awan. Relationship between Environment and Sustainable Economic Development: A Theoretical Approach to Environmental Problems, *International Journal of Asian Social Science*, 3(3):741-761, 2013.

⁵⁰ Nikos Astroulakis. Ethics and International Development: The Development Ethics Paradigm East-West *Journal of Economics and Business* Vol. xvi , no 1 (99-117), 2017.

Renewable resources are those resources that are capable of regenerating themselves within a relatively short period, provided the environment in which they are nurtured is not unduly disturbed. Examples include plants, fish, forests, soil, solar radiation, wind, tides, and so on. These renewable resources can be further classified into two distinct groups:

Non-renewable resources are those with a finite endowment, which can be depleted over time. Examples of these resources include metallic minerals like iron, aluminum, copper, and uranium; and nonmetallic minerals like fossil fuels, clay, sand, salt, and phosphates.

Nonrenewable resources are resources that either exist in fixed supply or are renewable only on a geological timescale, whose regenerative capacity can be assumed to be zero for all practical human purposes. Nonrenewable resources can be classified into two broad categories. The first group includes those resources that are recyclable, such as metallic minerals. The second consists of non-recyclable resources, such as fossil fuels.

B. The dDisposal and aAssimilation of Wwastes/waste sink capacity/

This is the capacity of the environment to assimilate the waste products of production and consumption and convert them into harmless or ecologically useful products. This use of the environment is the one we are most concerned with in this module, as we look at the introduction. The natural environment provides a repository for all non-recycled waste produced by economic activity. In the absorptive capacity of the atmosphere, the oceans, and the soil, the natural environment is able to assimilate some of that waste without diminishing the provision of its other services.

The environment is not only affected by waste products but also by intentional releases of chemicals, such as pesticides, wood preservatives, paints, and lubricants. The impact of human activity on the composition of chemicals in the atmosphere is clear. Since 1750, pre-industrial period, carbon dioxide concentrations have changed from 280 parts per million in 1750 to 380 parts per million in 2000. There have also been significant increases in other gases such as methane and nitrous oxide. There are serious concerns being expressed about these increasing concentrations in the atmosphere and climate change. We are thinking here about the physical assimilative capacity of the environment. This is the physical capacity of the land, water and the atmosphere to absorb wastes and is determined by physical factors such as the climate, rainfall, wind patterns, and geographical location. When thinking about waste we need to distinguish between degradable and cumulative pollutants. With cumulative pollutants we need to understand if there are any important thresholds that need to be avoided.

C. Supplying of Environmental or amenity goods

Economic benefits (ie increased utility) may be directly derived from the consumption of the flow of services that are forthcoming from a stock of environmental goods. There are many examples of where the environment provides amenity benefits for society. For example, some countries enjoy beautiful landscapes and the public benefit from these via their associated recreational services and tourism. Environmental stocks of trees can offer global services such as climatic regulation because the trees absorb carbon dioxide, which might otherwise contribute to climate change. Many people get enjoyment from the biodiversity that exists in the world, and this can also be considered as a form of public consumption of an environmental good. The other examples of the consumption of environmental amenities are bird watching, canoeing, hiking national park trails, observing a morning sunrise or an evening sunset, etc.

3.4 Environment politics and environment ethics⁵¹

Learning Activity: What is environment politics? How politics and environment are interrelated?

power and biotechnology and global problems such as **biodiversity** loss, climate change and **ozone depletion**.

The environment has been on the political agenda since the late 1960s. In April 1986 the Chernobyl nuclear reactor exploded, with catastrophic human and environmental consequences stretching from the Ukraine across much of the Northern Hemisphere. Chernobyl appeared to be the death knell for the nuclear industry, as most governments stopped commissioning any new nuclear power-stations. Remarkably, twenty years later the nuclear industry is back in favour, with the first new nuclear reactor in the EU for over a decade being built in Finland, the French and British governments planning a new generation of nuclear reactors, and President Bush offering financial incentives to anyone willing to build the first nuclear power stations in the USA in a generation. Ironically, the contemporary justification for nuclear power is the 'green' claim that it is a carbon-free solution to climate change. The lifestyle choices of many people are increasingly shaped by environmental considerations: they purchase organic products, recycle drink containers, cycle to work and invest their savings 'ethically' and take 'ecotourist' holidays. Yet global capitalism and consumerist lifestyles grow

⁵¹ Akinwale o. Coker. Environmental Pollution: Types, Causes, Impacts and Management for the Health and Socio-Economic well-being of Nigeria

ever more demanding on the environment. Most people in the industrialised world seem to want more goods, to take cheap flights, to drive their cars and they are wedded to a 'throwaway' culture that results in landfill sites piled high with plastic bottles and obsolete computers. Citizens have joined environmental groups in their millions, signed petitions and marched on demonstrations. The environmental lobby has become an important actor in national and international politics, while the dramatic stunts of eco-warriors have become a familiar part of the political repertoire. But entrenched business interests and technocratic elites continue to exercise far greater influence over most key policy decisions. Green parties are now an established feature of party politics in many European countries, and have even joined coalition governments in several countries, whilst established parties of all persuasions have adopted a greener rhetoric. However, electoral politics remain dominated by traditional materialist issues, such as the state of the economy, taxation, public order and welfare policy. Governments everywhere have introduced a wide range of environmental protection policies and regulations, and most countries are formally committed to the principles of **sustainable development**, but priority is still almost always given to economic growth over environmental protection. Efforts to build international co-operation to address global environmental problems such as **climate change** have become a central concern of international diplomacy, yet the USA has refused to agree to make even the limited and inadequate emissions reductions contained in the Kyoto Protocol, and rapidly industrialising major powers such as China and India have not been required to make any commitments. Whilst there is no doubt that environmental issues have had a big impact on contemporary politics, the frequency with which governments adopt a business-as-usual response to environmental problems raises the cynical thought that perhaps nothing much has really changed. This puzzle is one of many challenges confronting environmental politics, which has rapidly become an established subject of political enquiry.

Biodiversity: The number, variety and variability of living organisms; sometimes refers to the total variety of life on Earth.

Ozone Depletion:

In the classical world, Plato, Lucretius and Caesar all commented on the problem of soil erosion. The collapse of the Mayan ~~civilisation~~civilization hundreds of years ago can probably be attributed to deforestation and soil erosion. Much later, however, it was the industrial and scientific revolutions of the eighteenth and nineteenth centuries that really created the conditions for contemporary concern about the environment. In particular, the process of industrialisation contributed to environmental degradation by accelerating resource consumption, urban development and pollution. One of the earliest examples of what we would now call environmental legislation was the 1863 Alkali Act in Britain, whilst in the USA the first legal action against air pollution occurred in 1876 in St Louis. The first wave of concern about environmental issues can be traced to the emergence of conservation and nature protection groups in the latter part of the nineteenth and the early twentieth centuries, reflecting a growing middle-class interest in the protection of wildlife, wilderness and natural resources. Several leading pressure groups, including the Sierra Club in the USA, the Royal Society for the Protection of Birds in the UK, and the Naturschutzbund Deutschland in Germany, date from this period. The **conservationist** movement established a firm base through the twentieth century as most countries saw a gradual accumulation of policies affecting various 'environmental' issues, ranging from the regulation of industrial pollution to the creation of national parks. Nevertheless, it was not until the emergence of '**modern environmentalism**' – the wave of popular concern about environmental issues that swept across the developed world during the 1960s – that the environmental discourse became widespread

Conservationism: An approach to land management that emphasizes the efficient conservation of natural resources so that they can later be developed for the benefit of society.

Modern environmentalism: The emergence, from the late 1960s, of growing public concern about the state of the planet, new political ideas about the environment and a mass political movement.

Table 3.1 Evolution of Environmental issues

Evolution	Environmental issues
First Generation: preservation and conservation (pre-1960s)	Protection of wildlife and habitats Soil erosion Local pollution
Second Generation: modern environmentalism' (from 1960s)	Population growth Technology Desertification Pesticides Resource depletion Pollution abatement
Third Generation: global issues (late 1970s onwards)	Acid rain Ozone depletion Rainforest destruction Climate change Loss of biodiversity Genetically modified organisms

Source: Neil Carter, 2001

Environmental Policy and Sustaining Growth⁵²

There are a number of reasons why government intervention is needed in environment. In particular, market failures in the provision and use of environmental resources mean that natural assets would be over-used in the absence of government intervention. A range of policies are available to tackle these market failures as follows:

- ⇒ Market-based instruments, such as the land fill tax, and payments for environmental stewardship;
- ⇒ Direct regulation, for example, relating to water quality and to vehicle emissions;
- ⇒ Public spending and technology programmes, such as on developing flood infrastructure, public procurement of sustainable products and supporting low carbon technologies such as electric vehicles; and
- ⇒ Information provision and other policies to address barriers to behaviour change, such as product labelling policies and policies to increase take-up of resource efficiency measures that provide environmental and financial savings.

Effective environmental policy is likely to require the use of multiple instruments each tackling a different part of the problem while avoiding duplication and unnecessary regulatory burdens. Pricing environmental inputs correctly helps manage the sustainable provision and use of natural resources. A consistent and coherent environmental policy provides greater certainty about the value of investments and encourages long-term business investment in new technology and innovation. Finally, environmental policy, including infrastructure and other investments, can reduce how vulnerable the economy and businesses are to adverse environmental events – both by reducing environmental risk and by increasing the economy’s resilience to

⁵² Shushmitha Baskar and R. Baskar Environmental Studies for Undergraduate Courses, 2007

these risks. For example, not just investments that facilitate emissions reductions to avoid dangerous climate change, but also those investments that help the economy adapt to climate impacts already locked-in by past and current emissions.

| The key principles of the environmental protection policy🌟

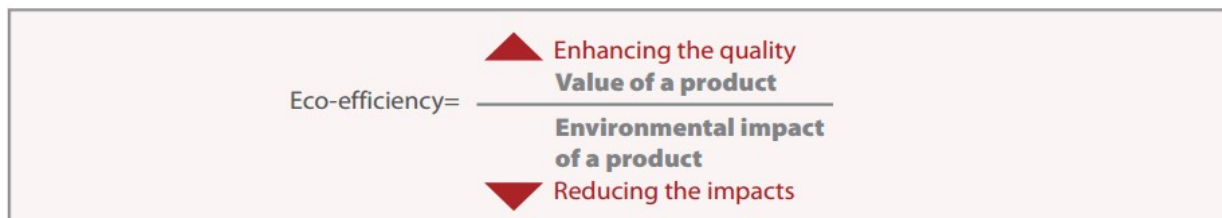
To ensure sustainable development of, environmental measures should form a part of the process of development of territories and all sectors of the national economy, and they cannot be separated from this process. This needs an integrated approach, i.e. sectors of the national economy (transport, industry, energy, construction, agriculture, housing, tourism, healthcare, etc.) should be developed so as to minimize any adverse environmental impact and maximize eco-efficiency of these sectors by including environmental measures into strategic documents for the development of these sectors. Efforts will be made to ensure close cooperation of economic sectors and coordination of activities when addressing issues such as climate change, reduction of air pollution, conservation and improvement of natural resources and the quality of the environment, waste reduction and preservation of landscape and biodiversity and use of the best available technologies. Efforts should be made to use the most environmentally advanced, efficient and available technology wherever possible, even if the established limits and rates are not exceeded. In order to reduce the risks to the environment and humans and simultaneously increase production efficiency, the implementation of cleaner production principles and low-waste technology will be promoted, especially in the use of natural resources, waste management, recycling, etc., and in the process of soil remediation. The principles are given below;

Eco-efficiency-Efforts will be made to ensure that the use of natural resources grows at a slower rate than production or services, i.e. to ensure that increasingly less energy.

Elements for eco-efficiency in the business sector

- Reducing material requirements for goods and services
- Reducing energy intensity of goods and services
- Reducing toxic dispersion
- Enhancing material recyclability
- Maximizing the sustainable use of renewable resources
- Extending product durability
- Increasing the service intensity of goods and services.⁵³

Fig- Eco-efficiency in the business sector



Source: ESCAP,2009

Precautionary principle⁵⁴

The precautionary principle states that, in cases of serious or irreversible threats to the health of humans or ecosystems, acknowledged scientific uncertainty should not be used as a reason to postpone preventive measures. The principle originated as a tool to bridge uncertain scientific information and a political responsibility to act to prevent damage to human health and to ecosystems.

⁵³ Akinwale o. Coker. Environmental Pollution: Types, Causes, Impacts and Management for the Health and Socio-Economic well-being of Nigeria.

⁵⁴ European Commission, Principles of EU Environmental Law, 2002

Most of the time, it is difficult to predict the effects of human activity on the environment. In order to protect the environment, the state, wherever possible, should apply the precautionary principle. If a risk of irreparable damage emerges, the most expensive measures to prevent deterioration of the environment are justifiable. The application of the precautionary principle should be based on the study of the area, forecasting, consistency and caution when predicting the consequences. In case of any scientific doubt, appropriate (precautionary) assessment procedures are applied and preventive actions are taken in order to avoid damage to the environment;

Ted Schettler and Carolyn Raffensperger provide a rationale of why the precautionary principle is needed in addressing complex, uncertain environment and health risks, including the mounting evidence of the effects of human activities on ecosystems and health, the complexity of contemporary environmental health risks and their uncertainty and the limitations of current risk-based decision-making tools in preventing complex risks. They note that the precautionary principle encourages policy-makers and public health professionals alike to consider how to account for growing complexity and uncertainty in their approach to public health.

As modern potential risk factors become more complex and farreaching, the precautionary principle addresses uncertain risks and seeks to shift the ways in which science informs policy from a strategy of “reaction” to a strategy of “precaution”.

Polluter pays principle - Efforts will be made to ensure that the costs of and responsibility for the restoration of an impoverished and polluted environment are shared not by all the citizens of the country but by those who benefit from it or are users of natural resources, i.e. the costs of pollution remedies should be paid by a respective polluter, except where such a polluter cannot be identified or where, pursuant to EU or national

legislation, such a polluter cannot be held liable for pollution or be forced to pay restoration costs.⁵⁵

Pollution prevention-Efforts will be made to prevent environmental pollution before it even begins, as the costs of remedying environmental damage are almost always higher than those of preventing damage (pollution prevention), and sometimes it is not even possible to remedy damage and restore the environmental status. The prevention of waste generation will be promoted, and its efficient application will have an impact not only on the reduction of waste, conservation of natural resources, improvement of the quality of the environment and the use of waste as a resource but also on the increase of the efficiency of production and other waste generating economic activities.

Rectification at source -Environmental damage should be rectified at source. Efforts will be made to ensure that all possible environmental protection measures are taken as soon as possible after the manifestation of adverse consequences and as close as possible to sources of pollution causing such adverse consequences;

Substitution-Efforts will be made to ensure that substances hazardous to humans and the environment are replaced with non-hazardous substances and non-sustainable resources with clean or less polluting renewable resources, while waste generated is returned for reuse, recycling or other uses (such as power generation);

Subsidiarity- This principle means the strengthening of democracy and partnerships in decision making and implementation processes. Problems which cannot be resolved locally should be addressed at a higher level.

⁵⁵ Nikos Astroulakis. Ethics and International Development: The Development Ethics Paradigm East-West Journal of Economics and Business Vol. xvi , no 1 (99-117), 2013. _

Efforts will be made to assist local communities with taking care of their environment, enhance the value of programmes and actions at local level and increase opportunities for the choose of actions and measures for dealing with local environmental problems. The principle of subsidiarity acknowledges that environmental problems and opportunities can be very different in each region; therefore, the environmental protection policy should take this aspect into consideration;

Partnership and shared responsibility-The aim of sustainable development can only be achieved if all stakeholders act united and cooperate (including public authorities, international organizations, local authorities, non-governmental organizations, national economic sectors (through their associations), businesses, consumers, members of the public, etc.). Each partner shall acknowledge its responsibility for the implementation of the environmental protection objectives and shall use available measures. Building partnerships through shared responsibility is a major challenge that can only be solved by acknowledging the diversity of views and respecting different interests and reasoned group opinions;

Public participation and information-Efforts will be made to increase public participation in decision-making process, promote and expand public and private education and raise public awareness and expertise on environmental issues and inform the public about their environmental impact.

Core features of the environment as a policy problem⁵⁶

This section identifies seven core characteristics that distinguish the environment as a policy problem.

Public goods

Many environmental resources can be described as public goods. Public goods are both 'non-rival' and 'non-excludable'. They are 'non-rival' because

⁵⁶ Richard T. Wright and Bernard J. Nebel Environmental Science: Toward Sustainable Future, 2002.

one individual's consumption does not limit the consumption of others: someone breathing clean air does not stop another individual also enjoying clean air. Public goods are 'non-excludable' in that, if one individual refrains from a polluting activity (e.g. driving a car), others cannot be excluded from the resulting benefits (cleaner air). By contrast, with private goods (a washing machine or a handbag), rivals can be excluded by the law of property. The public nature of environmental problems has important consequences for policymakers because efforts to protect the environment may encounter significant collective-action problems. The benefits to be gained from using a public good are often concentrated among a handful of producers while the costs may be spread widely: for example, a power station releasing sulphur dioxide that will eventually fall as acid rain far away, or a factory dumping chemicals into a river that pollutes it for miles downstream. If a government wishes to prevent this pollution, the cost of dealing with the problem may fall largely on the polluter, which in these examples would be the electricity generator or the factory owner. Consequently, a small number of spatially concentrated polluters who may have to pay for clean-up measures have an incentive to act collectively to protect their interests (perhaps by dissuading the government from taxing the pollution), whereas the individual citizens who suffer from the pollution are generally ill-informed, geographically dispersed and insufficiently motivated to mobilize as a group in defense of their interests. Furthermore, if individuals cannot be excluded from the benefits that others provide, then each has the incentive to free-ride on the joint efforts of others to solve the problem. So, if a government exhorts citizens to save water by refraining from 'unnecessary' activities such as washing cars or watering lawns, or it seeks to prevent air pollution by asking people to use their cars less, there will be a strong temptation for individuals to ignore these instructions in the expectation that others will be more dutiful. Free riding will therefore result in a less than optimal provision of the collective benefit, which in these examples would be a constant water supply or clean air. The problem here

is not about the consumption of air, but how individuals use this resource to dispose of waste materials such as sulphur dioxide or carbon dioxide. The collective challenge posed by common-sink resources is to control their level of pollution. Failure to protect either pools or sinks can lead to a 'tragedy of the commons' in which a resource is either completely exhausted or damaged beyond use.

The idea of the '**Tragedy of the Commons**' was popularized by **Garrett Hardin**. He invites us to picture a medieval village pasture that is open to all and to assume that each peasant will try to keep as many cattle as possible on this land. Eventually, the carrying capacity of the land will be reached. However, when confronted with a decision about whether or not to put an extra cow on the common land, the rational self-interested peasant will recognize that, whilst all the benefits of the extra cow accrue to her or him alone, the costs – the effects of overgrazing – will be shared with the other villagers. Thus each villager will keep adding more cows until the common land is destroyed: There in is the tragedy. Each man is locked into a system that compels him to increase his herd without limit – in a world that is limited. Ruin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons. Freedom in a commons brings ruin to all.

| **Trans-boundary problems**

Problems of the global commons are frequently trans-boundary. For example, climate change, ozone depletion and marine pollution do not respect national borders. Global problems represent a major threat to the environment and can only be solved through concerted action by the international community. However, if one nation takes action to reduce ozone depletion or prevent global warming, it cannot exclude other nations from the benefits. Whereas an individual government can use the law of the land to require citizens or companies to change their behavior, the doctrine

of national sovereignty means that there is no equivalent international authority – no world government – that can force every country to conform. Consequently, efforts by the international community to address trans-boundary problems have required unprecedented levels of cooperation between states and the building of new international institutions to persuade reluctant nations to support joint action.

Complexity and Uncertainty

Policy making may be hampered by the complexity and uncertainty that characterize many environmental problems. It is often difficult to identify the complex and interdependent relationships between natural and human-made phenomena. The interconnectedness of ecosystems means that many problems are non-reducible i.e they cannot be resolved by addressing individual parts in isolation. Indeed, policies that deal with one discrete problem may have unintended and damaging consequences elsewhere. For example, in the 1950s local air pollution in Britain's industrial towns was reduced by building taller factory chimneys, only for it to be discovered many years later that this solution had simply exported the pollution to fall as acid rain in Scandinavia. Similarly, cars can be fitted with **catalytic converters** to reduce the nitrogen oxide emissions that cause acid rain, but the resulting reduction in engine efficiency increases **fuel consumption** which in turn increase the carbon dioxide emissions that contribute to global warming. Complexity and uncertainty underline the importance of science, scientists and professional expertise in environmental policymaking. Problems such as climate change and ozone depletion cannot even be identified without science. Some environmental degradation is reasonably visible, such as fumes from road traffic, or relatively easy to detect, such as falling fish stocks, but scientific knowledge is needed to make an accurate assessment of the nature of either problem. Yet science frequently struggles to fulfill its role as objective arbiter among policy options. The scientific knowledge informing our understanding of

environmental problems is often based on a theory which is contestable and evidence that can be interpreted in several different ways, so scientific judgments will always be provisional and open to revision. The fluidity that characterizes science can make it difficult for policymakers to make adequate responses to 'new' problems such as climate change, ozone depletion and GMOs. These issues may be subject to resistance or even denial by affected interests, such as industrialists or farmers, who may discourage or oppose fuller scientific inquiry into the environmental impact of such issues. There is also considerable disagreement within the scientific community concerning many long-established problems. For example, there are sharply contrasting views about whether bathing-water pollution should be prevented by building longer pipes to take sewage further out to sea, or by stopping all marine sewage disposal. Nor are scientists immune from twisting their findings to suit vested interests, such as their corporate funders, or even to increase their own chances of securing future research funding.

Uncertainty and complexity complicate policymaking. If policymakers understand the causes of a problem then it is obviously easier to design effective solutions, but frequently they have to act with incomplete information. Faced with uncertainty, should they adopt a precautionary approach to a problem, or continue depleting an environmental resource until scientific evidence proves that action must be taken? How policymakers respond will be shaped by their position on the ecocentric-technocentric divide, with ecocentrics opting for caution and technocentrics being more likely to assume optimistically that things will pan out satisfactorily. Moreover, in liberal democracies such dilemmas open decisions to political conflict by providing ammunition for both proponents and opponents of remedial action, which further complicates and politicises the decision making process.

Irreversibility-The problem of uncertainty is exacerbated by the irreversibility of many environmental problems. Once the Earth's carrying capacity is exceeded, then environmental assets may be damaged beyond repair. Scarce resources may be exhausted and species may become extinct. Some environmental assets are substitutable, although rarely is the process straightforward or costless. Technological advances may eventually enable solar energy and wind power completely to replace depleted fossil fuels as generators of energy, but probably only if there is also a massive overall reduction in energy consumption. Irreversibility places even greater pressure on policymakers to get it right, for unlike fiscal or welfare policy, where a poorly judged tax rate or benefit payment can be corrected in the following year's budget, it may not be possible to correct an earlier mistake.

Temporal and Spatial Variability

Many environmental issues are complicated by the fact that their impact will be long-term, probably affecting future rather than present generations, whereas remedial policies need to be adopted before the full negative effects of a problem are felt. Although action to protect future generations may be needed now, politicians tend to have short-term concerns - tomorrow's

papers, forthcoming opinion polls or the next election - and they know how difficult it is to persuade people to accept self-sacrifice today in order to protect those who are not yet born. In short, it is easier to make policy that responds to today's political pressures than addresses tomorrow's environmental problems. Similarly, there are huge variations in the spatial impact of environmental problems. The depletion of Himalayan forests results in flooding downstream in Bangladesh. Rising sea-levels caused by global warming will cause most damage to low-lying lands such as Egypt and the Maldives. Sulphur dioxide emissions generated by British factories fall as acid rain in Scandinavia. Spatial and temporal variability mean that the costs of environmental problems, and their solutions, are unevenly

distributed. Inevitably, environmental policies will produce winners and losers. The challenge for governments is to balance competing interests, but this raises important issues of equity and social justice between current and future generations.

Administrative Fragmentation

The administrative structure of government is usually divided into distinct policy sectors with specific responsibilities such as education, defense or health care. A core group of economic ministries such as finance, industry, employment, energy, agriculture and transport make policy decisions affecting production, consumption, mobility and lifestyles that will frequently have negative consequences for the environment. Yet these individual ministries often engage in a blinkered pursuit of narrow sectoral objectives with **little consideration** for their environmental impact. A transport ministry might implement a massive road-building programme, or the agriculture ministry might encourage intensive farming methods, while responsibility for protecting the environment is typically given to a separate ministry. The instinct of bureaucrats is to break problems down into separate units, but the interdependence of economic and ecological systems does not respect these artificial administrative and institutional boundaries. Many environmental problems are cross sectoral and require coordinated responses that transcend sectoral boundaries. For example, an effective climate change strategy will need the involvement of the ministries responsible for transport, energy, industrial emissions, livestock and forestry, as well as for overall economic policy.

Regulatory Intervention

Environmental damage is frequently a by-product of otherwise legitimate activities; consequently, governments may have to intervene in the economy

and society to regulate these damaging activities. Regulatory intervention can involve a mix of policy instruments, not just legal instruments: for example, setting factory emission standards or encouraging the recycling of waste paper. The regulatory character of much environmental policy contrasts with many other policy areas, notably welfare policy, where taxes and public spending are used to alter the distribution of resources. Although public spending is rarely the primary instrument of environmental policy, regulatory interventions will usually impose some kind of cost on key interests in society and may have significant distributive consequences. Consequently, regulatory proposals are likely to provoke howls of outrage from businesses and trade unions about the dangers of reduced competitiveness or jobs lost, or from consumers who have to pay higher prices for cleaner or safer goods. Thus the effectiveness of regulatory interventions may be limited by this historical tension between economic growth and environmental protection. This section has identified seven core characteristics of environmental problems. The first five are intrinsic to the environment as a policy issue; the remaining two characteristics reflect the institutional structures and policymaking processes of modern government.

The Traditional Policy Paradigm

A policy paradigm provides policymakers with the terminology and a set of taken-for-granted assumptions about the way they communicate and think about a policy area. While none of the seven core characteristics identified in the previous section is unique to the environment, taken together they pose a range of problems that are particularly challenging to policymakers. Yet the traditional paradigm that emerged during the 1970s treated the environment like any other new policy area, rather than recognising the interdependency of the relationships between ecosystems and political, economic, social and cultural systems. The traditional paradigm has been characterized by government policies were reactive, piecemeal and tactical: few countries possessed a comprehensive national plan setting out an

anticipatory, comprehensive and strategic approach to the environment. Instead, a specialist branch of government – an environment ministry and various new agencies were formed to deal with environmental issues. Environmental policy was treated as a discrete policy area. Agencies had few powers over decisions taken in other policy sectors and there was little policy co-ordination and considerable scope for problem displacement. For example, pollution control typically involved the use of single-medium regulations to control industrial releases, whilst separate agencies dealt with discharges to air, water and land.

Many policies were prone to an ‘implementation deficit’ involving a shortfall between policy intent and outcome. For example, although major legislative programmes such as the US Clean Air Act 1970 and the UK Control of Pollution Act 1974 introduced stringent controls on pollutants and toxic substances, many deadlines and targets were missed and key provisions remained unimplemented many years later. Above all, a balance had always to be struck between environmental protection and economic growth, with the latter frequently taking priority.

Political Obstacles to Change

The traditional paradigm is bolstered by two core characteristics of the policy process: first, the privileged position of business and producer groups; secondly, sectoral divisions within the institutional structure of government both reflect and reinforce a special-interest approach to public policy in which each ministry tends to act as a sponsor for the key producer or professional groups within its policy sphere. This section uses theories of state-group relations and policy network analysis to show how the power of producers and the fragmented nature of government have reinforced the traditional paradigm.

The Power of Producers

In political science, it is common to explain policy outcomes in terms of the power exercised by competing interests. This section uses some central theories of state-group relations (pluralist, neo-pluralist, neo-Marxist) and the theory of three-dimensional power to explain the continuing strength of the traditional paradigm in shaping environmental policy outcomes. The pluralist model regards public policy as the outcome of competition among different groups. For every environmental issue there will be a wide range of institutions, organisations and interest groups seeking to influence the formation and implementation of public policy. Each interest group will use the resources at its disposal – expertise, finance, membership, public opinion – to influence policy outcomes. It is assumed that power is diffuse: no single group or set of interests dominates the decision process, many groups can gain access to government and, if sufficiently determined, most groups can achieve at least some of their objectives. The government will obviously have its own preferences on many subjects, but it will consult widely and respond to powerful outside demands. Of course, not every group has equal influence. In particular, a primary aim of any government is to manage the economy, so in core economic sectors it regularly consults and seeks the co-operation of business groups. Environmental policy often has a direct impact on businesses, so they will mobilize against proposed (or existing) regulations or eco-taxes, or to win approval for a new development such as a motorway or a dam. As insider groups, businesses will usually remain within the law: lobbying politicians and civil servants, financing publicity campaigns or funding sympathetic pressure groups. Sometimes producers may threaten to flout legislation or even take direct action to make their case; French farmers have an unrivalled record in achieving their aims by blocking roads and ports.

Pluralist accounts therefore concede that producers have both the motivation and the means to play an active role in the policy process, but they do not regard business as a privileged participant. Businesses may exercise disproportionate influence compared to environmental groups

because they have more resources at their disposal. The pluralist would anticipate

that when environmental groups are able to mobilize sufficient resources to counter the strength of business, they too should win better access to government and a matching influence over policy outcomes (unless, like Greenpeace, they deliberately resist entry for fear of being 'captured'). Yet, in practice, in many key areas affecting the environment, those 'insider' pressure groups operating closest to government typically consist of a handful of powerful producer interests. Governments regard the views of key producer groups as legitimate and important, so they benefit from good access to ministers and civil servants to discuss matters affecting their interests and they are regularly consulted by government officials. Conversely, environmental and consumer groups are often 'outsider' groups excluded from the corridors of power; they are less routinely consulted and they may struggle to get their voice heard by government. Consequently, more often than not, policy outcomes show the interests of producer groups trumping those of environmentalists.

One weakness of pluralism is its use of an incomplete, one-dimensional model of power which underestimates the influence of business interests. Pluralists focus on observable influence, examining each individual decision to assess whether the preferences of business groups hold sway. However, Bachrach and Baratz (1962) argue that observable power measures only one aspect of power. They identify a second dimension of power - 'non-decision-making' - which refers to the ability of powerful groups to keep issues off the agenda. Producer groups can manage conflict before it even starts by using political routines to produce or reinforce dominant values and interests, suppress dissenting demands or co-opt challenging groups, a process that Schattschneider (1960) called the 'mobilisation of bias'. In practice, observable 'pluralist' decision-making is frequently confined to safe issues that do not threaten the fund groups, are marginalised. Indeed, opposition groups may not even raise their dissenting

views in the formal policy process because of a fatalistic assumption that they will be rejected by the dominant producer interests.

Administrative Fragmentation

Another factor giving some interest groups disproportionate access to the policy process is the institutional structure of the state. The fragmentation of government into sectoral divisions produces a special-interest approach to public policy in which each ministry tends to act as a sponsor for the key groups of producers or professionals within its policy sphere. Agriculture ministers typically see themselves as speaking on behalf of farmers, rather than acting to protect consumer interests or the environment. Similarly, energy ministers see their role as protecting the commercial interests of the major energy producers in the coal, oil, gas and nuclear industries, so they may downplay the environmental damage associated with the energy sector. Each policy sector is characterised by administrative arrangements that reflect the underlying power relations between the concerned interest groups. Thus in most countries, pluralistic patterns of environmental policymaking seem to be the exception rather than the rule.

Achieving policy change

Despite the powerful structural and institutional factors reinforcing the traditional environmental policy paradigm, policy change is not impossible. In recent years, all governments have introduced new measures to improve environmental protection, although evidence of radical change is scarce. This section draws selectively from the wide literature on policymaking by highlighting the agenda-setting, advocacy coalition and network approaches as useful frameworks for exploring the potential for policy change and, in particular, to indicate how the traditional paradigm might be superseded by an alternative framework.

Agenda-setting

The agenda-setting stage of the policy process is a critical point at which policy change can be initiated. Amongst several models that seek to explain how issues can get onto and ascend agendas, a crude but influential model,

specifically designed to account for the rise and fall of environmentalism in America in the early 1970s, was the **issue attention cycle**. The notion that environmental issues go through cycles of attention is attractive because it resembles the way that public and media interest latches onto one issue before lurching off in pursuit of another. Moreover, evidence from the USA suggests that peak periods of relevant organisational activity (new institutions, programmes and policies) often coincide with peak periods in the attention cycle, implying that governments do respond to public concern. More cynically, it could be suggested that policymakers are simply making sure they are seen to be 'doing something', even if their action has minimal impact on the problem. Indeed, Downs presents an essentially pessimistic view of the importance of agenda-setting as a process which generates a temporary public fascination with the topic of concern, but has little long-lasting importance. This pessimism is particularly appropriate where policy communities exist because, even if an issue attracts widespread public attention, a policy community may be strong enough to resist pressure for substantial change, confident that public attention will not sustain an issue long enough to define a new agenda. Other theorists have argued more optimistically that these brief moments of public interest are occasions when structural changes can be forced through, which may permanently alter the rules of access and participation. Agenda change occurs when problems, policy solutions and political receptivity combine in a 'window of opportunity': a compelling problem is recognized, a technically viable solution exists and the political circumstances are right for change. Similarly, Baumgartner and Jones's (1993) model of 'punctuated equilibrium' characterizes the policy process as having long periods of stability in which only incremental changes occur, interspersed with short periods of instability when major policy change occurs. Disruption to the equilibrium may allow access by new groups seeking to challenge the dominant policy paradigm. Sometimes that challenge is sufficiently powerful and persuasive to overthrow the dominant

policy consensus and to replace it with new perspectives, institutions and policies. A key role during these moments of instability is played by the media, which can direct public attention to new issues or developments, or offer a new perspective on familiar issues. Suddenly issues that are normally confined to policy sub-systems are thrown open to wider scrutiny. New participants from other sub-systems may become interested in the debates so that previously low-profile policy arrangements are permanently disrupted.

The advocacy of coalition framework

Advocacy coalition framework (ACF) is a comprehensive model of the policy process emphasizing the role of ideas, information and analysis as factors contributing to policy change at all stages of the policy process. A central claim of the ACF is that an understanding of policy change requires a focus on elite opinion and the factors that encourage shifts in elite belief systems over time. The ACF, like network theory, focuses on the policy sub-system which is composed of all the actors – politicians, bureaucrats, interest groups, academics, journalists, professionals – who are actively concerned with a particular policy issue such as air pollution control, and who regularly seek to influence public policy on that issue. Within each sub-system these actors may form several advocacy coalitions drawing together people who share the same normative and causal beliefs about how policy objectives should be achieved. The belief systems of each coalition are organised into a three-level hierarchy:

1. Deep core beliefs are the broad philosophical values that apply to all policy sub-systems (e.g. left-right);
2. Policy core beliefs are the fundamental values and strategies across that specific policy sub-system (e.g. the seriousness of the problem and the best policy instruments to deal with it);
3. Secondary aspects are the narrower beliefs about specific aspects of the problem and policy implementation. Typically, a policy sub-system will be

dominated by one powerful coalition, with several competing minority coalitions each seeking to impose its approach on the policy process. Sabatier, like Hall, argues that change will normally be incremental because it is secondary beliefs that are most prone to change, usually as a result of 'policy-oriented learning' by coalitions as they acquire new information and reflect on the best methods of achieving their policy objectives. Changes to policy core beliefs are less frequent and will normally only occur when non-cognitive factors are disrupted by exogenous shocks from outside the sub-system, such as macro-economic developments or a change in government. At these infrequent moments, the opportunity exists for a minority coalition to impose its belief system on the policy process.

According to all these ideas-based approaches – agenda-setting, the ACF and even the discourse framework – change in environmental policy is easier to achieve where policymaking is relatively pluralistic than where it is dominated by closed policy networks (although there is no guarantee that the policy outcomes will be better for the environment as industry coalitions will often prevail over environmental coalitions because they can mobilise more resources in an exercise of one-dimensional power). Even then, however, radical change is rare because without major exogenous changes there are few windows of opportunity to provide access to different

interests and advocacy coalitions that can push new issues and ideas onto the policy agenda. Policy communities and exogenous change The strength of policy network analysis lies in its capacity to explain continuity and stability, but it has been widely criticised for offering a static model that is poor at explaining policy change. After all, if a policy community is stable, why should it ever introduce changes that are not directly in the interests of its members? Yet no sub-system is immune from external developments. Just as Sabatier recognised that radical change requires the belief systems of policy elites to be shaken up by exogenous

non-cognitive factors, similarly network analysts have identified a number of structural factors that may destabilise a strongly institutionalised policy community and so make policy change more likely. In short, exogenous factors can play a catalytic role in changing power relations. Five external factors seem particularly significant in shaping environmental policy.

1. A sudden crisis may throw a policy community into disarray. The discovery of a link between bovine spongiform encephalopathy (BSE) and the human disease new-variant Creutzfeld-Jakob disease in 1996 provoked a food scare so enormous that the EU introduced a complete ban on the export of British beef, profoundly weakening the powerful agricultural policy community. During 2000-1, the discovery of BSE elsewhere in Europe and an outbreak of foot-and-mouth disease provoked a public debate about the nature of intensive agriculture that destabilised agricultural policy communities across Europe. The 1989 Exxon Valdez oil spill in Alaska Sound produced immediate local improvements in the safeguards against marine oil pollution.

2. A policy community may also be disturbed when a government is confronted by a new problem, such as climate change or food safety, for which the dominant interests in the policy community have no immediate solution. In such circumstances governments seeking answers to policy puzzles may turn to alternative interests outside the established network. The need to reduce carbon emissions from road traffic has prompted policymakers to look beyond powerful road lobbies in their search for alternative transport policies. The development of new technologies such as GMOs may similarly disrupt established methods of consultation in the agricultural sector, forcing governments to listen to a wider range of interests, including consumers and environmentalists.

3. Changes in external relations can disrupt the structural conditions underpinning a policy community. International agreements such as the ban

on chlorofluorocarbons (CFCs) or commitments to reduce greenhouse gas emissions impose new external obligations that may require a national government to override the resistance of powerful producer interests. The extensive privatisation of public assets since the 1980s has also undermined some

established policy communities, particularly in Britain where, for example, greater competition transformed the energy market (resulting in a major shift from coal to gas as the source of electricity generation) and therefore disrupted the established energy policy community. EU environmental directives in those areas where policy has been most stringent, such as drinking- and bathing-water quality, have destabilised some policy networks (Maloney and Richardson 1994). In the British water industry, the combination of regulatory restructuring arising from privatization and tough European directives prised open a previously cohesive policy community (consisting of engineers and water scientists) to provide a window of opportunity for environmental groups to politicise water quality issues. This flux eventually forced the government to make several significant policy changes, including a shift away from the established policy of low-cost, long-pipe sewage disposal at sea that was blamed by many for the low quality of bathing water in many tourist resorts.

4. The emergence of new social movements and pressure groups has contributed to the growing importance of environmental issues on the political agenda. It has become harder for politicians, civil servants and even producer groups to ignore these issues and many environmental groups are now routinely consulted by most governments across a wide range of issues. Political actors, notably ministers, have the capacity to use their despotic power to break up a policy community and to allow access to new groups.

The Rise and the fall of Nuclear Power

The potential threats to human safety and the environment posed by the use of nuclear power highlight many of the core characteristics of environmental policy identified in this chapter. As the catastrophic explosion at the Chernobyl nuclear reactor in 1986 demonstrated, there can be few other issues that pose such a potentially irreversible, transnational and long-term threat to the environment as nuclear power – even if the actual risk of damage is statistically extremely low. Despite these concerns, from the late 1950s to the 1980s, as strong pro-nuclear policy communities developed, most industrialized nations invested heavily in the expansion of nuclear

energy. Yet, remarkably, since the 1980s, an extraordinary coincidence of exogenous factors has profoundly weakened these entrenched policy communities, resulting in a dramatic reversal of the enthusiastic pro-nuclear consensus amongst policy elites. By the mid-1990s, most North American and Western European nations had abandoned all plans to build new nuclear

reactors and the industry appeared to be in terminal crisis. A decade on, there is growing evidence of renewed government interest in nuclear power in an ironic new guise: as a carbon-free energy solution to mitigate climate change. Historically, decisions about nuclear power generally emerged from tight knit, closed policy communities or corporatist institutional arrangements. In Britain, for example, the policy process was dominated by the Atomic Energy Authority (UKAEA) – a government-funded, largely unaccountable, cross-breed between a ministry and a nationalised industry – and its scientific experts – with the Department of Energy only a secondary actor in the policy community. The government gave the policy community its full support and ensured that it was subject to minimal democratic control via Parliament.

In the 1950s and 1960s, two key factors explained government support for nuclear power. First, for nuclear powers such as Britain, France and the USA, the military objective to develop nuclear weapons generated a demand

for plutonium (for weapons), which could only be extracted from reprocessed spent uranium (from nuclear power-stations). This military-industrial link was critical in the decision to push ahead with what was, even to its most enthusiastic supporters in the 1950s, still an un-commercial technology. Secondly, the belief that nuclear power offered a modern, technological solution to future energy requirements was widespread. All governments, including many with no pretensions to develop nuclear weapons, were persuaded that nuclear power had the potential to provide an abundant supply of cheap energy to underpin future economic growth. Other factors contributed to this growing love affair with nuclear energy. Concern about pollution from coal-fired plants was a major stimulus to the US nuclear programme in the 1960s. The Middle East oil crisis of 1973–1974 prompted several European countries, notably West Germany and France, to launch huge construction programmes in order to reduce their dependence on oil supplies from volatile overseas markets. By 2006 there were some 440 nuclear reactors in operation across the world in 31 countries generating 16 per cent of global electricity. The USA has the biggest nuclear sector, with 103 reactors generating 788.6 billion kilowatt hours of electricity (or 20 per cent of its total electricity), whilst in France, with the second largest nuclear capacity, 78% of electricity is generated by the nuclear sector.

Summary

Ethical decisions related to environment can be very paradoxical. In order to make the decision that would benefit humans and harm to nature, people must weigh up the possible consequences and determine which one is ought to take precedence. For example, extracting oil to produce energy is harmful to the environment in one hand and beneficial to humans for various applications like producing fuels and pesticides aside from economical gain in another hand. It is obvious that choosing to use oil

excessively as an energy resource is not an environmental-friendly action and so that striving to find an alternative energy resource is an ethical action which affirms the right to live in healthy and balance environment in one side and without affecting economic growth in another side. In short, any decisions should take into account human satisfaction and environment simultaneously before come into effect.

Environment science is a branch of science concerned with environmental issues. Ecosystem is a defined space in which interactions take place between a community, with all its complex interrelationships, and the

physical environment. Abiotic (nonliving) the ecosystem, and biotic (living component) are the components of ecosystem. Biotic component typed into autotrophs, heterotrophs and Sapotrophs where as abiotic component classified to edaphic/soil factors and climatic factors.

Environment technology is concerned with the impact of technological innovation on the environment and significance of technology to protect or reduce environment pollution. In addition, it suggests searching and innovating alternative ways of technology which less harmful to environment. Moreover, Environmental technologies are technological solutions of environmental problems, and they mitigate the impact of production on the environment. E.g re-cycling, use environment- friendly products and closing the industry of toxic products such as DDT etc are the subject matter of environment technologies.

Environmental economics is the subset of economics that is concerned with the efficient allocation of environmental resources. The key objective of environmental economics is to identify those particular tools or policy alternatives that will move the market toward the most efficient allocation of natural resources. The environment provides both a direct value as well as raw material intended for economic activity, thus making the

environment and the economy interdependent. Natural resources can be classified into renewable (which are renewed by reproduction and growth) and non-renewable (which cannot be renewed or replaced after they are depleted). Environmental economics takes into consideration issues such as the conservation and valuation of natural resources, pollution control, waste management and recycling, and the efficient creation of emission standards.

Environmental politics aimed at the study of political theories and ideas relating to the environment, the examination of political parties and environmental movements and the analysis of public policy making and implementation affecting the environment at international, national and local levels. The principles of environmental protection policy are; Eco-efficiency, Polluter pays principle, Precautionary principle, Pollution prevention, Substitution, Subsidiarity Partnership and shared responsibility, and public awareness. In line to this, Public goods, Trans-boundary problems, regulatory intervention, Complexity and uncertainty, Agenda-setting, The traditional policy paradigm, Political Obstacles to change, Administrative fragmentation, Achieving policy change, The advocacy of coalition framework, the rise and the fall of nuclear power are the core features of the environment as a policy problem.

Review Questions

If the statement is Correct write True and if not write False.

1. Polluters are only responsible for the pollution to which they contribute.
2. Publically owned resources more exposed for exploitation and overconsumption
3. Environmental issue expect to left only for policy makers rather than the participation of community at grass root level.

4. Biotic is a non-living component of an ecosystem.
5. Ethical decisions related to environment is non-controversial.

Part II. Discuss the following questions

6. Why the issue of environment considered as an ethical question?
7. Discuss over the relation between environment and economy
8. Explain the impact of technology on environment by giving concrete examples.
9. What is polluter pays principle? And what is role in protection of the environment?
10. List and explain the principles of environmental protection policy

Glossary

Environment- is ~~surroundings that~~surroundings that affect an organism during its life time

Ecology- is a science which study an ecosystem

Ecosystem- is the system resulting from the integration of all living and non-living factors of the environment

Environmentalism- is an attitude or movement involving concern about pollution, resource depletion, population pressures, loss of diversity and other environmental issues.

Environmental ethics- is the philosophical discipline that studies the moral and ethical relationship of human beings to the environment

Food chain- is feeding of one organism upon another in a sequence of food transfers.

Food web- the relationship in which predator eats different types of food at each trophic level and it is eaten by many different organisms

Instrumental value- is the value which something has for someone as a means to an end which they desire

Intrinsic value- is simply the value which something has and a value which is an end not a means for other values.

Non-renewable resource - is a natural resource which cannot be generated, replaced, or used on a scale which can sustain its rate of consumption; once exhausted there will be no more available for future use.

Policy - a set of basic principles and associated guidelines, formulated and enforced by an organization, to direct its actions in the pursuit of short, medium or long-term goals.

Polluter pays principle - according to which the polluter should bear the cost of those measures used to remedy pollution determined by the extent to which the damage done exceeds an acceptable level (standard) of pollution.

Precautionary principle - where a threat of serious or irreversible damage to the environment is possible, but in the lack of full scientific certainty, that lack of certainty will not be used as a reason for postponing the use of cost-effective measures to prevent possible environmental

degradation.

Renewable resource - is a natural resource which can replenish itself with the passage of time, either through biological reproduction or some other naturally recurring process.

Resilience (Environment) - is the ability of an ecosystem to respond to a perturbation or disturbance by resisting damage and recovering quickly.

Sustainable development - is a form of human development in which resource use aims to meet the human needs of the present without compromising the ability of future generations to meet their own needs.

Trophic levels -is a feeding position in a food chain such as primary producers, herbivores, primary carnivores