Political Economy of Ecology Movements

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Development activity in India has proceeded on a resource-intensive path. It has seriously disrupted ecological stability of life support systems which has been maintained through centuries. Resource demands of the process have undermined the productive potential of natural resources and have created severe ecological instability. It is in this context that ecology movements have emerged and are throwing up indicators to assess the impact of development process on natural resources, their uses and how the cost and benefits they carry are distributed among different societal groups. This paper attempts to systematise and provide a conceptual framework for understanding the development process and its structural features from the ecological perspective.

This paper is above environmental conflicts in the contemporary human society. In general it relates to the human societies all over the world but in particular it addresses the most intense and emerging social contradictions of India related to conflicts over natural resources. Scientific knowledge has been used by the contemporary societies to considerably enlarge man's access to natural resources, on the one hand, and on the other, to consume the natural resources at extremely high rates of utilisation. The contemporary period is also characterised by the emergence of ecology movements in all parts of the world which are attempting to redesign the pattern and extent of natural resources utilisation to ensure social equality and ecological sustainability. In this way, ecology movements have questioned the validity of the dominant concepts and indicators of economic development. The ideology of economic development, which remained almost monolithic in the post World War II period, is thus faced with a major foundational challenge. In this paper an attempt has been made to provide a systematic conceptual framework for analysing the processes and structures of modern economic development from an ecological perspective. It attempts to analyse the relationship between economic development and conflicts over natural resources to trace the roots of the ecological movements. Further, in the light of the ecological perspective, it examines the fundamental assumptions and categories of modern development economics that are used to set the objectives of economic development as well as the criteria for the choice of technologies that are used in the process of achieving these objectives.

Economic Development and Environmental Conflicts in India

A characteristic of the Indian civilisation has been its sensitivity to the natural ecosystems. Vital renewable natural resources like vegetation, soil, water, etc. were managed and utilised according to well defined social norms that respected the known ecological processes. The indigenous modes of natural resources utilisation were sensitive to the limits to which these resources could be used. It is said that the codes of visiting the important pilgrim centres, like Badrinath in the sensitive Himalayan ecosystem, included a maximum stay of one night so that the temple area would not put excess pressure on the local natural resources base. In the pre-colonial indigenous economic processes, the levels of utilisation of natural resources were generally not significant enough to result in drastic environmental problems. There were useful social norms for environmentally safe resource utilisation and people protested against destructive resource uses even against the kings. A major change in the utilisation of natural resources of India came with the British, who linked the resources of this country with the direct and large-scale non-local demands of Western Europe. Natural resource utilisation, by the East India Company, and later by the colonial rulers, replaced the indigenous organisations for the utilisation of natural resources, like water, forest, minerals, etc. that were mainly managed as commons.

With the establishment of British colonial rule in India, the ever increasing resource demands of the industrial revolution in England were largely met from colonies like India. Forced cultivation of indigo in Bengal and Bihar, growth of cotton in Gujarat and the Deccan led to large-scale commitment of land for the supply of raw materials for the British textiles industry, the flagbearer of the industrial revolution. Forests in the sensitive mountain ecosystems like the Western Ghats or the Himalaya were felled to build battle-ships or to meet the requirements of the expanding railway network. Forests of Bengal-Bihar-Orissa region were used for running wood-fuel locomotives in the earliest periods of railway expansion. The latter stages of colonial resource utilisation and control included the monopolisation of water rights like in the Sambhar lake of Rajasthan or the Damodar canal in Bengal. The colonial intervention in the natural resource management in India led to conflicts over vital renewable natural resources like water or forest and induced new forms of poverty and deprivation. Changes in resource endowments and entitlements introduced by the British came in conflict with the local people's age-old rights and practices related to natural resource utilisation. As a result local responses got generated through which people tried to regain and retain control over local natural resources. The Indigo movement in Eastern India, Deccan movement for land rights or forest movement in all forest areas of the country, the Western Ghats, the central Indian hills or the Himalaya, were the obvious expressions of protest generated by these newly created conflicts.

The conflicts resulted by the colonial modes of natural resource exploitation could not, however, grow with a local identity. Rightly, with the advancement of anti-colonial people's movement at the national level, these local protests merged with the national struggle for independence. With the collapse of the colonial rule internationally, and the appearance of sovereign independent countries in the Third World, together with India, resolution of these conflicts at the local level became a possibility. While the political independence vested the control over natural resources with the Indian state, the colonial institutional framework for natural resource management did not change in essence. Where colonialism ended, the slogan of economic development stepped in. There was unfortunately no other possible institutional mechanism than those of the classical model of development left by the British, with which the newly formed Indian nation could respond to the accentuated aspirations of the Indian people for a better life. The same institutions and concepts, nurtured and developed by the colonial rulers were put to objectives which were exactly opposite to those of the colonial period. Concepts and categories about economic development and natural resource utilisation that had emerged in the specific context of capitalist growth and industrialisation at the centres of colonial power were raised to the level of universal assumptions and applicability. The processes which resulted in deprivation were now entrusted.
with the responsibility of basic needs satisfaction. It was not given serious thought that the historical specificity of early industrial development in western Europe necessitated the permanent occupation of the colonies and the undermining of the local ‘natural economy’ [1]. This inexorable logic of exploitation, exhaustion and alienation integral to classical model of economic development based on resource intensive technologies led Gandhi to seek an alternate path of development for India when he wrote:

God forbid that India should ever take to industrialism after the manner of the west. The economic imperialism of a single tiny island kingdom (England) is today keeping the world in chains. If an entire nation of 300 million took to similar economic exploitation, it would strip the world bare like locusts.[2]

While Gandhi’s critique was an advanced warning against the future problems of following the classical path of resource intensive development, at the time of India’s independence, there was no clear and comprehensive work-plan to realise the Gandhian dreams of alternate development, that would be resource prudent and would satisfy basic needs. The issues of resource constraints of economic development were, therefore, not highlighted at the theoretical level, partly due to the tremendous pressure on economic development of the enhanced aspirations of a newly independent nation, and partly due to the lack of internalisation of natural resource parameters within the framework of economics. As the scale of economic development activities escalated from one five-year plan to another, the disruption of the ecological processes that maintain the productivity of the natural resource base started becoming more and more apparent. The classical model of economic development in the case of the new nations resulted in the growth of urban-industrial enclaves where commodity production was concentrated, as well as of quick exhaustion of the internal colonies whose resources supported the enhanced demands of these enclaves. In the absence of ecologically enlightened resource management methods, the pressure of poverty enhanced the pace of economic development activities with the hope of a quick improvement in the standard of living for all, as in the case of western Europe. For example, commercial forestry made more revenues by making more timber and pulpwood available in the market but in the process reduced the multipurpose biomass productivity or damaged the hydrology of the forests. People dependent on non-timber biomass outputs of the forests like leaves, twigs, fruits, nuts, medicines, oils, etc. were unable to sustain themselves, in the face of commercial exploitation of forests. The changed hydrological character of the forests affected both the micro-climate and the stream flows disturbing the hydrological stability and affecting agricultural production.

There are similar examples from all parts of the country, related to almost all massive developmental interventions in India’s natural resource systems. Ecological degradation and economic deprivation generated by the resource intensive character of the classical model of development have resulted in environmental conflicts, whose understanding is necessary for the reorientation of our current development priorities and concepts. Increasingly it is becoming clear that these classical concepts and priorities are being used as an alibi to direct ‘development’ at the national level, while the educated minority elite is the main beneficiary of these ‘development’ processes.

The ecology movements that have emerged as major social movements in many parts of India are making visible many invisible externalities and pressing for their internalisation to the economic evaluation of the elite-oriented development process. In the context of a limited resource base and unlimited development aspirations, the ecology movements have initiated a new political struggle for safeguarding the interest and survival of the poor, the marginalised, among whom are women, tribals and the poor peasants.

**ECOLOGY MOVEMENTS AND SURVIVAL**

The intensity and range of the ecology movements in independent India have kept growing as predatory exploitation of natural resources to feed the process of development has gone up in extent and intensity. This process has been characterised by the huge expansion of energy and resource intensive industrial activity and major development projects like big dams, forest exploitation, mining, energy intensive agriculture, etc. The resource demand of development has led to the narrowing down the natural resource base for the survival of the economically poor and powerless, either by direct transfer of resources away from basic needs or by destruction of the essential ecological process that ensure renewability of the life supporting natural resources.

In the background of this the ecology movements came up as the people’s response to this new threat to their survival and as a demand for the ecological conservation of the vital life support systems. The most significant life support systems beyond clean air, are the common property resources of water, forests and land on which the majority of the poor people of India depend for survival. It is the threat to these resources that has been at the centre of the ecology movements in the last few decades.

Among the various ecology movements in India, the Chipko movement (embracing the trees to oppose fellings) is the most well known[3]. It started as a movement of the hill people in the state of Uttar Pradesh to save the forest resources from exploitation by contractors from outside. It later evolved to an ecological movement that was aimed at the maintenance of the ecological stability the major upland watersheds in India. Sustained people’s resistance for saving vital forest resources took place in the Jharkhand area in Bihar-Orissa border region as well as in Bastar area of Madhya Pradesh where there were attempts to shift natural forests to plantations of commercial tree species, to the complete detriment of the interest of the tribal people. In the southern part of India the Appiko movement, which was inspired by the success of the Chipko movement in the Himalaya, is actively involved in stopping illegal over-felling of the forests and in replanting forest lands with suitable native broad-leaved tree species. In Himachal Pradesh the Chipko activists have concentrated on their opposition to the expansion of the mono-culture plantation of the commercial chir pine (pinus roxburghii). In the Aravalli hills of Rajasthan there has been a massive programme of tree planting to give employment to those hands which were hitherto engaged in felling of trees.

Exploitation of mineral resources, in particular, the opencast mining in the sensitive water-sheds of Himalaya, Western Ghats and central India have also done a great deal of environmental damage. As a result environmental movements have come up in these regions to oppose the reckless operations of mining. Most successful among them is the movement against limestone quarrying in Doon Valley. Here the volunteers of Chipko movement have led thousands of villagers in a peaceful resistance to oppose the reckless functioning of limestone quarries that is seen by the people as a direct threat to their economic and physical survival[4].

While the Doon Valley instance has a long history of popular opposition to quarrying of limestone and a major Supreme Court order has restricted the area of quarrying to a minimum, examples of such success in the case of ecology movements is rare[5]. People’s ecology movements against mineral exploitation in the neighbouring Almora and Pithoragarh still seem to be ignored, probably due to the relative isolation of these interior places. Beyond the Himalaya, the ecology movement in the Gandhamardan hills in Orissa against ecologic havoc of bauxite mining has gained momentum and it draws inspiration from the Chipko movement. The mining project of Bharat Aluminium Company (BALCO) in the Gandhamardan hills is being opposed by local youth organisations and tribal people whose survival is directly under threat. The peaceful demonstrators have claimed that the project could be only continued ‘over our dead bodies’[6]. The situation is more or less the same in the area of Orissa-Madhya Pradesh region where rich mineral and coal deposits are being opened up for exploitation and thousands of people in these interior areas are being pushed to deprivation and destitution. This includes the coal mining areas around the energy capital of
the country in Singrauli. In these interior areas of central India movements against both mining and forestry are becoming extremely volatile and people's resistance is growing.

Large river valley projects, which are coming up in India at a very fast pace, is another group of development projects against which ecology movements of the people have come up. The large-scale submersion of forests and agricultural lands, that is the pre-requisite for the big river valley projects, always take a heavy toll of dense forests and the best food-growing lands. These have been usually the material basis for the survival of large number of people in India, specially the tribal people. The Silent Valley project in Kerala was opposed by the ecology movement on the ground of its being a threat, not to the survival of the people directly, but to the gene pool of the tropical rain forests threatened by submersion. The ecological movement against the Tehri high dam in the UP Himalaya exposes the possible threat to the people living both above and below the dam-site through large-scale destabilisation of land by seepage and strong seismic movements that could be induced by impoundment. The Tehri Dam opposition committee has appealed to the Supreme Court against the proposed dam by identifying it as a threat to the survival of all the people living near the river Ganga upto West Bengal[7].

Most notable among the people's movements against dams on the issue of direct threat to survival from submersion are Beddi, Inchampalli, Bhopalpatnam, Narmada, Koel-Karo, Bodhghat, etc.[8]. In the context of already overused land resources, the proper rehabilitation on a land-to-land basis of millions of people displaced through the construction of dams seems impossible[9]. The cash compensation given instead is inadequate in all respects for providing an alternate livelihood for the majority of the displaced. Destitution is thus the first and foremost precondition for starting large dam projects.

While the process of the construction of the dams itself invites opposition from ecology movements, the functioning of the water projects dependent on the constructed dams goes on to creating further ecological disasters and movements. People's movements against widespread water-logging, salinisation and resulting desertification in the command areas of many dams have been registered. Among them are the instances at the Katangi, Kukadi, Tawa, Kosi, Gandak, Tungabhadra, Malaprabha, Ghatprabha, etc. and the canal irrigated areas of Punjab and Haryana. While excess of water created ecological destruction in these cases, improper and unsustainable use of water in the arid and semi-arid regions generated ecology movements in a different way. The anti-drought and desertification movement is becoming particularly strong in the dry areas of Maharashtra, Karnataka, Rajasthan, Orissa, etc. Ecological water use for survival is being advocated by water based movements like Pani Chetana, Pani Panchayat, Mukti Sangharsh, etc.[10]. Another major movement originating from the ecological destruction of resources by growth based development is spreading all along the 7000 km long coastline of India. It is the movement of the small fishing communities against the ecological destruction caused by mechanised fishing whose instant profit motive is destroying the coastal ecology and its long-term biological productivity in a big way.

No amount of the threat to survival in India from environmental hazards can be compensated for associated with development planning and this dichotomy has been analysed politically as the result of the existence of the two Indias[11]. Every development activity invariably has a need for natural resources. In the context of limited quantities of natural resources, either limited by non-renewability of ecological limits to sustainability, the resource needs of the two Indias are bound to conflict with each other. In this unequal competition the survival of the less powerful but more populous micro-economy is directly threatened. This threat may come either by resource transfer or by ecological factors leading to resource degradation. Yet the significance of the ecology movements does not merely lie in the fact that they are voices of the dispossessed who are victims of the highly unequal sharing of the costs of the development process. The positive feature of these movements lies in the manner in which they make visible the invisible externalities of development based on a particular economic ideology and reveal its inherent injustice and non-sustainability. The recognition of these inadequacies and the imperatives arising from the right to survival creates another ground and another direction for development which ensures justice with sustainability, equity with ecological viability.

The ecology movements can no longer be considered merely specific and particular happenings. They are an expression of the universal socio-ecological impacts of a narrowly conceived development based only on short-term commercial criteria of exploitation. The impact of ecology movements cannot be assessed merely in terms of the impact on particular development projects they originate from. The impact, in the final analysis, is on the very fundamental categories of politics, economics, science and technology which together have created the classical paradigm of development and resource use. The emerging irreversible threat to survival arising from the development process allows a re-evaluation not just of some individual projects and programmes which have been shown to be ecologically destructive, but of the very conception and paradigm of development that generates such projects. The ecology movements are revealing how the resource intensive demands of current development have ecological destruction and economic deprivation built into them. They are also stressing that the issue is not merely a trade off of costs and benefits because the cost of destruction of the conditions of life and well-being is not measured in a matter of money, it is a matter of life itself. The most important and universal feature of ecology movements is that they are redefining the concepts of development and economic values, of technological efficiency, of scientific rationality—they are creating a new economics for a new civilisation.

DEVELOPMENT FROM VIEWPOINT OF DISPOSESSED

Though the ecology movements relate to issues that are geographically localised, like forests or water pollution, their reverberations are national and even global in import. This macro-micro dialectic is rooted in the cognitive gaps associated with development planning and this dichotomy has been analysed politically as the result of the existence of the two Indias[11]. Every development activity invariably has a need for natural resources. In the context of limited quantities of natural resources, either limited by non-renewability of ecological limits to sustainability, the resource needs of the two Indias are bound to conflict with each other. In this unequal competition the survival of the less powerful but more populous micro-economy is directly threatened. This threat may come either by resource transfer or by ecological factors leading to resource degradation. Yet the significance of the ecology movements does not merely lie in the fact that they are voices of the dispossessed who are victims of the highly unequal sharing of the costs of the development process. The positive feature of these movements lies in the manner in which they make visible the invisible externalities of development based on a particular economic ideology and reveal its inherent injustice and non-sustainability. The recognition of these inadequacies and the imperatives arising from the right to survival creates another ground and another direction for development which ensures justice with sustainability, equity with ecological viability.

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ECONOMISTS' SLUMBER: GROWTH AGAINST SURVIVAL

The ideology of the dominant pattern of development derives its driving force from a linear theory of progress, form a vision of historical evolution created in eighteenth and nineteenth century western Europe and universalised throughout the world especially in the post-war development decades. The pattern of history postulated in this theory of progress created the ideology of development that equated development with economic growth, economic growth with expansion of the market economy, modernity with consumerism and non-market economics with backwardness. The diverse traditions of the world, with their distinctive technological, ecological, economic, political and cultural structures were driven by this new ideology to converge into a homogeneous monolithic order modelled on the particular evolution of the west. The creation of development as ideology was based on 'the universalisation of the western economic tradition and of equating development with economic growth alone and its unquestioned acceptance as progress. The Rostow model of stages of economic growth is the clearest articulation of these assumptions. Rostow presents change as taking place in three stages. The first stage consists of traditional society: whose structure is developed within limited production functions, based on pre-
Newtonian science and technology and on pre-Newtonian attitudes towards the physical world... The central fact about the traditional society was that it was cornered and had a ceiling, a ceiling which was determined by the level of attainable output per head[12].

The totality of development experiences, however, does not reflect this simple linearity and stage by stage evolution. The interrelationship between resources within the same ecosystem as well as interlinkages between economic activities between segments of society makes the economic development processes complex and multifaceted. Viewing the world as an ecologically interrelated whole leads to a concept of development that puts a premium on maintaining the ecological balance and integrity while satisfying basic human needs. In this context the 'backwardness' and 'low productivity' of non-western societies is based on the assumption of the ideology of classical development that recognises productivity only in the context of commodity production. The 'high productivity' of the latter similarly has been based on a narrow and specific interpretation of productivity. The resource intensity of modern production processes, geared towards profit maximisation in the absence of the awareness of other forms of productivities, leads to ecological deterioration and loss of resource productivity, which remain hidden externalities in development economics. The internalisation of such negative externalities over a large temporal and spatial horizon, in many instances, render the 'high productivity' processes extremely unproductive.

The second stage of Rostow, characteristic of the dual sector model, originates from a misleading representation of the material foundations of the visible and formal development process. In the context of limited resource base, the resource demands of the development process are often satisfied by resources created in the process of survival needs and life-support functions. Modernisation and economic growth based on resource intensive processes compete for the same resources as are also used for the satisfaction of basic survival needs, either directly, or through the destruction of ecological functions performed by the resources. The second stage is clearly not a temporary co-existence of two unrelated sectors, namely, the 'dynamic and progressive' modern and the 'stagnant and backward' traditional.

There is a distinct relationship between these two sectors in that the 'dynamism' of the modern is fuelled by a continuous and unequal resource flow from the traditional. The growth and productivity of the modern has to co-exist with the poverty and backwardness of the traditional. In the context of absolutely unequal sharing of the cost of economic growth, visible development accrues to the privileged while invisible underdevelopment accrues to the dispossessed. The Rostowian approach assumes that in the process of development 'the economy exploits hitherto unused resources', which is true in the case of resource abundance. However, in the present context vital natural resources like forests, water, land, etc., are all scarce and have a number of competing requirements that are yet to be attained. These could be associated with the maintenance of ecological processes of sustainability of natural resources or of the life support system of those externalised by the formal process of development. The diversion of resources otherwise needed for human survival or for safeguarding the ecological processes remains invisible. Thus, in the context of the conflicting demands on scarce resources, economic growth leads to economic polarisation and not necessarily to universal prosperity. The rapid growth of the people's ecology movements is a symptom of this polarisation and a reminder that natural resources play a vital role in the survival of the people. Their diversion or destruction through other uses, therefore, leads to impoverishment and an increasing threat to survival. The underdeveloped societies are not those which are geared by growth and development, as the dual sector model supposes. The real underdevelopment of the hinterland takes place simultaneously as an integral part of the whole process of contemporary growth and development in which gains accrue to one section of the society or nation and the costs, economic or ecological, are borne by the rest. From within the societies and nations getting the advantages of resource use, Rostow's take-off stage can be seen as a reality. When one sees the process of development from the perspective of those who are underdeveloped as a result of its resource intensity, the 'take-off' often gets translated to 'roll-down' into underdevelopment or ecological disasters. Britain's 'take-off' at the end of the 18th century was made possible by the underdevelopment of the colonies in three contiguous pricpal sectors: Indian industry and Indian agriculture, the slave trade from Africa and the genocide of the indigenous North American people were the preconditions for the economic growth in the centres of modern industry in Britain. The illusion of the contemporary take-off stage in countries like India and the vision of a flight to the 21st century are made possible through a similar process of the invisible destruction of the base for survival of millions of marginal people. The opposition of the ecology movements to resource destructive development and growth arises from the recognition that the creation of resources for growth is achieved through the destruction of resources for the survival of the people. The Rostowian fiction of the take-off of the whole society with improved quality of life for all the members ignores the economic polarisation and ecological destruction inherent in resource intensive development. It appears real because under the historical conditions of colonialism or enclavised development the invisible costs of growth are borne by the colonies or hinterlands. The geographical separation of the regions benefiting and the regions losing in the process left the resource destruction of the colonies and the hinterlands invisible and led to the superficial impression that economic growth takes place in an absolute sense. This impression was used to universalise the Rostowian model for all countries, all people and all historical periods and this became the ideology of development. The ideological universalisation and enclavisation of the process of growth and development is the reason for the simultaneous existence of underdevelopment alongside economic growth in the newly independent countries like India which accepted quick and resource intensive industrialisation as the path towards development. Like the erstwhile colonies, interior and resource rich areas of the country are bearing the costs of resources diversion and destruction to run the resource intensive process of development. Communities living in these interior regions and supporting themselves on the local resources are as a result, facing serious threats to their survival.

The ecological relationship of the growth of affluence for a few regions and some people, on the one hand, and the collapse of the resource base for survival for many, on the other, clearly contradicts Rostow's notion of the third stage of take-off in which 'old blocks and resistances' are overcome and the prosperity of the enclaves becomes pervasive throughout society. The imposition of resource destruction on the eroding of the resources and rights of marginal communities actually pay for the material basis of the prosperity of the enclaves. This prosperity can neither be reproduced for regions and peoples whose impoverishment and deprivation are rooted materially and ecologically in the same process of growth nor can the enclavisation process be sustained. The new poverty and dispossession create new 'blocks and resistances' to the diffusion of the development process, making enclave development and under-development of the hinterland a permanent feature of development based on resource intensive processes. Dichotomising tendencies and principles of exclusion seem to reflect the situation more realistically than the linear model of progress. The simplistic dichotomy between the modern and traditional sectors of the linear model is misleading because the traditional itself is transformed and underdeveloped by the resource demands of the modern sector. This misleading dichotomy needs to be replaced by the more complex contradiction between sectors of society making conflicting and unequal demands on limited resources; between demands for profits and requirements of survival; between sustainable and non-sustainable exploitation patterns and between socially just and unjust use of natural resources. The reality of the ecological non-sustainability of the accepted development model and the threat to survival arising from it need to be internalised into a new framework for understanding of economics and...
technology in a more authentic and less illusionary manner. The ecology movements are providing these insights for this new realism based on resource-sensitivity and recognition of people's right to survival.

While the above analysis emanates from the situation in the market economy oriented countries within the third world, the issues raised by it are universal in character. No doubt the anomaly of growth is most reckless in the market economy oriented third world countries but serious rethinking about the delicate relationship between economy and ecology is going on in both the advanced market economies and the socialist countries [13]. As the whole world prepares to enter the third millennium mankind as a whole is feeling a special responsibility towards the global future. Man is looking for a new philosophy to live in harmony with nature and ecology that is needed to give a new meaning and relevance to economics [14].

THREE ECONOMIES OF NATURAL RESOURCES

A new and holistic relationship between economics and ecology has to depend on a holistic understanding of the natural resource process and utilizations associated with human societies and the natural ecosystems. The dominant ideology of development, which guides development activities almost exclusively, has been classically concerned only with the use of natural resources for commodity production and capital accumulation. It ignores the resource processes that have been regenerating natural resources outside the realm of human existence. It also ignores the vast resource requirements of the large number of people whose needs are not being satisfied through the market mechanisms. The ignorance or neglect of these two vital economies of natural resources, the economy of natural processes and the survival economy has been the reason why ecological destruction and threat to human survival have remained hidden negative externalities of the development process. To make good this shortcoming it is necessary to comprehend the place of natural resources in all the three economies.

The incompleteness of modern economics in handling natural resources in their ecological totality has been voiced by many. The most penetrating description, however, comes from Georgescu-Roegen who wrote:

"The no deposit no return analogy benefits the businessman's view of economic life. For, if one looks only at money, all one can see is that money just passes from one hand to another; except by regrettable accident it never gets out of the economic process. Perhaps the absence of any difficulty in securing raw materials by those countries where modern economics grew and flourished was yet another reason for economists to remain blind to this crucial economic factor. Not even the wars the same nations fought for the control of the world's natural resources awoke the economists from their slumber [15]."

While trade and exchange of goods and services have always been present in human societies, the acceptance of the market to the position of the highest organising principle of societies led to the neglect of the other two vital economies in development thoughts. The hidden negative externalities of the development processes governed by the principles of the market, have, thus, created new forms of poverty and underdevelopment. Various case studies described in the following chapters will substantiate such a claim. The biggest problem is that when exclusive attention is being given to monetary flows, requirements of natural resources not backed up by suitable purchasing power cannot be registered on the economic scene. As a result, specially in the context of the third world countries, the place of natural resources in the economy of natural resource production (or the nature's economy) or in the survival economy of non-market consumption for biological sustenance of the marginalised poor gets completely ignored. The political economy of the ecology movements cannot be understood without a clear comprehension of these two economies: the three distinct economies. The ecology movements are the first indicators of compatibility and conflict among the three competing demands over natural resources. In this way the articulation of these three economies provide the foundation of a framework for an ecologically sustainable and equitable process of economic development that ensures survival and does not threaten it. The benefits and costs associated with development projects thus need to be evaluated not only in the framework of the market economy but also the other two economies associated with natural resources.

The words ecology and economy have emerged from the same Greek word 'oikos' or the household. Yet in the context of market-oriented development they have been rendered contradictory. "Ecological destruction is an obvious cost for economic development"—the ecology movements are told. Natural resources are produced and reproduced through a complex network of ecological processes. Production is an integral part of this economy of natural ecological processes but the concept of production and productivity in the context of development economics has been exclusively identified with the industrial production system for the market economy. Organic productivity in forestry or agriculture has also been seen narrowly through the production of marketable products of the total productive process. This has resulted in vast areas of resource productivity, like the production of humus by forests, or regeneration of water resources, natural evolution of genetic products, erosional production of soil fertility from parent rocks, etc, remaining beyond the scope of economics. Many of these productive processes are dependent on a number of ecological processes. These processes are not known fully even within the natural science disciplines and economists have to make real efforts at internalising them. The paradox is that through the resource ignorant intervention of economic development at its present scale, the whole natural resource system of our planet is under threat of a serious loss of productivity in the economy of natural processes. At the present moment the ecology movements are the sole voice to stress the economic value of these natural processes. The market-oriented development process can destroy the economy of natural processes by overexploitation of resources or by destruction of ecological processes that are not comprehended by economic development. And these impacts do not necessarily occur within the period of the development projects. The positive contribution of economic growth from such development may prove totally inadequate to balance off the invisible or delayed negative externalities from their damage to the economy of natural ecological processes. In the larger context, economic growth can, thus, itself become the source of underdevelopment. The ecological destruction associated with uncontrolled exploitation of natural resources for commercial gains is a symptom of the conflict between the ways of generating material wealth in the economies of market and the natural processes. In the words of Commoner

"Human beings have broken out of the circle of life driven not by biological needs, but the social organisation which they have devised to 'conquer' nature: means of gaining wealth which conflict with those which govern nature[16]."

Modern economics and concepts of development covers a miniscule portion in the history of economic production by human beings. The survival economy has given human societies the material basis of survival by deriving livelihoods directly from nature through self-provisioning mechanisms. In most of the third world countries large number of people are deriving their sustenance in the survival economy that remains invisible to market oriented development. Within the context of limited resource base the destruction of the survival economy takes place through the diversion of natural resources from directly sustaining human existence to generating growth in the market economy. Sustenance and basic needs satisfaction is the organising principle for natural resource use in the survival economy in contrast to profits and capital accumulation being the organising principles for the exploitation of resources for the market. Human survival in India till today is largely dependent on the direct utilisation of common natural resources[17]. The ecology movements are raising their objections against the destruction of these vital commons so essential for human survival. Without clean water, fertile soils and crop and plant genetic diversity economic development will become impossi
ble. Sometimes by omission and sometimes by commission formal economic development activities have impaired the productivity of common natural resources which has enhanced the contradiction between the economy of natural processes and the survival economy.

The organising principles of economic development based on economic growth renders valueless all resources and resource processes that are not priced in the market and are not inputs to commodity production. This premise very frequently generates economic development programmes that divert or destroy the resource base for survival. While the diversion of resources, like diversion of land from multipurpose community forests to monoculture plantations of industrial tree species or destruction of common resource or diversion of water from staple food crops and drinking water needs to cash crops are frequently proposed as programmes for economic development in the context of the market economy, they create economic underdevelopment in the economies of nature and survival. The ecology movements are aimed at opposing these threats to survival from the market based economic development. Thus in the third world ecology movements are not the luxury of the rich but are a survival imperative for the majority of the people whose survival is not taken care of by the market economy but is threatened by its expansion.

The political foundation of the ecology movements lie in their capacity to enlarge the spatial, temporal and social basis for the evaluation of economic development projects—in their capacity to bring into picture all the three economies described above. A new economics of development will emerge only when these three economies can be conceptualised within a single framework.

**Technology Choice: Towards Holistic Ecological Criteria**

When economic development programmes are seen in the perspective of all the three economies, a clearer view of the political economy of the conflicts over natural resources is expected to emerge. In the dominant mode of economic development perceived from within the framework of market economy, mediation of technology is assumed to lead to control over larger and larger quantities of natural resources, thus turning scarcity into abundance and poverty into affluence. Technology, accordingly, is viewed as the motive force for development and the vital instrument that guarantees freedom from dependence on nature. The affluence of the industrialised west is assumed to be associated exclusively with this capacity of modern technology in generating wealth.

The concept of technology *per se* as a source of abundance and freedom from nature's ecological limits are in part based on the limitations of market economy in understanding in a holistic manner, the same resources which it exploits. Only when development processes are viewed in the holistic perspective of all the three economies can the scarcities and under-development associated with abundance and development be clearly seen. Most resource intensive technologies operate in the enclaves with enormous amounts of various resources coming from diverse ecosystems which are normally far away. This long, indirect and spatially distributed process of resource transfer made possible by energy intensive long distance transportation leaves invisible the real material demands of the technological processes of development.

The spatial separation of resource exhaustion and creation of products have also considerably shielded the inequality creating tendencies of modern technologies. Further, it is simply assumed that the benefits of economic development based on these modern technologies will automatically get percolated to the poor and the needy, growth will ultimately take care of the problems of distributive justice. This would, of course, be the case, if growth and surplus were in a sense absolute and purchasing power existed in all socio-economic groupings. None, however, is correct. Surplus is often generated at the cost of ecological productivity of natural resources or at the cost of exhausting the capital of non-renewable resources. For the poor, the only impact of such economic activity very often is the loss of their resource base for survival.

It is, thus, no accident that the modern, efficient and 'productive' technologies created within the context of growth in market economic terms are associated with heavy social and ecological costs. The resource and energy intensity of the production processes they give rise to demands ever-increasing resource withdrawals from the natural ecosystems. These excessive withdrawals in course of time disrupt essential ecological processes and results in the conversion of renewable resources into non-renewable ones. A forest provides inexhaustible supplies of water and biomass including wood, over time if its capital stock, diversity and hydrological balance are maintained and it is harvested on a sustained yield basis. The heavy and uncontrolled market demand for industrial and commercial wood, however, requires continuous overfelling of trees which destroys the regenerative capacity of the forest ecosystems and over time converts the forests to non-renewable resources. Sometimes the damage to nature's intrinsic regenerative capacity is impaired not directly by over exploitation of a particular resource but indirectly by damages caused to other natural resources related through ecological processes. Thus under tropical monsoon conditions overfelling of trees in catchment areas of streams and rivers destroys not only forest resources, but also stable, renewable sources of water. The resource intensive industries do not merely disrupt essential ecological processes by their excessive demands for raw materials, they also destroy and disrupt vital ecological processes by creating pollution of essential resources like air and water. In the words of Rothman the private economic rationality of the profit seeking business enterprise is a murderous providence because it cannot guarantee the optimum use of resources for society as a whole. It cannot avoid continually creating situations which cause the pollution of an environment[18].

In the context of resource scarcity where most resources are already being utilised for the satisfaction of the survival needs, further diversion of resources to new uses will have the possibility of threatening survival and generating conflicts between demands of economic growth and requirements of survival. It therefore, becomes essential to evaluate the role of new technologies in economic development in the basis of their resource demands and its conflict with the demands of survival. The productivity of a technology in the perspective of human survival must distinguish outputs in terms of their potential for satisfaction of vital or non-vital needs, because on the continued satisfaction of vital needs depends human survival. As Georgescu-Roegen points out, there can be no doubt about it. Any use of the natural resources for the satisfaction of non-vital needs means a smaller quantity of life in the future. If we understand well the problem, the best use of our iron resources is to produce plows or harrows as they are needed, not Rolls Royces, not even agricultural tractors [15].

In the context of the market economy the indicators of technological efficiency and productivity are totally independent of the difference between the satisfaction of basic needs and luxury requirements, between resources extracted by ecologically sensitive or insensitive technologies or of the nature of the contribution of economic growth to the diverse socio-economic categories. In the context of a highly non-uniform distribution of purchasing power and scanty knowledge of or respect for ecological processes, economic growth depends on production and consumption of non-vital products. The expansion of the formal sector of economy for the production of non-vital goods very often leads to further diversion of vital natural resources. For example, the water intensive production of flowers or fruits for the lucrative export market often results in water scarcity in low rainfall areas. In a world of limited and shrinking resource base, and in the economic framework of market economy, luxury non-vital requirements start getting satisfied at the cost of vital needs for survival. The high powered pull of the purchasing capacity of the rich of the world can draw out necessary resources in spite of resource scarcity and resulting conflicts. This complete lack of the recognition of the resource needs of the survival economy or the nature's economy in the current paradigm of development economics shrouds the political issues arising from resource transfer and ecological destruction.
For the economic sector based on 'efficient modern technologies', this provides an ideological weapon for increased control of the sponsors of economic development over the whole natural resource endowments of the countries concerned.

The ideological and limited concept of 'productivity' of technologies has been universalised with the consequence that all other economic processes become invisible. The invisible forces which contribute to the increased 'productivity' of a modern farmer or factory worker come from the increased consumption of non-renewable natural resources. Lovins has described this as the amount of 'slave' labour at present at work in the world. According to him each person on earth, on average possesses the equivalent of about 50 slaves, each working a 40 hour week. Man's annual global energy conversion from all sources (wood, fossil-fuel, hydroelectric power, nuclear) at the present time is approximately 8 x 10^{12} watts. This is more than 20 times the energy content of the food necessary to feed the present world population at the FAO standard per capita requirement of 3,600 cals/day.

In terms of workforce, therefore, the population of the earth is not four billion but about 200 billion, the important point being that about 98 per cent of them do not eat conventional food. The inequalities in the distribution of this 'slave' labour between different countries is enormous, the average inhabitant of the US for example, having 250 times as many 'slaves' as the 'average Nigerian'. And this, substantially is the reason for the difference in efficiency between the American and Nigerian economies: it is not due to the differences in the average 'efficiency' of the people themselves. There seems no way of discovering the relative efficiencies of Americans and Nigerians: if Americans were shown 249 of every 250 'slaves' they possess, who can say how 'efficient' they would give themselves to be [19].

The increase in the levels of resource consumption is taken universally as an indicator of economic development. If the present level of resource consumption in the US is accepted as the development objectives of India, the total resource demands of 'developed' India can be calculated by multiplying the current resource consumption by a factor of 250. Neither our forests, our fields or rivers can sustain such a 'development'. When the per capita resource consumption is considered, the Malthusian argument relating population with resource scarcity does not hold good. More significant than the population factor is the total resource factor. Thus, although many countries of the south have a much larger population than the US of the north, the industrialised quarter of the world uses more grain than all the other three quarters put together. This high consumption is due to the fact that intensive livestock production in industrialised countries accounts for 67 per cent of their total grain consumption. This 'efficient' process of livestock management for the production of meat, as reported by Odum requires ten calories of energy input to produce one calorie of food energy [20]. The energy subsidy provided by the capital stock of Earth's non-renewable resources make a resource inefficient process look as efficient in the market economy. It is interesting to note that even in the west, about a century back one of the more efficient foods produced using a fraction of a calorie of energy input. The same is true in the economics of water resources use in modern agriculture. When the production of high yielding varieties of seeds are evaluated, not on productivity per unit land (tons/ha) but per unit volume of water input (tons/k l it) these miracle seeds of Green Revolution are seen as 2-3 times less efficient in food production than, say, the millets. The results of evaluation of technological efficiency of processes associated with economic development, when re-examined on a holistic basis and optimised against all resource inputs, would generally lead to the conclusion that: the much talked of efficiency of widely practised high technology is not intrinsically true. They are, in fact, highly wasteful of materials and pollutive (that is destructive to the productive potential of the environment) [21].

New technologies in the market economy are innovated for profit maximisation and not to encourage resource prudence per se. The extent of inefficiency in the utilisation of natural resources with production processes based on resource intensive technologies can be illustrated with the production of soda ash, an important industrial material. In the Solvay process for the production of soda ash, the two materials used are sodium chloride and limestone. The entire limestone used in the process ends up as waste material. Twenty-five per cent of the sodium chloride is lost as unreacted salt. From the balance 75-80 per cent the acidic half is lost and only the basic half goes into the final product. Therefore only 40 per cent of the raw materials consumed are actually utilised. The waste products go to pollute land and water resources systems. The economy of the process is artificially made good by concessions in procuring limestone, salt and fuel and further concessions in respect of land, transport, etc. It is such subsidies for natural resources which makes the counter-productive processes appear as efficient.

Referring to the technology of production of frozen orange juice Schneiberg made the following remarks:

What is true of the unobtrusive shift from fresh oranges to frozen orange juice is typical of most transitions from traditional to late industrial technologies. The majority of these become more energy intensive; the energy content of all the necessary production processes increases per unit produced . . . . The hallmark of modern technology is its typical labour saving quality—not its energy saving aspect [22].

Guided by a narrow distorted concept of efficiency and supported by subsidies of all types, technological change in market economy oriented development continues in a direction of resource intensity, labour displacement and ecological destruction. The long-term continuation of such processes will lead to the exhaustion of the resource base of the survival economy and to human labour being rendered dispensable in the production processes of the market economy. The partisan assumptions of modern economic development which cannot internalise the economy of natural processes and the survival economy are thus being raised to the level of universality. As a result, with the expansion of economic development in the third world countries, the resource intensive and socially partial development is leading to social instability and conflicts. While the ecology movements in the industrially advanced countries are directed against more recent threats to survival like pollution, the ecology movements in the third world countries have a much longer history related to resource exhaustion and ecological degradation of natural ecosystems in these countries that the holistic ecological criteria for technology choice is needed most urgently.

**Market Push Towards Ecological Destruction**

In the absence of a deeper understanding of the economy of natural processes and the survival economy, the critique of the market economy oriented development, technology choice and natural resource use, that is presented by the ecology movements as a critique of a particular development and technology paradigm is naïvely construed as a critique of development per se, technology per se and against any form of intervention into nature and natural resources. In this way the intervention of the market is tautologically defined as the only justified route towards development and introduction of short-term profit maximising technologies become the only vehicle for achieving it.

The ideology of this development is limited within the limits of market economy. It views the natural resource conflicts and ecological destruction as separate from the economic crisis, and proposes solutions to the ecological crisis in the expansion of the market system. As a result, instead of programmes of gradual ecological regeneration of natural resources, their immediate and enhanced exploitation with higher capital investment gets prescribed as a solution to the crisis of survival. Clausen, as the president of the World Bank has recommended that "a better environment, more often than not, depends on continued economic growth" [23]. In a more recent publication Chandler (1986) further renews the argument in favour of a market oriented solution for the ecological problems and believes that concern for conservation can only come through the market [24]. This non-organic growth
was questioned by the African farmers in the following words, "Can you turn a calf into a cow by plastering it with mud?" [25]. There are some false assumptions behind such expectations for the market solutions to ecological crises, particularly in the context of the third world countries. The anarchy of growth and the ideology of development based on it are the prime reasons behind the ecological crises and destruction of natural resources. Introduction of unsustainable cash crops in large parts of Africa is among the main reasons behind the ecological disaster in that continent. The destruction of the ecological balance of the rainforests of South America is the result of the growth of agribusiness and cattle ranching in the cleared areas. The business groups encouraging cash cropping can move out when the productivity of the newly opened land will fall. They have no compulsion towards the ecological re-habilitation of the ravaged land. They command the resource base by making decisions that transcend their basis in legal ownership, but do not have to bear the ecological costs of the destruction of soil and water systems. The costs of destruction of Africa's grazing lands and farm-land, and of Latin America's forests have not been borne by multinational food business but by the local peasants and tribals. Agribusiness just moves on to other resources and other sectors to maintain and increase profits. The global market economy has no internal mechanism for ensuring ecological rehabilitation of natural resources destroyed by the market itself. The costs of ecological destruction is left behind to be borne by the residents of the respective areas alone, who participate in the survival economy of the same land. Under these conditions the market is incapable of responding to the requirements of the economy of nature and the economy of survival. Even while the market economy erodes nature's economy and creates new forms of poverty and dispossession, the market is proposed as the solution to the problem of ecologically induced poverty. Such a situation arises because the expansion of the market is mechanically assumed to lead to development and poverty alleviation. In the ideology of the market, people are defined as poor because they do not participate overwhelmingly in the market economy and do not consume commodities produced for and distributed through the market even though they might satisfy those needs through self-provisioning mechanisms. They are perceived as poor and backward if they eat self-grown nutritious millets and not commercially produced, commercially distributed processed foods. They are seen as poor and backward if they live in ecologically suited, self-built housing from local natural resources like bamboo, stone or mud instead of cement concrete bought from market. They are seen as poor and backward if they wear indigenously designed handmade garments of natural fibre instead of mechanically manufactured clothes made of man-made fibres. Bahro [1984] quotes an African writer who differentiated poverty and misery. The culturally conceived poverty based on non-western modes of consumption is often mistaken to be misery. Culturally perceived poverty is not materially rooted poverty or misery. Millets or maize, the common non-western staple crop is far superior to processed foods and are again becoming popular in the west as health foods through the alternative movement. Huts built with local materials represent an ecologically more evolved method of providing shelter to human communities than the concrete houses in many rural socio-ecologic conditions. Natural fibres and local costumes are far superior in satisfying the region-specific need for clothing than the manufactured nylon and terelene clothing, especially in the tropical climate. These culturally induced perceptions of poverty and backwardness have provided a great deal of undeserving legitimisation for the accepted form of development, which has, in turn created further conditions for invisible material poverty, or misery, by the denial of survival needs themselves through resource intensive production processes. Cash crop production and food processing divert land and water resources away from sustenance needs, and exclude increasing numbers of people from their entitlements to food as described by Barnett:

The inexorable process of agriculture—industrialisation and internationalisation are probably responsible for more hungry people than either cruel wars and unusual whims of nature. There are several reasons why the high-technology-export-crop model increases hunger. Scarce land, credit, water and technology are pre-empted for the export market. Most hungry people are not affected by the market at all... The profits flow to corporations that have no interest in feeding hungry people without money [27].

The correlation of development, as an effort in poverty removal and the actual creation of conditions of material poverty as a result is best exemplified by the Ethiopian case. The displacement of nomadic Afars from their traditional pasture land in Awash Valley from the pressures of commercial agriculture organised by the foreign companies led to their struggle for survival in the fragile uplands which degraded the ecosystem and led to the starvation of cattle and the nomads. The market economy thus conflicted with the survival economy and nature's economy in the uplands. At no point has the global marketing of agricultural commodities been assessed in the background of the new conditions of scarcity and poverty that it has induced. The new poverty is no longer cultural and relative. It is absolute, threatening the very survival of millions on this planet. At the root of the new material poverty lies an economic paradigm which is governed by the forces of the market. It cannot assess the extent of its own requirements for natural resources, and it cannot assess the impact of this demand on ecological stability and survival. As a result economic activities that are most efficient and productive within the limited context of market economy, often becomes inefficient and destructive in the context of the other two economies of nature and survival.

The logic of the market by itself is not adequate to induce these changes in resource use that threaten ecological destruction and survival especially in the context of independent nation states. Development as an ideology allows the indirect entry of global market domination. It creates a need for international aid and foreign which provide the capital for such development projects that commercialise or privatise resources. Control over local resources thus increasingly shifts out of the hands of local communities and even national governments into the hands of international financial institutions. The conditions for loan determine the mode of utilisation of natural resources. The pressure of repayment and servicing of debts further consolidates the globalisation. Total integration with the global market economy thus marginalises the concern for the economy of natural processes and the survival economy. In the resulting anarchy of resource use, the visible enclaves of economic development with their elite minority residents get a disproportionately high access to resources and the invisible hinterlands of economic under-development, the homes of the silent majority, are left with shrinking access to a shrinking resource base.

The ecology movements in India are the expression of protests against the destruction of the two vital economics of natural processes and survival from the anarchy of development based on market economy. It is not surprising that these movements are strongly critical of the international lending institutions, whose finance fuels the process of the monetary growth oriented economic development at the cost of ecology and survival. Thus, it is also not surprising that the international lending institutions and the elite of the recipient countries look down on the ecology movements as obstructionists and anti-progress, since they are committed to obstruct ecological destruction and halt the process that results in progress for a few and regress for the many. In the whole perspective of the three economies, the proverbial cake is shrinking, while in the limited perspective of market economy there is a short-term and unsustainable growth. There is increasing scarcity of water, of forms of biomass like fodder, fuel, etc, and there is ever-increasing tendency of short meteorological drought turning into large-scale desertification. On the other hand there are more bottled drinks, more milk and milk products in urban markets, more flowers and vegetables for the urban and export markets.

Left to itself the development programmes of the third world would have, by now,
internalised the vital economies of natural processes and survival. The appearance of large international aid projects and loans, however, induces a tremendous support to the classical model of growth based development. It is from this perspective that the ecology movements are critically evaluating the international financial institutions and their aid-lending programmes. In this respect the most vocal criticisms have been made against agencies like the World Bank and its regional counterparts. There are three important reasons why ecology movements are so critical of the multilateral development banks (MDB). Firstly, much of the loans and credits from these banks go to environmentally sensitive areas such as agriculture, forestry, dams and irrigation. In 1983, half the project loans of about $22 billion were directed to these sectors. Thus, although as a percentage of total economic investment these loans account for a fraction, in terms of the impact on natural resource systems they are very significant [28]. The second reason that these MDBs are crucial to determining development patterns and resource use in third world countries is that they require borrowing governments to demonstrate commitment to projects by pledging so called 'counterpart' funds and making complementary investments of its own. The World Bank in particular has overwhelming influence on overall development policy through its country programming papers, sector policy papers and country economic memoranda. But the MDBs' greatest leverage is in 'structural adjustment' and sector lending by which the Banks influence long-term economic policy and not just single projects. The Structural Adjustment Loans of the World Bank are creating long-term institutional changes towards privatisation and the adoption of a strategy of export growth, both of which strongly influence the pattern of control over and utilisation of natural resources.

The third mechanism by which MDBs affect the utilisation of natural resources is through the links between foreign aid and export financing. In 1978, Johnston Jr., deputy assistant secretary of state, bureau of economic and business affairs, testified to the US Congress that "every dollar we pay into the MDBs generates about $3 in business for US firms". Bushnell, deputy director for developing nations of the US department of treasury stated before the subcommittee on foreign operations of the house appropriations committee on March 16, 1976: From US National point of view these banks encourage development along lines compatible with our own economy. They stress the role of market forces in the effective allocation of resources and the development of outward-looking trading economies. Our participation... in international development banks will also provide more assured access to essential raw materials, and a better climate for US investment in the developing world... [29].

The heavy involvement of international finance in the economic development of the third world countries changes the natural resource management strategies in drastic ways. Rapid growth of export oriented resource utilisation has led to countries being caught in the debt trap, with which comes ecological degradation. The linkage of borrowing and ecological degradation can be exemplified with the case of Brazil. In 1980-82 period Brazil was borrowing about US $300 million per year which rose to about US $950 million in 1983 and 1984. When the disbursements were used up Brazil was not able to provide the counterpart funds to complete the projects and loan repayment started on incomplete projects. The load comes on farming for export, leading to more deforestation, more human displacement in the Amazon. The story of Africa, the continent with the most serious ecological crises is no different. In 1983 there were no African countries among the big debtors. Today, the external debt of the forty-two sub-Saharan economies is in the order of US $130-135 billion. The case of Sudan is illustrative of what is happening to Africa. A few years ago, agencies like FAO saw Sudan as having the greatest agriculture potential, especially for export-crops. Sudan did 'develop' its agriculture, with heavy borrowing. Today, Sudan has a US $78 million proposal for emergency aid and US $213 million in interest due, after rescheduling on US $10 billion external debt. Thousands of Africans are dying because development first destroyed their sustenance base and now paying the debts for that development is further depriving them of their entitlement to survival. When the whole economy is in such a shape Africa's ecological regeneration is surely a far cry. The whole state of anarchy of development and its after-effects are summarised in the following words of the Peruvian president, Garcia Perez. At this moment when hundreds of millions of people in Africa, Asia and Latin America are waiting in vain for food, when poverty and violence are everywhere, the banks can wait: the poor have waited long enough for reason and justice... we say that first comes the need to defend our natural wealth. We are not going to pay, as in Shakespeare's 'Merchant of Venice', with the flesh and blood of our people: we are going to defend and retain within our country the surpluses and resources that the vicious structure of the world economy directs abroad [30].

The need for a development that will lead to improved standards of living, not under mine them, that will create ecological stability, not instabilities, is clear. The crises of market orientation of economic development has created responses from the local communities as well as from ecological movements. The contribution of international development aid and loan to the processes of ecological destruction of the reserve base for survival in the third world has provided the platform for a joint global response of the ecology movements in the north as well as in the south [31].

The ecology movements in general, and those in India in particular need to be analysed in the background of the forces of economic development. The various dimensions of social movements, for survival, for democratic values, for decentralised decision-making at the local levels are all components of the ecology movements. While at the local level they may demand better management of forests in mountain catchments or better conservation of water in drought prone areas, on the whole they are slowly progressing towards defining a separate model for economic development—a new economics for a new civilisation. That is how ecology movements all over the world are coming closer as an upcoming political force that will put its signature in the history of mankind in the coming few decades.

Under such pressures the agencies of classical model of development are also turning 'environmental' overnight, and a new co-option attempt has begun. Time for the ultimate battle between the traditional concepts of development and the new ecological development is drawing nearer. The new packaging of old development model is characterised by the co-option of the language of the movements to decorate the contents of old development programmes guided by the market and biased in favour of those who already enjoy economic superiority. A section of 'non-government organisations' is taking on as the new delivery system in place of the governmental organisations. With the help of these NGOs or newly named people's organisations (POs) a great deal of international aid is focusing on environment as a sector for funding [32]. New forestry programmes, dry-land reclamation programmes, etc are being handed over to the NGO sector, as if leaving matters to these NGOs mean a new conceptual framework for development. It is forgotten that as long as the development programmes are framed within the limits of market economy and do not internalise the economy of natural processes and the economy of survival, results cannot be different. The fundamental difference between hollow—decorative environmentalism and deep—scientific ecology must be understood because a new contradiction is being created to confuse the cities of market oriented development. With the help of such a clarity ecology movements which emerged against uncontrolled deforestation has also stood up against ecologically harmful afforestation programmes as in the case of social forestry based on eucalyptus monoculture [33]. While water from underground aquifers can save the people from an impending disaster, ecology movements are opposing uncontrolled uptake of groundwater because it goes against both economy of natural processes and the economy of survival [34]. There is a criticism from the protagonists of hollow
environmentalism that deep ecological arguments can wait, what cannot wait is instant environmental action. In this way much of the activism of ecology movements is being fettered away in micro level actions while their challenges at the macro-conceptual level gets diffused. The task of the ecology movements is to face both the challenges in a co-ordinated form. And while at the micro-action level the classical development model may add a few ceremomial tree planting programmes to keep the NGOs busy, the challenge at the macro-conceptual level is becoming tough with eminent economists seriously going into the defence of the classical model of development. Thus Solow, the 1987 Nobel Prize winner in Economics, holds that production and growth can completely do away with exhaustible natural resources and resources exhaustion is not a problem. It is alleged that 'the ancient concern about the depletion of natural resources no longer rests on any firm theoretical basis'. This claim of modern economics based on its unquestionable faith in modern western science made Solow to write:

If it is easy to substitute other factors for natural resources, then there is, in principle, no problem. The world can, in effect, get along without natural resources, so exhaustion is just an event, not a catastrophe[35].

The ecology movements have, thus raised issues that on the one hand, touch upon the question of activating micro-action plan to safeguard natural processes and survival, while, on the other hand, providing the macro-concept of ecological development at the global national and regional levels. The issue is not simply of planting trees here or protecting a tiger there. The issue is related to a fundamental change in human concepts about life, about development about civilisation. They are related to the most central issues of ecological degradation of nature's productivity that is threatening human survival at a global level. After about four decades of development efforts if the third world is still faced with hunger, it is time that the old development strategy be replaced by a new are that is based on a holistic understanding of the total situation. The ecology movements of the world have entrusted themselves with this most challenging task of evolving humane and sustainable development.

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