

Drylands and man: Perspectives on environmental scenario

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Abstract: *Environmental studies focus on the interrelationships and interactions between man and environment. Man and other living beings affect the environment and environment, in turn, affect the man. The earth and its environment may be considered a laboratory of nature. Man and other living organisms in soil, air and water owe their continued life to the balance of physical and chemical condition on the earth and its environment. Man is the most potent actor on earth who possesses authoritative abilities to mould the natural ecosystem.*

Keywords: Drylands, environmental scenario

1. Introduction

In view of the ecological factors, man has to see that no such circumstances prevail which can cause an abnormal and harmful situation leading to ecological collapse. Human understanding of environment and its impact on life has been a guiding light for maintaining a balance between man and his surroundings on which his very existence depend. Human society, being complex, consists of a multitude of activities which sometimes happens to be deleterious to the natural ecosystem equilibrium. Through his ingenuity, man developed technology to harness natural resources and further to his unsurpassed greed uses them excessively. This excessive extraction or plunder of nature's endowments often results in irreparable damage to the ecosystem. Among several forms of human breach of natural limits, one finds manifestation of damage to ecosystem too. The main principle of ecology is that of interdependence and interrelatedness, i.e. everything is dependent upon and related to everything else. The environment of a region exhibit short term (diurnal) or long term (seasonal) fluctuations. Environment is the most fundamental and far reaching of the natural elements which control life.

2. Man and drylands

The world population has reached the mark of 7 billion in Oct. 2011, 7.8 billion in December 2020 and it will reach 9 billion in 2050. Accordingly, this increase of 2 billion people would require 40% increase in the production of food grains in the next 40 years. Major part of this additional food-grain production will come from the fertile lands of the world, which are just 11% of the total land. It is not possible to bring more lands under food grains production, since the remaining land is being degraded at a greater pace and desertification is taking place in most parts of the world. For example, the Gobi desert of central Asia has dust/sand blown to China and Korean fertile plains which is causing significant fall in food grains yields.

Likewise, the sand of Thar Desert in our country is swallowing fertile lands of Great Northern Plains.

Animal husbandry in arid and semi-arid areas is quite prevalent economic activity. As the nature of agriculture is subsistence, people require supplementary economic activities. For the last 3-4 decades, the arid and semi-arid areas of the country are experiencing high population growth and also increase in cattle population. Having poor land capability, unsustainable land use practices begins along-with pressure on available grazing lands of area; thus causing gradual damage to the local ecology. Likewise, the regions adjoining the arid/desert lands face potential advancements of desert-like conditions, if such land use practices continue for a longer period of time. This advancement or spread around desert like conditions may be called the beginning of the desertification.

Nature has endowed us with natural resources, which forms the basis of our life on the earth. These natural resources are bountiful at some places and scarce at others. This uneven distribution usually results in different intensities of utilization. No doubt, cultural influences do play a role in this process. Perception and preference vary a great deal and influence the rate of exploitation spatially as well as temporally. Resource exploitation intensity and rate should be sustainable and carried out in environmentally sound ways. Whenever and wherever the exploitation turns excessive and unsustainable, degradation of natural resources occurs.

3. Mounting stress and nature

Man has been exerting pressure and making significant impact on nature. He has been involved in activities which cause disruption in fragile ecosystems on the earth. For the last two centuries he has been exploiting nature so indiscriminately and recklessly that the entire balance of nature's ecosystem has been jeopardized. If man still does not respect nature and learn to live in harmony with nature, he definitely will procure nature's vengeance upon himself and has to pay heavy price for the same. The exploitation of the nature would have been good and beneficial only to the extent that it had not upset the

balance of ecosystem but man destroyed forests, misused surface water and exploited ground-water and minerals so rampantly that imbalance in the nature has been is due to the unchecked and irrational over-exploitation of the natural resources. It has resulted in different kinds of degradations which invariably are making man's life difficult on earth.

Dry lands are inhabited by more than 2.1 billion people globally accounting for over 40% of the world's population. Asia has the largest area under dry lands, which is home to over 1.3 billion people, i.e. accounting for over three-quarters of the total population in dry lands worldwide. India amongst the countries of Asia is the most affected- both in terms of area affected and the population threatened or at risk due to desertification. According to UN-Habitat, drylands has a growth rate of 18.5% which is much higher than rest of the world. Even within the Asian region, land degradation in India is of concern both in terms of per capita availability of arable land and natural resources such as forestry, which is one of the lowest in the world. This poses great challenge to our country in terms of meeting the food-fuel-fodder requirements in the coming decades.

4. Expansion of Deserts

Desertification, by definition, the extension of typical desert landscapes to areas where they did not occur in the recent past. This process takes place generally in arid zones bordering the deserts. The areas may be under average rainfall of 100 to 200mm with outside limits of 50 to 300mm. Problem of desertification in areas surrounding the desert areas is becoming rampant and at present severely affecting the local natural ecosystem. Surprisingly, this problem has been neglected so far, though it raises alarm to the administration and the planners as well.

The nature of desertification thus appears to be complex, with several different mechanisms ending in similar convergent results. Further, it is always a physical or chemico-physical process induced by biological or biophysical mechanism which reduces plant cover and primary productivity. Gradually, the land becomes unusable for man and his animals, thus narrowing the ecumene limits.

Edaphic Issues: According to World Watch Institute, the upper 25cm layer of soil renewal takes about 200-1000 years. Despite this fact, this issue has failed to list in work agenda of most of the Governments and farmers. The reason is that depletion/erosion of soil's upper layer is very slow and it may take centuries to identify this problem. Wherever in the world, this effect is quite discernible, the scarcity of food and water is omnipresent. It leads to mass struggle for food and water. The civil wars and struggle of Africa and Asia has its roots in the scarcity of fertile lands and water resources.

Role of Technology- Technology harnessed to exploit natural resources excessively entails repercussions of multiple intensities and of varying nature. No doubt, every environmental problem is the consequence of several factors which act together. Another observation is that man aims to benefits and tend to ignore the damage to ecological balance. Though, eventually, the benefits are dwarfed by the losses.

Persistent damage to ecological balance becomes irreparable because in a developing country setup, recovery measures invariably face financial limits. The steps taken in order to restore the ecological balance, perhaps, remain much wanting than what there should be. This gap widens with time and replenishment becomes very difficult, if not impossible.

Annual rainfall totals are highly variable in dry areas and so drought (periods of below average rainfall) occur quite frequently. The human impact has been considered main cause of desertification, and that the role of drought is rather like a catalyst, merely speeding up the long-term process of degradation that had been occurring before the drought began. Normally, droughts are relatively short-term phenomena, lasting for only a few years at most. Continuous onslaughts of droughts invariably results in immense pressure on available resources that deplete fast. It promotes poor land use and therefore catalyses the long-term process of desertification.

5. Conclusion

The more fragile the ecological system, the more delicate is balance between the population and the resources. In such an area, usually the population is already pressing upon the meagre resources. Developing nations like us have agriculture based ecological systems which is essentially subsistence type. Average size of landholding is small and farmers need to cultivate more and more to sustain themselves. Lacking the capability to utilize modern farm techniques, cultivation extends towards marginal areas too. Marginal lands and fallow land were earlier left idle as wastelands and common land. Most of the semi-arid regions characterize rain-fed cropping, which is unable to feed growing population. As farmers are forced to cultivate the land, left fallow earlier, it causes the beginning of deterioration of environmental attributes there.

Our understanding of desertification may be limited, although until now it has been thought of as largely the result of human misuse of land with over-cultivation, over-grazing, deforestation and mismanagement of irrigated cropland leading to degradation of soil and vegetation. The role of climate has been thought of as mainly of a catalytic, so that desertification accelerates as drought causes people to over-farm the land to compensate for falling yields. Though, the role of climatic variation and human impact along with their boundary becoming increasingly blurred.

Dry land areas are vulnerable ecosystems. Natural resources utilization in dry lands should be conservation-based and their management should be rational. There is great need for awareness in general public and consideration for opting more environmental-friendly practices.

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