

Human-Environment Interactions: An Ethical Perspective with Particular Reference to Assam, India

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Abstract: Today it is realized that a growing concern for the environment is an integral part of the overall process of sustainable development. This study relates to the North-East region of India, particularly to Assam, vis-à-vis the aspect mentioned above. The paper aims at highlighting the interaction between man and environment with regard to Assam. For this purpose three areas of agriculture, industry and biological diversity of the region have been taken up. The paper also intends to find out various environmental hazards that affect natural capital stock of the region. The suggestive measures that are intended to seek out to solve these environmental problems pertaining to Assam may be taken as 'model solutions' for any part of the globe where the similar problems occur as in Assam. For the collection of different data in the preparation of this paper a field study survey has been taken up as a method. The result of the paper reveals that a sound ecological wisdom or 'Ecosophy' is needed to preserve the stability, integrity and beauty of the biotic community. It also shows that it is the need of the hour to consciously be aware of our ecosystem. A sound environmental ethics is the moral basis of our responsibility to the environment.

Keywords: Assam, agriculture, industry, biological diversity, environmental hazards, model solution, ecological wisdom, suggestive measures, environmental ethics.

I. INTRODUCTION

'Environment' in general refers to the surroundings of an object. Today it is realized that a concern for the environment is an integral part of the overall process of sustainable development. Environmental ethics which is a part of environmental philosophy examines how human beings should interact with the non-human world around them. American ecologist, forester, and environmentalist Aldo Leopold suggests that our legislations and policies must be in conformity with a set of ethos or guiding beliefs. These beliefs are associated with biodiversity and environment as a whole. He stresses on the point that ethic is needed to preserve the "stability, integrity and beauty of the biotic community." It is the need of the hour to consciously be aware of our ecosystem.[1]

This paper restricts its study area to a human-environment approach within the North-eastern provinces of India, more particularly in Assam. It highlights different areas of environment related to agriculture, industry and biodiversity of the region. Assam's economy is primarily agrarian. The socio-economic condition of Assam largely

depends on its agricultural production. The demand of organic food is increasing in Assam as the consumers are becoming more conscious of food quality, health and environment.[2]

II. ORGANIC FARMING IN ASSAM

Assam and the North East are mostly organic by default. "Fig.1" (Source: Dept. of Agriculture, Assam) According to Assam Government records in a comparative study of the progress and development of a few organic crops like Joha rice (196 hectare), pineapple (157 ha), ginger (425 ha), turmeric (236ha), orange and lemon (2483 ha) in Assam, it is seen that in 2005-06 organic farming covered 1993.41 hectares land and it increased to 4297.00 hectares in 2008-09. These products have high demand in national and international market. The joha is famous for its characteristic aroma. Lemon with a high percentage of vitamin C (10gm.) per 100 gm. can be used in cosmetic industry.[3] With a Scoville rating of 1041427 (peak), bhut jalakia (red pepper) it holds the world record for the hottest chili. It is grown only in Nagaland, Manipur and Assam.[4] Moreover Assam is famous for tea production named after the region, Assam. This tea grown at sea level is known for its body, briskness, malty flavour, and strong bright colour.

Organic farming has many advantages. A major benefit of organic food is that it is free from chemicals such as pesticides, fungicides and herbicides that harm our health. The chemicals may lead to various incurable diseases like cancer etc. Secondly, organic farming is favourable for weed management. Weed management promotes weed suppression and discourages weed elimination and enhances crop competition and phytotoxic effects on weeds. These reasons identify organic farming as climate friendly and eco-friendly.[5]

According to International Federation of Organic Agriculture Movements (IFOAM) 2009, organic farming is cultivated up to 322 million hector land in the world. Australia tops to be the most organically managed land with 120 million hector. India is in seventh position in the list. North-east India including Assam has the potential of organic farming in about 180 million hector land.[6] For this reason the land has high possibility to be recognized as 'Organic Agricultural Region.'

III. PROBLEMS AND CHALLENGES RELATED TO AGRICULTURE

Pressure of population of land, inadequacy of non-farm services like provisions of finance and marketing, poor techniques of production and inadequate irrigation facilities are some of the factors behind the backwardness of agriculture of a state like Assam. In North East India flood problem has now become a serious problem. Urbanization, deforestation, construction of buildings, bridges, barrages, reservoirs etc create artificial flood. In order to meet each challenge proper strategy is needed.[7]. Campaigns to reduce population growth, adequate provisions for finance and marketing and improvised technology for irrigation can be the possible solution.

IV. INDUSTRIALIZATION AND SOME ALTERNATIVE SOURCES OF ENERGY

Industrialization needs favourable ecological system which is one of the constraints for establishment of heavy industry. North-east of India is basically a hilly region. Hence soil erosion, deforestation, landslides and other natural calamities create problems for cultivation.

There are various environmental impacts with respect to different environmental components such as air, water, soil etc. For example, in Assam Hindustan Paper Corporation Limited, the parent company of Nagaon Paper Mill contributes to the air pollution by releasing a number of gaseous elements through its chimney. The paper mill effluents also affect the growth of rice cultivation. Vegetables like tomato, potato etc get rotten and the coconut and papaya get splitting. The coal fields of Ledo and Margherita, places of upper Assam where open cast mining is still practiced create health and environmental problems. With the development of science and technology, the consumption of fossil fuel has increased to a great extent. Biofuels can be used as substitute for the nonrenewable and rapidly declining fossil fuels. The plants are actually the primary sources of most of the forms of energy.[8]

A. Some energy producing plants

As a source of renewable energy, *Jatropha curcus* has been identified as the most suitable seed for production of biofuel in North eastern region of India. This plant can be used for bioenergy to replace petrol and diesel, for soap production and climatic protection. Nahar plant is another resource of bioenergy. The engine performance test with this oil reveals that a blend of 5% Nahar biodiesel with 95% petroleum diesel can be used as the substitute of 100%.[9]

B. Conservation biology

A multidisciplinary science that has developed to deal with the crisis confronting biological diversity is the conservation biology. According to U.S. office of Technology Assessment (1987), biological diversity is "the variety of variability among living organisms and the ecological complexes in which they occur." [10]

C. Wetlands of Assam

The wetlands of Assam are very important wintering grounds for large congregations of water birds. The wetland of this region supports a number of threatened species. Assam can be considered as potential Ramsar sites. Most of these potential Ramsar sites have globally threatened birds and congregations of more than 20,000 waterbirds.[11] Govt. of India has identified only two wetlands Deepor Beel and Urdap Beel under the Wetland Conservation Programme. Deepor Beel Bird sanctuary ('Beel' means wetland in Assamese), located about 10 km southwest of Guwahati city is considered as one of the largest and important riverine wetlands in the Brahmaputra valley of Assam, India. This Ramsar site covers an area of about 900 ha. Deepor Beel suffers from many ecological and anthropogenic threatening now a days. To mention a few of them:

- Large scale encroachment in Deepor Beel area.
- Industrial development within the periphery of beel.
- Hunting, trapping and killing of wild birds and mammals within and in the adjoining areas of Deepor beel.
- Unregulated fishing practice for the feasts of New Year and the Assamese Magh Bihu from end of December to mid January

A few measures can be thought out to conserve the beels from above mentioned threats. Firstly, it is imperative that tremendous human pressure can be brought down to minimum level. Secondly, Municipal garbage dumping in the wetland by the concerned Development Authority is to be stopped and moved to another place immediately and the wastes treated as per the regulation in place.

D. Wildlife: National Parks and sanctuaries

Assam is gifted with five National Parks and about 18 sanctuaries. Among the Parks, Kaziranga National Park boasts to be a World Heritage Site. The Indian rhino popularly known as the great Indian one-horned rhinoceros is a descendent of an old species of rhino. " Fig 2"(Source: Conservation of Wildlife Management of Assam) One horned Rhino has high demand for its horn in the international markets for its supposed medicinal properties. One of the threats come from encroachers especially the migrants at the international border of the park with Bangladesh come illegally to the park. Another problem is poaching in KNP. Moreover, the tea gardens that have developed close to the park boundaries also pose a threat through pesticide run off. This pesticide run off is tough for park staff to control.[12]

E. Suggestive measures for reduction of damage

Proper strategies are needed to decrease the likelihood of erosion of river Brahmaputra. Secondly, to reduce pesticide run-off into the river, several strategies would be needed including, conservation of organic production. Thirdly, there are different methodologies to calculate impacts of dams and then to plan to minimize side effects. A thorough study of possible effects of different hydropower schemes and locations is urgently required.[13]

F. The Need for Environmental Ethics

Joel Feinberg in his essay *The Rights of animals and Unborn Generations* emphasizes the interests of future generations to preserve endangered species. He says, "Surely we owe it to future generations to pass on a world that is not used up garbage." [14] A human centric environmental ethics based on a traditional western approach poses a threat to environmental values. A nature centric system of ethic opposed to human centric ethics is the need of the hour. Norwegian philosopher Naess, the founder of "deep ecology movement" maintains that every being, whether animate or inanimate has an equal right to live. [15] Ecology teaches us a beautiful symbiotic interrelation and interdependence between the members of the biotic community. Population growth at a very high rate is now a threat to the ecology. We need to take programs for reduction of population. Professor Paul Ehrlich suggests the 'I=PAT' formula in relation to the impact of environment. Here, I = environmental impact, P = population, A = consumptive affluence, T = technology. describe the impact of human activity on the environment. The river Brahmaputra has seen the increase of all the three right hand side factors, i. e. population, consumptive affluence and technology. As a result we can see the negative impact on the environment and the ecosystem in Assam.

V. CONCLUSION

It is the human behaviour and not the environment that needs to be managed. To control population size, level of affluence, dependence on technology and thereby to modify our societal attitude towards environment, Cairns suggests that the formula, i.e. I=PAT can be taken into consideration while taking up the issue of man-environment interaction. [16] Undoubtedly various Govt. schemes as well as legislative measures are there to create awareness among the mass people of Assam regarding the maintenance of ecological balance. Ecological wisdom is a proper reply to the challenges pertaining to sustainability as it puts emphasis on exploring diversity of perspectives on man-environment interrelationships.

Man must learn how to use scientific and technological knowledge to fulfill their needs without causing any harm to the natural environment. Hinduism lays much importance on the unity between man and nature. According to Hinduism, men are neither separate nor independent of nature, but constituent part of nature. M. K. Gandhi says that the earth provides enough to satisfy every person's need but not every person's greed. Love for nature cannot be brought about by laws. It must come from within because we love the earth and living beings thereof.

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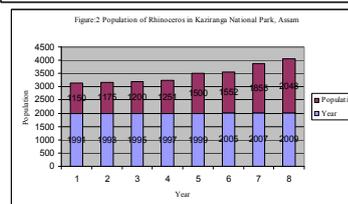
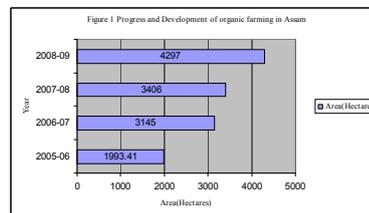


Table : Distribution of organic crops in Assam

Distribution of organic crops in Assam	Cultivated area of organic farming (crop wise)	
	Crops	Area(Hectares)
	Joha Rice	196
	Pineapple	157
	Ginger	425
	Turmeric	236
	Orange & Lemon	2483