



Environment and Sustainable Development: A Study Among the Tribes of Eastern Ghats in Andhra Pradesh

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ABSTRACT

This paper provides the existing interrelationship between environment and sustainable development. In addition to this, it discusses about tribal ecology, livelihoods of tribes, issue of shifting cultivation and deforestation, Indigenous knowledge of tribals in protection, conservation and regeneration of natural resources and strategies for sustainable development of tribes in Eastern Ghats of Andhra Pradesh specific and other tribal areas, in general. All these aspects in the paper are explained with the evidence of an empirical case study of Eastern Ghats forest environment of A. P. in which around 27 hill tribes inhabits. These tribes are distributed in the tribal sub-plan areas of Visakhapatnam, Srikakulam, Vizianagaram, East Godavari, West Godavari, Khammam, Mahaboob Nagar and Warangal districts of Andhra Pradesh. The paper comprises of both semantic and scientific explanations with ethnographic methodological descriptions. This paper forms the part of a Major Research Project Report "Environment and Sustainable Development : An Anthropological Study Among Tribes of Eastern Ghats in Andhra Pradesh" sponsored by I.C.S.S.R., New Delhi.

INTRODUCTION

Human beings survival basically depends on environment in which they dwell. Development of mankind is closely associated with the environment. Hence, environment and development are interdependent. Relationship between man and environment has been point of discussion for a long time. Anthropologists mainly concentrate to understand man relationship with environment. The relationship between man and nature was never constant but has been changing constantly. Man was "natural homospey" in the early stages of development and his requirements were natural and fulfilled from the nature. He was neither familiar with the laws of nature nor could develop technology. After a long struggle, we have invented methods and techniques to face the simple problems of nature. Such as he started to use cloths and shelter to meet the challenges of climate, domestication of animals and plants and man made simple implements and artifacts. Such a way, he tried to adopt with the natural conditions. In later period with the advancement of social and economic organizations and furtherance of technology, capacity of man to exploit the natural resources and to increase the agricultural productivity enhanced enormously. With the advantage of transportation and communication, the movement of man and circulation of commodities and diffusion of ideas globally are possible to a great extent. By the time of industrial revolution, man could acquire so much knowl-

edge, efficiency, power and technology that he started controlling the nature and commenced extraction of material and energy from nature on large scale. Simultaneously, he emitted large quantity of waste materials in the nature. Impact of man on nature has increased enormously. This relationship of man and nature has given much scope for research in many disciplines including anthropology.

Environment and natural resources are mostly attributed to commercial and economic point of view, where the basic concern of human beings is much neglected. Environment is primarily for the people, who forced to interact with it for their subsistence and survival. The human population is distributed in different ecological and geographical areas of the globe. The human settlements are mainly found in the biosphere. Each human settlement has its own natural environment and resources. The human population in settlements adopted to the natural environment, while exploiting the natural resources in it with a particular technology, which suits to such environmental conditions. It further shows the levels of development of different human groups varying mainly due to environment or ecological variations. Cultural variations prevail in between the forest dwellers and the inhabitants of plain areas within the particular geographical region.

The debate on the issue of environment and development is going on worldwide since 1972 onwards. In the U.N. Con-

ference on Human Environment at Stockholm in 1972, Indira Gandhi observed that environment cannot be improved in conditions of poverty. Ecology and conservation should not work against the interest of the poor, but bring improvement. India shares many types of environmental problems with the developed and developing countries, but it has also its own specific problems. However, there continue to exist serious imbalances between the developed and the developing countries of the world. It is necessary to restrain unfavourable and harmful exploitation of the resources in developing countries by the developed countries. Developing countries have the opportunity to observe the experience of developed countries in selecting resource management strategies to suit their interests. Some developing countries like India and Tanzania in the process of considering alternative pathways to economic and social improvement, some of which involve the principles of ecological and resource conserving development (O'Riordan 1978).

The World Commission on Environment and Development (1987) has called for a new sense of urgency in promoting harmony between mankind and the biosphere sciences and technology are opening up unusual possibilities in the fields such as genetic engineering, farm machinery development, biomass utilization, data-base management, communication; satellite monitoring for early warning systems to signal impending land degradation and pest epidemics. Although, advances in science and technology are heartening, much of the motivation for investment in new farming technologies may spring solely from consideration of commerce rather than concern for lasting human happiness. Thus, global agriculture is at the cross roads from the ecological, economic and ethical stand points. The challenge lies in converting the potential now available for higher production into an opportunity to develop agricultural research and development and distribution strategies, which can make hunger a problem of the past.

The primary motivation for development is human welfare, which is also the primary motivation for environmental quality. Thus, the two motivations, coverage and non-conflict, thereby rejecting the false dichotomy between environment and development. This should, therefore, encourage the search for optimal harmonious relationship between environment and development. Thus, the main issue also pointed in the Brundtland Commission Report (1987) about poverty in the developing countries, international inequality and sustainability of development are basic issues involved in the theme of environment and development.

Environmental problems are not new. But the accelerating pace and changing character of human impact on environment is alarming. At the global level, there is debate over that constitute the most urgent problems. However, there are

some priority areas or themes at global level that need to be emphasized. These are (1) Sustainable use and conservation of resources, (2) Preservation of environment, (3) Prevention of pollution and (4) Control of population growth.

Concepts: The 'environment' defined as that whole outer physical and biological systems in which man and other organisms live as a whole, albeit a complicated one with many interacting components. The wise management of that environment depends upon an understanding of those components: of its rock, soil, minerals and waters, of its present and potential vegetation, of its animal life and potential for livestock husbandry and of its climate. It demands positive and realistic planning that balances human needs against the potential environment has for meeting them (Source: UNEP 1976).

Sustainable development: It has many definitions. The standard one which we consider is still useful from the Brundtland Report 'Our Common Future'; "Sustainable Development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED 1987). Sustainable development is a process of social and economic well being. In order to meet this end, we must ensure that the demand in the environment does not exceed its carrying capacity for the present as well as for future generations.

In general, sustainable development describes a process in which the natural resource base is not allowed to deteriorate. It emphasized the better to unappreciated role of environmental quality and environmental inputs in the process of raising, real income and the quality of life. Environment was regarded as important both as a direct source of human welfare and as an input to economic activity designed to human welfare.

Sustainable development has certain goals. These are (1) basic needs of all human beings, i.e. food, clothing, shelter, education, health, security and self esteem must be met adequately, priority must go to these needs. These needs will be determined by natural and technological resources available and the global socio-economic context, (2) Development process should not be disturb the ecological balance and environmental purity as well as quality, (3) Global participation and mutual support are essential to optimize the above two goals. Each country should find its own ways and means to promote this independence.

Sustainable development demands a change in our attitude towards nature. Nature is not just a material resource for human consumption. Man is also a part of nature. The past history of mankind also helps in shaping of the new future. Sustainable development is not the only concern of the government and private organizations alone, but it is the

business of the people in general. It is a process which has to be initiated at each level of human endeavour and life. It involves individuals, families, communities, corporate bodies, nations and global society. Therefore, it is a comprehensive term and can be looked at from a variety of perspectives, such as environmental, economic, social, political, cultural and technological. Sustainable development is possible, if all of these factors are taken into consideration.

THE STUDY AREA

The tribals habitats of Eastern Ghats forest environment is the main focus area of the study. Nine tribal sub-plan areas of Eastern Ghats in Andhra Pradesh were covered under the study. The Eastern Ghats are a series of discontinuous low ranges running generally north-east, south west parallel to the coast of the Bay of Bengal. These ghats are a long chain of broken hills and elevated plateaus, running about 1750 kilometres with an average width of about 100 kilometres between Mahanadi and Vaigai rivers along the Indian east coast through Orissa, Andhra Pradesh and Tamilnadu.

This ecological zone has a complex geography with various mountains, dales, plains and a variety of plant and animal species. These ghats are located between 77°22' -85°20' longitudes and 11°22' north latitudes in the tropical region. Its northern boundary is marked by River Mahanadi basin; while the southern boundary in the Cauvery and Tamilnadu uplands and passes through fourteen districts of Andhra Pradesh State.

In Andhra Pradesh State, the hilly region in the districts of Visakhapatnam, Srikakulam, Vizianagaram, East Godavari, West Godavari, Khammam, Guntur, Prakasam, Krishna, Kurnool, Nellore, Ananthapur, Chittoor and Kadapa form the Eastern Ghats. The altitudes range from 300-1500 m above MSL. The highest peak in these ghats in Sambari Konda with the elevation of 2527m, near Gudem village in Visakhapatnam district. The northern portion of Eastern Ghats includes Godavari, Sileru, Machkund basin and cover the districts of Visakhapatnam, Vizianagaram, Srikakulam, East Godavari and West Godavari. The Southern Eastern Ghats portion covers the districts of Guntur, Prakasam, Kurnool, Nellore (Veligondas, Palakonda, Nalla malais, Erramalai, Papikondalu, etc., and Amrabad plateaus of adjoining Mahaboobnagar district) and extends to the adjoining Kadapa and Chittoor districts of Seshachalam.

The Eastern Ghats of Andhra Pradesh can be broadly divided into three climatic and environmental zones, where a large majority of the tribal habitats are located. They are (1) Nallamalais of Kurnool, Prakasam and Mahaboobnagar districts, characterized by low rainfall and deciduous forest. Hence, the highest elevation reaches not more than 200 ft.

This is the land of most primitive tribe Chenchu and also a few Yanadis inhabits. (2) The second zone consists of forest areas of East Godavari, West Godavari and a part of Khammam districts. The area is characterized by the main water source of Godavari River, medium rainfall and vegetation in the high ranges and deciduous forest in the lower regions with considerable top soil. The highest elevation in the zone is not more than 400 feet; the two Principal tribal groups inhabiting this zone are Reddis of Bison hills and the Koyas. (3) The third zone spreads over the part of three districts of Visakhapatnam, Vizianagaram and Srikakulam. The area is characterized by high rainfall, semideciduous forest with evergreen trees on the higher ranges. Elevation at some places reaches more than 5300 feet. The top soil is of considerable depth. About seventeen tribal communities inhabit in this zone. The major tribes found in this zone are Bagata, Valmiki, Khond, Konda dora, Kotiya, Nooka Dora, Mali, Gadaba, Porja, Jatapu and Savara. The districts Warangal and Adilabad are also known for tribal population. Tribal areas of these two districts fall in the Scheduled are of Andhra Pradesh, and located adjacent to Eastern Ghats where Lambada, Koya, Kolam, Gond and Thori tribes inhabit. Eastern Ghats is rich in both flora and fauna. The tribals inhabiting in Eastern Ghats environment mostly depend on its forest flora and fauna for their livelihood.

MATERIALS AND METHODS

Conventional anthropological methods like observation (both participant and non-participant), schedule, interview and case study were employed for collection of empirical data. Secondary data were collected from nine I.T.D.As and Forest Department of Andhra Pradesh. Etic and emic approaches were strictly followed to collect the qualitative data in addition to observation, interview guide and field notes. Random and purposive sampling procedures were followed in selection of the field area and respondents. The paper is mostly descriptive in nature, comprises of both semantic and scientific explanations.

RESULTS AND DISCUSSION

On the basis of ecological and geographical background of tribes in Andhra Pradesh, the aboriginals have been broadly classified into two categories i.e., (1) Plain tribes and (2) Hill tribes. The plain tribes comprises of Lambada or Sugali, Yerukula and Yanadi. Hill tribes consists of 30 groups namely Andh, Bagata, Bhil, Chenchu, Gadaba, Gond, Gouda (in the agency tracts), Hill Reddi, Jatapu, Konda Kammara, Koya, Kulia, Mali, Manne Dora, Rena, Savara, Thoti and Valmiki. Among the hill tribes eight principal tribes are classified as primitive tribes viz., (1) Chenchu, (2), Gadaba (3) Kolam, (4) Konda Reddi, (5) Khond, (6) Porja, (7) Savara

and (8) Thoti. The primitive tribes settlements are mostly found on hill tops and slopes of interior forest in Eastern Ghats. Still these tribes are largely depending on food gathering, non-timber forest produce collection and shifting cultivation for their subsistence and survival purposes. Primitive tribes are classified on the basis of pre-agricultural stage of economy, low literacy and stagnant or diminishing population. They relatively live in isolation.

The hill tribes population is mostly concentrated in the nine scheduled districts, Srikakulam, Vizianagaram, Visakhapatnam, East Godavari, West Godavari, Khammam, Warangal, Adilabad and Mahaboobnagar. All these districts fall in the tribal sub-plan areas of Andhra Pradesh. In this State, the tribal sub-plan area covers the scheduled areas as well as the adjoining non-scheduled villages with 50% of entire sub-plan area in Andhra Pradesh consisting of 6686 villages, out of which 5936 are scheduled villages and the rest 750 are non-scheduled villages. Forest environment is the dominant ecological feature of the tribal sub-plan area in Andhra Pradesh

Livelihood of tribes: Forest is the basic life supporting system of tribes. Their economy is agro-forest based which substituted with livestock and skilled labour. Based on the ecological background the economies of the hill tribes are classified into four groups namely (1) Food gatherers, (2) Shifting cultivators, (3) Settled cultivators, (4) Pastoralists and (5) Artisans.

Food gatherers: The Chenchus are known as food gatherers. Their habitats are found in the Nallamalai forest areas. Chenchu population is distributed in Kurnool, Mahaboobnagar, Nalgonda, Prakasam, Ranga Reddi and Guntur districts. Forest degradation in the Nallamalai and declaration of wildlife tiger project sanctuary in the zone are much reflected on the livelihood of Chenchus. The establishment of hydro-electrical power generation project at Sri Sailam also created survival problem to some of the Chenchus who were rehabilitated into the colonies. Under Chenchu Development Project, certain of the interior Chenchus were rehabilitated into the colonies and allotted agricultural land to them. Literally they were uprooted from their natural environment. Now they are facing the problem of adaptability to new environment and with the new economic pursuit of agriculture. In the process certain of the Chenchus become beggars, thieves and some of them have taken up the profession of fire wood selling. Now the Chenchus are at crossroads. The Chenchus still who live in the interior forests are totally depending on the flora and fauna of forest and labour employment of Forest department. Once, they were nomads, semi nomads and now slowly adopting to sedentary life. Most of the Chenchus are in

transitional stage of food gathering to food production. Large majority of them are struggling hard for their survival due to scanty of food material in the forest environment.

Shifting cultivators: Khond, Konda Savara, Konda Reddi, Porja, Kolam and Gadaba tribes are largely subsisting on shifting cultivation (Podu), whereas some families in other tribes also practice 'Podu' cultivation in addition to settled cultivation. The aboriginals in the tropical forest zones forced to practice this crude method of cultivation for meeting their basic prime need of food. They know how to maintain eco-friendly relations even with this method of cultivation. The practice of shifting cultivation in the Eastern Ghats forest zone is also resulting to some extent of deforestation. Actually these tribes practice it forcefully due to ecological and geographical factors, which are interconnected with the habitats and settlement patterns. The recent forest policies are against to this method of cultivation and considered as the main source of livelihood to primitive tribes, who are largely subsisting on Podu cultivation. No doubt the practice of shifting cultivation damages certain extent of forest land and creating natural imbalance which results into environmental degradation.

Settled cultivators: The Bagatas, Koyas, Gonds, Manne Doras, Malis, Reddi Doras, Nooka Doras and Valmikis living in the valleys and nearby streams where plain landscape prevails, have totally adopted to settled cultivation but the same tribes inhabiting near the hill tracts and interior forests are resorting to shifting cultivation. In such areas they largely subsist on dry cultivation. In general, very limited extent of land is available for wet cultivation in the Eastern Ghats. Wet cultivators usually raise the paddy crop during Kharif season. However, a few of them currently growing commercial crops like turmeric, maize, tobacco, chillies, cotton, cashew, orange, ginger, pippallu (*Piper longum*), different varieties of beans, etc., mixed cropping like pulses, millets and oil seeds is the dominant feature in the dry and Podu cultivation. The wet cultivators use only the freely available surface water for irrigating the crops, which they raise. They have not yet developed the water conservation attitude but they have the traditional knowledge of water resource management even in the mountains. Terrace cultivation is also seen here and there in between the two hillocks where springs flow in rainy and winter seasons. The cultivators in the forested zones are now facing the problem of soil erosion due to hill terrain and deforestation.

Soil erosion problem is associated with the forest degradation. Agriculture is mainly dependent on land and rainfall, year by year there is a declining trend in rainfall due to forest deterioration. Almost all the respondents accepted that the deforestation is the major cause for decline of rainfall.

In summer months most of the tribal habitats are facing very acute drinking water problem. In such settlements, the tribal women folk walk miles together to fetch potable drinking water from the hill streams and springs located at down to the hills of far away places. Scarcity of agricultural land, in sufficient rainfall and lack of irrigation facilities in the habitats of settled cultivators, are also creating food insecurity to them.

Pastorals: Agency Goudus, and Banjaras or Lambadas are considered as pastorals and they largely subsist by rearing cattle, selling milk and milk products. The other tribes also domesticate cattle but they do not milch their cattle and use them as draft animals. The real pastoralists lead nomadic life and move according to a season and availability of pastures. But at present, the traditional pastorals are becoming “settled pastoralists”. Most of the pastoralists’ habitats are located at the bottom of hills or hillocks and mountains. Banjaras or Lambadas are now become as sedentary cultivators. But some of the Goudus in Bhadravari agency area are remained as pastorals and depending on milk and milk products for their survival.

Artisans: Konda Kammara is the traditional artisan tribe of Andhra Pradesh. This tribe population is distributed in the districts of Visakhapatnam, East Godavari and West Godavari. This tribe is following blacksmith and carpentry. They are also referred as “Mettu Kamsali”. At present only few of the Kammara families exclusively depending on the hereditary calling. Majority of them become agriculturists and agricultural labourers. In general, tribals are multifunctionaries. They manufacture all kinds of agricultural implements, household articles, etc.

Even some of the Gonds, Kolams, Koyas and Chenchus have taken up blacksmithy and carpentry. A few Gonds and Kolams have become good sculptors in both wood and stone. Sonar Lambadas are experts in manufacturing of gold and silver ornaments. The colourful dresses with attractive ornaments and embroidery are manufactured by themselves. Once they have manually manufactured gunny bags with jute. Some of the Porjas, Kyas, Konda Reddis, Chenchus, Kolams and Yerukulas are good basket makers. In view of scarcity of bamboos and less demand, the basket making has become their secondary occupation. Certain of the tribals are gifted with innate artistic skills but their skills are not recognized and developed. Now only a few of them are totally depending on household industry. Occupational mobility among the artisans is basically due to non-availability of raw material in the natural environment and less demand for their products.

Shifting cultivation and deforestation: The practice of shifting cultivation (Podu) is still found in the agency tracts of Eastern Ghats. The shifting cultivation is known as Podu

is coastal areas of Andhra Pradesh, *Vagad* in Kolami and *Padaka* in Gondi dialects of Adilabad district. This method of cultivation is practiced all over the world especially in tropical forests and mountain tracts. This form of cultivation appears to have been well established during the Neolithic period more than, 10,000 years ago. It was mostly suitable for the humid tropical forests where vegetation regenerates very fast. The actual number of shifting cultivators in the world estimated around 300 million.

In Andhra Pradesh, shifting cultivation is extensively practiced in the districts of Visakhapatnam, Srikakulam, Vizianagaram, East Godavari, West Godavari, Warangal and Khammam districts and sparsely in Adilabad district. The government reports state that about 62,504 tribal families are engaged in shifting cultivation over an area of 62,948 hectares, on an average each family has one hectare of land on all hill slopes for the purpose of Podu cultivation. The major tribal groups practicing shifting cultivation in the State of A.P. are Savaras and Jatapus of Srikakulam and Vizianagaram districts, Khonds, Konda Doras, Muka Doras, Porjas, Gadabas, Bagatas and Valmiki of Visakhapatnam district, Konda Reddis of East Godavari, West Godavari and Khammam districts, Kolams in Adilabad district.

Shifting cultivation involves several steps. Firstly land is cleared by burning of the vegetation cover. In second stage soil is disturbed with hoe (Valuva) after the rainfall, and then crops are planted in the plot usually without any additional manuring other than that provided by the ashes of the burned vegetation. Thirdly, the plot obtained is used for one or three years. The duration of cultivation depends upon local circumstances. Fourthly, the plot is abandoned for a time, so that it can regain its fertility. Fifth stage, a new plot is opened for cultivation, returns to the field cleared first and repeats the cycle. The critical factors in this system are three-fold. They are, availability of land, availability of labour required to produce the key crop, and the length of the growing season during which the key crop or crops may be produced or alternated with other supplementary crops.

Shifting cultivation is a crude method of agroecosystem of forest ecology. In order to survive the tropical forest has to make use of nutrients available in the biotic community. This is the same strategy used by Podu cultivators. The Podu cultivation creates a system of ‘accelerated decay’ that replicates the general sequence of nutrients flow in the Eastern Ghats forest ecology, instead of relying on the natural decay of the tropical forest to provide nutrients, the Podu cultivators accelerates natural decay by the burning of the slashed and felled fields. Because the accelerated decay is less efficient than the natural decay and there is great energy loss, fields quickly decline in fertility. To regain their fertility,

field sites must be left fallow.

Podu (shifting) cultivation is ecologically serene, if forest fallows can be maintained. Forest fallow also called “long fallow” is attained when the cleared and planted field is left out regenerate to high forest traditionally, it was the most common form Podu is use in the humid tropics by integral Podu cultivators. If fields are small, the sites, like naturally occurring forest gaps can “rapidly heal” and regeneration occurs swiftly. The surrounding forest serves as seed source for the site, as well as protecting it from winds and erosion. Rain forest by harvesting small fields and retaining “pieces of the original forest” for reseeded the integral Podu cultivator is actively managing the regeneration of the forest.

Podu cultivator also uses other techniques of management that favour forest regrowth. While the field is under crops, many Podu cultivators practice selective weeding. Herbaceous plants and shrubs that will become part of the desired succession may be cut back, rather than uprooted, and once harvesting of cultigens declines, allowed to regrow, rather than being cut and burned, trees may just be cut back, so that they will resprout and become part of the succession. Trees that are especially valued may be protected and not cut at all. Having plants and trees already established allows a rapid regeneration of the forest. The Podu cultivators do not have the compulsion to maintain a ‘clear’ field with large patch of exposed soil. Just, the contrary, in fact, for it is recognized that uncovered soils are soils that will wash or blow away. A Podu field is a field not rows, but of filled spaces.

Ecosystem maintenance creates different stages of regrowth that provide a more diverse array eco-zones for animals. Since, secondary forests have a higher carrying capacity for wild animals than primary forests an anthropologically created and managed forest improves the sub-system of hunting and strengthens the agro-eco-system. Generally, the long fallowing system is a form of forest. It creates the diversity, complexity and use of the biomass, for nutrients that existed in the forest. Due to stringent forest laws and policies the shifting cultivators are mostly confined to short term fallowing system.

The evidence of earlier studies on the problem reveals that shifting (Podu) cultivation as a natural process in the tropical forest ecosystem. Different tribal groups might explain it differently within their own cultural context, the use of natural process is evident throughout the high attitude zones of tropics. The Podu cultivator recognizes that the natural process of the tropics can be utilized as a natural resource. Indigenous resource management is based on maintaining specific natural processes in order to have specific items as an outcome of these processes (Alcom 1989). Rather than expand large amounts of energy to eradicate or

override the natural process, the tropical farmer uses the naturally available process for his own ends. Unlike his temperate climate counterpart, the tropical farmer does not have the means to override the natural process of this tropical environment. Technical knowledge revolves around how to operate with, rather than try overcome, the natural processes associated with the year round growing season and rapid succession that result from the high rainfall and high temperatures of the region (Alcom 1989).

Deforestation and survival of aboriginals: Deforestation is an environmental issue, currently lot of debate is going on it. There are varied reasons for the deforestation in Eastern Ghats. No doubt, the practice of shifting cultivation by the tribals in the agency tracts of Eastern Ghats causes deforestation to some extent. But the large scale deforestation takes place in the Eastern Ghats region due to smuggling of timber by the non-tribal timber merchants, usage of valuable timber in house construction of so called civilized urban dwellers and other agencies. Large number of public construction works and mining operations also destruct the natural forest environment. Degradation of forest environment has many reflections on the livelihood of aboriginals in Eastern Ghats of Andhra Pradesh.

The construction of hydro-power generating and irrigation dams like Machkhand, Jolaput, Sileru, Nagarjunasagar at Sri Sailam have resulted into evacuation of number of tribal settlements and rehabilitation of thousands of tribals into the new environments. The declaration of wildlife protected zone in the dense forest area in Nallamalai region resulted for the displacement of thousands of Chenchus who lived over a long period there. The Chenchus who had been rehabilitated into the colonies are facing the problem of adjustment to the new environment and added with subsistence crisis to them. The Chenchus who inhabits in the interior forest villages also affected much with the extinction of their life supporting plant and animal species due to the problem of deforestation in and around their habitats. Moreover, the government sanctioned development schemes are not reaching to the needy people, only a section of the tribal people benefited with these schemes. Polavaram irrigation project will be the future threat to the livelihood of tribals who in habit nearby this proposed project site. In Andhra Pradesh land and forest disputes are becoming a regular feature in most of the tribal areas of Eastern Ghats.

The shifting cultivators have the knowledge to maintain eco-friendly relationship with the forest environment in which they have been inhabited centuries together. Outside influences are the major threat to the natural forest environment of Eastern Ghats. The recent forest policies are also against to the practice of shifting cultivation by the tribal

communities. The forest department discourages the practice of shifting cultivation on the one hand and on the other hand it makes use of the forest produce including timber for commercial purpose. Large scale of forest degradation is taking place due to commercialization of forests since colonial rule in India. Government initiated afforestation programmes not attained the estimated results in enhancement of forest cover in the Eastern Ghats due to non-participation of large majority of indigenous people in the programme. Both the joint Forest Management (JFM) and Community Forest Management (CFM) programmes of A.P. also not much beneficial to the tribal communities. There is no single success case of village Vana Samraksana Samiti (VSS) found in the tribal areas of Eastern Ghats in Andhra Pradesh.

The Government of Andhra Pradesh, Tribal Welfare Department launched a massive scheme called Andhra Pradesh Tribal Development Project for rehabilitation of 63,371 shifting cultivator families with total outlay of Rs. 77.97 crores in the districts of Srikakulam, Vizianagaram, Visakhapatnam and East Godavari where Podu (shifting) cultivation was widely practiced. This project was largely funded by International Fund for Agricultural Development (IFAD), Rome. This scheme is also not properly implemented by the concerned government personnel. The tribals who are still at pre-agricultural stage of economy are struggling hard to make-out their livelihood in the degraded forest environment.

Indigenous knowledge of tribals in conservation of forest resources: The tribes in the Eastern Ghats have a lot of empirical knowledge on the basis of their experience while dealing with the forest and its resources. The traditional wisdom is based on the intrinsic realization that man and nature form a part of an indivisible whole, and therefore, should live in partnership with each other. This ecocentric view of tribal communities is widely reflected in their attitudes towards plants, animals, land and water. The whole body of knowledge, centered in the economic value of plant and animal species, is part of ethno-biology, and has potential value for the forest dwellers of Eastern Ghats. Indigenous science and technology also plays a vital role in conservation of natural resources such as forest, land, water, minerals, etc. The aboriginals have traditional knowledge of the flora and fauna, to which they interact in everyday life to meet their basic prime need of food. In general, the tribes in Eastern Ghats never kill an animal, bird or cut a tree or plant with which they claim totemic affiliation.

It has already been mentioned that tribals have developed symbiotic relationship with the forests since ages. Generally, forests and tribals are inseparable and existence and development of one depends on the other. They draw their

sustenance largely from the forest which provides them with food, timber, medicinal plants and material for construction of houses etc. Their belief systems, social, economic and ritual activities are intricately interwoven around forests and hills. They have coexisted since times immemorial and will continue to coexist in a naturally reinforcing relationship. The tribals hold this symbiotic relationship in great esteem and they regard various species of forest as their kith and kin.

The sacred centres like Srisailem, Ahobilam, Tirumala, Bhadrachalam and Simhachalam are located in the Eastern Ghats of Andhra Pradesh. These places have much religious importance in the lives of people inhabiting the tribal and non-tribal regions of ecological prudence exhibiting a symbiotic relationship between bio-physical ecosystems and social systems, with strong cultural interconnections between the two. This explicates that the culture and environment are complementary in various stages of evolution. The concept of cultural landscapes is an outcome of this recognition. Tribal communities have coevolved with their environments modifying nature but actively maintaining it in an adverse and productive state, based on locally evolved traditional ecological knowledge (TEK), socio-cultural practices and religious beliefs since antiquity. However, these traditional societies are no longer immune to change occurring all around, all the time. The predominant culture of over-consumption of natural resources is making a dent into these societies, resulting in erosion of their time tested and value based institutions currently, when the social fragmentation reaches to the family level and individual interest get priority, the community functions take a back seat. Further, in this era of information technology, cultural diversity is being eroded upon, and increasingly homogenized through access to information.

The aboriginals all over India have institutionalized in a variety of different ways large or small cultural landscapes and sacred ecosystems, as part of their belief system. In regard to Eastern Ghats of Andhra Pradesh, culture linked ecosystem management is to be found in most of the tribes who have certain natural resources linked institutions such as Konda Devata, Bhudevatha Adavithalli, Gagnamma and Vayudevudu. The tribals have the belief that both malevolent and benevolent spirits take abode of the mountains and forests, which wander in the natural environment of forests. The concept of sacred species, sacred groves and sacred landscape represent various stages in social selection. The guiding principles that regulate the use of natural resources are embedded in the codified and often non-codified institutions that they have evolved. These sacred institutions were originally intended to boost social solidarity rather than promot-

ing environmental consciousness per se. While religious norms explicably foster social solidarity, the conservation values, ipso facto also get fulfilled. It is in the context of ensuring community participation, for effective management of natural resources, an integrated approach with culture based traditional ecological knowledge as the inter connecting element between ecological, sociocultural and economic dimensions is required.

The social institutions linked to biological resource management are often linked to religious myths and sociocultural belief system. Such a concept of 'the sacred' often has spatial dimensions and specificities. One could conceptualize a broad hierarchy of social institutions or sacred entities i.e., (a) specially diffused sacred landscape, (b) spatially defined sacred land scape, (c) sacred groves and, (d) sacred species. The topmost in this order, the diffused landscape, has institutions that have least specificity but the greatest zone of influence. Least specificity means lower number of prescription and prohibitions in terms of practicing cultural norms. Next in this hierarchy would be spatially defined landscapes with well-defined institutional norms. The concept of sacred groves also falls in this category. Sacred species on the other hand, stand as a class apart; however, there may be restrictions on their usage.

Sustainable development of Tribals in Eastern Ghats: The development of tribal communities in Eastern Ghats is closely linked with the availability of natural resources, exploitative technologies and management. Overexploitation of natural resources due to population explosion is resulting in depletion and deterioration of forest environment in Eastern Ghats and it has much reflections on the livelihood of tribes. Protection, conservation and regeneration of natural resources are the best solutions to achieve the sustainable environment. Stable and sustainable forest environment definitely provide ample of scope for the sustainable livelihood of tribals in Eastern Ghats of Andhra Pradesh.

Classical anthropology was more concerned with understanding traditional and small communities 'peoples' perspective of development and their understanding to it as much essential which can be traced out through emic approach in the field situation. 'Peoples' knowledge and their cultural practices are taken into consideration in order to chalk out a development programme and its implementation. In this context the emic approach is much essential. The participatory development focus is on the local peoples' perspective rather than on the outsider's perspective. Generally, the use of emic perspective is in obtaining a better understanding of peoples' realities. The participatory approaches have directly developed from the technique of participant observation. Indigenous knowledge systems are also much beneficial for

the sustainable livelihood of a local community in the balanced environment situation.

Strategies for sustainable development: The interior tribals still live relatively in isolation of hills and forests. They got isolated and inaccessible geographical terrains remained in relative time freeze. Geographical isolation is one of the barriers to their development. Most of the development services are not reaching to them due to lack of proper transportation facilities. The extremists activities are also more prevalent in the interior forest areas of Eastern Ghats. In such areas, the interior tribals are not allowing the outside development agencies into their habitats. Extension of transportation communication facility definitely helps the interior tribals for their exposure to outside and bring them to mainstream and it also reduces the extremists activities in such areas.

The concept of democracy, civil society and welfare states enjoined upon the state to take the responsibility to identify and develop the backward communities including tribes and bring them on par with citizens in the main stream. In our country, the constitutional provisions for the scheduled tribes are one of the steps in that direction. But most of these provisions are not reaching to the actually needed families among the hill tribes in Eastern Ghats. The integrated tribal development strategy also not attained the expected results, especially in the interior tribal areas due to lapses at implementation level. In the earlier periods of post independence, certain of the policy makers and political leaders had their own views on the issue of tribal development which attracted Verrier Elwin to write monographs on tribes and become an architect of governments tribal development policy. Pandit Jawaharlal Nehru had a special feeling for tribals and his Panchasheel of tribal development according to their genius is often quoted. In general, the poor tribals may not be able to develop their own, because of scanty of resources available to them in the habitats which they dwell. They need the help of the external development agencies for reaching up to self sustenance levels. Group specific and family need based development programmes shall be more appropriate for bringing the economically poor tribals on par with the developed tribals and nontribals of elite categories.

Still more than 45% tribal population continues to be under below poverty line, malnutrition, deaths of children are on the rise, migration of survival is increasing, and lands are getting alienated. Health and nutrition programmes should be intensified to tackle the problems of malnutrition, malnourishment and under nutrition. The problem of land alienation can be tackled with strict implementation of 1/70 land Act economic development and legal aid. Restoration of land and distribution of additional land to the needy fami-

lies are the immediate interventions for solving the problem of food. Still large scale exploitation is taking place in the tribal areas due to their innocence, ignorance and illiteracy. To sort out this problem education programmes should be intensified and to be implemented properly. Education is one of the means for human development. Reintroduction of adult education programme in tribal areas can definitely improve the literacy rate among tribal communities. The innocent tribals are mostly exploited by the nontribal moneylenders and traders in the area of marketing. The solution for this problem is to strengthen the functioning system of Girijan Cooperative Corporation and TRIFAD. The public distribution system also needs to be strengthened by supplying the staple food grains and other domestic requirements in accordance with the convenient timings of local tribals.

Tribals empowerment is a good strategy which makes the tribals to participate in almost all developmental programmes and allow them to exercise their rights and provisions extended to them constitutionally. Empowerment of tribal women is another strategy which helps to elevate their status and participate in decision making process in all spheres along with their menfolk. In general, the women in tribal society enjoy better status when compared with that of women in the caste society. The tribal women contribute more to their family incomes, work more number of hours when compared to their men folk. The tribal women have indigenous knowledge in collection of N.T.F.P (Non-Timber Forest Produce) items without damaging such yielding plant species in forest environment. They have skills in maintenance of home gardens. Tribal women play an important role in minimizing the fuel food consumption. Their participation in all the developmental activities is definitely helpful for the overall development of tribal communities. The S.H.G. (Self Help Group) scheme definitely provided economic empowerment to the women in tribal communities too. Much attention is still needed to improve the agriculture and forestry sectors in tribal areas with the soil conservation strategy.

Health status of the tribals should need to be improved by providing health services at their door steps through the adoption of mobile health clinic and bear foot doctor strategy. Tribal medical system should also need to be introduced in the exiting government health facility in almost all primary health centre levels. Health is the most important factor for the economic progress and well being of any human community including the aboriginals. Health is considered as one of the social indicators of development. Poverty and food insecurity are intertwined with the poor health status of the tribal communities. Education and health programmes definitely play vital role to enhance the living conditions of the tribal communities in Eastern Ghats.

The tribals should be properly motivated in various developmental programmes to make them to participate fully and to achieve the progress among them in desired direction. Awareness creating programmes at family and community levels should be taken up with better and effective I.E.C. material, preferably by using the popular local media, in order to illicit positive response from the aboriginals. Audio-visual programmes pertaining to the environmental issues and environmental education to be regularly organized in tribal habitats, in order to realize them about the importance of our natural wealth. So that they try to protect, conserve and regenerate the natural resources. This strategy can be more helpful for fulfilling the objective of people's participatory development. Irrigation development and development of water conservation attitude among the tribals are also needed much attention from the concerned development agencies. Protected drinking water facility to be provided to almost all the tribal habitats in order to solve the waterborne diseases among aboriginals. Good sanitary facilities should be provided to the tribal villages in order to control malaria, typhoid and dengue fevers. Strengthening of the infrastructure facilities in the interior tribal settlements as well as intensifying the poverty alleviation programmes among the primitive tribes are the immediate actions to be initiated for the sustainability of the tribal families which are still at pre-agricultural stage of economy and largely depending on the physical environment of forest. Participatory action research and intervention strategies should be adopted by the researchers, non-government agencies, planners and administration in order to tackle the various tribal problems and issues with appropriate solutions at community level itself. Sustainable forest environment in Eastern Ghats definitely give ample scope for the sustainable development of aboriginals without any doubt. But forest environmental sustainability issue is a big question, not only in Eastern Ghats but also in other forested zones of our country and globe.

CONCLUSION

Large majority of the tribals in Eastern Ghats environment still facing the problems of poverty, food insecurity due to forest degradation and scanty of food resources. Environment laws and policies are also not strictly implemented by the concerned agencies in order to maintain natural balance in tribal habitats in specific and other settlements, in general. Recent forest policies are also against the right of the tribals on forest land and other resources. That is why forest and land disputes become very regular feature in the tribal areas of Eastern Ghats in A.P. The National Forest Policies 1952 and 1988 are a classic example of how the policies and unthoughtful actions of the State proved to be detrimental

to the interests of tribal populations, whereby the age old tribal customary rights and man-nature-spirit of these forest dwellers are affected. They are made "marginal" in their own habitat with restrictions placed on the entry into their age old habitat and also "concessions". The emerging threat of globalization is another extraneous factor that needs immediate attention.

It is a good augury that emphasis is being laid on people's involvement in the development process. Endowed with slowly increasing literacy and awareness levels, political consciousness guided and assisted by social activist groups, the scope for accelerated tribal development can be visualized.

Anthropological holistic approach and the multi pronged approach are more appropriate to tackle the environmental concerns. The following are the major areas of concern for the maintenance of natural balance. (1) Pollution control must take top priority to prevent further deterioration of natural environment, (2) Policies which result in profligate use of natural resources such as water, land, forest and minerals, (3) Special action plans to take care of highly polluted water ways, degraded forests and highly denuded mountain range may have to be drawn up, (4) Greening of degraded lands with community participation and involvement must be initiated, so that those who are involved in the action can reap the benefits.

In conclusion, the conservation of Eastern Ghats biodiversity is an urgent need in environmental perspective, as well as to ensure the sustainability of indigenous people, who dwell in the forest environment of Eastern Ghats for centuries together. The study provide insights on the

environmental concerns of sustainability, sustainable livelihoods and sustainable development of tribal communities in Eastern Ghats environment with an anthropological perspective. It provides a holistic view of tribals interactions with the natural environment of Eastern Ghats and means for their sustainable livelihood and development. Action oriented and intervention nature of studies can be helpful to tackle the environmental issues and conservation of Eastern Ghats environment as well as for the betterment of the life of tribal people. Enlargement of energy base in the Eastern Ghats environment, definitely solve the food problem and improve working capacity among aboriginals, in turn it helps for the economic growth and sustainable development among them. Lastly, the geographically and physically excluded hill tribes should be brought into the mainstream and allow them to participate in the ongoing development process, in order to elevate their standards of life by themselves.

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