

"SUSTAINABLE DEVELOPMENT"

Introduction:

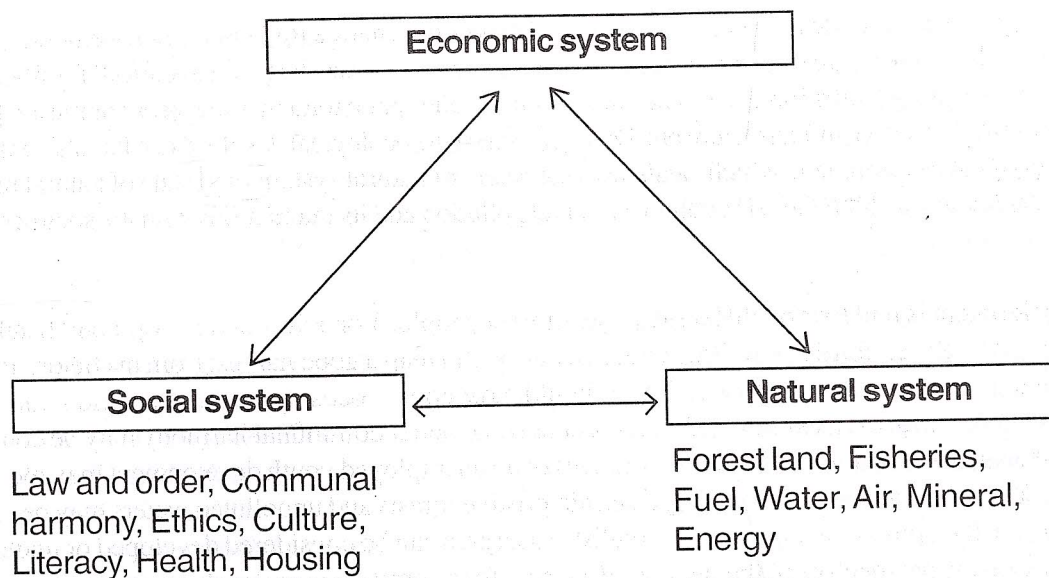
In social and regional context, development is often understood as a change for better, improvement, growth or progress. It is studied in two broad categories viz., social, which includes health, education, family welfare, literacy, child mortality and nutrition and economic, which includes per capita income, gross domestic product, employment, industrialization, infrastructure etc. During recent years ecological development has also emerged as an important organ of development which deals with the health of natural systems and state of natural resources like forest, water bodies, soils and levels of environmental pollution and its interactions with the socio-economic development.

The term development is understood differently by different people. For a farmer development means better availability of water, power, fertilizer and pesticides so that he can reap a good harvest from his fields. From the perspective of an industrialist a developed region should have good roads, telecommunication, market and banking facilities. An area with less law and order problem and better communal harmony may be considered developed in the opinion of an administrator. In the eyes of an unemployed youth development may mean more jobs. An area rich in natural resources, having clean air, pristine forests and unpolluted waters may be the most developed place in the opinion of an environmentalist. So an area can be considered developed or underdeveloped depending on the perspective of the person. However, for a common man development generally means better standard of living which often reflects sum total of all components and facets of development discussed above.

Like development, sustainable development is one the most debated and at times misunderstood term of present times. It aims to provide for the economic, social and ecological well being of present generation without compromising the need of future generations. It is seen more of as a concept than a reality. It talks about the needs of future generations which are almost impossible to predict or even to imagine. For instance, our ancestors some 200 years ago could in no way have imagined about the needs and life style of present generation. So how can we?

Therefore, many consider it as an ideal and often see it as an unachievable goal. In fact no one truly knows what sustainable development is, because we cannot point to any examples where it has occurred. There is a general lack of unanimity on how to equitably meet developmental and environmental needs of present and future generations. A broad understanding of sustainable development is depicted in the Figure-1 below.

Industry, Trade, Agriculture, Business, Banking.



Pillars of Sustainable Development

Fig 1 Interdependence of social, economic and natural systems

For the purpose of this article the sustainable development shall be treated as a sort of total development that improves social, economic, ecological as well as political well being of the people and where the standard of living of people gets better while the natural resource base is not depleted beyond the level of regeneration. In the rest of this article various elements of sustainable development have been discussed in the context of northeastern India. The issues have been discussed, wherever possible with the help of examples of northeast. An attempt has also been made to relate various elements of sustainable development in the context of northeast.

Characteristic Features of North-Eastern India:

The region lies within 21° 58'N and 29° N latitudes and 93° 40'E and 97° 25'E longitudes. Northeast spreads over an area of 255,000 sq km with a population of about 50 million today. It includes seven states of India viz., Assam, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland and Tripura who have several commonalities and therefore many a time they are considered as one ecological, economic and political unit. Northeast India is connected to the rest of India through a 22 km, Siliguri corridor and it has over 4500 km of international border with Bhutan, China, Myanmar and Bangladesh. About seventy per cent of the area, is hilly to mountainous. Rest are plains which include the valleys of Brahmaputra in north, Barak in South, Imphal valley and parts of Tripura. The population density varies a great deal; while in plains of Assam and Tripura it is more than 300 persons per sq. km

in Arunachal Pradesh it is only 15 persons per sq km. In other states it is about 100 persons per sq km. Hills and mountains are mostly inhabited by more than 100 recognized tribes. Many of these have distinct language and dialects. The region is also rich in biodiversity, forest wealth, traditional knowledge system, culture and art

Economy of the region is basically agriculture, supplemented by limited horticulture, animal husbandry, and crafts production. In hill states of Meghalaya, Mizoram and Nagaland 78% of forests belong to open (less than 40% canopy cover) category and 22% (more than 40% canopy cover) have dense forests. Although total area under forests may be high, the over all health of these forests is not good. Most old growth trees have vanished from accessible areas and they are present only in notified forests and in cliffs, ravines and gorges. Genetic depletion of trees is taking place quite rapidly.

Post independence India witnessed phenomenal socio-economic development particularly in the fields of agriculture, industries and human resource development. But northeast has not been able to keep pace with rest of country. This has been recognized by the development planners and union government. Presently the region is receiving added attention of national and international agencies and region is at a threshold from where it can take a quantum leap and significantly accelerate its development. The need of the hour is therefore, to steer the development of the region on a path which is sustainable and takes into account the issues of equity, social justice and ensures a balanced development.

Population stabilization:

The pattern of population growth is often related to the level of development. Amongst many developing societies, the natality and mortality is determined by the stage of development. The lowest stage of development is characterized by high natality and high mortality resulting into slow population growth. After a certain level of development is achieved the mortality drops while natality remains high. The population growth is highest during this period. The population tends to stabilize by low level of natality and low level of mortality when the society achieves higher level of social and economic development. Population stabilization is therefore seen as a product of development. Most states of northeast are still either in stage one of development and thus the growth is very slow for example parts of Arunachal Pradesh or in the second stage of development and thus experiencing high growth rate for example the state of Nagaland.

Any policy or plan aimed at making the development of northeast more sustainable, needs to influence the population growth in a manner that it stabilizes faster and also at a low level. This will ensure higher per capita availability of natural resources. The region's economy has a large primary sector with minimal capacity of employment generation. Possibilities of fast development of secondary and tertiary sectors are remote due to difficult terrains and prevailing socio-political conditions. Population stabilization can be achieved through rapid socio-economic development. Development planners must not wait until the population stabilizes by itself as it may take a long time and by then the total population will be too large and natural resources shall be in a considerably depleted stage.

Efficient use of natural resources:

Natural resources are the most important ingredient for development of any nation as they provide raw material and energy needed for maintaining the pace of development. Natural resources are the ecological capital provided by the nature like a one time grant. Most natural resources are finite commodity and non renewable in short term. Even renewable resources like forests and grasslands can become nonrenewable if not managed properly. In order

to derive maximum benefit for maximum number of people, inventorying and long term planning for resource use is a must. Efficient use of natural resources needs technological and managerial inputs. Involvement of people in natural resource management and raising awareness about ecological benefits of nature conservation are desirable for improving efficiency of resource use. While efficient use of ecological capital can help in accelerating the pace of socio-economic development, its misuse may cause ecological disaster.

Fig. 2, depicts the interrelations of various components of development and shows how they are dependent on the ecological capital.

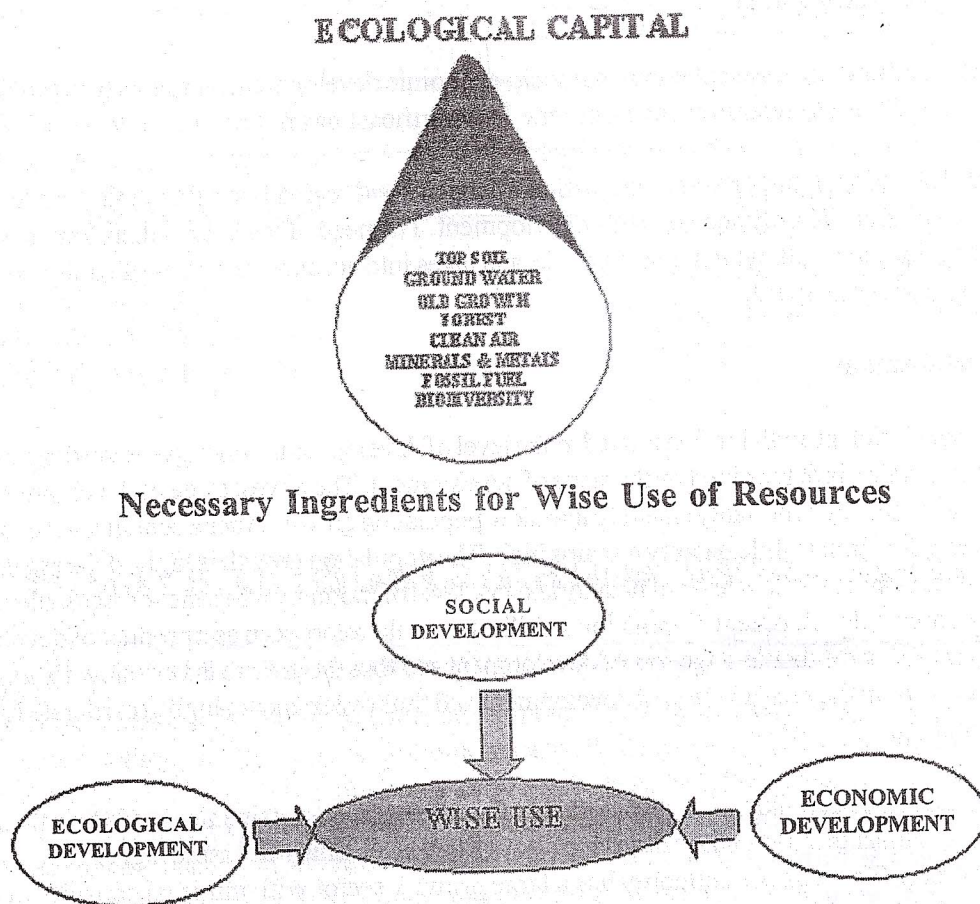


Figure-2 Inter - relationship of social, economic and ecological development and its dependence on natural resources

Northeast is rich in several natural resources. It has huge deposits of minerals viz., coal, limestone, petroleum, silliminite and several minor minerals, plenty of surface and ground water, fertile soil, biodiversity rich forests, huge domesticated germplasm, plenty of sunshine and climate favourable plant and animal life. The ecological capital of the region need to be used judiciously for short term and long term needs. The efficient utilization of resources means plugging of wastage, encouraging reuse, recycle, and waste use, and its protection and preservation where ever necessary. There is an urgent need of bringing out a policy guideline for natural resource management of northeast.

Waste reduction and pollution prevention:

Economic production system invariably emanates some quantity of waste. Waste is a material or energy which remains unused or is generated during the use of resource. Often waste is looked as unwanted or unusable which is a wrong notion. In fact most wastes whether of industrial, agricultural or of domestic origin can be used. This has two benefits, it reduces the waste thereby reduces the problem of waste disposal, prevents pollution and conserves the resource. This type of production is known as clean production. Waste reduction and pollution prevention is needed at every stage of product life cycle i.e. from extraction of raw material, production process and final use and disposal by the consumer. This is the most important management option for moving toward the goal of sustainable development.

In northeast the extraction and utilization of most natural resources are being carried out using out-dated and primitive technologies. This is causing colossal waste of vital resources and polluting near by natural systems. Extraction of coal and lime stone in Meghalaya is a glaring example.

Integrated natural resource management system:

In nature various components like land, water bodies, forests, grasslands, agriculture and horticulture are interdependent and interact with each other. Various natural resources are found dispersed in a mosaic fashion as an element of the landscape. However, for our convenience we have separated them by putting artificial boundaries and often evolve separate management plans and create separate departments responsible for their management.

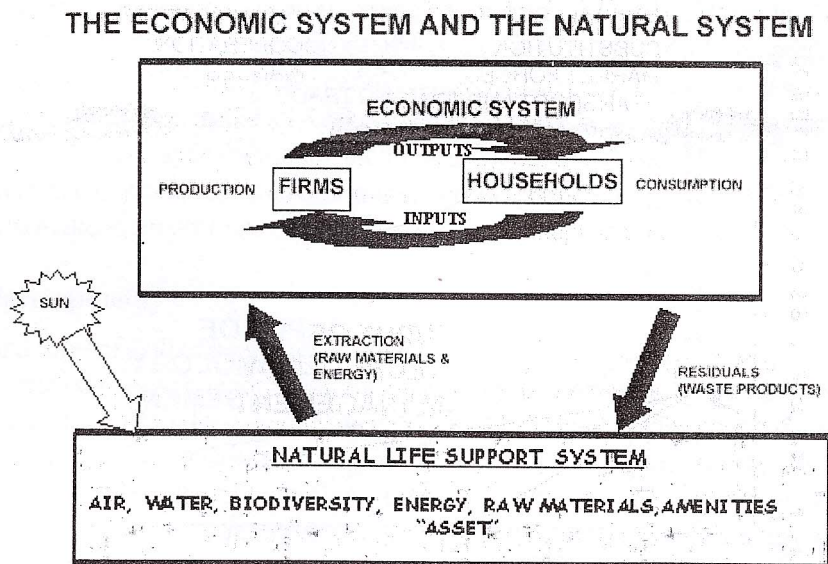


Figure- 3. Working of economic system and its relation with natural system

The matter becomes more complicated when there is a lack of coordination among different resource managers. The personnel deployed in one sector often do not understand the problems concerning other sectors. In natural systems management of one component has a bearing over the other and mismanagement of one adversely affects the other. Sound management of natural resources therefore, needs an integrated management system that takes care of all elements of landscape including a built in mechanism of monitoring and evaluation. Such a system will help conservation and best use of resources keeping in view the short and long term interest of the society. The interdependence of economic system and natural system is depicted in the Figure 3.

Northeast is extremely rich in natural resources and therefore a need for an integrated management of natural resources is most desirable in this region. Unplanned extraction of forest and other bioresources, unscientific mining, poor management of water, almost total lack of land use plan are some important areas that need to be tackled on priority for making the resource use more sustainable.

Determining environmental limits :

The economic system depends on natural system for the raw materials and also for disposal of the wastes. In many instances the economic systems tend to exceed the limit of extraction of raw materials or disposal of wastes. This causes scars and irreparable damage to the natural system and human environment in short run and may result in collapse of economic system in long run. Therefore, before start of any economic activity it is required to determine the environmental limit i.e. how much can be safely extracted and how much waste can be safely disposed.

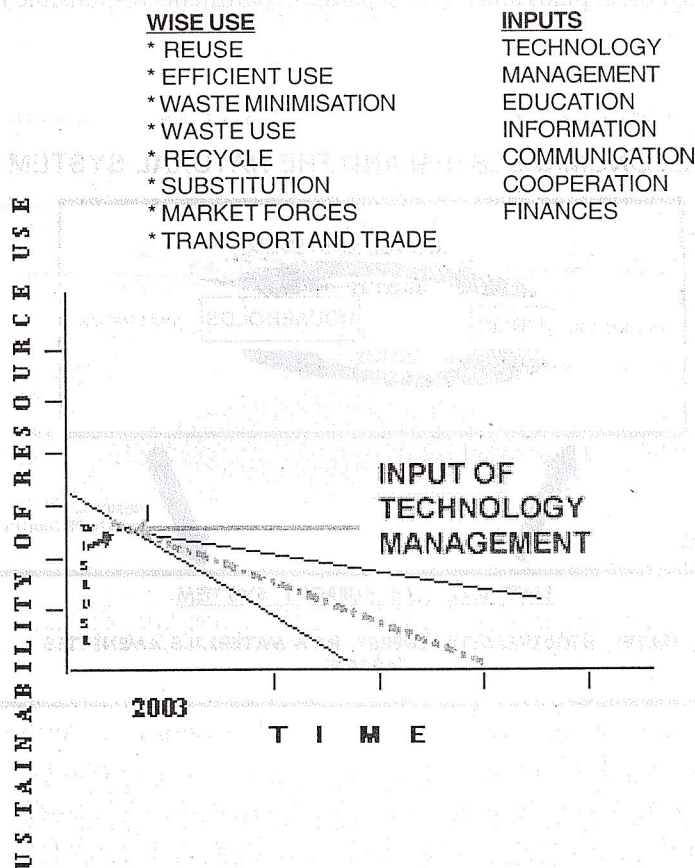


Figure 4. Enhancement of sustainability through wise use of resources and inputs to the system

The determination of environmental limit is generally taken as an on going process and should be a part of environmental monitoring. The environmental limits can be enhanced through injection of advanced technology or through improved environmental management (Fig. 4). Northeast has been a net exporter of raw materials and to large extent it is still continuing. Huge quantity of timber has been extracted from the natural forests of the region without proper restoration of the ecosystems. Large areas of primary forests were cleared for tea plantation without determining any limit or assessing their possible impact on the environment. Similarly several paper mills and plywood industries were established which used the bamboo and soft wood resources, mostly unsustainably, causing irreparable damage to the natural system of the region and in due course several of these industries also vanished. It is required that in future the prior determination of environmental limits be made mandatory for all economic activities. Establishment of Ferro alloy industries in Burnihat (Meghalaya) is a glaring example of such lapse and underlines the need of such a study.

Refining market economy:

Market acts like a double edged sword when it comes to management of natural resources and conservation of environment. If used properly it can help develop the resource base, provide maximum benefit to the society and even promote environmental conservation. However, market is often profit driven and thus it promotes activities which are beneficial to its players even at the cost of environment and development. Market promotes exploitation of resources for production of goods and services and therefore, conservation and sustainability are seldom its priority. Market therefore, needs to be refined so as to promote sustainable and judicious use of resources, social justice and equity. Empowerment of local people and building of community institutions to act as watch dogs and shortening of market channels can be possible interventions making the market eco-friendly and akin to sustainable development.

The natural resources and products of northeast have a vast market outside the region. Poor infrastructure and prevailing socio-political conditions have been an impediment in development of large businesses and establishment of industries in the region. The remoteness of the region caused shrinkage of potential number of entrepreneurs and only those who could afford to take a certain degree of risks and relatively more enterprising took the job. In such conditions, the middlemen and all market players worked on very high profit margins. Local governments and communities had little say in the market until few decades ago. This resulted into unsustainable exploitation of natural resources and degradation of environment. Serious policy interventions are required for refining the markets with an aim to make them promote development without degrading the natural system of the region.

Human resource development:

Education, training and level of skill of people are the indices of development. The development of human resource provides space for improved management of natural resources and enables the communities to take well informed decisions. It enhances the level of understanding and broadens the horizon of the people. It improves the availability of man power to take up the jobs related to management and conservation of resources. Implementation of any programme for sustainable utilization of natural resources can be better implemented in a community which is educated and well informed. In fact a certain level of human resource development is a must for guiding the development toward a path which is more sustainable.

One of the causes of unsustainable utilization of natural resources and underdevelopment of the region has been slow pace of development of human resources. Except Mizoram, all states of the region have very poor index of human resource development. The scenario is however, improving rapidly and in very near future the shortage of trained man power will become a thing of past.

Perception and attitudinal changes:

The sustainability of development is to a great extent a function of sound development planning and efficient management of available resources. The perception and attitude of people is very important for doing this, as it may require sacrificing short term gains in the interest of long term benefits. Also, at times it may warrant foregoing self interests in favour of society. All this requires right kind of motivation and attitudinal change of the society and individuals and even educate them in environmental ethics. To achieve intra and intergenerational equity, the basic tenet of sustainable development, the society's attitude toward the resources need to be changed. Every individual needs to be motivated to think that all that is available is not meant for him alone; the other sections of the society and even those yet to be born also have a share in it.

People of northeast in general have been considerate to the nature and fellow people. Strong community bonds and ready to help attitudes are very common among most indigenous societies of the region. Accumulation of wealth and lavish living have not been a tradition among the societies of the region. This is the type of attitude that favours sustainable and equitable use of resources. However, this perception and attitude is eroding rapidly in several parts of the region. It is therefore, required to revitalize the local traditions and educate the people about the value of ethics and positive attitude toward environment and natural resources.

Enhancing sustainability and resource availability:

The availability of resource and sustainability of development can be enhanced through wise use which can be promoted through reuse, efficient use, waste minimization, waste use, recycling, product substitution, market refinement and improved trade and commerce. Input of technology, management, education, information, communication, cooperation and financial resources can also enhance the sustainability of resource use.