

Study on Environmental Protection Schemes (Highlighting the Application on Solar & Biomass Energy)

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Abstract

The Environment is a French word, significance meaning is surrounding. Environment include Air, Water, Land & human beings and inter relations between them, also includes biotic factors like Plants, creatures, animals, microbes human beings. The “Environment” comprises all entities, natural or manmade, external to oneself, and their interrelationships, which provide value, now or perhaps in the future, to humankind. Environmental concerns relate to their degradation through actions of humans. Environment cannot be separated by its whole system, which constituted by physical, chemical, biological, social and cultural elements, which are interlinked individually and collectively in myriad ways.

Keywords: Hydrosphere, Lithosphere, Atmosphere & Biosphere

I. INTRODUCTION

A. Hydrosphere:

Hydrosphere means all water bodies such as lakes, ponds, rivers, streams and ocean etc. Hydrosphere operates in a cyclic nature, it termed as Hydrological cycle or water cycle.

B. Lithosphere:

Lithosphere means the proportion of rocks constituting the earth’s crust. The earth is a relatively cold spherical solid planet of the solar system, which spins in its axis and revolves around the sun at a certain constant distance. Lithosphere generally, contains soil, earth rocks, mountain etc. Lithosphere is divided into three layers- a. Crusts b. Mantle and c. Core (outer and inner).

C. Atmosphere:

Atmosphere means the cover of the air, that envelope the earth is known as the atmosphere. Atmosphere is a fine layer which contains gases like oxygen, carbon dioxide etc, and which protects the solid earth and human beings from the harmful radiations of the sun. There are five layers within the atmosphere, which can be classified on the basis of temperature and each layer has its own significance. These include the troposphere, the stratosphere, the mesosphere, the thermosphere and the exosphere.

D. Biosphere:

It is known as a life layer, it significance to all organisms living on the earth’s surface and their interaction with water and air. It consists of plants, animals and micro-organisms, starting from the smallest microscopic organism to the largest whales in the sea. Biology is related with how millions of species of animals, plants and other organisms grow, feed, move, reproduce and evolve over long periods of time in different circumstances. Its subject matter is really useful to other sciences and professions that deal with life, such as agriculture, forestry and medicine etc. The cycle of biosphere depends upon a number of factors like rainfall, temperature, geographical reference etc.

Apart from the physical environmental factors, it also depends upon the man made environment includes human groups, the material infrastructures built by man, the production relationships and institutional systems. The social environment shows the way in which human societies have organized themselves and how they function in order to satisfy their needs.

II. ENVIRONMENT: A CONCEPT OF WHOLENESS

The environment is a concept of wholeness (nature), with non-living and living components interdependent among each other’s. It significance as ‘the sum total of all conditions and influences that affect the development and life of organisms’. This stresses totality and every living organism from the lowest to the highest, also including human being, has its own environment space. The word ‘nature’ is also conveys the message that it does not belong to anyone but everyone belongs to it, like a family does not belong to anyone but everyone belongs to the family. Like in the environment also interactions between its different constituents

are expected, and these interactions sometimes might lead to hazardous situations. Interaction is leading to the faster deterioration of the environment.

The whole universe together with its creatures belongs to the nature. One can enjoy the bounties of nature by giving up all his greed'. Implicit in this thought is that no creature is superior to any other, and human beings should not have absolute power over nature. Let no one species encroach on the rights and privileges of nature. The element of sustainability is ingrained in this, because the emphasis is on using nature without greed. Once the element of greed enters, exploitation starts and we cease to utilize nature for the good of all human beings.

The issue of environmental activism though has received wide salience in the literature of social sciences yet it lacks systematic presentation and expression. For the students of Sociology of Environment, the word has special significance for its very implicit inclusion of people's action towards environment either for its protection or for its regeneration. The issue is particularly significant at the present juncture with the alarming deterioration of the environment worldwide. This not only calls for critical reflection on the causes of environmental degradation but also for people's action at different levels - local, national and international-in order to mitigate the problem and find out ways and means for an alternative mode to fulfill human needs in a sustainable way. There is also a need to look at the issue of people's action towards the environment in a systematic manner.

III. SPECIAL FOCUS ON INDIA'S NORTH EAST

The present study is concerned with environmental activism in North East India with special focus on environmental movements and the role of action groups operating in the region. India's North East falls under the eastern Himalayas, one of the two biodiversity hotspots of the country, 1. Is known for its rare and exotic varieties of abundant flora and fauna. The rich and verdant rainforests spread over the hills and plains not only provides unique glimpses of nature's bounties they are also inseparably connected with the Socio-cultural and economic life of the people. The region is the abode of different ethnic groups. About 25.81 percent of the region's population comprised tribal communities. In some states tribes constitute over 80 percent of the total population of the state.

These communities fall into what some describe as 'ecosystem people' who share symbiotic relationship with nature and depend on its bounty for their livelihood. Interestingly, the North East with its diverse flora and fauna, mineral resources and subsistence livelihood is now facing a threat brought by the modern growth oriented development paradigm. Though the region itself records a very low rate of industrialization it has been perceived as the storehouse of raw materials valued by the industries outside the region. The continuous timber logging by the contractors throughout the region has led to considerable loss of forest cover in the region, which is also causing severe loss of wildlife and wildlife habitats, including endangered and endemic species. Moreover the forest-covered areas are not sufficiently protected. Encroachment by people migrating from neighboring states and countries has not only become a serious threat to the wildlife of the region but also to the human settlements in the nearby areas of wildlife habitats. The increasing incidence of intrusion wildlife animal into human habitations in Assam routinely reported in local newspapers is a clear example of such a threat. Besides the ecological degradation, the growth oriented development paradigm adopted by the state has also threatened the traditional pattern of livelihood of the people of the region. Most of these people not only depend on nature for survival, their beliefs and value systems are also intricately linked to it.

A. Environmental Activism:

Though the phrase environmental activism is commonly used in literature of social sciences, the term is yet to be clearly defined. To a lay person the term may denote any system of action directed to save and protect the environment, but the action related to environment cannot be always social in typical sense of the term, until and unless it is performed with a social motive. Moreover the term activism is very often found to be used to describe acts that critique the state's inability to manage its natural and social resource efficiently. According to eminent environmental activist Upendra Baxe, activism is based on some manifest or latent critique of the organization of the distribution of power in society. Since it questions the organization of power, it helps people to understand that their exploitations are an outcome of the socio-economic and political arrangements and institutions. While a major part of literature on activism emphasizes on the critique of power distribution it overlooks the empowerment dimension of activism. One can always criticize the inefficiency and inability of the state to manage its resources: social and natural, but at the same time, there remains another side of the coin, the role of people to ameliorate their situation. Thus activism not only questions the distribution of power, but also has an orientation to have an alternative source of power, in its turn tries to empower people to achieve their own goal, either in the form of militant activism thus using violent.

B. Urbanization:

Urbanization is the process of human being moving towards towns from rural areas, and taking up the urban culture and working in the urban areas for better life style and better livelihood. The 65% country's population is spread over villages and also towards their nativity with formal occupation, mostly agricultural or its allied products, making their living with or without ancestral property like lands or houses. Deteriorating quality of urban life and suburban environment quality is to a great extent the result of excessive land use and use of urea mixed with harmful hazardous toxic components is a threat to the whole socio-economic system as well as environment. Thus planned cities are as necessary as planned farming also in rural areas. Environmentalist and social activist Mr. Sunderlal Bahuguna once pointed out that the agony of the present-day world is the offshoot of an illogical and

indiscriminate spoliation of the sources of the earth by man for his development that is leading him fast towards destruction of nature.

C. Urban Ecosystem:

Ecology and environment both are simply the study of organisms and their surroundings. Most urbanites are unaware of the connection between their livelihood, standard of living, quality of their dependence and fertility rate decline on the processes and cycles of the natural world. For those living in urban areas, many of the processes that explain the relationships between plants, animals and their natural habitats appear sub-standard in the city. Urban ecology cycle shows how these processes are the same ones that affect the urban communities' humans' nature.

IV. URBANIZATION IN WORLD

The slow growth of agricultural land stock and high growth rate of population the labour work force in developing countries are factors that push rural population toward urban areas are more and more now in the recent past. The underperformance of manufacturing sectors and employment generation sectors are largely responsible for the observed slower pace of urban growth in developing countries. Even though manufacturing sector is keeping well but cannot generate much employment being capital intensive is unlikely to accelerate rural to urban migration due to lack of planning. The likely deceleration of rural to urban migration and overcrowded could be the important reason for the slowing down of urbanization in the developing countries in recent times. The main factors like population growth and unemployment and pull factors like opportunities in the urban areas.

Census is the main source of data of urban population for not only India but also for the most of the countries of the world. Census functions urban areas based on certain criteria. The United Nations estimates indicated that at mid-1990s, about 43 per cent of the world population lived in urban areas. With the urban population growing two and a half times faster than its rural counterpart, the level of urbanization was projected to cross the 50 per cent mark in 2005. United Nations projections further showed that by 2025, more than three- fifth of the world population would live in urban areas (U. N. 1993). The fertility decline could also be the important factor for lower urban growth in several parts of the developing world. The growth rate of urban population of developing regions has been declining recently. In India also most of the big cities including metros are overcrowded. It reflects the effects of the host of factors like the relatively weak expansion of urban industries and price shifts unfavorable to manufactured goods, population aging, and policies to alter migration and spatial distribution patterns in some countries.

Scientists have suggested that there is over population when organisms (humans in this case) become so numerous that they degrade the ability of the environment to support their kind of animal in the future. The number of people earth can support in the long term (without degrading the environment) given existing socio economic systems, consumption patterns, and technological capabilities is called the human carrying capacity of the planet at that time. It can thus be concluded that the critical difference between the terms overpopulation and population density lies in the amount of resources available and the number of human beings consuming them. Environmental degradation is compounded by lack of food security, soil losses, uneven distribution of the water supply, consumptive lifestyles, and many other socioeconomic factors leading to loss of biodiversity and natural resources.

Some recommendations are also made for mitigating and managing these problems in the sustainable urban development perspective. According to current estimates, cities occupy 4% or less of the world's terrestrial surface, yet they are home to almost half the global population, consume close to three-quarters of the world's natural resources, and generate three-quarters of its pollution and wastes. Moreover, the UN estimates that virtually all net global population and economic growth over the next 30 years will occur in cities, leading to a doubling of current populations. This growth will require unprecedented investment in new infrastructure and create undreamed challenges for political and social institutions. Nowhere are the opportunities more promising or challenges to sustainability more daunting than in the rapidly urbanizing regions of the world. These transforming cities represent the engines of growth for the developing world and, in all regions, will continue to be the centers of innovation, culture, and the arts. These same cities, however, are the reasons of increasing poverty, pollution, disease, political instability, and social inequality. The transformation of surrounding land due to urban expansion and urban dwellers ever-increasing demand for energy, food, goods, and other resources is behind the degradation of local and regional environments, threatening basic ecosystem services and global biodiversity.

V. URBANIZATION IN BIG CITIES

Virtually all the population growth expected at the world level during the next thirty years will be concentrated in urban areas. Also, for the first time, the number of urban dwellers will equal that of rural dwellers in 2007. These findings are from official estimates and projections of urban, rural and city populations prepared by the Population Division of the UN Department of Economic and Social Affairs. The World Urbanization Prospects:

Major findings of the study are:

- Half the world population is expected to live in urban areas in 2007. The urban population reached 2.9 billion in 2000 and 3 billion in 2010. It is expected to rise to 5 billion by 2030, whereas 30 per cent of the world population lived in urban areas in 1950 and the proportion of urban dwellers rose to 47 per cent by 2000 and is projected to attain 60 per cent by 2030.

- Almost all of the population increase expected during 2000-2030 will be absorbed by the urban areas of the less developed regions. During that period, the urban population of these regions is expected to increase by 2 billion persons, nearly as much as will be added to the world population, 2.2 billion.
- In 1995-2000, the world's urban population grew at a rate of 2.2 per cent per year. During 2000-2030, it is projected to grow at an average annual rate of 1.8 per cent; at that rate, the world's urban population will double in 38 years.
- The urban growth rate of less developed regions reached 3.0 per cent per year in 1995-2000, compared to 0.5 per cent in more developed regions. This rate will continue to be particularly rapid in the urban areas of less developed regions, averaging 2.4 per cent per year during 2000-2030, consistent with a doubling time of 29 years.
- In contrast, the rural population of the less developed regions is expected to grow very slowly at just 0.2 per cent per year during 2000-2030. The world rural population will remain nearly stable during 2000-2030, varying between 3.2 billion and 3.3 billion.
- The process of urbanization is already very advanced in the more developed regions, where 75 per cent of the population lived in urban areas in 2000. Nevertheless, the concentration of population in cities is expected to continue so that by 2030, 84 per cent of the inhabitants of more developed countries will be urban dwellers.
- In 2000, 52.5 per cent of all urban dwellers lived in settlements with fewer than 500,000 inhabitants, a proportion that is expected to decline slightly by 2015, but still remain over 50 per cent. Consequently, the trend towards concentration of the population in larger urban settlements has not yet resulted in a marked decline of either the proportion or the number of persons living in smaller urban settlements.
- Large urban agglomerations do not necessarily experience fast population growth. In fact, some of the fastest growing cities have small populations and, as population size increases, the growth rate of a city's population tends to decline

With 26.5 million inhabitants, Tokyo is the most populous urban agglomeration in the world, followed by Sao Paulo (18.3), Mexico City (18.3), New York (16.8) and Mumbai (16.5). By 2015, Tokyo will remain the largest urban agglomeration with 27.2 million inhabitants, followed by Dhaka, Mumbai, Sao Paulo, Delhi and Mexico City, all of which are expected to have more than 20 million inhabitants (www.emeraldinsight.com).

VI. URBANIZATION IN INDIA

The population is growing at the rate of about 17 million annually which means a staggering 45, 000 births per day and 31 births per minute. If the current trend continues, by the year 2050, India would have 1620 million populations. Population explosion is one of the most threatening issues facing contemporary India particularly by the Indian cities. One of the most important reasons for population explosion in the cities of India is the large scale rural to urban migration and rapid urbanization (Kamal Raj, 2005).

Table – 1

Number of Households, Population and Occupied Residential and Vacant Houses with Rura/ Urban Break Up

Sl. No.	Total/ Urban/ Rural		Number of House holds	Population			No. of Houses at the time of House-listing		
				Total	Male	Female	Total #	Occupied residential	Vacant
1	2	3	4	5	6	7	8	9	10
1		1981*							
	Total	Total	119,772,545	665,287,849	343,930,423	321,357,426	121,782,109	113,735,542	8,046,567
		Institutional	247,457	3,790,700	3,116,289	674,411			
	Urban	Total	28,905,949	157,680,171	83,876,403	73,803,768	29,897,491	27,604,947	2,292,544
		Institutional	143,015	2,377,559	1,956,711	420,848			
	Rural	Total	90,866,596	507,607,678	260,054,020	247,553,658	91,884,618	86,130,595	5,754,023
		Institutional	104,442	1,413,141	1,159,578	253,563			
2		1991+							
	Total	Total	152,009,467	838,583,988	435,216,358	403,367,630	159,425,666	147,013,766	12,411,900
		Institutional	244,881	4,252,976	3,351,584	901,392			
	Urban	Total	40,418,141	215,771,612	113,936,953	101,834,659	43,518,317	39,073,337	4,444,980
		Institutional	140,702	2,406,841	1,893,949	512,892			
	Rural	Total	111,591,326	622,812,376	321,279,405	301,532,971	115,907,349	107,940,429	7,966,920
		Institutional	104,179	1,846,135	1,457,635	388,500			
3		2001++							
	Total	Total	193,579,954	1,028,610,328	532,156,772	496,453,556	202,973,364	187,162,172	15,811,192
		Institutional	460,717	7,802,866	5,460,238	2,342,628			
	Urban	Total	55,832,570	286,119,689	150,554,098	135,565,591	58,514,738	52,062,718	6,452,020
		Institutional	208,470	3,758,714	2,717,220	1,041,494			
	Rural	Total	137,747,384	742,490,639	381,602,674	360,887,965	144,458,626	135,099,454	9,359,172
		Institutional	252,247	4,044,152	2,743,018	1,301,134			

Source: Office of Registrar General of India

Note:

#: No. of census houses (occupied residential + vacant)

*: Excluding Assam

+: Excluding Jammu & Kashmir

++: India figures are final and exclude those of the three sub-divisions viz. Mao Maram, Paomata and Purul of Senapati district of Manipur as population Census 2001 in these three sub-divisions were cancelled due to technical and administrative reasons although a population census was carried out in these sub-divisions as per schedule.

Due to uncontrolled urbanization in India, environmental degradation has been occurring very rapidly and causing shortages of housing, worsening water quality, excessive air pollution, noise, dust and heat, and the problems of disposal of solid wastes and hazardous wastes. The large and metropolitan cities present a particularly depressing picture today.

VII. URBANIZATION IN INDIA AND METROPOLITAN CITIES

The situations in metros like Mumbai, Kolkata, Chennai, Delhi, Bangalore, Hyderabad etc, are becoming worse. The problems of finding space and housing for all have been intensified. Slums have become an inevitable part of the major Indian metro cities. Environmental pollution in India attributed to rapid industrialization, energy production, urbanization, and an increase in the number of motorized vehicles (Maitra 1993).

In cities like Mumbai not built to bear the pressure are failing apart with several shortfall in basic amenities, as an example two fifths of India's urban population resides in 35 Metropolitan cities. The major cause of worry all the major river including the mighty Ganga, Yamuna, Riva, Sutlej, Cauvery and Godavari are polluted with sewage and industrial toxic. The ground water is depleted and contaminated leading to various diseases like cancer, skin ailments and water borne diseases. Globally climate change is expected to result in sea level rise, which is a serious threat to India considering it has a 7517 KM long coast line. More than 7 million people will be at a risk due to expansion and could cost us 1850 million rupees.

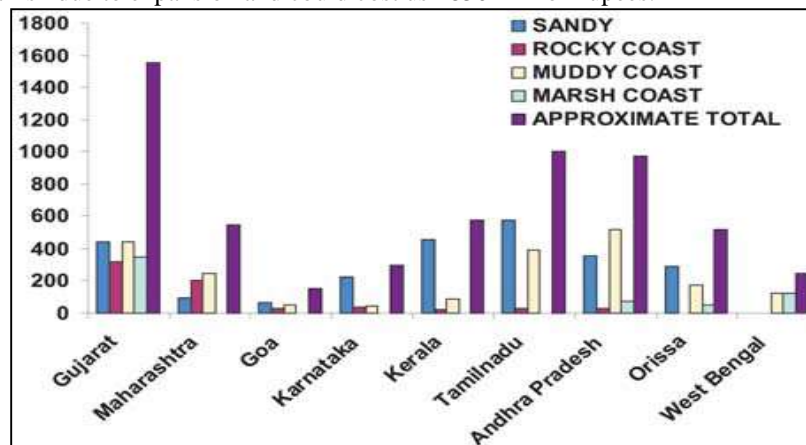


Fig. 1: Graphs

Source: www.envfor.nic.in 2009

Moreover, climate refugees from south Asia will also affect India. Around 75 million people of Bangladesh might be forced to take shelter in India. But more than that, it is the impact on the rains that will affect India the most. We have recently witnessed the devastating flood in Chennai due to heavy raining almost for 15 days nonstop. During the last three decades in India, the link between urbanization and environment and the threat to the quality of life have emerged as a major issue.

VIII. CLIMATE CHANGE

There is near consensus among scientists that climate change is unequivocal. Increase in anthropogenic activities, since the advent of industrialization in the mid-eighteenth century, has built up concentration of Greenhouse Gases (such as Carbon Dioxide, Methane, Nitrous Oxides and so on) in the Earth's atmosphere. Greenhouse Gases (GHGs) trap infra-red radiations reflected by Earth, leading to global warming; which, in turn, could lead to changes in rainfall patterns, disruption in hydro- logical cycles, melting of ice caps and glaciers, rise in sea levels, and increase in frequency and intensity of extreme events such as heavy precipitation or cyclones. These developments can have a serious impact on sustainability of water resources, agriculture, forests and ecosystems, affecting the well-being of billions of people on Earth. Climate Change can slow down the pace of development either through its adverse impact on natural eco-systems, or through erosion of adaptive capacity of the people, particularly those who are socially and economically vulnerable. Projections of temperature change as estimated by the IPCC are predicting India is highly vulnerable to climate change. As per recorded observations, India has seen an increase of 0.4 degree Centigrade, in the mean surface air temperature over the past century (1901–2000). Change in mean temperature and precipitation will require change in cropping patterns. It has been estimated that a 2.0 to 3.5 degree Centigrade increase in temperature, and the associated increase in precipitation, can lower agricultural GDP by 9 to 28 per cent. Yields of most crops will fall in the long run. The impact in the

short run may be small, but the heat stress will affect the productivity of animals and milk production may even decrease over the present levels. Agriculture technology can adapt to these changes to partially offset the adverse impact by adoption of water conservation practices, by changing cropping patterns and practices, and by developing new varieties that can withstand short term variability in weather patterns.

IX. CARBON MARKETS AND CLEAN DEVELOPMENT MECHANISM

CDM is an international mechanism for emissions trading that helps developing countries gain some financial resources through sale of emission reduction certificates to developed countries, while enabling them to meet their emission reduction targets. The market for such trading is either compliance-based such as the one created under Kyoto Protocol, or voluntary in nature. India has been an active player in the Clean Development Mechanism and the National CDM Authority (NCDMA) in the Ministry of Environment & Forest has so far accorded Host Country Approval to over 2000 projects. These projects have the potential of facilitating an overall inflow of approximately US \$ 7.07 billion in the year 2012, provided all of them get registered. Interestingly, most of the projects in India are unilateral in nature, wherein the project entity itself undertakes the initial investment, and aims to sell the Certified Emission Reduction (CER) units in the spot market rather than selling them in the forward markets.

Efforts are being made to increase participation of financial institutions/banks in financing voluntary projects, including the bundling of small projects which may reduce transaction costs and increase the average project size. A programme for capacity building to help industry adopt new and more efficient methodologies, such as programmatic CDM projects, is also being considered. However, the ability of international carbon markets to act as a stable source of adequate finance for domestic mitigation actions in developing countries is limited, because of the uncertainties about the scale of emissions reduction in the 2nd commitment period under the Kyoto Protocol. Further, in some of the key markets such as that of the European Union, unilateral restrictions are being imposed on sale of CERs from major developing countries in terms of eligibility, additional criteria, sectoral gaps and so on. In brief, the contribution of CDM to real technology transfer is limited, and as market prices remain depressed and volatile, considerable uncertainty prevails over its future. 7.134. Innovative domestic markets mechanisms are being evolved under the Perform, Achieve & Trade (PAT) Scheme that is being implemented by the Bureau of Energy Efficiency for designated industries under the provision of Energy Conservation Act 2010.

Efforts are being made to support this scheme by creating a Partial Risk Guarantee Fund with help from the Global Environmental Facility. However, this scheme is not suitable for the small and medium industry, for which new forms of financial support and capacity building are needed. Renewable Energy Certificates is another attempt at creating domestic markets through regulatory interventions at the state level. It may, however, be easier to deepen the existing quasi-markets in the power sector so that renewable power achieves grid parity faster.

X. CONCLUSION

A. West Bengal Scenario

The Government of West Bengal has now become quite aware of the devastating the menace of Global warming and the Air pollution can produce in the near future. Some strong measures have already planned by the Government to abate pollution in Kolkata and its suburbs. The W.B.R.E.D.A and Green energy Development Corporation limited are working on 24x7 in association with Government department like West Bengal pollution control board and department of Environment. These nodal bodies are working on for improving the air quality of the city and bring down pollution level for better living. The proposed steps includes conversion of all coal fired boilers operating within the city limit to oil fired ones and exploring the operation of closing the operation of new cossipore thermal power station of CESC during the winter months when the air pollution level of the city is at its worst. The West Bengal pollution control board and environment department in exercise of the powers conferred under section 17(1) S and section 20 of the air (prevention and control of pollution Act 1981, Issued the following order. All four wheeler vehicles other than passenger vehicles).

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