

four poverty and natural resource degradation

The link between poverty and natural resource degradation is the central issue in sustainability of livelihoods and the environment in mountain areas. In all efforts to analyse the nature and sources of poverty and to devise poverty alleviation approaches for mountain areas, it is extremely important to understand and appreciate the nature and implications of poverty - environmental resource - development links. For, given the limitations of large-scale creation and use of man-made physical assets and technologies, mountain people primarily depend on natural resources to sustain and improve their standards of living. However, most of these resources are environmentally sensitive and their indiscriminate exploitation poses threats to sustainability not only for the living standards of people in the mountains but also for those of people in lowland areas. The basic issues that need to be investigated and understood in this context are:

- what is the relationship - associative or causative - between poverty and the state of environmental resources?
- does development for poverty alleviation necessarily lead to degradation of natural resources?
- are there economic and technological solutions that lead to enhancement of the welfare of mountain people without degrading environmental resources?
- to what extent can poverty reduction and sustainable resource management be combined with appropriate institutional arrangements? and
- what criteria should be used when a trade off is involved between poverty reduction and conservation of resources?

Relationships between development and environment and between poverty and natural resources have been studied over the past two decades within the framework of what has generally come to be known as 'sustainable development'. The concept, evolved in the Report of the World Commission on Environment and Development, is defined as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs (WCED 1987). It implies prudent use of natural resources at a rate that does not exceed their regeneration. Studies assessing the poverty-environment-development linkages have mostly highlighted the conflict between poverty alleviation and environmental resource conservation but have fallen short of arriving at workable solutions. In any case, attempts to examine the linkages between poverty and natural resource degradation in the mountain context, particularly in the poor regions of the Hindu Kush-Himalayan region, have been rather limited. It is, therefore, important that the hypotheses that have been generated on the basis of studies elsewhere are examined closely in this region.

Poverty-Environmental Degradation: Cause and Effect

The first proposition that needs examination relates to poverty as a cause or consequence of degradation of natural resources. Most studies have established an association, but not a causality between the two phenomena (Markandya 2000). In general, a poor community is likely to have a more degraded environment than a non-poor community. Thus deforestation and poverty are found to go together (Jagannathan 1989; Deininger and Mintzen 1996). On the other hand, mapping of development indicators in Nepal showed that the poorest districts have the least natural resource degradation (ICIMOD 1997; Jodha 1998a). None of these or other studies establish causality: neither the earlier two studies in West Java, Indonesia and Nigeria and in the Chiapas and Oaxaca regions of Mexico suggest that the poor were responsible for deforestation; nor do the findings relating to Nepal tell us that the poor conserve their environment better, or forgo opportunities for improving their livelihoods for the sake of environmental conservation.

In general, however, the poor are seen as 'the most visible agents' of destruction in a degraded environment. The poor depend heavily on natural resources, especially in mountain regions, for their livelihoods and their poverty offers them few choices. It is this lack of alternatives that forces them to use available natural resources intensively. The poor seem to 'stand at the end of a long chain of cause and effect' and 'are the messengers of unsustainability rather than its agents' (UNFPA 2001). There is a growing view that the poor are not necessarily the main agents responsible for resource degradation: quite often the rich play a much greater part in this process (Metz 1991; Prakash 1997; Jodha 1998b). Where the poor have encroached upon or over-exploited natural resources, it is not out of preference for providing for their sustenance in this way, their ignorance of its consequences, or for lack of a stake in natural resources, but because they have no other options. Therefore, it is necessary to look at the factors and processes that have led the poor into a situation of 'choicelessness' and evolve strategies to increase their livelihood options.

Irrespective of whether the poor or the non-poor are mainly responsible for environmental degradation, it is widely agreed that the poorest sections of the society are hurt most by a declining natural environment. For, the poor and the vulnerable are most often users of marginal resources and also the most dependent on common property resources (Dasgupta 1996). Fuelwood scarcity imposes greater hardship on the poor, particularly women, than on the better-off (Kumar and Hotchkiss 1988) and when water shortages occur as a result of deforestation and misuse of natural resources, the poor are most affected (Kadekodi 1995). On the other hand, it is also observed that environmental regulations that increase the cost of production of certain goods result in increased unemployment and higher prices producing differential impact on the poor and the non-poor groups.

Population-Environment Links

Among the factors that have led to over use of natural resources by the poor, pressure of increasing population is considered to be the most important (De Janvry and Gracia 1988; Cleaver and Schreiber 1994; Dasgupta 1996; Lopez 1997). There is limited evidence in favour of the 'Boserup hypothesis' (Boserup 1965) postulating improvement in resources, particularly land-based, and increasing resource productivity with increase in population pressure, but most empirical evidence suggests that areas with an increase in population density beyond 'carrying capacity' are also areas of the greatest degradation. At the same time, it is pointed out that with right policies increase in population need not result in environmental degradation

(Heath and Binswanger 1996). A poverty-resource degradation linkage is found to work through population pressure in the following sequence: as the natural resource base is increasingly degraded, poor families require more members to achieve the same level of welfare and with increasing fertility and population the cycle of increasing degradation is established (Dasgupta 1995). In mountain areas, another dimension of population dynamics that needs to be considered is that of high incidence of outmigration of the working population, especially men. Although this could, on the one hand, help to check environmental degradation to the extent that it reduces pressure on natural resources, it could, on the other hand, result in weakened families compelled to adopt short-cuts to natural resource use and less labour allocation for conservation-oriented practices (Collins 1987).

Resource Management Systems: Is Community Participation the Solution?

It is widely recognised that the key to the poverty-environment relationship is the question of natural resource management systems. It has been argued that the traditional community systems of natural resource management have a great deal to offer in the evolution of institutional arrangements for sustainable management of natural resources and their use for the benefits of local people (Berkes 1989; Jodha 1998a, 1998b). Several cases have been documented about how community, rather than state or private, control and management has succeeded in ensuring sustainable use and regeneration of natural resources. Notable examples are those of the land, water and forest resources in Western India (Chopra and Kadekodi 1988; Chopra and Gulati 1996; Narain 1998) and of participatory forest management arrangements, especially community forestry in Nepal (Bhatia 2000; UNFPA 2001).

Economic Growth, Environment and Globalisation

An interesting aspect of the poverty-environment-development interrelationship consists of the long-term relationship between income levels and quality of environment. As pointed out by Markandya (2001), some studies suggest a U-shaped relationship between GDP and environment, i.e. the quality of environment deteriorates initially as GDP per capita increases, and then improves after a threshold level of the per capita GDP is achieved (Grossman and Krueger 1991; World Bank 1992; Barbier 1997). (The relationship is also referred to as 'Environmental Kuznets Curve', alluding to the economic growth-income distribution relationship postulated by Simon Kuznets.) Evidence has also been found favouring an 'inverse U-shaped' relationship (Stern and Barbier 1996) suggesting a positive relationship between GDP and environment initially and a decline in quality of environment after a critical level of per capita GDP is achieved. In either case, however, there appears to be inevitable degradation of the environment, sooner or later, and it could be of an irreversible nature. It is, therefore, important to build in mechanisms to check environmental degradation into the strategies for development and poverty alleviation. In the particular case of mountain areas, the nature and sequence of relationships between income enhancement efforts and natural resource degradation need to be studied at the level of micro-ecological regions and locations to devise such mechanisms.

It seems clear that communities in mountain areas will continue to depend heavily on agriculture and other natural resource-based activities for their livelihoods. Environmental degradation will only deepen their poverty. So environmental conservation and poverty alleviation need to be the parallel objectives of any intervention in mountain areas. In this context the impact of on-going processes of globalisation on mountain communities and environment needs to be closely examined. It is feared that globalisation can, on the one hand, marginalise the nature-based niche of mountain areas, and, on the other, be quite insensitive to their fragile ecosystems.

tems (Jodha 2000). In general, globalisation is seen to have increased overall prosperity and stimulated growth, but, at the same time, it has increased income inequality and environmental degradation (UNFPA 2001). In pursuing economic reforms to benefit from globalisation, policy-makers have often ignored the parallel social, environmental, and institutional reforms required to prevent increases in inequality, poverty, and environmental degradation (Reed and Rosa 1999).

Economy-Environment Trade-off: Making Choices of Economic Activities

It should be recognised that most development activities, either of a productive nature or for building infrastructure in mountain areas impinge on environment. The environmental impact of different activities varies, as does the economic benefit flowing from them. At one end, there could be 'environmentally benign' activities with high income generating potential (e.g. growing medicinal plants and herbs, planting fruit trees, and so on.) and, at the other end, there are 'ecologically disastrous' ones bringing in large short-term gains mostly to non-local entrepreneurs and contractors, but inflicting irreparable damage to the environment (e.g. extractive activities such as mining and indiscriminate exploitation of forests). The latter need to be, no doubt, severely restricted; but confining economic activities to the former only will leave mountain people with very limited options for their livelihoods. Between the two extreme types of activities - 'environmentally benign' and 'ecologically disastrous' ones, there is a whole range of activities with varying degrees of environmental impact and economic benefits. Each of them entails a 'trade-off' and effort needs to be focussed on selection of a pattern of activities that minimises environmental impact and maximises economic benefits. The exact measurement of the impact of each activity in quantitative terms is not always possible, especially as environmental impacts are not easily quantifiable. It should, however, be possible to rank activities by their environmental impacts and economic benefits (as illustrated in Annex 2) and use such a ranking for decision-making and policy formulation with a view to promoting a structure of economic activities that maximises benefits to the people and minimises environmental degradation.

Green Technologies and Alternative Energy: A 'Win-Win' Strategy?

It appears that there is more often a conflict than a concordance between poverty alleviation and environmental conservation. In most cases, a trade-off between conservation and poverty alleviation looks inevitable, and this poses a major challenge to policy- and decision- makers. It is agreed that only an integrated approach to the problems of poverty and environmental degradation can result in sustainable development. Such an approach remains elusive. In a recent document UNFPA has been bold enough to propose a sustainable development strategy, consisting of the following 'building blocks', as 'win-win solutions for poverty and the environment' (UNFPA 2001): (i) increasing the resource base of the poor; (ii) investing in alternative energy services and infrastructure; (iii) support to green technologies; and (iv) pricing policies that do not encourage profligate use of resources such as electricity, water, and fertiliser (UNFPA 2001). The emphasis placed on energy technologies and use seems to be of particular relevance for mountain areas. Energy consumption is positively associated with levels of living and development, but sources of energy - renewable or non-renewable - and efficiency of energy use can make a tremendous difference to sustainability and environment. Mountain areas are generally deficient in access to energy, although most of them have substantial potential for renewable energy generation. Energy sources, technologies and devices of the poor mountain people are inefficient and mostly involve a lot of time, drudgery, and burden, particularly for women.

Escaping poverty is not merely, therefore, a question of finding ways to increase energy consumption, but rather of changing the kind of energy used. Investment in alternative energy services and infrastructure could be among the most effective ways of alleviating the poverty of mountain people.

Most of the above propositions are still in the stage of hypotheses and opinions, as not enough empirical evidence to test them is available as yet. Also most of them are based on experiences and observations from flatland areas. It is important to examine them in the specific context of mountain areas, particularly in the developing mountain areas of the HKH region, with a view to devising strategies and policies for poverty alleviation and sustainable development.