CONCEPTUAL FRAME AND STRATEGIES FOR INTRODUCING ENVIRONMENTAL EDUCATION

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Introduction

Indeed, the preparation of strategy for giving the right direction to any system is mainly based on its component and their inherent characteristics. Environmental education is very much essential specially in India and in the other developing countries where the interaction of man with nature have become more complex because of rapidly increasing demands of population and changing nature of environmental conditions. In fact, interaction of man with nature is inseparable from the very begining of the history of humanity because nature fulfils the need of man. The most urgent requirements of man are: food, clothing and shelter and an orderly environment in which the first three might be provided (Galbraith, 1958). It is a fact that these requirements can only a fulfilled till the environmental resources are available and exploitable. There may be the stage of unprofitable use of these resources. Therefore, an integrated concept of environmental management is required for highlighting the basic issues which should be the strategic points for preparing the plan for environmental education. Thus, the main aim of this paper is to describe the major attributes of environment and the basic issues related to environmental management and secondly, to discuss main strategic points for the development and maintenance of the environment.

Environmental management - some issues

(a) Interacting Environmental Phenomena :

The management aspect of environment is basically related to three interactive major factors of environment which generate the environmental resources. They are: (i) the amount of solar radiation absorbed by the earth surface, which generates various cycles of energy for man, animals as well as

plants, and directly influences the climatic conditions and biological processes on the earth; (ii) tectonic processes which form the geological and physical features of land and generate various natural resources and their potentials; and (iii) the expansion of human activities and their interaction with the nature for achievements and production which are dependent upon population growth, materialistic needs and economic gains. In fact, these three factors are interrelated and form the system in which man plays a significant role.

The basic issues related to environmental management are closely associated with the concept of 'Terristrial Unity' which is based on the principle of inter-relationships of environmental phenomena. It was first studied by Humboldt who introduced the concept of 'Cosmos'. Later on, many environmental scientists explained the relationship between man and nature which are the constituent parts of Cosmos by adopting two approaches. First is related to the requirements of man and availability of environmental resources as Ratsel adopted in his Anthropogeography. The second approach of environmental interrelationships is studied to measure the degree of interaction which vary according to time and space (Zimmermann, 1951). According to this approach, resources are the results of interaction between man and nature. According to the functional theory of resources, the degree of interaction varies according to time when intensive use of environmental resources is required to meet out the demands of increasing population and its standard of living. Zimmermann further emphasises the role of technology and culture in intensifying the degree of resource interactions and integrating environmental attributes (Fig.1). In fact, application of modern technology increases the rate of utilisation of resource potentials but, on the other hand, cultural factors or traditional activities of the society restrict resource utilisation and check the demand of increasing population. Therefore, in the traditional societies, the rates of resource uses are very low and, consequently, they are called backward societies. However, they have a lot of resource potentials. Thus, the integrated nature of resource use must elaborate the main issues of

resource conservation and its management.

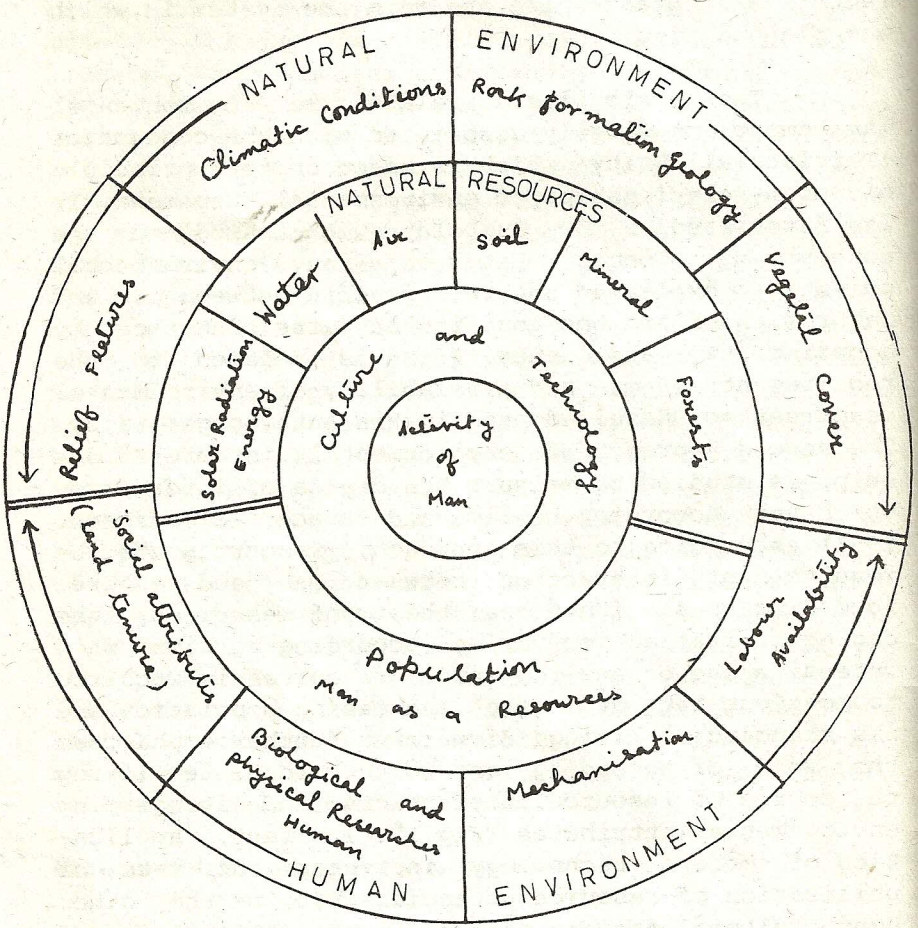

Fig. 1 : Environmental attributes : a conceptual frame.

It is important to note here that the interaction of man with nature is not direct. There is a triangular relationship among environmental attributes. Environmental forces which include the forces of resource processes like solar radiation (source of energy), topographical features and geological structure of the earth surface and climatic conditions are the main corner stones of the triangular relationship. The environmental resources which are the products of environmental conditions come under second attribute of the system. They establish the relationship between the activities of man and environmental conditions. The third attribute is man and his activities which refers to the technology and culture through which the degree of interaction is measured. Thus, the changing patterns of these interactions are dependant upon the resource resistence and techno-cultural enhancement. The issues of environmental management are closely related to the interrelatedness of the interacting environmental phenomena.

(b) Conservation of Environmental Resources

Judicious harnessing of the natural resources is the key for solving a number of environmental problems. Conservation of resources refers to curb the 'misuse', prevent the 'abuse', regulate the 'non-use' save the resources and invest resources for 'future use'. Resource development and conservation is concerned with the conservation of inherent natural processes by which the resources are being generated. The acceleration of natural processes is the function of (i) available amount of resources and their potentials, 'R', (ii) factors for natural quality of resources, 'q', (iii) use of technology, 'T', (iv) cultural constraints, 'C', and (v) scale of economies (size of teritory), 'Es'. The acceleration forces of natural processes 'A', may be formulated as

$$A = (R\ q\ T)/C + Es,$$

where resource potentials, their quality and use of technology are the main accelerating forces of resource utilisation while, culture is the constraint. Thus, conservation of resources is closely related to the techniques of resource utilisation.

There are various stages of the utilisation of various environmental resources, namely, the Primary stage of utilisation, Extracting stage, Converting stage of resource and Resource processing. At primary stage, man satisfies his basic needs from natural resources without knowing its proper uses. But abilities of man and enhancement of science and technology intensify the interactions of man for exploiting environmental resoureces. In the last stage, man processes the resources in various ways for social satisfaction and increasing demands (Fig.-2). Thus the knowledge of the resource conservation is essentially important for proper environmental management.

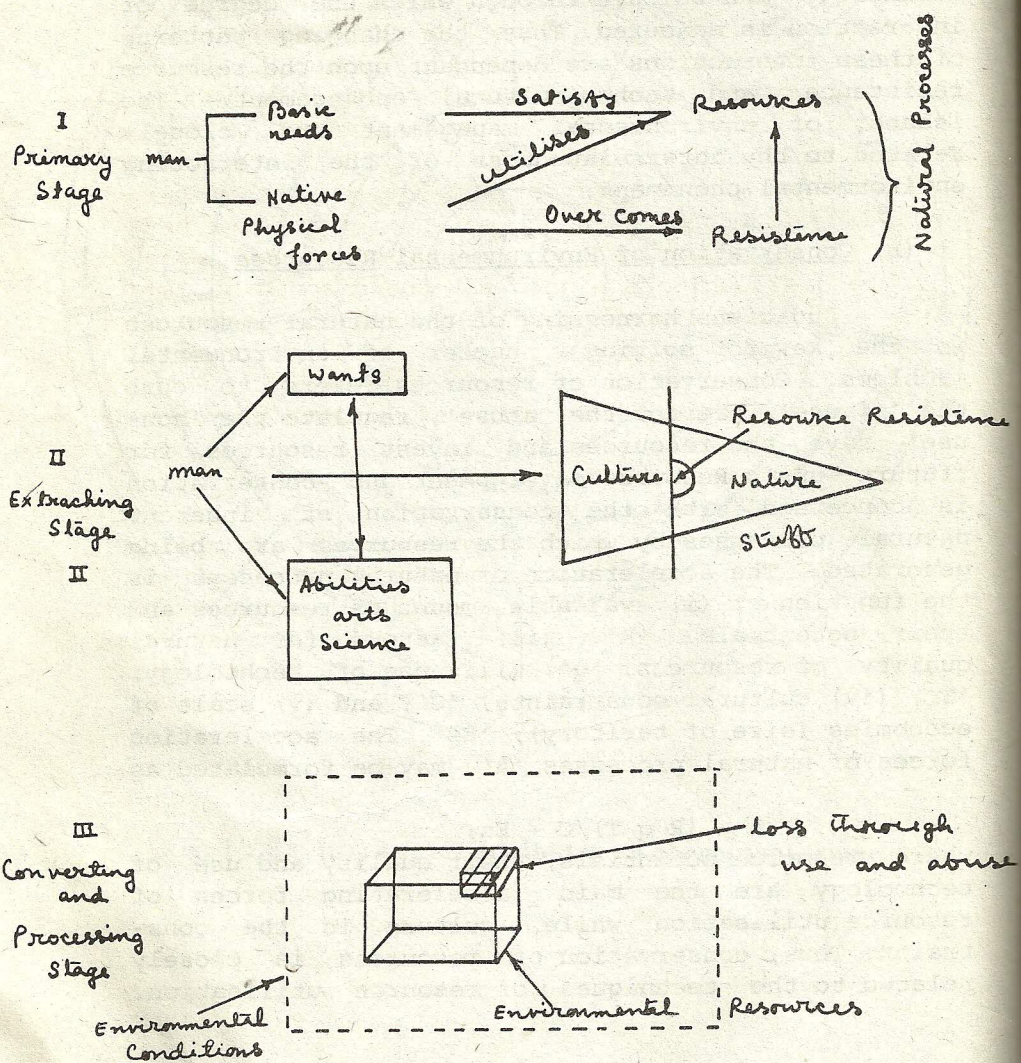

Fig. 2 : Stages of interaction between man and nature.

(c) The Issues of Environmental Degradation and Pollution

The issues of environmental problems are closely concerned with the three major natural resources, that are soil, forest and water.

(i) Soil Degradation : Soil erosion, water-logging, salinity and alkalinity of soils are the major problems which can be checked by adopting its related technology and adjusting the activities of man. In India, 6000 million tonnes of top soil is being eroded every year taking with it more than 6 million tonnes of nutrients. 70 million hectare of land is in critical stage of erosion, 30 million hectare is subject to wind erosion, 4 milloion hectare under gullies, ravines, and 3 million hectare is affected by shifting cultivation.

(ii) Deforestation : According to forest policy of the Government of India, 33 per cent land should be under forest cover, while in India, only 19.52 per cent land is under forests in the existing landuse i.e., 64 million hectare. Therefore, more land must be put under forests.

(iii) Quality of Water : The interaction of man and industrialization affects directly the quality of water. The inland water and sea coasts near large urban centres have been polluted and many of these have become unsafe for use.

(iv) Environmental Pollution : Because of increasing complexities in the environmental resource utilization the environmental pollution problems are coming up fast and it can be observed that in some parts of the country specially in big urban centres the air, water, and noise pollution is affecting the life of the people. Power plants, industries, are the major emitters of pollutants which directly affects the environmental conditions.

STRATEGIES FOR ENVIRONMENTAL EDUCATION

In fact, the main strategies of environmental education on the related aspects to conservation and

management should focus on environmental resources. The fundamental principles of conservation of environmental resources are associated with the basic issues of resource management, that is to maintain harmony between man's requirements and the resource base. The four main principles of resource utilization on which the main task of environmental education is based should be elabcrated briefly here. They are as follows :

(1) Inter-locking Resource Relationship : At each and every level of environmental education, the principle of resource - relationship must be put for the general awareness of the people. The people of the area/region should know about the availability of the resources and the techniques which are being applied for extracting them.

(2) Multiple and Optional Use of Environmental Resources : In the higher education syllabii, the main emphasis should be given to the nature of resource availability and their uses. So that the optimal conditions of the resource utilization can be determined and suggested for future planning. The principle of resource -optimisation should give a sound base for preparing integrated resource utilisation plans of the particular area.

(3) Sense of Social Responsibility and Ecological Consciousness: There are many and varied ecological constraints in utilising the environmental resources. The people should be trained in such a manner that they should have a social responsibility to conserve the resources. A resource awareness programme should start in the rural areas through environmental education so that the villagers know about. The consequences of missing the local resources.

(4) Government Control : The state as well as local government can play a vital role in conserving the resources. They should inact requisite laws and train the administrative machinary at district level to conserve the resources available in the area. But through environmental

education, these laws and regulations should be taught to the people and they should also be made aware of the consequences of resource degradation.

It can be concluded here that without knowing the availability and interacting nature of resource and their utilisation processes of an area, the environmental education policies can not be implemented effectively. The stages of resource utilisation are the major aspects which must be kept in minds of the planners when environmental education policies are formulated.

REFERENCES

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