ADDITIONAL INCOME GENERATION THROUGH FORESTRY ACTIVITIES AND INVESTMENTS

Often, lack of appropriate technology and technical manpower are considered to be the major constraints to development. It is, however, clear from the foregoing that the problems faced by the hill farmers in the Hindu Kush-Himalaya Region are in general related to a dwindling resource base and deteriorating local environment. Forestry and allied development activities help to re-establish the natural resource base to meet the basic needs of the hill farmers in terms of fodder, fuelwood, leaf-litter, poles, and timber and thus sustain the hill farming system. Moreover, declining farm productivity forces the hill farmers to make up production deficits with additional cash income. Forestry and related development activities have a high potential for generating off-farm employment and income opportunities for rural hill people, thus enabling them to earn the much needed cash income.

In the past the allocation of development resources has been characterised by regional and sectoral disparities with funding and manpower concentrated on lowland development. As a consequence, the upland regions and the forestry sector in particular, received only residual investment. For example, in Nepal, forestry sector expenditure was scant, with the greater part directed towards revenue-oriented tree felling in the Terai. A review of past investment in terms of proposed and actual expenditure on forestry and related projects clearly illustrates that the full potential of the contribution that could have been made to hill economies and investment has not been realised.

Similarly, past research and development work has often been undertaken on an ad hoc sectoral basis and has proved largely inadequate given the integrated nature of the three components - crop production, livestock husbandry and forestry - of the hill farming systems. The present need is for an integrated sectoral approach to the problem that emphasises the total development of the system of which agriculture is a part.

The primary purpose of this study is thus the identification of forestry and related activities which with appropriate investment would make a greater contribution to upland farming economies.

Forestry, through appropriate investments, could contribute to the hill farming economies in a number of important ways. Forestry and related development activities such as watershed protection, erosion control, the protection and improved management of existing forests, and reforestation of large denuded areas in these hills and mountain areas have high potential for creating employment and income opportunities, particularly for the low income groups of the hill population.

An understanding of this potential has resulted in recent years in increased government expenditure in forestry and related sectors and a growing trend, exemplified in the case of Nepal, towards greater inputs from external agencies. The effects of increasing the hill farmer's off-farm income could be much greater if the emphasis were placed on production and labour oriented field (local level) programmes, rather than on capital-intensive and centrally based projects and organisation in the name of institution building. This approach would provide greater employment opportunities for the poorer disadvantaged section of the population.

More recently, forestry development in the hills has received relatively greater attention and the resulting forestry and related activities are creating more off-farm income opportunities for the hill farmer. Community/social forestry programmes in particular have received widespread acceptance and funding in Nepal, India and several other countries of the Region. A major justification for this acceptance and support is that these programmes offer potential for increased rural employment and income through local people's participation. In the case of Nepal, it can be said with certainty that the contribution of community

forestry to local employment and income in rural areas has been far greater than in the case of conventional forestry programmes. Similarly, social forestry programmes in India are claimed to be making greater contributions to employment and income than forestry programmes of a conventional nature (Sharma, 1984). The employment and income benefits from community/social forestry programmes accrue to the landless, near landless, small and marginal farmers and the weaker sections of the local populations, often with surplus unskilled labour.

Appropriate development and encouragement of various forest based and related cash crops create potential for expansion and provide the hill farmer with the much needed cash income, thus making a much higher contribution to the hill farming economies in the Region.

There is also a high potential for rural income generation in the forestry sector through the development of certain forest based or related industries. The importance of forest products related to such small scale industries can hardly be over-emphasised as they provide job opportunities to a large number of rural people. In particular, enterprises based on so called 'minor forest products' are usually household units which are scattered throughout the rural areas in the Region. Sheikh (1985) has produced a very useful report, pertaining to Pakistan, on the role of minor forest products in rural employment and income generation. Employment opportunities and supplementary sources of income generated by means of widespread development of these minor forest products related to small-scale cottage industries accrue largely to the people of lower income brackets in rural areas. Improvement in the quality of such traditional handicraft goods could also go a long way towards further developing a growing export market.

Some of such forest dependent local industries and manufacturing processes, most of which are already practised by the hill farmers of the Region to generate the cash needed by them and that have a potential for further improvement, are listed below: (Mahat, 1985; Sheikh, 1985).

- o Local industries using forest products as raw material
  - Village carpentry
  - Handicrafts
  - Wood carving, lacquer work and inlay work
  - Bamboo and cane goods manufacturing, basketry
  - Production of cloth, ropes, cordage, bags, nets from plant fibres
  - Sports goods
- o Local industries using fuelwood
  - Alcohol from grain, fruits and flowers
  - Brown (raw) sugar
  - Oil processing
  - Peanut roasting
  - Ghee processing
  - Cheese making
  - Wool washing, dyeing and carpet making
  - Fruit jam
  - Blacksmithing (iron)
  - Metal craft (copper, brass, bronze)
  - Aluminium utensils
  - Jewellery (gold and silver)
  - Brick and tile manufacture
  - Lime-burning
- o Local industries using forest products both for raw material and fuelwood
  - Charcoal making
  - Handmade paper making
  - Medicinal herbs processing
  - Processing of fruits, nuts and berries
  - Ghee, appetizers and other products from the fruits and seeds of tree species
  - Tannins and dyes
  - Gums and resins - rosin and turpentine, gums, lac, Shellac, essential oils, etc.
- o Miscellaneous
  - Mushroom farming
  - Medicinal plants development
  - Sericulture
  - Bee keeping: honey
  - Orchids
  - Tourism
  - Fish and meat smoking
  - Road construction

Data on the quantities of forest products involved in such local manufacturing processes and the economic returns from these to the rural household economy in the Region are

hardly available. The topic warrants further research even though the task is time-consuming and by no means easy. However, industries located in nearby bazaar-towns, semi-urban and urban areas, and using forest products as raw materials and fuelwood or both, also provide considerable employment and income to the people of the rural areas in these hill areas. These provide some estimate of the quantities of forest products involved and the scales of income and employment generated to the rural people in the vicinity of these industrial areas. Industrial use of forest products for raw material and energy seems to be increasing and with it the contribution of forestry to the local economy is also increasing.

Future investment priorities

Greater emphasis on and higher priority to the forestry sector in hill regions is clearly the need. The objectives and target population of any planned investment should clearly be defined at the outset. Future investment in the forestry sector should primarily aim to supply the basic forest products needed by the poor hill communities on a sustainable basis. Investment should assist in the development of practical methods of ecosystem management based on sound ecological principles. Therefore, a prerequisite of any investment programme should be the undertaking that forestry or related activities will at all times aim at maintaining or improving existing ecosystems. An understanding of the interactions within the system would assist in the formulation of better programmes for the integrated development of agriculture, livestock husbandry, forestry and related development activities.

A closer integration of the various components of the hill farming system would provide a cash income to supplement farm produce and increase the potential for self-sufficiency in the hills. It has to be borne in mind that the small farmer is often a risk avoider with a comparatively low level of access to inputs and information. Therefore, investment plans should attempt to spread the risk by generating a greater number of community-oriented projects. The target community should be involved in the initial selection of investment priorities and be represented throughout the implementation phase of the programme.

Potential areas of investment in forestry for employment and income generation include:

- Investments related to forest products development (Table 1)
- Investment related to forestry institutional and infrastructural (organisational) development (Table 2).
- Investment related to forestry and farming system linkages research, including in- depth participatory research and observational studies.

Table 1: Areas of investment related to forest products development

	INVESTMENT RELATED TO SOURCE OF PRODUCT PRIORITY	PRODUCT AND END USE	PERCEIVED INVESTMENT
o	New planting and improved management of existing forests and trees for single trees, blocks on private/communal/government/waste and leased lands.	FODDER	1, 2
o	New planting and improved management of existing forest and tree for single trees, woodlots, on private/communal/government waste and leased lands:	FUELWOOD	1, 2, 3
o	New planting and improved management of existing forest and tree for single trees, woodlots, on private/communal/government waste and eased lands:	POLES AND TIMBER	1, 2, 3
o	Bamboo and Nigalo on Private/communal/ government waste and leased lands:	BASKETS, FURNITURE, PAPER PULP, CONSTRUCTION MATERIAL	1,2,3
o	Multiple use trees development. Single trees or blocks on private/communal/ government waste and leased lands:	FODDER, FUELWOOD, FRUITS, EDIBLE VEGETABLE OILS,	1, 2
o	Improved grass and legume species:	THATCH, MATS, FODDER	1, 2
o	On-farm horticulture, fruit production: Orchards, single trees:	VEGETABLES, SOFT FRUIT, JAM, ALCOHOL	1, 2
o	Herbs and spices (export potential).	MEDICINES, SPICES	1, 2
o	Herbs, medicinal plants and other cash crops in new tree and forest plantation areas on private/communal/government waste and leased lands:	MEDICINES, SPICES/ FODDER/FUELWOOD/POLES AND TIMBER	1, 2
o	Fibre-producing plants : Daphne Nettle, Lokta, Allo, Broussaonetia, (*Grevia opposite-folia*), cactus, phasro, etc.	PAPER, ROPES, CORDAGE, TEXTILES	2, 1, 3
o	Charcoal production	CHARCOAL (metalwork)	1, 2
o	Mushroom growing	MUSHROOMS	2, 1
o	Willow planting	BASKETS, MATS, FURNITURE	2, 1, 3
o	Walnuts, chestnuts, hazelnuts, etc.	NUTS, FURNITURE	2, 1
o	Tree and legume crops (e.g. chiuri ghee)	EDIBLE VEGETABLES	2, 1
o	Sericulture (Mulberry Morus spp.)	SILK, FODDER	2, 3
o	Softwood plantations (e.g. poplar)	PAPER PULP, MATCHES, PACKING CASES	2, 1, 3
o	Game management and conservation	MEAT, SKINS, FURS, HORNS	1, 2
o	Orchards	MEDICINE, PERFUMES AND TOILET PRODUCTS	2
o	Acacia catechu plantations	KUTCH AND KATHA	3
o	Cardamom	SPICES	2, 1

KEY: 1 = Product for domestic consumption
2 = Product for cash sale
3 = Industrial product

Table 2. Investment related to forestry institutional and infrastructural (organizational) development.

METHOD	TARGET	OBJECTIVES
Training, workshops	Mainly weaker sections of hill rural populations: landless/near landless, marginal/small farmers, generally with surplus unskilled labour, and women	Skill development and to better prepare for off-farm income and employment opportunities.
Public education and extension	Progressive farmers Community leaders	Self-help, improve technical skills.
Formal education Field projects	Primary school pupils	Consciousness raising.
Formal education Field projects	Secondary school pupils	Incorporation of forestry and allied subjects into curricula.
Specialized courses rural development work	Undergraduate university students.	Community service, Development of practical skills.
Incentives: financial and others, e.g. training	Individuals from rural communities	To train individuals as community extension workers.
Incentives: financial and others, e.g. training	National (government) project personnel	To encourage govt. staff to work in remote/rural areas.
Study/observation tours within and outside the country	Particularly for progressive farmers and local peoples' representatives, e.g. local,district and regional leadership	For demonstration, observation, inter action and people's encouragement and motivation.
Formal seminars; informal consultation and negotiations	National, regional, district and local level political and social leadership	Interaction Motivation Participation of people in decision-making, programme planning and implementation.
Establishment of efficient, appropriate data base	Policy makers, planners/ programme/project implementors, researchers, students, etc.	To facilitate the dissemination of relevant information.