

## DEVELOPMENT AND RURAL LIVELIHOODS

### 1.1 Economic Growth, Development and Livelihood Opportunity

Economic growth describes quantitative increase in the real output of an economy, conventionally measured by the increase in real product over time. The occurrence of economic growth is attributed traditionally to the accumulation of capital and productivity increase resulting from technological progress within the economy (Lucas, 1988). Economic development on the other hand results from sustained and concerted action towards improving living standards, including development of human capital and critical infrastructure, ensuring the long-term sustainability of growth. Economic development thus endeavours to enhance economic and social well-being among the people. Livelihood scoping is expanded by the emergence of multiple avenues for livelihoods among the people. People are also persuaded to adopt new livelihoods by institutional and structural change within the economy. Development therefore simultaneously harnesses the processes of economic expansion and adaptation, both being reflected in the choice of livelihoods made by people resident within an economic region.

#### 1.1.1 Development Theory & Models

Development can thus be conceived of as a multidimensional process involving major changes in social structures, popular attitudes and national institutions, as along with the acceleration of economic growth, the reduction of inequality and the eradication of poverty (Todaro & Smith, 2003). Post-World War II literature on economic development has been dominated sequentially by four major and sometimes competing strands of thought, namely

***PHASE A: The Stages of Growth Approach***

e.g. 'Stages of Growth' Model of Development (W.W. Rostow, 1960) and the Harrod-Domar Growth Model (Roy Harrod, 1939 and Evsey D. Domar, 1946)

***PHASE B: Theories and Patterns of Structural Transformation***

e.g. Two-Sector Surplus Labour Model (W. Arthur Lewis, 1954) and Empirical Analysis of the 'Pattern of Development' (Hollis B. Chenery & Moshe Syrquin, 1975)

***PHASE C: Global Interdependence Approach***

Neoclassical Dependence Model (e.g. Paul Baran, 1975; Theotonio Dos Santos, 1969) and the Dualistic Development Thesis (e.g. Hans W. Singer, 1970)

***PHASE D: Neoclassical Freemarket Models***

Public Choice and Market Friendly Approaches (e.g. Peter Bauer, 1984; I.M.D. Little, 1982; Deepak Lal, 1985)

The ideas associated with each of these are briefly outlined thus.

In the linear *stages of growth* models that became prominent between the 1950s and 1960s, development was considered synonymous with rapid aggregate economic growth, with faith therefore being laid on the '*trickle-down*' process. The *stages of growth* approach views the development process as the succession of stages of economic growth through which each developing country must pass, till it ultimately reaches the stage of "take-off into self-sustaining growth" that developed Western countries

have already passed into. To realise this growth stage, developing countries have to mobilise domestic savings and foreign capital in sufficient volumes that can be channeled into productive investment. Faith was thus reposed on the capital-theoretic Harrod-Domar economic mechanism by which more investment leads directly to enhanced economic growth without the occurrence of parallel changes in class structure that reinforce development, and with the removal of all institutional, structural, social, and ideological impediments to the development process (Alavi & Shanin, 1982). However, the mechanism of economic development embodied in the 'stages of growth' theory did not always work because of prevailing differences in structural, institutional and attitudinal conditions in developing countries compared to those prevalent in the developed West, and the lack of complementary attributes such as managerial competence, skilled personnel, and the ability to plan and administer a wide assortment of development projects, while regulating private and international investors (*ibid.*).

Thus from the 1970s, development economists began to focus alternatively on the theoretical modeling of the patterns of *structural change*, combining neoclassical pricing and resource allocation theory with appropriate statistical analysis while outlining the processes of structural change that developing countries have to undergo during their transition to sustained economic growth. The approach also traced out an identifiable process of growth, industrialisation and change to be replicated in all developing countries, without acknowledging that implicit differences in the pace and patterns of development can arise out of differences in country-size and in initial factor endowments, in public policy attitudes to foreign capital & technology, and the global economic environment (*ibid.*). Analysis of *structural change* in the Chenery & Syrquin and Lewis models that exemplify this approach focuses on the sequential process of structural transformation in less developed countries (LDCs) that allows industry to replace traditional agriculture as the engine of growth. However, the Chenery & Syrquin model differs from the Lewis model by showing that, in addition to capital accumulation, other interrelated changes also occur in a country during the transition from the traditional to the modern economic system. Nevertheless, by laying more emphasis on the patterns of change rather than on theory, the structural change approach can lead policy-makers to erroneous conclusions about causalities within economic development. Similarly, the redistributive aspects of growth are ignored (Todaro & Smith, *op. cit.*).

In contrast, the *international interdependence* approach that shaped during the 1970s is much more radical and political in orientation, stressing the need for major policy-initiatives to eradicate poverty, to extend diversified employment opportunity and to reduce income inequality. The interdependence approach also favours greater public ownership and control, along with expansion of primary trade between developing countries. Because of the lack of *trickle-down* incomes and growing presence of people living in absolute poverty in many developing countries, economic growth is no longer viewed as the sufficient condition for removing poverty. Hence, by questioning the very meaning of economic development, the interdependence approach adds other dimensions to development objectives, turning its emphasis away from industrial development towards rural development (Meier & Rauch, 2000). Underdevelopment is viewed from the perspective of unequal international and domestic power relations, where losses of self-reliance and economic freedom by the mass of people in developing countries have resulted from the emergence of a powerful elite class, from institutional and structural rigidities, and from the proliferation of dualistic society across the developing world. Very often, these have rested in turn on faulty advice provided by well-meaning but often uninformed "expert" advisers from the international assistance agencies and multinational donors (*ibid.*). However, while the *global interdependence* approach lucidly explains the causes for chronic persistence of poverty in developing countries, it offers little by way of prescriptions to initiate and sustain economic development in such countries.

Subsequently, through the 1980s and after, the Neoliberalist 'freemarket' counter-revolution emphasised the positive role of *markets* in an open economy, accompanying *liberalisation* of foreign trade for

export promotion and *privatisation* of inefficient public-sector producing units. This contemporary approach holds that development failures do not stem from economic exploitation by external and internal forces, but rise primarily because of excessive government intervention, regulatory control and because of the economic distortions induced by interventionist policy and the non-market failures associated with the implementation of public policy. The '*freemarket*' approach discards government economic intervention in any form as being distortionary and counterproductive, postulating therefore that the existence of efficient markets is sufficient to solve all economic problems. The importance of achieving efficiency in economic governance is nullified on the theoretical presumption that politicians, bureaucrats, citizens and the state act solely from self-interest and use the power and authority of the government for their own narrow ends. Hence, minimal government is the best form of government (Grindle & Thomas, 1991). However, governments do have a key role to play in facilitating the operation of markets through "non-selective" interventions to redress market imperfections, investment coordination failure and the adverse environmental outcomes, all resulting from missing and incomplete information, from externalities in skill creation and learning, and because of the production economies of scale. Because of differences in economic & political structures, institutions & organization, and ideologies & value-systems between developed and developing countries, the policy precepts & behavioural assumptions of traditional neoclassical theory are questionable and are often found incorrect in practice. Hence, each country's situation has to be assessed individually to identify the neoclassical concepts and models that best illustrate its development problems (*ibid.*)

The importance of agricultural diversification in development and livelihood opportunity can be viewed against this comparative context. Most LDCs are predominantly rural in character, with agriculture as their dominant economic sector. Hence, growth in non-agricultural rural employment has largely been driven by agriculture (Mellor, 1976). Since the agricultural sector has also shown considerable flexibility in the absorption of labour and the generation of economic growth, it can no longer be regarded as a sector that 'passively' supplies labour to urban-based industry (Bhaduri, 1992). Hence, recent thinking within the development literature has supported the classical thesis that the growth of non-agricultural sectors in developing economies cannot take place without the growth of agriculture (Timmer, 1988). Focus on the agricultural sector for employment generation is also necessitated by the high weight of the sector in total employment, and by its strong linkage to the other sectors of the economy (Lele & Mellor, 1990). Employment in agriculture and allied activities can thus be raised through agricultural diversification, which therefore is a critical component within the rural transformation of the LDCs through output growth, employment generation and sustainable use of natural resources.

### **1.1.2 Paradoxes of Development**

During the development process, the unfavourable outcomes that inevitably emerge and eventually retard the pace of economic development may be regarded as development paradoxes. The main development paradoxes visible through the world in recent times have been the coexistence of (a) stability with growth, (b) frictional unemployment with product-mix restructuring, (c) persistent unemployment with full-employment policies, (d) market imperfection with preference asymmetry, (e) free trade with protected markets (Panchamukhi, 2000), and (f) growth with sustainability. Each of these is separately discussed.

#### *1. Stability with Growth*

Along with increase in public productive investment towards building essential social overhead capital during the initial stages of state-led planning & development in emerging and advancing countries, the greater outlays made towards non-productive activities to meet augmented demand for general services like education and health lead to increases in cost, and thus tend to generate inflation (Baerwald, 1969). As development proceeds, it also becomes less cost-effective. The sharp rise in money outlay towards

accelerating its pace also results in inflation (*ibid.*). Recent literature on the growth and stability essentially raises three issues, namely that

- (a) Stability is a necessary, but not a sufficient condition for attaining high growth;
- (b) Stabilisation policies undertaken for achieving high growth can themselves result in the crisis of growth & stability; and
- (c) Whether low sustainable low growth accompanied by stability is better than unsustainably high growth with large instability.

Macroeconomic volatilities in monetary policy, fiscal policy, terms of trade & capital flows have adverse impacts on investment and per capita GDP that increase inequalities in the distribution of income and distort poverty alleviation processes within developing countries (Hausmann *et al.*, 1995). Hence, implicit trade-off between the choice of exchange rate regime, inflation reduction and stability of output becomes inevitable, since countries with a pegged exchange rate have experienced lower overall inflation with high variances in inflation duration and outputs, than countries with a typical floating exchange rate regime (Bleaney & Fielding, 1999).

### *2. Frictional Unemployment with a Restructured Product-mix*

The immiserisation effects from structural adjustment are related to the change-impacts of wage rate and technological progress on the patterns of comparative advantage in the trade baskets of the countries involved in international trade. The globalisation and liberalisation era advocates national & international adjustment processes for restructuring production and financial institutions within a free market environment to attain efficiency and higher growth. However, structural adjustment can itself leads to lower efficiency and growth in countries that do not effective safety nets, with facilities for redeployment of labour, and implementing other social security schemes during the transition period while shifting from one production regime to another.

### *3. Persistence of Unemployment with Full Employment Policy*

An important aspect in poverty alleviation in developing countries is the creation of additional job opportunities for unemployed labour. However, the paradox of growing unemployment while full-employment development models are being pursued in both developed and developing countries is a common phenomenon. The process of structural adjustment and industrial relocation because of globalisation strategies which lay substantial emphasis on free market forces, results in conflict between full employment objectives and the actual spectre of growing unemployment. In developing countries with a large population size, such as those in South Asia, policy-makers therefore have to be careful to adopt appropriate development strategies calibrated to existing unemployment, and poverty situations.

### *4. Market Imperfections with Preference Asymmetry*

The common contention advanced by the neoclassical counterrevolution is that competitive free-markets and less governance provide the basic gradients for development. Indeed, most economic models and development policy prescriptions, are based on the presumption of perfectly competitive markets. Thus multinational organisations, *e.g.* the erstwhile General Agreement on Trade & Tariffs [GATT] and the present World Trade Organisation [WTO], both evolved in order to create and regulate a free and competitive world trading order. Consequently, all WTO agreements and policies were adopted as part of the reform process in order to introduce a perfectly competitive global market. The Policy makers have to be careful to adopt appropriate development strategies. However, competitive markets generally do not persist, nor, given the institution, cultural, and historical contexts of many less developed countries, are they necessarily even desirable from a long-term economic and social perspective. Indeed, consumers are rarely sovereign in their selection of commodities, and in the quantities and purpose of their production. Private or public producers, on the other hand, have significant power in determining market prices and the quantities sold. Information is moreover limited,

markets are fragmented, and much of the economy is still nonmonetised. In the presence of widespread production & consumption externalities, and discontinuities & indivisibility in production, market failure is a common occurrence in these economies. Market imperfections have risen recently, mainly because of (a) the intensification of non-tariff measures of trade regulation, (b) growing transnationalisation of production, with parallel adoption of non-competitive policies and increasing incidences of mergers & acquisitions, and (c) the increasing asymmetry of information.

#### *5. Free Trade with Protected Markets*

The establishment of WTO in 1995 followed a long period of global trade negotiations, culminating from the Uruguay round of discussions. The distinctive feature of this round of trade negotiations was its expansion of the arena for trade liberalisation into many more spheres, including agriculture, textiles, trade-related intellectual property rights [TRIPS], and services. The negotiations also focused on gradual elimination of tariff & non-tariff barriers, to liberalise market access and expand the volume of world trade. Actual worldwide experiences of implementing various WTO agreements with a commitment to expanded market access has brought out disturbing divergence between expectations and ground realities, revealed in the occurrence of (a) gaps between the expected and actual growth of world trade, (b) asymmetry between developing and developed nations in the implementation of WTO commitments, (c) persistence of high peak tariffs in the developed countries, and (d) failure of trade to perform as an engine of growth.

#### *6. Growth with Sustainability*

In a situation of resource constraints and pressing development needs, any change resulting from innovation is not costless. Inevitably, trade-offs between environment, social, cultural and economic costs have to be made, relative to expected gains (Simon, 2001). In an era where modernisation is being viewed as being synonymous with development, increased rates of natural resource extraction (especially non-renewable resources), and the launch of capital-intensive large scale development projects without due evaluation of costs & benefits and stakeholder-inclusion from among the poorer sections who depend solely on local resources, can result in higher short-term economic growth, but higher long-term unsustainability, through additional factors like environmental degradation, human displacement and social alienation (Cernea, 1997, 2001; Parasuraman, 1999). Hence, in fragile and topographically constrained regions such as mountain locations, where production activities are mainly based on natural resources, many development initiatives lead ultimately to unsustainability.

#### **1.1.3 Rural Development Experience**

Development theory and practice have traditionally evolved after Western models, with undue emphasis being placed on an urban industrialisation strategy centered upon mobilising savings into potential investments to accelerate economic growth. Essentially, this strategy neglects the rural areas where most of the world's people still reside. The importance of the agricultural sector within such strategy has often been viewed only as the source of necessary resources which support the 'more important' urban sector - rural capital formation is to be siphoned off through high agricultural taxes, food production is to be devalued through artificially low agricultural prices, and rural labour is to be expropriated through offers of industrial wages marginally above subsistence. Nevertheless, if development is conceived in terms of access to resources, the rural areas of the world lose out in terms of access to income as well as access to basic social services including clean drinking water, decent education, public healthcare and a healthy environment. Consequently, urban settlements are placed in a better position than rural settlements with regard to basic infrastructure, income opportunities, life expectancy & mortality standards. Fortunately, development economists have now begun to realise the flaws of this strategy, especially of the way it fails to meet in addressing the long-term needs of the mass of people, living primarily in rural areas (Todaro, 2006; World Bank, 2001; Lipton & Longhurst, 1991).

Before any meaningful discussion of rural development practice can take place, rural development must be understood as a concept. As a comprehensive and multidimensional concept, rural development encompasses the coordinated development of agriculture & allied activities, rural industries & crafts, socioeconomic infrastructure, community services & opportunities, and, the quality of human resources in rural areas. Rural development thus connotes overall development of rural areas with the ultimate aim of improving the quality of life of rural people. As a *phenomenon*, rural development is the end-result of interactions between various physical, technological, economic, socio-cultural, and institutional factors. As a *strategy*, it is designed for improving the socioeconomic wellbeing of a specific group of people, the rural poor. As a *discipline*, rural development is multi-disciplinary in nature as it represents the interaction of agriculture with the social & behavioural sciences, and the engineering & management sciences (Singh, 1986). Todaro defines three conditions for development in rural areas, namely (a) the implementation of land reforms, (b) the provision of incentives, especially to small farmers, to increase agricultural production & productivity, and (c) the formulation of an integrated program of development (Todaro, *op. cit.*). Rural development collectively encompasses

- (i) efforts that raise real farm & non-farm incomes through job creation, rural industrialisation, and through increased provision of education, healthcare & nutrition, rural housing and a variety of other related social welfare services;
- (ii) efforts that reduce inequalities in rural income distribution, and inequality between rural & urban incomes and economic opportunities; and
- (iii) efforts that increase the ability of the rural sector to sustain and accelerate the pace of such efforts over time (Singh & Singh, 1985).

Activation of the passive social and economic structure in its entirety is thus an essential prerequisite for rural development so that the rural people themselves participate in the task of changing their lot (*ibid.*).

Rural development is also alternatively defined as a strategy to improve the collective economic and social life of specific groups, particularly the rural poor (World Bank, 1975). This involves development outreach to the poorest sections who depend on rural livelihood, including small & marginal farmers, agricultural tenants, as well as the landless (*ibid.*). A UN-Asian Development Institute initiative that sets apart the technoeconomic issues in development, redefines rural development in fundamental humanistic terms as the delineation of man *vis-à-vis* the material forces of production & society, and purposeful growth of the human personality (Haque *et al.*, 1975). However, generation of full employment through scientific resource management and provision of adequate work opportunities are both necessary for meeting basic rural needs. Proper regional planning ensuring forward and backward linkages between the regional agriculture and the nonagricultural sector is also necessary in order to ensure uniformly high regional growth rates. Hence, rural development strategy must have an integrated nature (Brahme *et al.*, 1975).

Of the multiple objectives of rural development, the most important are those that seek to improve the standards of living and well-being of the people. A World Bank publication accordingly defines rural development as the self-sustaining improvement of general living standards among low income groups in rural areas (Lele, 1975). While rural productivity has to be raised in order to realise this objective, rural areas also have to be made less vulnerable to natural hazards, exploitation and poverty, by bringing them into mutually beneficial relationships with the regional, national and international economy. The process of development must encourage participation by the people, with minimal disruption of traditional customs and practices. To achieve these development goals simultaneously, the administration of development has to be decentralised.

Several government schemes and programmes have been instituted in India that aim at the fulfilment of rural development objectives through the creation of new opportunities for rural employment through wage-employment and self-employment, along with complementary redistributive welfare programmes. In broad categories, these include

- (i) *rural employment schemes, e.g.* Integrated Rural Development Program [IRDP, instituted 1980], Training of Rural Youth for Self-Employment [TRYSEM, 1979], and Development of Women and Children in Rural Areas scheme [DWCRA, 1982], all aimed at expanding opportunities for self-employment through financial support for acquisition of productive assets. Another set of welfare schemes that provide guaranteed work to rural wage-seekers include National Rural Employment Program [NREP, 1980], Rural Landless Employment Guarantee Program [RLEGP, 1983] and Jawahar Rozgar Yojana [JRY, 1989]. These aim at the creation of more wage-employment opportunities through initiation of rural development projects with high labour absorption rates which are also appropriate to the skill-endowments of the rural poor, and at creating new productive assets in the form of rural infrastructure, social forests, etc.
- (ii) *area development programmes, such as* Drought-Prone Area Program [DPAP, 1973], Desert Development Program [DDP, 1977-78], Hill Area Development Program [HADP, 1974-75] and Integrated Tribal Development Program [ITDP, 1974-75], which aim at reducing and eliminating the rural poverty attributable to agroclimatic conditions and unfavourable geographical situations.
- (iii) *'minimum needs' schemes, such as* Minimum Needs Program [MNP, 1974], comprising remedial measures aimed at improvement of rural healthcare and rural amenities like housing, water supply and sanitation, as well as enhancement of rural nutritional standards and restitution of the rural environment. Programmes have also been instituted to expand rural opportunities for elementary and non-formal education, with the ultimate aim of raising the skill-endowments and productivity among the rural poor.
- (iv) *land reforms programmes, including the implementation of* land ceilings and tenancy reforms, aimed at the overall transformation of agrarian relations between agricultural land and its tillers, as well as between the tillers and owners of agricultural land.

Particularly since the passing of the 73<sup>rd</sup> and 74<sup>th</sup> Amendments to the Indian Constitution, which seek to empower local bodies for self-governance, special efforts have also been made to secure active people's participation in rural development administration. Panchayati Raj institutions [PRIs] and other civil-society institutions including non-governmental organisations [NGOs] have been important agencies for empowering and ensuring effective people's participation in rural development decisions.

Although the achievements of these rural development initiatives have been quite significant, they have fallen short of resolving the many problems still faced by the rural population. More than a fifth of the rural population in the country living below the poverty line [BPL], eradication of rural poverty in India is still a far cry. The incidence of poverty may be even higher in the poorest states. The working of rural welfare schemes has also been deficient, with the successes achieved being far short of targets even for MNP programmes. Since huge fund-leakages continue to occur during the implementation of schemes, the rural poor have been deprived of due benefits which ought to have accrued to them. Both because of faulty design and poor scheme implementation, the progress of rural development in India so far has been far from satisfactory. This situation has been aggravated by recent policy shifts. Persisting rural problems associated with planning inadequacy, economic backwardness, and unemployment & mass poverty have been compounded by the bias towards urban-oriented growth created by the New Economic Policy [NEP] since 1991. This has consequently led to progressive neglect of rural labour, bringing tiny village producers into direct and hopeless confrontation with the growing forces of global marketisation that are currently sweeping through the Indian economy (Agarwal, 1996).

#### 1.1.4 Role of Agriculture in Rural Development

The fact that over two-thirds of the world's poor are engaged primarily in subsistence agriculture in rural areas has severe future implications. The basic problems of widespread poverty, rising regional & rural-urban inequalities in wealth and income distribution, and growing labour unemployment in developing countries are also manifested within rural stagnation. To correct such aberrations, a process of self-reinforcing development must be introduced that fully integrates agriculture and rural regions with the rest of the economy. Traditionally, the contribution of agriculture to economic development has been viewed as passive and supportive. In the traditional development approach, the primary role of agriculture was confined to supplying low-priced wage-goods and food in adequate amounts, while releasing surplus labour to meet the employment needs of an expanding industrial sector. The industrial sector was thus viewed as the dynamic or 'leading sector' of the economy. Hence significant emphasis was placed on it within any overall strategy for economic development. In reality though, agriculture and the rural economy play a far-reaching economic role which makes their development indispensable within overall development strategy. Since the agricultural sector has shown considerable flexibility in its absorption of labour and generation of economic growth, it is no longer regarded as a sector that 'passively' supplies labour to urban-based industry (Bhaduri, *op. cit.*). Rapid population growth in developing countries and the lack of equivalent employment opportunities in other economic sectors have made their rural and agricultural dependence more acute. Consequently, the expansion of rural employment opportunities in these countries largely depends on the growth of agriculture, and results in increased absorption of the rural workforce into farm activity.

In multiple ways, agricultural growth has a downward link to the development of rural industries. The interlinkage hypothesis states that agricultural growth and increased farm-incomes lead to increased demand for non-conventional farm inputs and manufactured consumption goods. With the rural areas in developing countries being agriculture-dominated, agricultural growth plays a significant role both in rural development and in overall economic development by sustaining regional diversification and growth (Afifudin, 1974) and also by creating greater intersectoral growth linkages between farming and non-farming activities (Mellor, 1976; Hazell & Roell, 1983). Thus, the growth of farming itself is a stimulant for the emergence of more diverse economic opportunities in the rural areas (Hazell & Haggblade, 1993), and the linkages between farm and non-farm sectors are critical for rural development. With provision of agricultural inputs many allied activities and agro-based industries can be set up in rural areas. A major share of the rural population in developing countries has to depend on farming for sustenance. Moreover, growth in non-agricultural rural employment has been largely driven by agriculture (Mellor, 1996). The main contributions made by farm activities to rural development are

- a) provision of food to the rural farm-family,
- b) provision of food and wage-goods to society at large,
- c) supply of raw materials for the development of agro-based industries, termed the 'product contribution' of agriculture (Kuznets, 1964),
- d) creation of markets for industrial products through increased purchasing power, termed the 'market contribution' of agriculture (*ibid.*), and consequent expansion of the secondary and tertiary sectors,
- e) increased capital formation and transfer of surplus labour for future industrial development, termed the 'factor contribution' of agriculture (*ibid.*),
- f) expansion of diversified, non-agricultural, labor-intensive rural development activities that directly and indirectly support the farming community and are supported by it,
- g) provision of employment and livelihoods to a major portion of rural population, particularly the rural poor in developing countries, and

- h) improvement of overseas payments either through increased agricultural commodity exports and resultant increase in foreign exchange earnings or through expanded production of agricultural import substitutes, termed the 'foreign exchange contribution' of agriculture.

Anticipating these contributions, the Lewis model emphasised development through structural change and focused on the identification of mechanisms by which LDCs could transform their domestic economic structure from the traditional subsistence agricultural economy to a more modern, urbanised and industrially-diverse manufacturing and service economy. The Lewis model thus postulated that overall economic development would be made possible by the transfer of surplus labour from the rural subsistence sector to highly-productive urban industrial activity, without causing any loss of output in the former.

It is now generally recognised that increased labour absorption in agriculture and allied activities in their present technological form cannot contribute significantly to increasing livelihood opportunities for the rapidly growing rural labourforce. It is also impossible to bring about the structural transformations that precipitate economic development through the mass relocation of surplus rural populations to the cities. While the urbanisation of selected rural areas is eventually inevitable, this is likely to be accompanied by substantial absorption of local labour within such urban settlements and the rural non-farm sector. In India, the rural non-farm sector performs an increasingly significant role in augmenting rural incomes, since non-farm activities attract both casual or marginal workers, as well as agricultural workers with an inadequate land-base who resort to such livelihoods during the agricultural off-season in order to supplement household incomes. The contribution of non-farm activity to rural livelihood diversification is also immense. The rural farm and non-farm sub-sectors have to play complementary roles in a successful rural development programme.

Three types of hypotheses are generally advanced regarding the growth of non-agricultural activity in rural areas, which also have bearing upon the regional variations in such activities. The first of these, namely the *inferior-goods hypothesis* (Hymer & Resnick, 1969) visualises shrinkage of the rural non-farm sector as the economy grows, because it produces inferior goods and services whose demand is likely to fall with rising rural income. The second, namely the *demand-and-supply interlinkage hypothesis* (Unni, 1991) visualises continuous expansion of the non-farm sector as agriculture prospers, because of the interlinkage between the rural farm and non-farm sectors. The third which is also known as the *residual sector hypothesis* (Vaidyanathan, 1986), treats non-farm activities as residual activities which act like a sink and absorb that part of the rural labourforce that has failed to find employment in agriculture.

A farm and employment-based strategy of economic development, therefore, must contain minimum three basic complementary components: (a) acceleration of farm output growth through proper technological and institutional measures, management of farm resources, and appropriate price incentives to augment the productivity of the farmers, especially small farmers; (b) augmentation of domestic demand for farm output resulted from employment centric urban development strategy; and (c) initiation of diversified labour-embodied, non-farm rural development activities, while maintaining complementarities with farm activities and the surrounding environment. The main goals for agriculture-led rural development that contribute to overall economic development are

- a) substantial augmentation of farm outputs and yields to directly benefit small farmers while providing adequate food surplus and wage goods for supporting the growing urban industrial sector,
- b) conversion of low-yielding subsistence peasant farms in developing countries into high-yielding, commercialised enterprises,
- c) understanding the resistance to change offered by traditional farm-families and peasant cultivators in the contexts created by the local economic environment,

- d) rationalisation of institutional and structural reforms in the face of economic and price incentives to farmers to raise farm outputs and yields, and understanding of the incentives provided by diversified, labour-intensive non-farm activity, human resource development, and provision of various social services to rural areas to secure increased farm outputs and farm productivity, and improved rural standards of living (*ibid.*).

## **1.2 Rural Livelihoods**

Rural livelihoods are mainly drawn from agricultural activity. Farmers initiate agricultural activity by deciding what to cultivate and how and when to cultivate it. They also generate livelihoods for farm labour, and through the incomes which originate from agriculture, for non-farm labour. Rural livelihoods that are dependent on transportation and trading activities are also based upon the foundation of agriculture. The demand for the products of rural artisanship and the demand for services in rural areas are in turn generated by the incomes accruing to those who originally draw their livelihood from agriculture. Therefore in most rural areas, except for those located in coastal areas or in places where agriculture has been replaced as a prime livelihood activity by an alternative form of land-based activity such as plantations or mining, agriculture forms the mainstay for rural livelihoods. Rural livelihoods are thus much more centred around a single principal economic activity than urban livelihoods.

### **1.2.1 General Livelihood Concepts**

In its simplest sense, 'livelihood' connotes the means of gaining a living. A livelihood system encompasses the livelihood capabilities, tangible assets such as stores and resources, intangible assets such as claims and access, and social institutions and organisations as well as activities and opportunities needed as a means for securing a living (Ellis, 1998). Livelihoods constitute more than just income, since while including incomes in both cash and kind, they are determined by the social institutions of family, kin and village, as well as by gender relations and property rights (*ibid.*). Income is nevertheless defined as labour or property-based earning, and refers to cash-earnings and cash-transfers received by households as well as to payments received-in-kind that can be valued at market prices. Among these, cash earnings include salary, business and trading profits, sales of farm-produce including crops and livestock, as well as rents, interest earnings, and cash-transfers such as remittances, unemployment benefits, etc.. Incomes-in-kind refer to consumption by households of their own farm produce as well as to payments they receive in kind, such as food, commodity transfers, and routine exchanges of consumption items that occur between households in rural communities. *Access* to resources is critical to the livelihood strategy of households (Bebbington, 1999). The viability of rural livelihoods depends upon household access to economic options and opportunities, and is enhanced through networks that assist rural households in accessing, protecting and expanding such opportunities (*ibid.*). Defined through the process by which endowments and entitlements are shaped, access depends on existing social interrelations. A form of livelihood is sustainable if it enables the community to cope with and rescue itself from stresses and without comprising its future viability.

Social networks play a crucial role in diversifying household access to opportunities. Rural livelihoods are organised around competing or complementary spheres of activities, wherein different groups of households compete or cooperate in accordance with their social and physical attributes (Ellis, 1998, *op. cit.*). Social institutions determine the distinct livelihood strategies pursued by individuals and households. Access to livelihoods is shaped by accepted institutions like formal conventions and informal codes of behaviour, which in turn are reshaped by livelihoods (Ellis, 1998, *op. cit.*). Livelihood choices are also influenced by access and benefits from social overhead capital, social infrastructure and public services. Livelihood concepts also enter the non-material aspects of well-being, such as the choice made by communities for different value positions (Long, 1997; Appendini, 2001). In this holistic sense, the assets held by households determine their well-being and capability, also giving them the power to challenge and remake the rules governing the control, use and transformation of resources

(*ibid.*). Besides reinforcing efficiency, the possession of human capital also enhances the capability of communities to engage with and transform the world critically (Sen, 1997). Thus, in the holistic sense, livelihood is a dynamic concept.

The access to assets through access to favourable opportunities and other accesses shapes livelihood in terms of different activities and thereby distinct income sources for making a living, *inter alia*. The critical features of the livelihood of the people of the low-income developing countries, particularly the rural people, are that livelihood is survival oriented and hazard-prone, and so includes many activities instead of one or few activities with a view to survive and improve the standard of living under crises. Hence, livelihood and diversification co-exist in rural areas. The rural livelihood is primarily agriculture or farm dominated, *albeit* it is not equal to agricultural livelihood since in addition to agricultural activities rural people may undertake off-farm and non-farm activities as livelihood for survive depending upon their asset endowment and access (Ellis, 2000a). Thus, the activities covered by rural livelihood may be of farm, off-farm as well as non-farm nature. Furthermore, while facing crisis of agricultural livelihood, there remain other livelihood options for the rural households to stay in rural residence by designing a less precarious livelihood strategy combining farm and non-farm activities without leaving the land. This bears more significance to indigenous groups for whom rural residence and relationship to their land asset comprise critical dimensions of their ethnic identity. Moreover, this crisis may open other options by re-organising agricultural livelihood through re-allocation of land within agriculture to gain a niche of higher value products (*ibid.*). Hence, the emergence of non-viable agricultural units not necessarily led to the end of rural livelihoods.

By definition, agriculture broadly includes all land-based production activities such as the cultivation of seasonal and perennial agricultural crops, horticulture and floriculture, as well as livestock husbandry and dairying, forestry and fisheries, sericulture, whereas the off-farm activities are also land-based activities where the labourer works on the land of other ownership either to earn wage income or exchange labour or share-cropping. However, non-farm activities are originated outside land. In case the rural livelihood is composed of farm and off-farm activities, it exploits natural resource-base that may be degraded because of over utilisation without appropriate measures of re-generation and maintenance its existing quality, and thereby, environmental sustainability is a critical concern for sustainable rural livelihood. Existing rural social institutions and relations play a significant role in determining the access to land assets, the patterns of land-ownership, resource utilisation and management within agriculture, and over all shaping the livelihood of the rural farm households. Moreover, while access to resources for the affluent rural farm households having large land holding have been mainly through the market, state, and kinship networks, but for the poor rural households having small land-size, more formal and relatively strong forms of organisations such as intermediary organisations of state, market, and civil society along with external support that are necessary for opening access to knowledge, credit, irrigation, technical assistance, and new markets (*ibid.*). Hence, in the face of poor asset-base and absence or minor presence of institutional supports, rural households of developing countries construct diversified livelihood to survive, and *inter alia*, the main reason of this is that diversity enhances resilience of hazard-prone livelihoods by spreading risk and extending the options of substitution among diversified livelihood components (*ibid.*).

### **1.2.2 Livelihood Diversification**

The livelihoods of rural households comprise activities of multiple natures. Rural livelihoods require such diversity in order that rural families survive in adverse circumstances and improve their living standards. Livelihood diversification is specific to contexts, situations and nuances, and changes meaning with reference to changing contexts, situations and senses. The process of diversification may thus be viewed as one of continuous adjustment to changing circumstances. Diversification becomes an enabling means for economic growth when new opportunities for growth, *e.g.* through the induction of new production technology or market expansion overcoming demand constraints, have appeared as the

initial impetuses inducing diversification (Ellis, 1998, *op. cit.*). At macro level, diversification means the process of structural change through which the economic activity shifts its emphasis from the primary to secondary and to tertiary economic sectors (*ibid.*). In corporate literature, diversification is the process by which a modern corporate unit enlarges its operations beyond existing products and markets (Eatwell *et al.*, 1987). In the context of a single firm, diversification is the means by which demand constraints are overcome (Marris, 1964). Thus, diversification is either a response to specific opportunities, threats or challenges, or a general strategy for growth (Penrose, 1959), or otherwise a response to the trade-off between risk and economies of scale (Pope & Perscott, 1980). In the context of rural households, livelihood diversification is defined as the construction of a portfolio of activities and social support capabilities by rural families in their struggle for survival and for improvement of their standards of living (Ellis, 1998, *op. cit.*).

The parallel processes of income diversification and agricultural diversification are closely related to livelihood diversification. Livelihood diversification is not synonymous with income diversification, although many studies on diversification (Reardon *et al.*, 1992; Adams & He, 1995; Perz, 2005) also focus on household portfolios of income-sources and their relation to aggregate income, income distribution, asset-bases, farm outputs and other related variables. The concept of livelihood diversification in relation to household income-sources takes into its purview social and kinship networks, gender relations, property and access rights, income, wealth, and asset holdings that are important in building and sustaining diverse income portfolios (Hart, 1995; Bryceson, 1996). These enabling factors are also critical in determining the options and constraints of households and individuals to pursue distinctive livelihood strategies. The diversity of household income-sources statically defines the composition of household income at a point of time, the phenomenon of diversification is interpreted as an active social process whereby households engage in increasingly intricate and dynamic portfolios of activities over a period of time (*ibid.*). Livelihood diversification of rural farm households encompasses the household diversification into both non-farm as well as on-farm (*i.e.* agricultural) activities. The emphasis of the latter is on raising farm productivity, creating an environment conducive to the diversification of income opportunities.

Agricultural diversification implies the process of latent change within agricultural production scenarios and includes expansion into allied production activities, thus connoting change in the cropping-mix, nature of enterprise and portfolio of activities of agricultural households. However the definition and meaning of agricultural diversification is not unique, but context-specific. In the context of food and nutritional security, agricultural diversification incorporates the changes that affect supply of food and nutrition over time, whereas in the context of agricultural growth and development, diversification reveals the changes in agricultural production scenarios over time that are required to attain a specific goal (Chand & Chauhan, 2002). Whether the relation between livelihood diversification and agricultural diversification is complementary or competitive would depend on how agricultural growth is affected by the withdrawal of productive resources. Thus while some studies suggest that livelihood diversification benefits farm investment and productivity (Carter, 1997), others indicate that livelihood diversification impoverishes agriculture because of the withdrawal of resources from farming activity (Low, 1986). In contrast, *rural diversification* is defined as a process that broadens and strengthens the income sources of rural households. Thus livelihood diversification becomes an even broader concept than rural diversification, since it denotes a social survival strategy aimed at improving the standards of living of rural households. In the Indian literature, the term *occupational diversification* is often used to describe income diversification. Diversification also implies a shift from farm to non-farm activities or a shift from low-profitability cropping enterprise to more profitable cropping enterprise, or the deployment of household resources in diverse but complementary activities. In fact, diversification from farm to non-farm activities is essentially the diversification of rural economic activities, rather than agricultural diversification *per se*.

However, the pursuit of adding additional activities or enterprises to those that already exist within the livelihood portfolio always imposes a burden on the household. Such additions bear fruit when they enable the household to fulfil a desired goal. The livelihood diversity of households depends on their capability to undertake new activities in the face of the constraints on their livelihood decisions. Household goals vary depending upon household asset-bases and access to resources. The direct goals of livelihood diversification may be to raise income and wealth, minimize risks, and stabilise household income. The four variants of livelihood strategy commonly seen within rural livelihood decisions, comprise decisions pertaining to accumulation, consolidation, compensatory, and security (Zoomers, 1999). Each strategy is in fact associated with a specific livelihood motive or goal. Wealthy and affluent households having a sound asset-base and capable social support diversify mainly with the targets of accumulation, establishment of a minimum resource-base that enables future expansions of income and wealth, and consolidates their well-being through future investment. On the other hand, poor households with poor asset-bases and limited social support, who can be severely hurt by unforeseen livelihood shocks or, diversify livelihoods primarily in order to secure and compensate themselves against future risks. Thus their prime reason for livelihood diversification is that this enhances the resilience of their hazard-prone livelihoods by spreading out risks and extending the possibilities of substitution between diversified livelihood components (Ellis, 2000a, *op. cit.*).

In economic environments, new opportunities can be emerged in multiple forms, such as technological breakthroughs in production, changes in demand patterns and government policy, development of new trade channels, and improvements in social infrastructure. The enlarged spectrum of economic opportunities increases household access to opportunities and the latitudes of choice of the wealthy households for diversifying their livelihood (*ibid.*). Expanded needs, choices, initiatives and pressures all provide basic stimuli for livelihood diversification. Households may seek to diversify livelihoods at their own initiative by adding additional activities to existing livelihoods. However, poor households may be compelled to diversify out of necessity because of unforeseen events such as loss of land tenure, natural calamities and environmental degradation, market-induced product risks and socioeconomic pressures (*ibid.*). The combination of choice with necessitating factors creates further incentives for livelihood diversification.

Diversification has been traditionally discussed in the literature in several heterogeneous forms, with crop diversification, agricultural diversification, non-farm diversification, income diversification, occupational diversification, income diversification, rural diversification and livelihood diversification as its alternative examples. Theoretical literature dealing with *strategic* versus *adaptive* diversification emphasises the importance of studying diversification in location-specific contexts. The determinants of diversification and the individual factors that contribute to it have also been focused upon in the literature, although much of this discussion is in a macroeconomic context. A wide range of motives, goals and pressures under which diversification is seen to occur is also defined in the literature. A debate exists in the literature regarding the impact of diversification in alleviating rural poverty, in raising farm productivity, and regarding the determinants of diversification at micro level.

The seasonality of agricultural work, labour-market fragmentation, credit market imperfections, risk-strategies and coping behaviour as well as intertemporal savings and investment behaviour are primarily viewed as the determinants of diversification in the literature. Work-seasonality continuously mismatches household consumption needs with uneven income flows, and thus explains many of the subsequent patterns at rural income diversification, particularly those that involve on-farm diversification of activity and off-farm wage earnings. Combined with work-seasonality, the risk and market imperfections that abound in the rural economy accentuate income instability among rural households (Alderman & Paxson, 1992). Hence, diversification as a risk management strategy emerges and often involves diversification into complementary crops with different soil requirements or markets or into non-farm activities to ensure the spreading of cultivation risks with little loss in total income and

marketing risk of agricultural price swing (*op. cit.*). Moreover, as a risk-minimising strategy, income diversification usually implies the tradeoff between higher total incomes that involve greater probability of income-failure and lower total incomes that involve smaller probability of income-failure (Roumasset *et al.*, 1979). The presence of imperfect and incomplete labour *market* in rural economy also creates an opportunity for diversification out of agriculture into non-farm wage earning, sometimes for remittances. Similarly, coping behaviour is the involuntary response of rural households to disasters or to unanticipated failures in their major sources of survival and can as such be regarded as the ex-post management of household consumption through adaptation in the wake of a livelihood crisis or collapse in search for new livelihood sources. Nevertheless, income diversification has also resulted from failures of rural credit markets in developing countries and thereby these are illustrative of diversification within crisis-situations. The access to opportunities depends upon the asset endowment of the individual households, social infrastructure, and the access to social capital, and thereby, household's access to assets is an important motive for diversification. In fact, asset diversity is crucial for livelihood diversity of the households and their welfare. An asset-poor household may be forcefully more diversified than that of an asset-affluent household, but the nature of activities and their respective returns of the former are inferior to that of the latter. Thus, the quality of the activities involved in the livelihood depends on the quality of the assets of the households.

### **1.2.3 Livelihood Complementarities**

In many rural contexts, a complementary relationship between crop agriculture and livestock farming has to be maintained. Shorter cropping-cycles and agricultural seasonality encourage rural families to combine these two activities in order to sustain their livelihoods during the periods when agricultural activity is minimal. The scope for maintaining livestock is determined by the access to supply of fodder. While during summer, livestock is sustained by green fodder, combining grass and leaves, available in the village neighbourhood, fodder supply during winter is mainly sourced from stored fodder-stocks such as straw and other crop residues. Agricultural intensification thus reduces green fodder because of alternative use of fallows, but under traditional cropping, increases the supply of dry fodder because of increased cropping. However, with the introduction of modern HYV-based crops with lower straw-yields, the scope for sustaining livestock operations along with crop agriculture has declined. Extended cultivation of field crops also limits the scope for tree crops including horticulture. Tree crops produce extended shadows, while field crops need longer hours of sunshine for maintaining productivity, although certain leafy vegetables that require less sunshine can be cultivated with tree crops through intercropping.

Shifts in livelihood occur when existing rural activities begin to face criticality. Such situations can occur when the carrying-capacity of the traditional rural livelihood system is exceeded. Thus when cropland extends into permanent fallows, or when settlement extends into forested lands, or when livestock populations exceed the capacity of existing pasture land, changes in livelihood are forced. Similarly, relative scarcities of labour and other factors of production alter the structure of wages, rents, etc., thus changing the competitiveness of different rural livelihood activities. Therefore, cultivation may shift from field-crops to tree-crops in order to lessen the usage of scarce labour, thereby also reducing cultivation costs as well as the scope for rural livelihoods based purely on wage-labour. The rural labour classes may in turn be displaced into other forms of livelihood activity, including migrant-work.

### **1.2.4 Rural Livelihoods in Mountain Contexts**

Agriculture is a dominant sector of economic activity in most mountainous countries and provides livelihoods to the bulk of the mountain people. But because of economic and physical constraints, mountain agriculture suffers from serious stagnation and is affected adversely by biophysical and socioeconomic limitations. Consequently, mountain agriculture has gradually becoming unsustainable (Jodha, 1991). Negative indicators of its unsustainability are revealed by increasing incidence of

landslides, soil erosion, gully formation, and declining crop-yields and livestock productivity, an increase in hunger, and outmigration of the labourforce (Shrestha, 1992). Mountain communities face (a) a reduction in quality and range of livelihood options, (b) increased shortage of resources at farm and community level, and (c) decline in flexibility of rural economic activities (Jodha, 1991; Shrestha, 1992). The sustainability of mountain agriculture has derived from diversities in (a) agricultural crops, (b) cropping systems, (c) horticultural crops, (d) complementary livestock and agroforestry activities, and (f) fuller utilisation of local resources and local traditional knowledge (Tollervy & Pelinck, 1994). Mountain areas are also characterised by inherent crop diversity and their variety of production niches. Agricultural flexibilities, diversification, and interlinkage with other co-production activities are thus used to add resilience to traditional farming in mountain locations (Jodha, 1992). Mountain farming systems have three main integrated components, namely staple foodcrops, horticultural cashcrops, and livestock operations (Tulachan, 2001). Mountain farming systems are possibly more fragile and sensitive than farming systems seen elsewhere, and therefore need more closer investigation. Mountain agriculture is shaped by (a) biophysical features and attributes of mountain that orient resource-use in particular directions, and (b) indigenous resource management and utilisation that has evolved out of prolonged adaptive practices (Sharma & Jodha, 1992).

As a consequence of the lack of suitable opportunities for non-farm work in mountain areas, owing to the lack of local industry, and the inaccessibility and ecologically-fragile character of cultivated land, marketable surpluses generated by mountain agriculture are low. This has resulted in the evolution of low-productivity, subsistence-type agricultural activity. Although the levels of urbanisation in most mountain regions are low, the existing urban centres usually offer the only avenues for non-farm employment, leading to relatively high rates of rural-urban migration. A large proportion of the rural population remains dependent on agriculture as a source for its livelihoods, under conditions of abject poverty, because of low agricultural productivity and low incomes. Demographic growth in mountain regions, coupled with fast growth in their labourforce owing to the higher work-participation rates of mountain women, creates tremendous economic pressure on the agricultural sector. Because of high levels of poverty in the rural sector, it also limits domestic saving to low levels as food demands rise considerably. Meanwhile, non-food demands in the rural sector increase only marginally, further limiting the scope for development of non-farm activity (Sharma & Banskota, 1992).

Forced absorption of the increasing labourforce within the agricultural sector in mountain areas in the face of demographic growth results further marginalisation, and also in the expansion of agriculture into more inaccessible and less fertile sloping lands. As a consequence of the latter, agricultural productivity declines further and is accompanied by environmental degradation. A critical state is reached when the carrying-capacity of the mountain agricultural system is exceeded despite the existing variety of agricultural practices and patterns in various micro-climatic regions. Many rural residents in mountain areas have to take recourse to seasonal migration in order to provide for basic needs during the longer period of agricultural slack. Since environmental degradation and poverty in mountain areas appears as both a cause and a consequence of low agricultural productivity (Sharma, 1992), the question of sustainable mountain development is thus closely related to mountain agriculture. Despite this, most economic approaches to mountain development are influenced by the resource-needs of adjoining lowlands. High rates of out-migration from mountain regions in any case further reinforce the lowlands-bias in mountain development strategies, despite the unique and vast range of economic products and services that can be generated and supplied by the mountain areas.

### **1.3 Livelihood Diversification Study Framework**

Agricultural extensification, agricultural intensification and agricultural diversification form alternative pathways for agricultural development and rural development. In the presence of sufficient unutilised land, more and more new land is brought under cultivation under agricultural extensification in order to

raise agricultural output. Growth of rural population, accompanied by population movements through urban development initiatives, have long encouraged the cultivation of new land by extending farming into forests, wetlands, hillsides, and pastures (Reardon *et al.*, 2002). However, the option of extensification gradually becomes unsustainable as new lands become scarce. Land scarcity becomes acute when the forest, rangeland, and wetland margins are exhausted threatening biodiversity, or when farmers are not allowed access to residual land, or when soil degradation reduces crop yields and forage growth over time (*ibid.*). Because of growing domestic demand for agricultural products, the farmers are eventually induced to follow the path of agricultural intensification path, applying more labour and/or capital over the fixed unit of land. While labour-biased agricultural intensification solely through higher applications of labour on land would soon be rendered unsustainable by decline in soil fertility, increased application of both labour and capital on the land unit can initially raise land and labour productivity substantially. Adoption of such intensified cultivation practices as a package is capital-dependent, and therefore not accessible to all farmers in all regions at the same time. Consequently, agricultural intensification leads to growing intra- and inter-regional inequalities in income and wealth distributions, going against the maintenance of social justice.

Agricultural intensification sometimes takes shape as an initial integration of new seed varieties and technologies into traditional agriculture as an experiment. If the experiment is successful, farmers invest more and more farm resources on the crops having higher economic potential. Thereby agricultural intensification ultimately results in specialisation, gradually transforming traditional agriculture into commercial agriculture. However, in addition to the production-risks linked with their adoption of the intensified technology, the farmers also have to individually confront market risks. The maintenance of crop-productivity through increasing application of fertilisers and pesticides, and over-extraction of water ultimately results in land degradation and unsustainable agriculture. With extended cultivation of the same crop on given land parcels over long periods of time, the long-run productivity of such specialised crops declines significantly. A return to sustainable agriculture demands the reduction of production and market induced risks in agriculture, especially for the smaller farmers, agricultural diversification provides the alternative path to rural development. Through diversified farming, limited farm resources are allocated optimally among a widening group of farm-based activities, maintaining horizontal and vertical integration between them. Agricultural intensification may thus be followed either by increasing specialisation or diversification or both.

In fragile mountain eco-regions, agricultural intensification is often not a viable strategy for rural development. Mountain agriculture faces a matrix of production and marketing constraints that are derived from negative mountain specificities. For instance, sunshine duration varies substantially over different slope aspects in mountain regions. Over the same slope-aspect, temperatures vary considerably with increased elevation. As a combined result of this, not all mountain locations are equally suitable for cultivating the crops that may grow well at certain locations. Microclimatic conditions vary substantially within mountain areas and agricultural practices are consequently more complex in nature than in plain areas. Although mountain streams or *jhoras* are the primary source for mountain irrigation, access to such *jhoras* varies according to the landscape elevation and slope-degree. Most *jhoras* being seasonal, wet cultivation is not possible in all regions during all seasons. Soil nutrients are washed out by high runoff. The relative scarcity of irrigation is a prime constraint in the development of mountain agriculture. Along with elevation and sloping topography, the presence of rocky soils and barren uncultivable lands restrict the areas available for cultivation making them economically unviable. The relative inaccessibility of mountain areas makes transport and communication difficult and expensive and the transportation costs of agricultural produce very high. A substantial section of rural mountain-dwellers still depend on low-productivity traditional agriculture for subsistence. In presence of these multiple constraints, a livelihood diversification study carried out in the mountain regions enables much closer understanding of how the agricultural and rural development processes involve livelihood

adaptation to constraints and local specificities as well as income growth, presuming upon the greater livelihood diversity already characteristic in mountain regions.

In ecology, the *carrying capacity* of an ecosystem is defined as the maximum population of human beings and animals that can be sustained in its area, based on the primary productivity of plants and available resources and services, without damaging the natural resource-base (Daily & Ehrlich, 1992). In the Indian agricultural context, it denotes the maximum human and livestock population that an agricultural region can support sustainably (Venkateswarlu & Prasad, 2012). Carrying capacity is not static and varies according to the status of resource utilisation, technology and management (*ibid.*) Thus the carrying capacity of farmland is improved by increased farm productivity and by the lowering of adverse impacts on natural resources and the environment. In mountain farmlands, carrying capacity is low because of the lower agricultural productivity of the sloping and elevated landscape. Agricultural diversification involving the introduction of high-valued cashcrops such as off-season vegetables, spices, fruits, and floriculture leads to better harnessing of the mountain production niche, generating higher incomes for mountain farmers. Vertical diversification through the integration of different agricultural enterprises generates higher incomes, while also sustaining and expanding the carrying capacity of the mountain environment where agricultural extensification is not an easy option. Although diverse by nature, mountain regions are less favoured in terms of access to infrastructure and other physical factors of production. Hence, the insights and findings obtained from detailed study of agricultural diversification in this restricted space may be applied to other less favoured agricultural regions, including those located in the plains.

### **1.3.1 Research Design**

Although secondary data are used for background analysis, the core investigation in the present study is based on primary data drawn from farming households in the mountain farming regions of Darjeeling district in northern West Bengal. The secondary data available on crop production in this mountain region are aggregative for larger-sized geographical units. Therefore they do not adequately reflect the sources of farm output as well the micro characteristics of farm producers. The secondary analysis instead serves to set up a useful comparison between the farming areas of the district and other areas where rural livelihoods are based mainly on other non-agricultural livelihoods. After defining the main identifying characteristics of the mountain-farming region of Kalimpong, the focus of research shifts to primary farm activities in this region. During primary study, the household questionnaire technique has been applied to capture the autonomous role of individual mountain farmers in determining their livelihood-diversification strategies. The respondent sample has been drawn from multiple hamlets purposively selected on the basis of their

- (a) proximity or distance from towns in order to assess the overall impact of marketing advantages and disadvantages on livelihood diversification
- (b) distinctive slope aspects, in order to understand and isolate local variations in livelihood diversification strategies induced by microclimatic constraints such as soil profiles, the amount of precipitation and the average duration of sunshine
- (c) distinctive elevations and locations, in order to understand and isolate local variations in livelihood diversification strategies induced by other microclimatic constraints such as diurnal and seasonal temperatures which vary by elevation zone

### **1.3.2 Data Collection and Research Methodology**

The present study draws upon primary and secondary data sources to capture both temporal and spatial aspects of agricultural diversification in the study region. The principal secondary sources of historical information on the regional economy of Darjeeling district are the various District Gazetteers. The

policy guidelines under which planned development of the regional economy and agricultural diversification has been initiated in more recent times are reconstructed from primary public documents for the district that have appeared periodically, including Annual Plans, Annual Credit-Action Plans, Agricultural Action Plans and Government reports on rural development.

Secondary statistical data for the study have been compiled from published public documents such as District Statistical, Census, Agricultural Census, and Livestock Census Handbooks for various years, and the State Statistical Abstracts, Economic Reviews, and farm management studies published by the Government of West Bengal. For more detailed spatial analysis of the spread of diversification within the study region, a database is built from the primary data. The results and conclusions of the study are derived on the basis of the analysis of primary data.

### **1.3.3 Sampling Procedure**

The primary database for the present study is built from a questionnaire-survey of selected village locations in Kalimpong-1 and Kalimpong-2 CD blocks in the Kalimpong subdivision (SD) in Darjeeling district, West Bengal. Selection of blocks from Kalimpong SD for detailed survey is pre-decided by its predominance as the principal agricultural area within the mountain region of West Bengal. The village-clusters and hamlets that are surveyed specifically were selected purposively, in terms of stratifying factors like agroclimatic and physiographic location, proximity or distance from markets, etc. They comprise

- (i) 8 hamlets from 7 village-*mouzas* in 4 *Gram Panchayats* [GPs] in Kalimpong-1 CD Block, and
- (ii) 4 hamlets from 3 village-*mouzas* in 2 GPs from Kalimpong-2 CD Block

These two study-blocks, along with Gorubathan block to the extreme east, make up Kalimpong SD, forming the eastern half of the mountain region in Darjeeling district. As mentioned, multistage stratified sampling was followed for selection of respondent farmers, with purposive sampling being used during the initial selection of study hamlets listed in Table 1.1

At household-level, the survey questionnaires were canvassed to a sample of 25 farmers residing in each. The questionnaire used for the rural household survey was formulated with the objectives of research, and the research questions and hypotheses in mind. The questionnaire, in 14 broad sections, included (a) general information of household, (b) economic information, (c) household living conditions, (d) landholding information, (e) cropping information, (f) animal husbandry, (g) horticulture, (h) agroforestry, (i) floriculture, (j) sericulture and other allied agricultural activities, (k) general indebtedness, (l) rural extension services, (m) community development activities, and (n) rural knowledge-system.

Data collected during the field survey are tabulated using Excel spreadsheets. Such tabulated data have been used extensively for descriptive analysis in the present study.

**Table 1.1: Sample Hamlets and Locations**

Village Hamlets	Mouza	Gram Panchayat	CD Block	Descriptive Locations
Lamini Gaon	Choto Bhalukhop	Bhalukhop	Kalimpong-1	Below Dambar Chowk-Malli Road West of Tirpai Hill
Ramitay	Lower Dungra	Dungra	Kalimpong-1	Below Kalimpong-Pudung Road South of Deolo Hill
Chisopani	Upper Dungra	Dungra	Kalimpong-1	Below 11 <sup>th</sup> Mile, Kalimpong-Algarah Road South of Deolo Hill at junction of Kalimpong-Pudung & Kalimpong-Relli Roads
Mahakaldara	Bara Bhalukhop	Bhalukhop	Kalimpong-1	On Tirpai-Mahakaldara Road west of Deolo Hil, North of Sangsay Khasmahal
Lepcha Gaon	Nassay	Kalimpong	Kalimpong-1	Above 6 <sup>th</sup> Mile on Kalimpong-Siliguri Road Northwest of Durpin Hill
Khawas Gaon	Lower Sindibong	Sindibong	Kalimpong-1	Below Kalimpong-Relli Road Southeast of Deolo Hill
Poshyore	Poshyore	Kalimpong	Kalimpong-1	Below 5 <sup>th</sup> Mile on Kalimpong-Siliguri Road Northwest of Durpin Hill
Sundung	Pudung	Pudung	Kalimpong-1	Below Kalimpong-Pudung Road Southeast of Deolo Hill
Yogda	Yogda	Sangser	Kalimpong-2	North of 14 <sup>th</sup> Mile <i>Fatak</i> on Kalimpong-Munsong Road North of Deolo Hill and west of Bhangra Hill
Bimbong	Bimbong	Sangser	Kalimpong-2	North of 14 <sup>th</sup> Mile <i>Fatak</i> on Kalimpong-Munsong Road North of Deolo Hill and west of Bhangra Hill
Upper Gairi Gaon	Gairi Gaon	Paiyong	Kalimpong-2	Below 17 <sup>th</sup> Mile, on Kalimpong-Algarah Road South of Lava Hill
Lower Gairi Gaon	Gairi Gaon	Paiyong	Kalimpong-2	Below 17 <sup>th</sup> Mile, on Kalimpong-Algarah Road South of Lava Hil

Sources: *Kalimpong-1 & Kalimpong-2 Block Offices, DGHC Tourism Department, and personal communication*

During the analysis of survey data, the observed diversification of mountain agriculture and rural livelihoods ascertained was evaluated against generic stratifying attributes like gender, caste and class as well as physical attributes like elevation ranges, microclimatic factors and local environments. The degree of temporal, spatial and stratified diversification observed was measured by three indices commonly found in the literature, namely the *crop diversification index [CDI]*, the *Berry index [BI]* and the *composite entropy index [CEI]*. For analysing the data, mainly arithmetic techniques of ratio and percentage are applied. Binary correlation analysis is applied to find out the extent of association between cropping diversification and crop yield rate of households in the hamlets. Key-informants such as leading farmers, agro entrepreneurs, agricultural extension workers, and agronomists and agricultural scientists who live and work in the study region strengthened the inferences drawn from the rural surveys.

### 1.3.4 Study Objectives

The principal objective of the present study is to lay bare the strategic mechanisms for agricultural and rural development that operate in highly constrained mountain regions. To uncover these, the study examines the resource-bases accessible to mountain farmers, their dynamic cropping patterns, their patterns of spatial, stratified and temporal diversification, as well as horizontal and vertical diversification. These are examined in relation to their economic potentials, environmental impacts and gender and social implications. Effort is also made to assess the accessibility of alternative diversification paths to small, marginal and larger farms. The growth linkages of agricultural diversification are also explored. Thus, the study attempts to define the institutional, structural and policy interventions that are required to strengthen agricultural diversification in mountain regions.

To accomplish this, the study makes a field-level assessment of factors that assist or impede the diversification of rural livelihoods in agro-ecologically constrained mountain regions, having selected the Kalimpong region of Darjeeling district for case study. Through the methodology of detailed questionnaire surveys, various aspects of diversified farm operations by mountain farmers in selected village hamlets in Kalimpong-1 and Kalimpong-2 CD blocks are examined. These include their

- (a) land command, irrigation access and land allocations to crop agriculture in alternative forms,
- (b) labour-sharing patterns, labour inputs and costs, and labour commitment to alternative crops,
- (c) crop outputs and productivity, marketability and profitability of crops, and resulting agricultural incomes
- (d) subsidiary participation in livestock operations and allied mixed-farming activities
- (e) mountain-farming specializations by microclimatic/agroclimatic niches, and
- (f) the cumulative impact these have on rural incomes, employment and poverty, and on the use of natural resources in the study region.

### **1.3.5 Research Questions**

In keeping with the above research objectives, the research questions raised in the present study relate to the resource-base commanded by mountain households and their access to opportunities; their livelihood strategies; the determinants of agricultural diversification and the economic potential of alternative diversification options; and the impacts of diversification on the sustainability of rural resource-use, reduction of rural inequalities and poverty, and other growth and livelihood linkages. These are listed below:

- (i) What are the resource-bases of the rural households in the study region and are these degraded or not?
- (ii) How do rural households secure access to resources and livelihood opportunities?
- (iii) How do the rural households determine their livelihood strategies on the basis of such access to resources and opportunities?
- (iv) What are the determinants of agricultural diversification in the study region?
- (v) What are the nature and strengths of alternative diversification strategies?
- (vi) What is the economic potential of alternative land-based and subsidiary activities that advance agricultural diversification?
- (vii) How do different diversification options create a potential impact on the sustainability of rural resource-use?
- (viii) How does agricultural diversification create growth-linkages and what is its extent?
- (ix) What are the social and gender implications of diversification?
- (x) How does diversification help in reducing rural inequalities and eradicating poverty?
- (xi) What are the kinds of rural extension and financing requirements that are necessary for successful agricultural diversification?
- (xii) How do indigenous resource management and utilisation practices play an effective role in furthering agricultural diversification?
- (xiii) What factors and mechanisms define a sustainable process of substitution, replacement and addition of new activities to the existing rural livelihoods in the study region?

- (xiv) What institutional, structural and policy interventions are required for encouraging agricultural diversification in mountain regions?

### **1.3.6 Research Hypotheses**

The following research hypotheses may thus be tested using the survey results:

1. Persistence of semi-feudal modes of land organisation and tenure in mountain areas limit the gains from agricultural diversification.
2. Existing cooperative forms of labour exchange in mountain farming areas restrict the potential of livelihood diversification into non-farm activities.
3. Infrastructural limitations like the inadequacy of transportation and banking facilities are also a premier constraint upon the livelihood diversification options of mountain farm households.
4. Because mountain areas lack groundwater, crop diversification is only feasible in areas that are close to a surface water-source.
5. Agricultural diversification helps to preserve the sustainability of natural resource-use in mountain areas.
6. Indigenous knowledge systems and resource-use practices of mountain farmers act as a bulwark against resource degradation and natural disaster.
7. Ethnicity and the traditional choice of livelihoods play a significant role within the choice of diversification options by mountain farmers.
8. The agricultural and livelihood choices of literate farmers tend to be more diversified than those of illiterate farmers.
9. Agricultural diversification reduces rural poverty through the growth of rural non-farm employment and the generation of new employment opportunities in the farm sector.
10. Agricultural diversification is also conducive towards increasing women's participation in the labour force.
11. Agricultural diversification brings greater economic benefits to small farmers than to larger farmers, thereby reducing economic inequality between farm households. Farm size-related inequalities within rural asset and income distribution in mountain areas are mitigated to some extent by participation in animal husbandry activities.
12. Crop substitution with areas under inferior cereals being replaced by wheat and maize takes place as a result of shifts in tastes as a result of improvement in income as well as increasing interaction with the outside world.
13. Crop substitution of traditional crops by cash-crops or other general crops takes place as a result of improvement in rural and market infrastructure, technological improvements in cultivation as well as higher expectation of profitability from the substituted crops.
14. Livelihood diversification is greater in mountain areas where agriculture is not so developed.
15. By reinforcing growth linkages and downstream effects, agricultural diversification leads to the diversification of activities and livelihoods for the rural workforce.

### **1.4 Chapter Descriptions**

The dissertation based on the foregoing study plan is presented in 8 chapters. Of these, the first (*i.e.* the present) chapter has discussed the place of economic diversification in development theories and

economic models. Certain paradoxes that are commonly seen during the development process are discussed, along with the rural development experience and the role played by agriculture in rural development. Using the analysis of general livelihood concepts found in the literature, the contexts for livelihood diversification studies and rural livelihoods in mountain regions are studied. Thereafter, the design of the present research study is explained, along with its data collection needs and research methodology. Since the core of the study is empirical and involves field-data collected from the selected study region of Darjeeling district in the Indian state of West Bengal, the sampling procedure, and the process of questionnaire formulation, tabulation & data analysis is outlined compactly. This is followed by a statement of study objectives, research questions, research hypotheses, and chapter descriptions.

Chapter 2 thoroughly examines the literature on the role of agrarian relations in rural development. The common process of agricultural *intensification* is contrasted with agricultural *diversification*, outlining the *strategic* and *adaptive* motives behind diversification. Analysis is made of the different factors that form part of the diversification process, their determinants and their implications. The existing scope for diversification is explored in relation to physiographic and agroclimatic zoning, and alternative farming systems, including those prevalent in mountain areas and other constrained regions, combining agriculture with pastoral farming. In mountain areas, environmental and ecological constraints and shorter seasonality make horticulture and floriculture important cultivating activities allied to mountain farming. Livestock farming is also examined as an important subsidiary livelihood activity in mountain areas. Along with the literature review, existing research gaps are noted, which inform the purposes of the present study into the prospects and practices of rural livelihood diversification in mountain regions.

Chapter 3 explores the mountain region of Darjeeling where the present study is situated, using secondary data pertaining to the different regional units within it. The development potential of each of its CD blocks is assessed in relation to its typical forms of landuse and economic activity. The analysis shows that after the urban centres, the agricultural blocks of the district have the highest potential for economic development, because livelihood decisions here have remained within the sphere of the rural people, unlike the tea blocks where existing livelihood opportunities have been limited by the historical spread of plantations. The sample hamlets selected for survey study are then compared against this district backdrop.

Chapter 4 begins the analysis of rural sample-survey results by comparing cropping intensities, cropping patterns and their temporal changes between different hamlets and different farm-household strata. As the survey sites are chosen keeping microclimatic variations in mind, the locational determinants of these are expected to differ widely. On the other hand, the adaptive behaviour of the sample households is expected to reflect their common response to the constraints that exist in mountain agriculture. Such broad similarities and differences between hamlets and household classes are examined by studying intercropping practices, and intertemporal crop diversification, and by measuring the spatial and stratified patterns of crop diversification among rural hamlets and households.

On the basis of the foregoing foundation, Chapter 5 explores the crop economics of mountain farming households in the selected hamlets in terms of agricultural outputs and yields, crop profitability and net returns to land, labour and agricultural investment. The positive influences of crop diversification within mountain farming systems are gauged through its positive impacts on rural employment and the mountain environment.

Chapter 6 establishes the complementarities between farming and livestock activities in mountain areas, analysing the composition, status and economic potential of livestock holdings in the sample hamlets, the nature and causes of livestock diversity and the overall impact of combined farming and livestock operations on the mountain environment.

Chapter 7 explores the status and economic roles of other subsidiary rural activities commonly found in mountain areas, like horticulture, agroforestry, floriculture, sericulture, apiculture, etc., in terms of the roles these have in mountain livelihood diversification and the complementarities these bear to agricultural livelihoods in mountain regions. An attempt is thus made in Chapters 6 & 7 to show that livelihood diversification in mountain regions is guided by sound economic logic that seeks to optimize the economic livelihoods accessible to mountain farming communities under multiple constraints. Livelihood diversification is visible as an essential part of this economic adaptation.

Finally, Chapter 8 sets out the main findings and inferences from the study. Agricultural communities in mountain regions are seen to practise livelihoods highly adapted to specific mountain situations. While livelihood diversification forms an essential strategic component of their economic adaptation, the particular form that this assumes depends on a host of local locational factors, defining the heterogeneities within farming communities in mountain areas. Although agrarian factors continue to play a determining role, their force is somewhat mitigated by the technology limitations and smaller activity scales that exist within mountain agriculture.