

8. Conclusions and Recommendations

The Basic Issues of Poverty and Unsustainability

The economic poverty within the Bhardeo community is inextricably linked with cumulative environmental poverty which cannot be tackled unless the people are given an opportunity to undertake economic reconstruction and nature management. The kind of development expected to take place in areas surrounding the capital has eluded communities like Bhardeo.

Should one consider the basic development policies and strategies at the national level and the number and nature of the activities within Bhardeo, the situation would not change for the better in Bhardeo in the next decade as far as external interventions for its economic upliftment are concerned. Communities like Bhardeo are outside the mainstream of development. They are too poor to attract the interest of wider responsive markets, too small to voice their needs, and too weak to respond to economic growth indicators.

The poor economic condition, accentuated by poverty, is one of the important causative factors responsible for the depletion of resources, especially of the natural resource base. The natural resource base of the community is under the stress of constant over-exploitation. Reduction in biomass most probably induced decrease in farmland and livestock productivity. As a result of this, as well as population increase and the increasing reliance on imported fertilisers (Table 21), the local farming system has become unsustainable.

Inevitably, the first victim of perpetual poverty has been the environment, especially forests. Ecological balance will not be possible without greater development efforts and investments.

Basic changes in land use and in the income base have the potential for increasing incomes. Hence, the management of resources and environment in Bhardeo is basically linked to poverty and development issues. Although the basic issue in Bhardeo is poverty, the priority of economic-ecological

management is possible for the community. The longer-term effects of environmental stabilisation could bring back the positive trends that once sustained a reasonable subsistence economy and a cultured lifestyle. Institutional support services, such as training, extension, input delivery, and marketing, are not in line with local realities. The institutional path to development, however, is difficult in the absence of national fiscal commitment to local economic development (e.g., the annual district grants to local institutions) and lack of extension services.

Trends and Indicators of Unsustainability

The situation in Bhardeo in 1988 was that of a post-earthquake area. Physical tiredness and under-nourishment affected the health of women and children. The debris cover on the valley floor and the damaged terraces presented a picture of despair. The community and its resources had to be restored to their former state and the buildings had to be reconstructed quickly so that economic recovery could take place. The agrarian economy with a traditional production base and land use system became no longer self-sustaining in terms of productivity and labour management, nor in its ability to respond effectively to changes in the resource base.

Major trends and indicators of the system's unsustainability can be noted in the depletion of natural resources; deficits in the household economy; migration and marginalisation of the households dependent on imported fertiliser even to maintain a meagre rate of production; the landscape scarred by numerous landslides; and failure on the part of the community to reclaim damaged farmlands, either individually or communally.

Migration

The people of Bhardeo find their area a beautiful place to live in. Their attachment to Gupteswar Mahadev, the streams and the forests, their rich culture, and their neighbours and friends are irreplaceable. Despite poverty, the overwhelming majority of the households are unwilling

to leave the place. One is obliged to accept the fact that it is not because of the mental hardships that some households have started to out-migrate. Out-migration, seasonal or permanent, is an economic compulsion, induced by an institutional failure to develop the area; depleted land resources, and a weak economy.

In the last decade, the area became a place that a few households found physically difficult to live in. The present trend of out-migration does not contribute to the development of Bhardeo. Prolonged absence of able-bodied males also results in considerable social problems and in local labour shortages, even under the existing resource use system. Displacement of families could also lead to an increased rate of permanent migration over time.

Seasonal migration might further increase. Also the number of people out-migrating, as well as the period of migration, might increase rapidly in the future. People should redress the damages on a massive scale through biophysical and socioeconomic development activities and sustain development through effective management of nature. As the area is culturally rich, it is the community which maintains traditions. The exodus could result in the deterioration of Bhardeo's environment and culture rather than it being preserved for the next generation.

Marginalisation

Bhardeo is marginalised politically and institutionally. Because of its location in the hinterland and the small population of voters, it was neglected by the Government. Development support was nil. It was in mid-April 1988 that the first government institution, the Department of Livestock, was established. Even after the catastrophic floods, no help, rehabilitation programmes, or rescue work were carried out by the Government.

The marginalisation process is affecting some of the very small landholders on the upper slopes and on the valley floor of Bhardeo. They have already started selling their farmlands and have either left the area or are in the process of looking for wage-earning jobs outside the area. This is despite increased use of chemical fertilisers which has led to a slightly noticeable increase in productivity. Yet the net income is below investment (in the form of labour, seeds, fertilisers, crop protection against wild animals, etc), and this is supposedly being subsidised by individual households with incomes derived from elsewhere. The investment made in the nature of labour is normally discounted. This is not an unusual phenomenon.

The mountain farming systems are such that unless they are linked with markets, on the basis of their comparative advantages, regarding kind, quality, and rarity of the commodity, they can only produce enough for their own subsistence. This seems to be the case with the Bhardeo community.

Its linkage with outside areas has been one way of surviving and has a negative impact at best, even if we are to consider the few income-generating opportunities that are available. These too have been at the cost of farming. Where did everything go wrong? Are people too submissive, with insufficient motivation and initiative?

Despite the negligence of the Government, politicians, and development planners, Bhardeo could have cashed in on its comparative advantages. Bhardeo has failed until now to do so.

Economic Marginalisation

The altitude factor restricts the present land use system. The production of food crops in the upper areas is limited. The land is occupied by a single crop for nine months and it is not rational to try to improve the crop production system. In the absence of cash income, farming the upper slopes is not profitable while the cost of chemical fertilisers increases. The input of organic materials would decrease in due time as the constraint of collecting these materials is also being felt in these areas. This imbalance exerts higher pressure on land which leads people to use forest resources from a wider area and to expand cultivated land.

Animals can no longer be maintained on the old scale at the household level. At first glance it would appear that any additional effort to expand the fodder base would perhaps result in livestock increase in the population. But there are several other factors that could check further increases in household income, area of land for cultivation, markets for animal products, and the number of economically active family members.

The links between livestock, farmlands, and the use of forests are strong and crucial for the subsistence household economy of the Bhardeo community. Yet the farmland potential would not be fully harnessed, especially under the present land use system and the prevalent cropping practices, in an economy below subsistence level.

Worsening Socioeconomic Conditions

Over the years, the supply of farmland products in Bhardeo apparently decreased to about 50 per cent of the community's basic food demand and it is impossible to collect biomass from the local forest lands. Consequently, the prevalent farming practices have proved to be inadequate, more so under the existing production system (maize-based and relying on chemical fertilisers) and the deteriorating economic status of the population.

The economic-environmental degradation of the system has affected social relationships in the community. The eligible male adults are finding it difficult to marry within the area, thus there is a household labour shortage. Traditional skills that could help to popularise activities such as charcoal-making from different species of timber, farming in low temperature areas, summer potato cultivation, and intensive use of forests for minor products, such as mushrooms, exist. Building upon the existing potential should not be difficult.

Limit to Resource Depletion

The impact of further depletion of resources is determined by factors such as resource location, resource condition, and the time and labour costs involved in harnessing resources. What choice does the Bhardeo community have? The present cost is high both in terms of the time and labour inputs required to fetch a load of biomass. As biomass sources recede further from the homestead, labour allocation becomes difficult.

Since the able-bodied males go outside the area to work during the dry season, the women, who in most cases stay behind at home to look after the household, tend to be hard pressed. The children and the livestock need regular attention. There is every likelihood that, given the advanced condition of exploitation of the forests in the area, the time required for collection of forest products would increase to about eight to nine daylight hours, as against the present average time of about six to seven hours per day. A farmer can afford to go and collect biomass only during the daylight hours. The farmers would not be able to depend on biomass any longer and the possibility of increase in fodder resources, within accessible distances, are very remote. Such a scenario could possibly occur within the next two decades.

High Economic Dependency Ratio

The economic profile that has emerged is bleak, as far as Bhardeo's food situation is concerned. People have to look

for income-generating opportunities outside the area. The high dependency ratio found in Bhardeo has a negative impact on the local economy. However, in these mountain societies, it is not examined from the perspective of economic satisfaction only. Yet, given the limited land and income opportunities available, the dependency is far too high, further affecting the food situation.

The Challenges

The problems of poverty and environmental degradation observed in Bhardeo, although small in scale, pose a challenge because of their very nature and complexity. The development of Bhardeo on a sustainable basis becomes an insurmountable challenge to planners unless the aspirations for development, articulated needs, local skills, and ingenuity are understood.

Taking into consideration the resources, institutional constraints, and development aspirations of the community, several measures could raise the present virtually destitute condition of the community to a level from where steps towards economic development could be taken.

The Bhardeo community has specified its priorities for development. The needs and priorities of the community are simple in nature. It is pertinent to consider the aspirations and development priorities of the community in the context of nature-based resources, human resources, and the location of Bhardeo in the hinterland. A phasewise economic-environmental rehabilitation should precede economic development. Investments have to be judged on the basis of their relative rate of returns. The production environment of the existing resource base would change under different conditions of resource availability enhancement efforts, and given a production impetus to resource use.

Recommendations

The Need for New Development Schemes

A new awareness should guide the community in managing the given resources within the limits of sustainability. Conservation and protection measures are vital to the enhancement of land resources and for promoting a level of sustainability that could motivate the farmers to manage their resources judiciously.

Some adjustments and newer strategies would have to follow. Development priorities need to be in tune with

efforts to manage the environment, e.g., rehabilitation of damaged farmlands and steeper slopes, reforestation, etc. These are also areas that have immediate development potential. However, a general ban on forest exploitation might not be effective at present, neither would such a move be necessary in the long run.

Development efforts need to take into account the nature of development and the speed at which the community can cope with it. The new programmes under consideration must be simple, relatively familiar, and should lead to rapid increase in income and to stabilisation of the environment.

Contrary to generally held opinions regarding the sustainability of mountain agriculture, a change in production base from extensive to a higher degree of plant and animal diversity, development of human skills, and diversification of the income base from that of a primary product base to manufacturing could make the system sustainable within a short period of time.

The whole concept of sustainability is relative. Hence, it could be tested under different conditions of resource use and development support. For example, the sustainability of new land use practices could be assessed under different conditions of resource management and biomass demand.

Institutional Support and Fiscal Resources Over Time. This area has been neglected by national institutions as far as development support is concerned because Bhardeo has no economic or political clout. There is no guarantee that the necessary inputs will be available on a continual basis. Resource improvement efforts should be based on locally available inputs.

Economics of Production and Land Use and Their Linkages with Markets. Production depends upon the commodity's profitability, and this is subject to demand and production cost. The products that are economical today may not be so tomorrow. The question is do we take the unsustainability of a particular product or change products and their uses?

Environmental Impact of Increased Water and Biomass Consumption. Environmental rehabilitation is a pre-condition to bringing about positive changes in the land use system. The area presently lacks water to satisfy the irrigation and drinking water requirements. What will be the demand of the changed land use practice on the water and biomass inputs of the area?

Level of Production and Human Population over a Defined Period of Time. It would be too unrealistic to expect the system to cope with unlimited population growth, both human and animal. The present level of production is far from sufficient, even for the existing population. Hence, the question of sustainability is not particularly relevant as far as sustaining the present nature and level of production is concerned. It has to increase. But how far will a quantitative increase be matched by a qualitative rise in productivity?

Even if the area is commercialised, production of some goods has to be maintained for security. This also depends upon the kind and quality of the production base and the purpose for which the products are used. For example, there is no alternative to local self-sufficiency where fodder and contingency products are concerned. Particularly in food and timber, the local economy cannot be self-sufficient within the next decade. Securing and maintaining adequate emergency supplies for the community for up to half a year is necessary to ensure self-sufficiency.

Initial Efforts

Rehabilitation of natural resources may no longer be possible in Bhardeo without addressing the basic issues of economic development. Hence, an initial start to help the Bhardeo community must begin with the rehabilitation of natural resources, such as clearing debris, primarily from the farmlands and water channels, through purchase and sale of the debris, tree plantations and terrace improvements, and generating off-farm income by providing opportunities for local jobs.

The land use pattern should be changed from intensive food crop cultivation to fruit orchard and charcoal plantation on *kharbari* and on common land. This could help to double the income of the community within three to five years with intensive effort. Activities for rational use and for marketing farm and forest-based products, manufactured from local materials, should accompany these efforts. Bhardeo has wasteland, particularly along the stream banks (in the valley), and low quality grazing grounds. Should these lands be made available for productive uses, the economy would receive a boost. Notwithstanding, with or without additional lands, local farmers should opt for high value products to improve the subsistence level economy.

The potential, however, lies in efforts to produce high-value products based on land resources and livestock. Commercialisation has to be seen as a resource

enhancement effort and the necessary human resources should be developed through skill improvement, including in the realm of the basic economics of production. These are the strategies to be considered in the case of Bhardeo within the next few years.

In the past, the attention of researchers was focussed mostly on the climatological effects of soil erosion, loss of productivity, economic surveys, and development studies,

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Initial Efforts

Rehabilitation of natural resources may be sought in various forms. In addition to addressing the basic issues of economic development, there is an initial step to help the Bhardeo community meet basic needs with the rehabilitation of natural resources, such as cleaning debris, primarily from the lands and water channels, through purchase and sale of the debris, tree plantations and terrace improvements, and generating off-farm income by providing opportunities for local jobs. The land use pattern should be changed from intensive food crop cultivation to fruit orchard and shrub plantation on the bank and on common land. This could help to double the income of the community within five to ten years with intensive effort. Activities for rational use and for marketing farm and forest-based products, manufactured from local materials, should accompany these efforts. Bhardeo has waterland, particularly along the stream banks in the valley, and low quality grazing grounds. Should these lands be made available for productive use, the economy would receive a boost. Reforestation, with or without additional lands, local farmers should opt for high value products to improve the subsistence level economy.

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based on national plan and policy documents, on areas similar to Bhardeo. The present need is for an actual development-action study to try out ideas and test knowledge so that the studies can be integrated with investment plans and programmes, and so that changes can be steered on an economically and environmentally compatible course with the "active and gainful participation" of the local community.

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Economics of Production and Land Use and Their Linkages with Markets. Production depends upon the community's profitability, and this is subject to demand and production cost. The product that the community may not be able to produce tomorrow. The question is do we take the responsibility of a particular product or change products and the market. A community to stand still and allow economic growth and development. Environmental Impact of Production, Water and Soil. Community development relationship is a pre-condition for bringing about positive changes in the land use system. The area presently lacks water to supply the irrigation and drinking water requirements. What will be the demand of the community and the practice on the water and domestic inputs of the land in a development scenario?