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Anthropogenic Changes in the Environment and Man-Nature Interaction

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Influence of human activities on environment is greatly increasing and the problem of environment degradation has taken not only alarming but dangerous situation due to exploitation based economic development. The social and economic factors are at the root of the present environmental crisis (McHale, 1975). Anthropogenic changes in environment will adversely affect the future economic development of the human society. Economic development is required for the welfare of the society but not at the cost of the destruction of environment. So alternate model has to be evolved in which harmony with nature would be established. The entire "geobiocenosis" (ecological system) is regulated by the complex mechanism and naturally evolved system of inter-relationship between living organisms and their environment. These inter-relationships disseminate changes in the environment and its products. So in the absence of ecological planning further technological progress will lead to specific disruption (Budyko, 1980) to the stability of the biosphere. The deterioration in human environment may be related to these basic causes; accelerated population, increased urbanization, and expanded and production efficient new technology with associated increase in demands for space, food and natural resources (U. Thant : 1969).

Similarly technological progress has constantly increased the possibilities of influencing the environment and created conditions for the emergence of major ecological problems. Nature has been increasingly damaged, restorative capabilities have progressively weakened and human environment has deteriorated to the point of affecting the quality of life. As a result of revolution in science and technology, mankinds inter-actions with its environment are becoming increasingly complex. Man's general influence on nature is greatly intensified through a growing exchange of matter and energy. Nature's capacity for a self-purification of the waste products that it receives is steadily declining (Gerasimov, 1983). Complexity of human interaction with all other agents of biosphere has produced a sharp increase in anthr-opogenic influences on environment in the form of pollution, other disturbances and shortage of resources. Harmful influences of human economic activity on the environment is not only limited to its pollution by toxic and other products. It extends to deep influences on the reproduction of natural resources, the development of elemental destructive processes and other phenomena taking place in nature (Gerasimov 1983).

The influence of anthropogenic changes on hydrological regime of land areas has been increasing rapidly. The run-off of many large rivers as well as of small ones has been substantially altered as a result of creation of hydro-engineering facilities. A substantial part of waters of river run-off is diverted in order to meet the needs of industry, urban population and irrigating agricultural fields. The creation of large reservoirs whose area is often comparable to that of natural lakes, significantly changes the evapotranspiration system and run-off regimes on large territories. The influence of economic activities on plant cover appears to have frequently produced severe losses to human society (Commoner, 1972). In many cases, the plant cover destroyed by man, does not restore itself even after the cessation of its systematic exploitation. Though restoration of forests and other types of natural vegetal cover is widety carried-out in many countries to protect the environment.

Significance of particular animal species for mankind is not limited to current economic estimates, and the loss of any part of genetic fund of the globe may deprive man in the future of important means for regulating ecological system and the possibilities for a comprehensive utilization of living nature for various practical objectives (Budyko, 1980).

Eastly growing population increases pressure on land every year. Land is the main source of food. The soil are ploughed deeper and more frequently to increase its fertility which leads to high pulverization of soil

leading to change in its nature which increasingly makes it susceptible to wind and water erosion.

Among various components of the biosphere, the atmosphere is best able to carry the disturbances that arise within it over long distances. Atmospheric processes represent the major mechanism that may transform local influences of man on his environment into global changes in natural conditions. The matter circulates in closed cycle pattern in the nature but the economic system developed by man is capable of consuming only an insignificant part of the matter and bulk of it returns to biosphere in the form of the gaseous and solid wastes which exert in calculated pressure on the system of nature. The layer of ozone in atmosphere serves as a kind of shield protecting the terrestrial life from shortwave ultraviolet radiation. But the atmospheric contents of ozone are changing due to economic activities on the surface of the earth.

The studies of such changes require the development of process models on numerical basis so that our understanding of ecological mechanisms and ecological system may be developed for its protection and conservation. Relationships among various aspects of ecology need in-depth study. Most prominent among such aspects are :

(a) Various components of the biosphere and quantitative/qualitative understanding of its elements in geographic perspective.

(b) Major type of organic and inorganic resources, their circulation in the biosphere and development of rationalized pattern of their utilization for various geographic regions.

(c) Understanding the cycles of energy in nature.

(d) Monitoring the development of human activities in light of developing technology and its impact on the biosphere according to the postulated empirical models.

(e) Searching the methods of influencing the large-scale processes within the biosphere in order to create a global system for regulating the biosphere in the interest of human society (Budyko, 1980)

(f) Study of environmental problems in various geographical regions of the world on inter-disciplinary basis.

CONCLUSION

All the Involved branches of "Science" should be involved in promoting the rational use of natural resources, environmental protection, its improvement and welfare of human society. Limited ability of biosphere to renew the resources should be carefully linked with the socio-economic development. Increasing complexity and sophistication of our technology should be diverted towards this goal so that our development should come in ' least- friction" with the other sensitive systems of biosphere. Generally, it is neither possible nor feasible to limit the growth of economic activities except in the areas which are reserved as natural reserves, sanctuaries and ecological/biosphere reserves etc. The only solution lies in developing the "system of least-friction and minimum damage in the field of man's productive activities to the natural surroundings". Special awakening in the field of ecological conservation is needed for this purpose to force the diverse socio-political systems throughout the world to solve this problem.

Ecology studies the complex inter-relationship between the organisms and environment both animate and inanimate. So its field is usually wide and varied and so is its method of study. This complex phenomenon of study needs greater amount of information to be analysed for proper understanding and developing appropriate models for forecasting future environmental conditions. Present age is characterized by the aggregate effect of intellect, science and technology on the relationship of human society with nature. Inter-action between man and nature is inseparable because man is also inseparable part of nature. But our knowledge in this field is very limited and it needs serious efforts for its advancement (Clarke, 1962).

However, to accommodate population, to integrate technology into complex environments, to plan and control industrialization and urbanization and to properly manage land and their resources have fallen short of those required. In consequence, all nations of the world face dangers which in some fields and in some areas have already achieved critical proportions (U. Thant, 1969). Founder of natural resources those belong to all on this planet, like riches of the oceans have further aggravated the environmental deterioration. Therefore, it has become utmost necessary to calculate the environmental changes in their entirely-all the "reactions" taking place in the regional and even global environment, all the changes that occur as a results of this intrusion into structure of environment and to allow all other existing forms of modification and for those that may develop in future (Fedorov, 1980). The only way out for environmental conservation, will be .the restoration of optimum conditions through proper developments in the field of conservation technology and close system scientific advancement in resources utilization.

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