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### Abstract

Micro-enterprises are the keys to generate employment opportunities as well as income earning avenues to both landless, women and landholding people. Therefore, the poverty alleviation in semi-arid regions requires a greater understanding of the interactions of agriculture and allied enterprises and their implications for the household economy. This paper synthesizes the available evidence on agriculture and allied enterprises in watershed development areas and how policy should address the issue to balance between agriculture and micro-enterprises promoted by watershed development programs.

**Keywords:** Micro-enterprise, agriculture, watersheds, livelihoods.

### Introduction

Agriculture and allied activities support livelihoods of nearly 70 per cent of India's rural population (Hiremath 2007). In recent years, land-based livelihoods of small and marginal farmers are increasingly becoming unsustainable, since their land has not been able to support the family's food requirements and fodder for their cattle. As a result, rural households are forced to look at alternative means for supplementing their livelihoods. In this context, natural resource-based micro-enterprises have emerged as alternative livelihood opportunities in rural areas. Varying socio-economic and environmental trends including declining crop prices, swelling labour forces, migration and urbanization increased the demand for alternative employment and off-farm livelihood opportunities. Due to lack of skill development, formal employment ceased to keep pace with the demand for employment. In this context, watershed development strategy facilitated small landholders, landless and women groups to benefit from small scale allied activities.

Watershed development is the strategy for sustainable growth in the vast rain-fed regions since 1980s to enhance agricultural production, conservation of natural resources and raising rural livelihood system. Although soil and water

conservation was initially the primary objective of watershed program that saw large public investment since inception, later its focus shifted to principles of equity and enhancing rural livelihood opportunities and more recently to sustainable development since mid nineties (Wani et al. 2002). As the focus of watershed development shifted, the landholders (small and large farmers), landless, women and youth groups were brought to ensure the success of the program. Traditionally, watersheds have been viewed as hydrological units to conserve soil and water, and a compartmental approach has been adopted. However, through the integrated watershed management approach all natural resources in the watershed are managed efficiently and effectively so that the rural livelihoods can be improved substantially through convergence of various activities (Sreedevi, 2003).

Micro-enterprises are worth giving attention to for several reasons. Firstly, in some areas these make a significant contribution to household income, employment and economic production. Secondly, they have a potentially key role to play in supplying resilient and flexible services. Thirdly, compared to land-based agriculture, they tend to generate relatively good income and hence provide resilience to household economic conditions. Finally, being relatively less technology oriented, these activities support a proportionately larger section of the unskilled labour force and produce larger number of livelihoods per unit of output. Micro-enterprises are the keys to generate employment opportunities as well as income earning avenues to both landless, women and landholding people. Therefore, the poverty alleviation in semi-arid regions requires a greater understanding of the interactions of agriculture and allied enterprises and their implications for the household economy.

This paper synthesizes the available evidence on agriculture and allied enterprises in watershed development areas and how policy should address the issue to balance between agriculture and micro-enterprises promoted by watershed development programs.

## Constraints

Although, micro-enterprises are operates locally and have low entry and exit barriers, it suffers from major constraints.

- Flow of funds (credit availability) is a major constraint for their effective operation.
- Shortage of capital.
- Lack of necessary skills in the chosen activity.
- Competition from larger units.
- Lack of marketing facilities and effective pricing for goods.

Along with credit, poor people need various other services/input viz. training for skill development, information, insurance and market linkages which would minimize risk and enable them to generate income for their survival. Providing poor people with credit for micro-enterprise can help them work their own way out of poverty.

## Strategy and Approaches

Information on micro-enterprise based livelihoods was drawn from a wide range of published and unpublished sources, including field research by members of GT-Agroecosystems at ICRISAT. Although there is now rich debate and discussion on various aspects of livelihoods, there is no evidence on overall synthesis of micro-enterprises, which are dependent on natural resource. This paper brings information together to create composite picture of changes in rural livelihoods and enhanced livelihood opportunities.

## Micro-enterprises, Markets and Technology

Small-scale entrepreneurship through watershed development plays a significant role in poor people's lives and is one of the keys to lifting people out of poverty. Some of the activities are the backbone on which the rural society survives in most arid and semi-arid regions. Watershed development primarily aiming sustainable management of natural resources contributing for overall agriculture development and livelihood promotion in rural areas. Initial poverty eradication efforts in India concentrated on supply of agricultural technologies, inputs and services that were often 'production' orientated. However, they were largely inappropriate to the needs of the poor and the benefits were mostly captured by the wealthy. Later, the approach changed towards 'capacity-building' in sector organizations to equip people and organizations with the skills and resources to do a better job. The concept of livelihoods and livelihoods analysis emerged in the mid nineties - closely associated with poverty reduction strategies. This approach was useful to identify and prioritize the needs of the community in enhancing their livelihoods.

## Market Structure

Although micro-enterprises operate in very informal, unregulated environments, the fortunes of most of these activities are connected by supply chains through production channels and the influence of competition, to mainstream commercial markets. These interrelationships increasingly link allied enterprise activities performance to the behavior of other actors in economic networks. Most times production activities of allied enterprises are supported by local markets to fulfill

local demand. However, monopoly does not arise as diverse actors are involved in the production processes. Thus, most often, micro-enterprise activity serves as a strong social capital, within the community, builds strong social network.

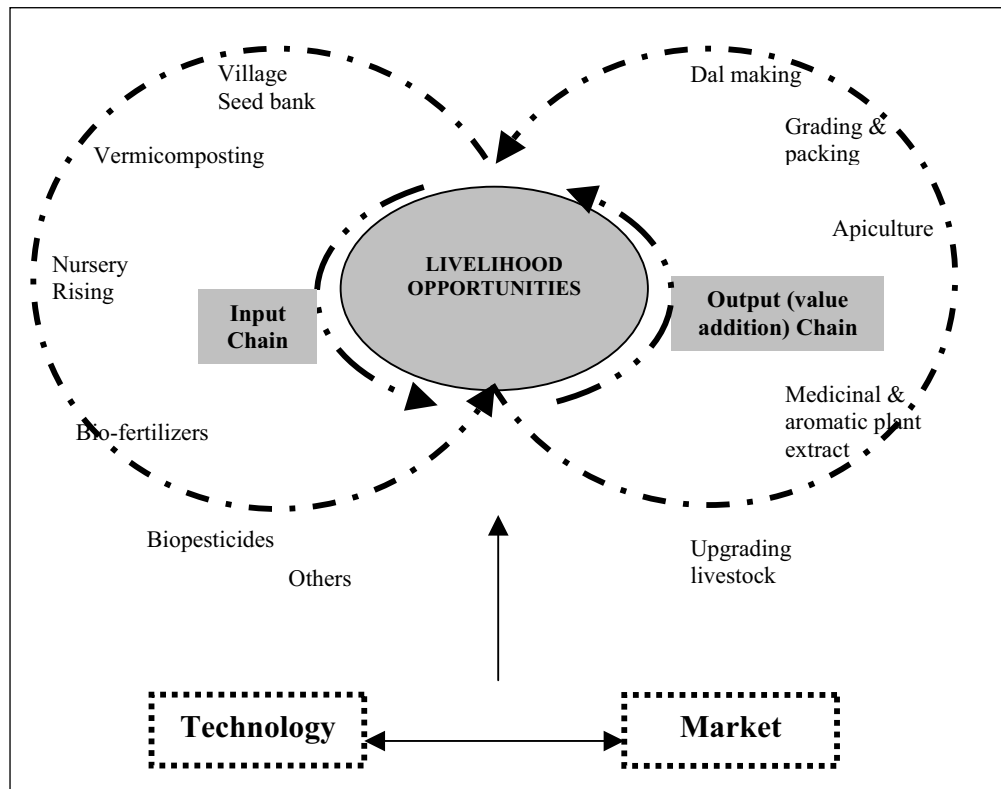
## The Role of Technological Change

In a world influenced by rapid technological developments, the capacity to cope with, generate and manage change seems like key factors in determining the livelihood strategies of poor people involved in agriculture allied enterprise. In the livelihood analysis, technology assumes greater significance as having at least four interrelated constituents viz. technique (machines and equipment), knowledge (know-how and skills), organization (systems, procedures, practices and support structures), and product (design, specification) (Scott, 1996; Pauli, 1999).

Agriculture and allied enterprise activities enhance rural livelihood system through locally available technological backstop. In principle, poor people stand to gain from technological change – generating easier access to information, higher productivity, lower inputs costs, less wastage and better environmental management. However, the pace and volatility of change can be a problem, particularly when allied activities are left behind the agriculture development or forced to take greater risks in order to keep pace with increasing vulnerability. As a result, the livelihood outcomes that allied enterprise owners practice, is likely to be increasingly determined by these activities capacity to generate and manage technological change. In the long run, an effective analysis of the factors that influence technological change in and around agriculture and allied enterprises is important for understanding the livelihood strategies and options for poor people who work in these activities.

An approach in understanding the livelihood opportunities is presented in Figure 1. This approach explicitly link watershed development with rural livelihoods and effectively poverty alleviation. Rural livelihood system is dependent on input and output chains which are centered on utilization of natural resources. The input chain is mainly providing support to achieve higher growth and larger income flows to different category of people who are depending on these activities. These are the keys to value addition to their income activities that are dependent on market and technology.

For example, village seed bank, vermicomposting, nursery raising and bio-fertilizer enterprises are providing enough opportunity to the value addition in the household economy. The allied agricultural activities are gaining importance as the proportion of income coming from agriculture fell and households became increasingly dependent on other sources of income (Deb et al. 2002).



*Figure 1. Input - output chain in livelihood promotion.*

The watershed development provides better training and development to farming communities in micro-enterprises forms a better way to reduce migration to urban areas for seeking employment during off-farm season. Selection of micro-enterprises can be based on the locally available resources and technical backstopping for training the farmers. The selection of micro-enterprises can also help women and landless people to promote their livelihoods and to improve the economic condition by using locally available resources. Several micro-enterprises activities provide an opportunity to diversify their livelihood activities and to improve the crop productivity by increasing soil fertility through ecological methods of farming (Wani et al. 2002). These activities avail market facilities at the nearest places to sell their products. Hence, agriculture and allied activities provide greater opportunity to strengthen rural livelihoods.

## **Income-Generating Micro-enterprises**

The innovative farmer participatory approach for integrated watershed management implemented through a consortium of research organizations, development

agencies and NGOs envisages a strategy of convergence of the activities in watersheds. In this paper, experiences from APRLP-ICRISAT, ADB funded and other projects are used to describe success stories of growing micro-enterprise activities in rural watersheds (Wani et al. 2002).

**Medicinal and Aromatic Plant Extracts:** Medicinal and aromatic plants possess the ability to grow in poor soils and under low rainfall and moisture conditions, thereby assisting in the natural regeneration of these crops. These crops improve specialized skills; encourage contacts with niche markets; adds to crop diversification; and provides employment opportunities (Rangarao, 2009). Value addition to medicinal and aromatic plants product is one of the objectives of crop diversification. Processing of aromatic plants by extraction of oil is value addition to lemongrass, palmarosa, vetiver, and *Eucalyptus citriodora* (Reddy et al. 2008).



*Figure 2. Distillation of lemongrass in Padmatipally, Nalgonda.*

**Apiculture:** The harvesting of honey from the forest has been in practice since long and huge profits from this enterprise promoted rearing bees in the farms. In the recent past rural communities while diversifying their agricultural practices, have adopted this practice gradually. Production of honey from farmlands can be a secondary activity for farmers as it requires less time as compared with other activities and can be carried out by women in a house. On an estimate, about 80 per cent of honey is used directly in medicines and 10 per cent is used in Ayurvedic and pharmaceutical production (Gol, 2006). Studies found that apiculture is an excellent, esthetic livelihood generating endangered hobby. It has a potential market with environmental responsibility and worldwide medicinal and nutritional recognition. Apiculture requires less investment and easy-to-learn (Rangarao, 2009). It also helps in pollination of crops and increase seed setting in many crops.



*Figure 3. Apiculture.*



*Figure 4. Upgrading livestock.*

**Upgrading and Rearing Livestock:** watershed program is an important intervention in dryland areas to improve crop as well as livestock productivity. Small ruminants like, sheep or goats are the best source of regular cash income throughout the year for rural poor without much investment. They form a major component in a tree-crop-livestock diversification/integration paradigm. As integrated crop-dairy farming system is a viable and profitable proposition to the farmers, upgrading livestock is essential.

**Village Seed Bank:** Village seed bank system was introduced as part of income-generating activities in many watersheds. These seed banks are providing self-sufficiency and self reliant for farming communities since they experience the

drudgery of seed companies in terms of spurious seeds supply. Therefore, seed banks emerged as a worthy social capital in rural areas.



*Figure 5. Village seed bank system.*

**Vermiculture:** Vermiculture became a prominent micro-enterprise for rural landless and women groups, as it requires low investment. Vermiculture is environment friendly as it converts disposal of organic wastes generated in farms as well as in household front as productive plant nutrient. These residues contain valuable plant nutrient and can be effectively used for increasing the agricultural productivity. Earthworms convert the residues into valuable source of plant nutrients by feeding on the organic material and excreting out valuable organic manure. Earthworms are one of the major soil macro-invertebrates. The role of earthworms in the soil is to improve soil fertility and soil health. Vermicompost increases water-holding capacity of the soil, promotes crop growth, helps produce more, and improves food and fodder quality (Nagavallema et al. 2004).



*Figure 6. Vermicomposting by women SHGs in Mentapally, Mahbubnagar.*



**Dal Making:** Dal making is a best micro-enterprise to avoid middlemen and get maximum market price for the product. Dal-making is also a value addition to the product through which farmers can benefit the most. This micro-enterprise is brings women self-help groups together and builds strong social network among rural communities (Figure 7). Apart from value addition to the product, farmers also get nutrient-rich fodder to feed animal (ICRISAT, 2004).

**Poultry-based Activities:** Agro wastes (eg, from maize cultivation) can be diverted for poultry feed along with other supplemental food. Rearing of improved breed like broilers can increase the returns and improve the livelihood options.

**Horticulture and Forestry-based Activities:** Teak planting, pomegranate cultivation and custard apple cultivation along the bunds and marginal lands will provide profit to the farmers.

**Nursery Raising:** Nursery raising forms a means of livelihood for large number of people (Figure 8). Nursery raising as the means for developing livelihood and income-generating opportunities for the local communities. It also provides capacity building and skills upgrading for members of the communities. Nursery raising generates cash income, means for poverty alleviation, opportunity for women and aged people to contribute to income generation and flexible working hours.



*Figure: 7. Low cost dal mill in watershed villages.*



*Figure 8: Nursery raising.*

## Case Studies

### **Vermicomposting: A Bio-enterprise for Sustainable Agriculture**

The ICRISAT led consortium initiated the concept of vermiculture enterprise for rural women to improve soil fertility and crop productivity through eco-friendly methods of farming and train the women SHGs in vermiculture technology and assist them to set up viable vermiculture enterprise at the household level (Figure.9). These alternate sources of nutrients supply sizeable quantities of nutrients, reducing the need for huge quantities of costly fertilizer. A proper combination of nutrient management options together with soil and water management practices will result in improved productivity and also the productivity can be sustained without any harm to natural resources. On-site training was also provided and women SHGs were empowered to undertake vermicomposting. As a result, women SHG members are involved in vermicomposting enterprise as a strategy to cope with insecurity prevailed in household economy. Numbers of watershed projects following livelihood approach have adopted vermicomposting through SHGs which avoids pitfall of neglect of vermicompost pits in individual approach during the absence of individuals.



*Figure 9. Women involved in vermicomposting activity.*

#### **Box 1: Adarsha Watershed, Kothapally**

Ms. Lakshamma and four other women have set up a vermicomposting enterprise in a common place under one roof. Having begun with a population of 2000 earthworms of three epigeic species, they regularly harvest around 400 kg of vermicompost every month collectively. Their work in making vermicompost is shared collectively and the unique marketing strategy involves meeting potential customers. Sometimes, they even get customers from distant places. They earn a net income of around Rs. 500 each month. By becoming an earning member of the family, they are involved in the decision-making process in the family. This has also raised their status in the society (extracted from Nagavallema et al. 2004).

#### **Box 2: APRLP Watershed**

Ms. Padmamma living in Sripuram of Mahbubnagar district in Andhra Pradesh leads a routine life. She joined the women's SHG at the beginning of the APRLP project. Though reluctant during the initial stage, she started taking active part in the weekly meetings and showed interest in the discussions about raising income through small activities like adopting the vermicompost scheme. This scheme was introduced to enable crop productivity in the fields and enable the farmers to get more per hectare yield. Ms Padmamma is able to get higher yield from different crops such as maize and vegetables with the application of vermicompost in her own field. She now proudly displays the vermiculture beds to any visitor who comes to meet her (extracted from Nagavallema et al. 2004).

## Village Seed Banks: An Initiative for Self-reliance and Self-sufficiency

With the advent of hybrid technology, the farmers are required to replenish seeds every season from external sources to harness higher productivity. However, due to increased demand for seeds, it is difficult for organized seed sector to meet farmer's demand considering number of crops and varieties cultivated. Thus, unscrupulous elements in the seed industry are active in supplying spurious seeds to farmers, causing heavy losses to the farmers and the economy.

Therefore, many attempts are on to practice village seed bank to meet self-sufficiency in production and distribution of quality seeds for the crops where improved cultivars are high yielding and stress tolerant. Watershed development through collective community participation enables the community to revive the age-old concept of self-sufficiency through developing village seed bank. There are successful community initiatives across watershed development programs.

## ADB-Funded Lalatora Watershed

Lakshmi Self help group is a thrift group with eleven women members. The group started procuring seeds of improved chickpea varieties (ICCC 37, ICCV 10, ICCV 2 and KAK 2) supplied by ICRISAT under the ADB project from 2000 (Figure 10). The group first identifies the farmers who have sown the improved chickpea varieties. Upon harvest of the crop, the group approaches the identified farmers and offers to buy



*Figure 10. Discussion with project scientists.*

their produce at a premium of Rs 1.00 to 2.00 kg<sup>-1</sup> over the prevailing market price. In the first year, the group bought 300 kg seeds of improved chickpea varieties from farmers who had grown these varieties using breeder's seeds provided through the project. With the technical guidance of the project staff, the women graded the seeds and treated them with thiram 2.5 g kg<sup>-1</sup> of seed (Figure 11). The group incurred approximately Rs 20 per 100 kg seeds. The seeds were then stored in the government warehouse located about 15 km away from the village at a cost of Rs 20 per bag. Besides, they also had to pay Rs 10 per bag for transportation.

The group procured 400 kg seeds of improved chickpea varieties during 2001 and earned a net profit of Rs 1940 by selling the same in post-rainy season 2002. The SHG procured 800 kg chickpea seeds in post-rainy season 2002. As the volume of seed procurement is growing year after year, the SHG is considering increasing their monthly contribution from Rs 10 to Rs 50 at least for few months in a year to generate additional capital. At present, the group savings are to the tune of Rs 5600 and have received financial assistance of Rs 11,260 from the project as revolving fund for buying the seeds.

The seed reliability, quality and availability at the farmer's doorsteps are the major factors, which are influencing farmers to buy chickpea seeds from the group at a premium price. It is indeed interesting to note the prevailing notion is that the SHG



*Figure 11. Trained women grade and treat seeds.*

would sell the seeds at a lower price than that quoted in the market. In fact, the SHG is earning this premium for the goodwill they have in their community. Selling seed and standing by its quality is indeed an asset and a worthy social capital. Having gained confidence in dealing with chickpea seed, the SHG is considering procuring breeder's seeds of improved varieties of soybean, sorghum and coriander in the coming years. Besides, the group is also enthusiastic about taking other income-generating activities like dairy. On the reaction of the male members of the families to the seed procurement initiative, the women members reveal that they are getting a good deal of cooperation from them. Besides, they are encouraged to contribute higher amount of subscription to the thrift fund. The women feel more confident and acknowledge that the seed bank has brought new enthusiasm to the SHG and empowered the women. They thankfully acknowledged the contribution of the project to the SHG revolving fund (Table 1). The SHG members are willing to learn new technologies related to seed production and quality. Further, they opined that the seeds sold by the SHG are much superior in quality compared to what they used to buy from the market. The seeds, they said, has good germination (over 90%) and give high yield. Considering the success of the Lakshmi SHG, other thrift groups also showed keen interest in adopting the concept of "seed bank" as an income-generating activity.

**Table 1. Seed bank activity in ADB-funded Lalatora watershed development project.**

Particulars	2000	2001	2002	2003	2004
Participating SHGs (no.)	4	2	3	3	2
Seed procured (kg)	1200	800	2210	2213	1618
Project loan (Rs)	19740	10920	37620	34008	21364
Group savings (Rs)	1860	2000	3000	3000	2000
Seed buying price (Rs 100 kg <sup>-1</sup> )	1800	1615	1700	1600	1600
Seed selling price (Rs 100 kg <sup>-1</sup> )	2100	2100	1900	1860	1800
Amount earned by SHGs from seed sale (Rs)	25200	16800	41990	34408	29124
Net profit to SHGs (Rs)	3600	3880	4180	3942	3036

Source: Dixit et al. 2005.

## Pigeonpea Dal Making

In Mahbubnagar and Kurnool districts pigeonpea is grown on substantial area. The improved variety of pigeonpea has produced good yield and farmers sold it at Rs. 14 kg<sup>-1</sup> in the market and for their own consumption they have purchased dal at Rs 24 kg<sup>-1</sup>. By adopting the principle of adding value to the produce before leaving the watershed to ensure that maximum proportion of market product price goes to the



*Figure 12. Dal making by women self-help group in Karivemula.*

farmers and not the middlemen, *dal* making proposition was discussed with the PIAs and farmers. Farmers in Mentapally were the first to come forward and formed the SHG and established the *dal* mill on a pilot basis (Figure. 12). Till now they have converted 600 kg of pigeonpea into dal and added Rs 5400 value to their produce. They have worked out the charges to be paid to the SHG, which are lesser than the commercial mills and have recorded 90% dal recovery. In addition to the value addition, farmers have got the nutrient-rich pigeonpea hulls to be used as animal feed (ICRISAT, 2004).

### **Livestock Rearing and Upgrading**

The cattle breeding center set up in 2003 at Adarsha watershed, Kothapally, has evoked good response from the farmers. This center also runs mobile artificial insemination centers with portable equipment does the artificial insemination for buffaloes and cows. The cattle breeding also provide gainful self-employment to the rural youths who are unskilled to apply high science tools. Small and marginal farmers with a couple of crossbred cows, increased milk production through artificial insemination, are coming out of poverty.

Until November 2009, this center has done 2592 artificial insemination for cows and buffaloes out of which 1297 are pregnant and 524 calves were born (Table 2). Each farmer has to pay Rs. 40 per animal for artificial insemination for their cows or buffaloes. This money will be deposited in a bank account. The youths were trained to undertake this activity in surrounding villages.

**Table 2. Artificial insemination done at Cattle Breeding Center, Kothapally during August 2003 to November 2009**

Cattle	No. of cattle inseminated	Pregnancy examined	Pregnant animals	No. of calf born		
				Male	Female	Total
Cow	490	388	243	51	52	103
Buffaloes	2102	1737	1054	205	216	421
Total	2592	2125	1297	256	268	524

The cattle rearing activity after installing artificial insemination center as part of watershed activity has boosted milk production in the village. According to villagers, after the implementation of watershed development program in the village, the cattle rearing activity has gone up due to year-round availability of fodder for cattle. Also artificial insemination center set up in the village provided farmers to go for crossbred cows and buffaloes for higher milk yielding. Before the project implementation animals were giving just one to two litres a day. But all that is changing now because of fodder availability and artificial insemination. The milk yield has now gone upto 15 liters a day per animal. The milk yield at present ranges from 2 to 15 litres per animal per day depending on the type of animal. Because of watershed intervention, farmers grow *Napier bajra*, *Cenchrus Ciliaris* and wild green gram as fodder crops for animals which help to increase the milk productivity.

The market availability at the village is one of the major factors for undertaking livestock activity in the village. During the year 2007-08 Reliance Group set up a milk collection center in the village and the milk collection per day is nearly 400 litres. Before Reliance milk collection center was set up in the village, farmers used to sell their milk for private milk collectors for low price without any incentive. Reliance Group is paying Rs. 20-31 per liter based on fat content. However, there are three private people collecting nearly 250 litres milk per day and paying maximum Rs. 18 per litre. Due to increase in milk yield and easy access to market for milk, farmers are investing on animals to multiply their incomes. One of the best things about the program is its multiplier effect and after five years of establishing artificial insemination center, the cattle wealth in the village has increased manifold.



## **Agriculture and Micro-enterprises: A Growing Partnership?**

The above case studies provide ample evidence for a growing partnership between agriculture and allied enterprises. Figure 1 shows the range of available options and indicates increasing opportunities for livelihood enhancement. The figure offers a choice of 'career paths' through the different levels of livelihood security. In support, market and technology play a major role in making use of available opportunities.

The village seed bank, for example, provides an alternative to centralized production and distribution of improved seeds and help farmers to become self-reliant. The necessary stable technical backstopping and empowerment of the community members demonstrated the viability of village seed banks. The village seed bank not only ensure good quality seeds for enhancing productivity but also in generating income for the community members, resulting in improved livelihoods. The problem of spurious seeds supply and associated losses can be overcome by applying locally available seed system.

Similarly, vermiculture enterprise at the household level for rural women helps to improve soil fertility and crop productivity through eco-friendly methods of farming. The above case study demonstrated that vermicomposting is a viable option to increase the productivity and assists to improve environmental quality through absorbing organic wastes generated in farms and domestic front. Therefore, vermiculture enterprise serves as multipurpose criteria to sustainable rural development.

The above mentioned micro-enterprises are in close association with agriculture development either as an input or value addition to the products. Since these enterprises are based on locally available technology and resources, appropriate market linkage should be provided to facilitate rural entrepreneurs who are engaged in these activities. Therefore, agriculture and allied enterprises should go together to make difference in rural livelihood system.

## **Recommendations for Practitioners**

Micro-enterprises are informal, low costs, local business hubs for livelihood security of poor marginalized section of the society. The further promotion of these allied enterprises lies in the interest of decision makers and practitioners. Thus, following specific points to be taken care while formulating policies to promote micro-enterprises.

- Easy availability of rural finance for their effective operation and smooth running.
- Providing appropriate training to improve necessary skills in their chosen activity.
- Facilitating effective support system to overcome uncertain and unorganized marketing system for products.
- Policies should concentrate on effective pricing for goods and services generated by micro-enterprises.
- Necessary arrangements need to be created to provide sufficient revolving fund as project contribution to SHGs to overcome financial crisis.
- Adequate capacity building training programs need to be arranged to improve the skills of landless and women groups and to provide necessary information about new technologies, marketing avenues and techniques.

## Conclusion

It has been demonstrated from the above case studies that the relationship between agriculture, natural resources and micro-enterprises are interrelated. It is therefore, important to be able to understand exactly what is likely to occur in particular contexts. Given the increased witness on the role of micro-enterprise in promoting rural livelihoods and the associated increase in the proportion of household income derived from these activities, this merits some serious study; a need that has also been emphasized by researcher (Sreedevi, 2003; Dixit et al. 2005; Nagavallamma et al. 2004; Rangarao, 2009).

In this context, attention needs to be paid to the broader context in which changes are taking place. The economy is going through a transition in which agriculture and industry are changing rapidly in response to globalization, environmental limits, stresses and population pressure. A stronger push is also being experienced in many areas with land fragmentation, drought, groundwater scarcity and falling agricultural commodity prices. In view of this, it is very likely therefore that the increase in productivity and income from agriculture may not be sufficient to handle the situation. Therefore, probably the most important implication for policy is to recognize that agriculture and allied enterprises continue to provide a safeguard to rural livelihood system.

Agricultural allied enterprises should be viewed as an alternative to mainstream non-farm employment opportunities and although not the perfect way of providing employment to the poor in rain-fed farming. Therefore, there is an urgent need to understand how watershed development can become a part of efforts to support most diverse livelihood portfolios where a win-win situation can be created through

improving the resource base which creates a more conducive environment for undertaking micro-enterprise activities, leading to an overall increase in standard of living, employment, poverty reduction and building resilience of the community to cope with the impacts of drought.

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