Chapter IV part iii

Environmental issues

Hazards of atmospheric pollution (Topic a)

The idea that human beings have misused the earth's natural resources & environment is not new in origin. The earliest writings suggesting concern for the environment date back to the time of ancient Greeks, when Plato described the effects of soil degradation on the peninsula of Attica (Athens).

Environment means surroundings; it includes all external conditions and factors that affect life.

In order to have a clear concept of Environmental Degradation, we must have to understand the term SUSTAINED YIELD.

The highest rate, at which a renewable natural resource can be used without decreasing its potential for renewal, is called sustained yield.

Environmental Degradation:

Exceeding the sustained yield can cause a resource to become non-renewable or non-existent. This is also called Environmental Degradation.

When the resources are over consumed the population experiences a decline in the number of individuals because resource scarcity leads to starvation & death.

The use of technology has greatly extended the earth's capacity for human beings. Some scientists believe that the Earth may not be able to maintain the increasing size of population in future because of environmental degradation. Many of the technologies that have allowed for expansion of the human population are unsustainable in the long term. When these unsustainable technologies fail, the capacity of earth for humans will be reduced e.g., fossil fuels have been responsible for much of the increase in world's ability. But fossil fuels are finite in quantity and a reduction in their availability may cause reduced earth's capacity resulting in starvation & death.

Modern industrialized societies use and create a variety of substances, which are hazardous & toxic. If these substances escape into the environment, they can cause a variety of problems to human beings & other forms of life. Potential effects of these substances range from short-term discomfort to health problems as serious as cancer, birth defects & even premature death.

Air pollution may affect humans directly causing smarting of eyes or coughing. Exhaust fumes from engines of automobiles contain a number of polluting substances including carbon monoxide, a variety of complex hydrocarbons, nitrogen oxides & other compounds. When acted upon by sunlight these substances undergo a change in composition producing brown photochemical smog (mixture of smoke & fog). Air pollution has a serious effect upon forests and causes respiratory problems.

One form of pollution in industrialized societies is noise. Excessive noise of industries, hammers, jet planes & loud music can cause permanent loss of hearing. In addition, there is some evidence that noise can produce other harmful effects on human health & on work performance. The problem has received much attention with the advent of supersonic jet planes. The sonic booms of supersonic jet planes can damage building structures.

Another effect of pollution is acid rain, which occurs when SO2 & nitrogen oxides from burning of fossil fuels combine with water vapours in the atmosphere. The resulting precipitation is damaging to water, forests & soil resources. Acid rain results in disappearance of fish in lakes; it can corrode buildings & is hazardous to human health.

In industrialized societies huge quantities of hazardous gases are produced by agriculture, transport & industry which results in environment pollution & increased greenhouse effect. The increased greenhouse effect leads to increased temperature of earth. Chlorofluorocarbons used by the cooling industry & aerosols damage the ozone layer. This damage may cause skin cancer. The poisonous waste thrown in rivers & sea destroys marine life & toxifies marine food. Radiation is also a type of pollution that causes birth defects & a number of other health problems. Efforts are being made to minimize the production of hazardous wastes. Despite these efforts our industrialized societies still produce large quantities of these substances.

In Canada & the United States the average citizen produces about 700 to 850kg of waste per year which is more than twice the quantity generated by individuals living in Japan & Europe. In developing countries, the average quantity of waste per person is 100 to 200kg per year.

Electromagnetic pollution

All electrical appliances and electronic devices produce damaging electromagnetic fields (EMFs) or radiations, which we can't see or feel. These interfere with the body's own electromagnetic operating system thus causing stress. Headaches are signs indicating that the body is under stress. This stress, of course, can have many reasons. However, people often don't realize that it could be due to EMFs. Mobile phones can be particularly damaging, because they are carried in close contact with the body and even the brain, whilst telephoning. Furthermore, the radiation emitted is of microwave

frequency, which more and more research is showing to be particularly damaging to human health. Computer monitors have cathode ray tubes in them, which actually emit a variety of frequencies ranging from extremely low to X-rays. The real danger here is from long term exposure, i.e., people working several hours a day at the computer.

Today with abundant fossil fuels, growing amounts of nuclear energy & advanced tools and machines, it is possible to quickly change entire landscapes, changing long established natural patterns into new patterns with new purposes. The opportunity to enhance the material welfare & general well-being of a great number of people is now available, as is the opportunity to cause great damage to the capacity of earth to support life.

Solutions (Topic b)

The task of cleaning up the environment is difficult but not impossible. Use of fuels that are low in pollutants such as low Sulphur forms of petroleum; more complete burning of fossil fuels; recycling of pollutants & the shift to less polluting forms of power generation such as solar energy in place of fossil fuels. All these methods can be used for controlling pollution.

_Attempts to control pollution resulted in successful elimination of such sources of pollution as industrial poisonous waste & the outdoor burning of trash & debris. Efforts to reduce pollution from automobile engines & to develop pollution free engines may eliminate the more serious pollution problems.

The international scope of the problem has led to signing of international agreements on the limitation of Sulphur & nitrogen oxide emissions. Atmospheric testing of nuclear bombs was stopped in the USA & Soviet Union & the radioactive fallout from this source has declined.

The ultimate control of pollution will involve the decision not to allow the escape of harmful substances into the environment. Pollution control, therefore, does not mean an abandonment of existing productive human activities but their reordering so as to guarantee that their side effects do not outweigh their advantages. Environment planning must precede development. A highly technological society requires an abundant & reliable source of energy. Research on nuclear fusion as a power source, indicates that this process could replace nuclear fission as a power source in some areas. Solar energy in its various modified forms may be a more universally available source of power.

Apart from the development of major new sources of power, the greatest solution for prevention of pollution lies in new technologies involving recycling and reuse of waste products. Demand for new minerals; will be greatly reduced when those already available in population centres can be reused. If development of technologies for recycling & reutilization continues, many of the existing problems of environmental pollution will be solved.

In general, the disposal practices for solid & hazardous waste products have not been satisfactory. One of the most important solutions to this problem is to produce less waste. When compared to Japan, Canada & the US produce 2 to 3 times more waste per person, despite having similar levels of prosperity. A number of different techniques can be used to reduce the production of waste. In the past few decades, significant progress has been made recycling materials like glass, metals, plastics and paper. Governments can also create stronger legislation to reduce the production of both solid and hazardous wastes.

In addition to the introduction of new varieties of crop plants, the development of agricultural disease and pest control techniques, those do not involve release of poisonous chemicals into the environment. This process holds promise for the production of increased quantities from smaller areas of earth surface. Two of such techniques are mixed cropping, in which different crops are planted within an area and to control the spread of pests in an integrated pest management, in which as many as possible pest control methods are used in an ecologically harmonious manner to keep insects and diseases within manageable limits. Much more intensive development of aqua-culture (cultivation of natural products of water) can also produce much higher food yields from smaller areas. As a result of these advances in intensive food production more land and aquatic areas would be spared for the support of wild species as well as for recreation of mankind.

ENVIRONMENTAL ISSUES IN PAKISTAN: GOVERNMENT POLICIES AND MEASURES AND SUGGESTIONS FOR IMPROVEMENT

The environmental concerns of Pakistan are associated primarily with the adverse impact of un-sustainable social-economic development. High population growth rate, lack of public awareness of environment related education, mismanagement of natural resources, widely unplanned urban and industrial expansions are the core hard issues. These are further compounded with the rapid urbanization. Average population density of 222 persons per sq km in Pakistan is higher than many other developing countries. In Pakistan 37 percent people live in urban areas and 63 percent in rural areas. There is a high rate of migration to urban centers which has made the cities dysfunctional, overcrowded and very congested. Rapid urbanization is putting the available insufficient infrastructure under enormous pressure and causing environmental problems of great magnitude. Serious risks of irreversible damages are present due to air and water pollution, mismanagement of solid waste and destruction of fragile ecosystems. Urban air pollution remains one of the most significant environmental problems faced by the cities.

CNG was promoted as an alternate motor fuel for Pakistan's market to reduce pressure on petroleum imports and to curb air pollution. Presently about, 3329 CNG stations are operating in the country and approximately 2.5 million vehicles are using CNG as fuel.

Use of CNG as fuel in the transport sector has observed a quantum leap, replacing traditional fuels. National Environment Quality Standard (NEQS) for Motor Vehicle Exhaust & Noise (Amended), 2010 has been approved to control vehicular emissions. It has been decided that: (i) all petrol driven vehicles imported or manufactured locally will comply with Euro-II emission standards with effect from July 2009. Existing models if not complying with Euro-II emission standards will have to switch over to Euro-II models within three years (ii) all diesel driven vehicles imported or manufactured locally will comply with Euro-II emission standards with effect from July, 2012.

The National Standards for Drinking Water Quality (NSDWQ) were approved to improve the water quality and to provide the public with safe drinking water. Pakistan is committed to achieve the target of halving the proportion of people without sustainable access to safe and improved sanitation, by 2015.

Climate change is one of the most complex challenges of the new century; Pakistan, like other developing countries, remains extremely vulnerable to the impacts of climate change. The most serious concerns are the threat to water and food security of the country and the vulnerability of its coastal areas. Other climate change related concerns include increased risks in extreme events like floods, droughts, earthquakes & cyclones have adverse impact on forests, biodiversity, human health etc. Implementation of the climate change programme will be carried out through coordinated efforts of the relevant ministries to secure ample resources and their effective utilization.

Pakistan's role in preservation of nature through international conventions / efforts (Topic c)

Montreal Protocol (MP)

The UN Environment programme began negotiations to develop multilateral protection measures for the ozone layer in 1981. These negotiations were concluded in Vienna Convention for the protection of Ozone layer in March 1985 which led to the signing of Montreal Protocol relating to phasing out (eliminate gradually) ozone depleting (use up or exhaust) substances (ODS) in September 1987.

Pakistan became a party to the Montreal Protocol & its London Amendments on 18th December 1992. The subsequent amendments known as Copenhagen Amendments, which accelerate the phase out dates, were ratified in January 1995.

The use of ODS in Pakistan is mainly in deep freezers, refrigerators, air conditioners, foam, dry-cleaning, fire extinguishers & solvents etc. ODS consumption in Pakistan is about 0.02kg per capita. Keeping in view Pakistan's commitments to the international community, an ozone cell under the project entitled, "International strengthening for the implementation of the Montreal Protocol for the phase out of ozone depleting substances" with financial assistance of Multilateral Fund of Montreal Protocol, has

been established in the Ministry of Environment. Total cost of the project is $259000, which is being provided by the Multilateral Fund for implementation of Montreal Protocol (MFMP), through the UN development programme (UNDP). Ozone cell became operational in Pakistan in January 1996. There are about 22 industrial units in Pakistan which will receive the funds & help in reducing 1293 tons of ODS. The World Bank & United Nations Industrial Development organization (UNIDO) are implementing these projects.

Convention on Biological Diversity

Bio-diversity is defined as "the variability among living organisms from all sources including inter alia terrestrial, marine & other aquatic ecosystems & ecological complexes. This includes diversity within species, between species & ecosystems." (CBD 1992).

Pakistan ratified the convention in 1994 & is a member of CBD. This convention recognizes the intrinsic (inherent, belonging to, natural) value of biological diversity & ecological, genetic, social, economic, cultural, educational, recreational, & aesthetic values of bio-diversity & its components.

Pakistan is also a signatory to the convention on international trade in endangered species (CITES), the convention on the conservation of migratory species of wild animals (Bonn) & world heritage convention. All these conventions aim at protection & conservation of components of biological diversity.

A bio-diversity action plan has been prepared using financial assistance provided by the Global Environment Facility (GEF).

Convention to Combat Desertification

Desertification is defined as land degradation in arid semi-arid areas resulting from various factors including climatic variations & human activities.

This convention was ratified by Pakistan in 1996. Desertification is affecting more than 100 countries of the world resulting in environmental degradation, loss of soil fertility and reduction in land productivity.

CONVENTION ON THE PROHIBITION OF MILITARY OR ANY OTHER USE OF ENVIRONMENTAL MODIFICATION TECHNIQUES (CONVENTION ON ENVIRONMENTAL MODIFICATION)

The Convention defines environmental modification techniques as changing – through the deliberate manipulation of natural processes – dynamics, composition or structure of the earth, including its biota, lithosphere, hydro-sphere, and atmosphere or of outer space. Changes in weather or climate patterns, in ocean currents, or in the state of ozone layer or ionosphere, or an upset in the ecological balance of a region are some of the effects, which might result from the use of environmental modification techniques. Pakistan acceded to the convention on 27th Feb. 1986.

United Nations Framework Convention on Climate Change (UNFCCC or FCCC) is an international environmental treaty produced at the United Nations Conference on Environment and Development (UNCED) , informally known as the Earth Summit , held in Rio de Janeiro in 1992. The treaty aimed at reducing emissions of greenhouse gas in order to combat global warming. The convention was signed by Pakistan on 13th June 1992.

The treaty as originally framed set no mandatory limits on greenhouse gas emissions for individual nations and contained no enforcement provisions; it is therefore considered legally non-binding.

This treaty includes provisions for updates (called "protocols") that would set mandatory emissions limits. The principal update is the Kyoto Protocol, which has become much better known than the UNFCCC itself.

Kyoto Protocol: - The Kyoto Protocol to the United Nations Framework Convention on Climate Change was adopted in Dec. 1997 in Kyoto Japan, after intensive negotiations. Most industrialized nations and some central European economies agreed to legally binding reductions in greenhouse gas emissions of an average of 6 to 8%below 1990 levels between the years 2008-2012, defined as the first emissions budget; however, the Bush administration refused to ratify the protocol.

Some 141 countries, accounting for 55% of greenhouse gas emissions, have ratified the treaty, which pledges to cut these emissions by 5.2% by 2012. Pakistan ratified the Kyoto Protocol on 11th Jan. 2005.

Hazardous wastes Convention (Basel convention)

The Basel Convention (Basel Convention on the control of trans-boundary Movements of Hazardous Wastes and Their Disposal) is an international treaty that was designed to reduce the movements of hazardous waste between nations and specifically to prevent transfer of hazardous waste from developed to less developed countries (LDCs). It does not however address the movement of radioactive waste. The convention is also intended to minimize the amount and toxicity of wastes generated, to ensure their environmentally sound management as closely as possible to the source of generation, and to assist LDCs in environmentally sound management of the hazardous and other wastes they generate.

The Convention was opened for signature on March 22, 1989, and entered into force on May 5, 1992. Pakistan acceded to the convention on July 26, 1994.

United Nations Convention on the Law of Sea (UNCLOS, also called simply the Law of the Sea or LOS)

It refers to several United Nations events and one treaty. The term events, refers to the 1st United Nations Convention on Law of the Sea, the 2nd United Nations Convention on Law of the Sea and the 3rd United Nations Convention on Law of the Sea. The treaty resulting from the Third United Nations Convention on Law of the Sea also bears the name United Nations Convention on Law of the Sea. It is the most recent major development in international law governing the oceans. The treaty provided new universal legal controls for the management of marine natural resources and the control of pollution. Pakistan signed the convention on 26th Feb. 1997.

Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1972

Commonly called the "London Convention" or "LC-72" and also abbreviated as Marine Dumping, is an agreement to control pollution of the sea by dumping and to encourage regional agreements supplementary to the Convention. It covers the deliberate disposal at sea, of wastes or other matter from vessels, aircrafts and platforms. It does not cover discharges from land-based sources such as pipes and outfalls, wastes generated incidental to normal operation of vessels, or placement of materials for purposes other than mere disposal, providing such disposal is not contrary to aims of the Convention. It entered into force in 1975. Pakistan signed the convention on 9th March 1995.

Wetlands Convention (Ramsar Convention)

The Ramsar Convention is an international treaty for the conservation and sustainable utilization of wetlands, i.e., to control progressive encroachment and loss of wetlands now and in the future, recognizing the fundamental ecological functions of wetlands and their economic, cultural, scientific, and recreational value.

The official title is "The Convention on Wetlands of International Importance, especially as waterfowl Habitat".

The Convention was developed and adopted by participating nations at a meeting in Ramsar, Iran on February 2, 1971 and came into force on December 21, 1975.

The Ramsar list of wetlands of International Importance now includes over 1,550 sites (known as Ramsar sites) covering around 13,39000 sq.KM, up from 1,021 in the year 2000. The nation with the highest number of sites is the United Kingdom with 163 sites; the nation with the greatest area of listed wetlands is Canada with over 1,30,000 sq.KM. Pakistan signed the convention on 3rd July 1976.

Explanation of difficult words and terms

Ecosystem= A geographic area where plants, animals, and other organisms, as well as weather and landscape, work together to form life.

Biota= All the plant and animal life of a particular region.

Lithosphere= The solid part of the earth surface.

Hydrosphere= **The watery layer of the earth surface.**

Atmosphere= **The mass of air surrounding the Earth.**

Ionosphere = The outer of the earth's atmosphere; contains a high concentration of free electrons.

Ecology= The relationship of air, land, water, animals, plants etc., usually of a particular area.

Ramsar = A city of Iran.