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IDS Working Paper 539

Livelihood Diversification and Entrepreneurship: An Analysis of Production and Marketing Innovations in Smallholder Farming In A Rural Kenyan District, Mbeere

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Abstract

In the marginal arid and semi-arid agro-ecosystems of Africa, livelihoods largely depend on crop and animal husbandry, and non-farm employment. For years, farming in such areas has been compounded by recurrent rain failure, acute soil erosion, high pest incidences, overgrazing and poor cultivation methods leading to a serious environmental hazard. In the last decade or so, the scene has witnessed the entry of new forces: structural adjustment programmes (SAPs), with their corresponding currency devaluations and subsequent rising input costs, liberalisation, privatisation, globalisation and general institutional decline due to mismanagement or as part of the conditionalities accompanying the World Bank's/IMF's structural reform package.

The consequent withdrawal of the state from its traditional roles of agricultural marketing, and especially stabilisation of producer prices and sourcing for external markets, protectionism and provision of services such as basic inputs (certified or improved seeds and technology through research and extension) appear to be putting the African farmer in a rather precarious position. Further, the lack of industries to absorb surplus rural labour, the growing poverty and a rising demand for food and incomes imply that a greater proportion of the rural population in Kenya and other parts of Sub Saharan Africa (SSA) is likely to combine agriculture with non-agricultural activities especially petty trade, as they continuously undergo a process of de-rurbanisation.

On the other hand, market reforms accompanying SAPs appear to have brought with them profit opportunities, which some (though few) farmers have seized upon to increase or stabilise incomes for their households. In Mbeere, this seems to be taking place in the introduction of various forms of production and marketing innovations among smallholder farmers in the areas of fruit and dairy

production. Such farmers appear to be embracing what appears like entrepreneurial or profit-oriented farming, though without completely abandoning ordinary or traditional farming. This form of livelihood diversification in turn, seems to be having positive implications for income redistribution, employment creation and poverty reduction. These production and marketing innovations need to be studied with a view not only to understanding them better but also to informing future policy that targets the rural poor.

This research proposal is divided into six sections. Section 1.0 gives the introductory overview or background of the study and attempts to define the direction of its thrust with regard to other recent development research findings and policy. In Section 2.0, we present the focus of the study and raise the pertinent questions the research seeks to address. The third section (3.0) offers a justification and outlines the objectives of the study. Section 4.0. attempts to locate the study in the difficult and overcrowded arena of development theory. Highlights of the physical, economic and agro-ecological characteristics of the study area (Mbeere) are presented in section 5.0. And finally, Section 6.0 explains the methodology to be used in data collection and analysis.

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1.0 Introduction

In the last years of the 20th century, there has been a resurgence of *livelihood diversification* as a development paradigm, a phenomenon that development studies has embraced with a renewed vigour gathering impetus and strength into the 21st century. This is not because livelihood diversification is a new phenomenon. African households, whether rural or urban, are known to have been diversifying their livelihoods for centuries. What is important, however, is the realisation by development theorists and practitioners alike, that diversification is not merely a coping or survival technique by capital-deficient rural households. Some households can use livelihood diversification to increase or stabilise incomes, create jobs, and reduce poverty, in the long run. Livelihood diversification is not accidental, but a matter of conscious choice aimed at livelihood sustainability. On another level, livelihood diversification may be useful in understanding the current dynamics of smallholder agricultural innovation and entrepreneurship, by studying the nature and types of innovation being introduced by farmers, both on and off the farm. It is also likely to shed additional light on farm-none-farm linkages and the new policy dimensions.

Farm innovation is not a new concept, but a livelihood diversification approach may help one to understand innovation in a different light, away from the old modernisation paradigm of output maximisation through adoption of new (often pre-packaged) technologies from abroad. Thus, although agricultural innovation in Africa has a long history, market liberalisation has presented new opportunities, incentives and challenges to farmers, leading to new forms of entrepreneurial behaviour that could be crucial in local level development. Such behaviour could be evident in the introduction of production and distribution innovations by some individuals, or by small non-farm enterprises, in trying to establish competitive advantage in supplying differentiated products and, thereby, claiming their market segments, within the context of a capital deficient base, fragile ecosystems, and highly competitive economic environment.

1.1 The Research Problem

The state withdrawal from subsidised agricultural input supply, and the liberalisation of agri-commodity markets, appears to have created two supply and demand issues respectively. On the supply side, farmers are faced with an input constraint that necessitates the search for cheaper alternative inputs, which, subsequently, invites innovation. As yet, little is known about the real extent of farmer responses to productive factor scarcities, especially in the marginal areas

of Kenya. On the demand side, market reforms, though impediments in themselves to poor farmers, appear to have created profit opportunities in the form of demand for new, as well as existing agri-products, e.g. improved fruit varieties, milk from improved or exotic cattle and horticultural products. Profit-based farming necessarily requires innovativeness not only in improving and maintaining product quality and minimising production costs in the face of competition, but also in seeking new markets, locally and abroad. In addition, in marginal areas such as Mbeere, very few farmers appear to be responding to the emerging markets by adopting entrepreneurial farming techniques. This is contrary to the rationale behind market liberalisation that envisaged mass response.

This study, therefore, intends to investigate the dynamics of smallholder production and marketing innovations, against a background of farm-none-farm or, rural-urban linkages, within the broader rural livelihood diversification paradigm. By establishing the nature and extent of the social networks that sustain production of a wide variety of goods and services under difficult physical and economic conditions, the study hopes to capture various aspects and levels of agricultural entrepreneurship at the local level. In this endeavour, three entrepreneurial activities will be studied, namely: fruit production and trading, dairy production and marketing, and horticultural (vegetable) production and marketing from small-scale irrigation.

2.0 Study Focus and Research Questions

Although earlier studies have indicated that 55 per cent of the African rural population are engaged in non-wage agriculture and another 6 per cent in wage agriculture (*World Bank, 1995a; 1995b*), this largely masks the multi-occupational nature of rural dwellers' livelihoods (*Bryceson, 1999*). The character of African rural labour is changing from peasant household labour to wage labour, self-employment and non-farm income generation. The former subsistence-based activities are now being substituted by monetised activities and agricultural work has increasingly been replaced with non-agricultural activities. Economic liberalisation has produced changes in rural production and marketing infrastructure that has increased the levels of uncertainty. The disappearance of agricultural subsidies, in the midst of the increasing commoditisation of rural life, has precipitated a cash crisis in rural households, that has forced all able-bodied adults and children to seek different sources of income and to diversify livelihoods.

However, involvement in non-agricultural activities may provide a basis for accumulation by wealthier households with more educated members (relative to poorer ones) and, therefore, a basis for rural differentiation. In this way, income diversification may change from being a coping strategy to an accumulation strategy, when pursued by wealthier and medium-income households. Wealthier households' superior skills and other endowments yield greater returns than poorer households, with little or no non-agrarian skills, means of transport, and essential contacts. The poorer households are at the mercy of the vagaries of weather, and in bad seasons, when they harvest little, they are likely to pursue non-agricultural activities, with easier entry despite the saturated or shallow markets (*Dercon and Krishnan, 1996; Iliya and Swindell, 1997; Meagher and Mustapha, 1997; Bryceson, 1999*).

However, this appears to condemn poor households to eternal misery and, the failure to study private initiatives may miss the entrepreneurial opportunities that a free market system bestows on poor households, that may help to propel them away from poverty and towards prosperity. The reason is because in their search for cash-earning alternatives, African rural dwellers (subject to restricted skills, low educational levels, capital shortage and low purchasing power) have embarked on profound economic and social experimentation, which has broadened the pool of rural products and services. In this experimentation, social and age-old gender-based systems of division of labour have been redefined to maximise entry chances. New product and service markets have been introduced by monetising the traditionally non-monetised exchanges.

The appearance in rural villages of some of these new products and services has also broadened choice and information sources for rural producers. Of particular importance is the rise of middlemen who provide useful market information to producers, a fact that warrants the study of middlemen from a new and more positive light away from the unscrupulous profit-maximizers they have hitherto been portrayed to be. More importantly, this experimentation has stimulated the birth of agricultural services such as processing, storage and transportation as well as non-agricultural products and services such as animal cart-making and motor repairs in rural towns.

Studies indicate that after market liberalisation, the private sector has been rather slow in taking over the state's previous main functions namely, input supply,

production regulation and quality control, output marketing, research and extension, for export crops. The food crops sub-sector is apparently not attractive to private entrepreneurs. It has also been established that most private entrepreneurs appear to be targeting the better-off farmers who are also accessible and with whom entering into business transactions (including credit provision) involves fewer risks. The situation is reportedly worse in the remote marginal areas, particularly those far away from the main market nodes and those served by poor infrastructure. It would appear therefore that such areas (and Mbeere fits in here very well) are now suffering from geographical and social skewedness in service provision and market access, and therefore exclusion from any meaningful post-adjustment private sector interaction. The question here remains: to what extent is this true?

The proposed study will examine entrepreneurship originating from livelihood diversification efforts by smallholder farmers in one marginal rural area of Kenya. It will investigate the types of innovation emerging in the process of production, processing, storage, transportation and marketing of agricultural produce under difficult physical and economic conditions. For each of the three entrepreneurial activities i.e. fruit production, dairy production and horticultural production.

The study will basically address itself to the following research questions:

- (i) What characteristics are associated with Mbeere smallholder agricultural entrepreneurs and what motivates them to innovate?
- (ii) What innovations or product upgrading technologies have emerged in relation to production, processing, storage, transportation and marketing of fruit, vegetable, and milk products?
- (iii) What non-farm activities have been triggered by each entrepreneurial farming activity and, what social networks and methods of financial intermediation are used to maintain each activity?
- (iv) How market information is sourced, or accessed and market segments created and maintained?
- (v) In what ways can entrepreneurial farming be sustained and its gains spread to other households and what policy implications do these

activities have for livelihood diversification, income redistribution and poverty reduction within an African rural setting?

By seeking answers to these questions, the study hopes to go beyond the "survival only" approach inherent in many livelihood diversification studies and try to link poverty reduction with labour-saving and employment-creating innovations in smallholder agricultural production. This, it is hoped, will go a long way to reinforce the existing knowledge on innovation, how to improve coping mechanisms, and vulnerability reduction, so as to enhance sustainability, by creating adequate safety valves against farm income risks and shocks. Findings from the study will help to inform policy on ways of targeting the rural poor for effective poverty reduction and rural development in general.

3.1 Objectives of the Study

The objectives of the study will include the following:

- (i) Establishing the characteristics associated with Mbeere smallholder agricultural entrepreneurs and what motivates them to innovate;
- (ii) Establishing the types of innovation or technologies of product upgrading evident in production, processing, storage, transportation and marketing of each of the three products, i.e. fruit, milk and vegetables;
- (iii) Finding out what non-agricultural activities are triggered by each entrepreneurial farming activity and the social networks and forms of financial intermediation used to maintain each activity;
- (iv) Examining how market information is sourced, accessed and market segments created and maintained; and
- (v) Establishing ways in which entrepreneurial farming can be made sustainable and its gains spread to other households, with implications for income redistribution and poverty reduction.

3.0 Justification of the Study

Agricultural entrepreneurship has enormous potential for poverty reduction in Kenya's rural areas but little research appears to have been done in this area. The hitherto prevailing assumption is that African rural societies still practise traditional subsistence-oriented farming and, since they are risk-averse, they are unlikely to adopt entrepreneurial or profit-driven farming, which is usually risky. However, emerging realities, even in marginal agro-ecological zones, seem to increasingly challenge this assumption.

In addition, farm-nonfarm linkages in Africa are still not clearly understood. The constantly changing nature of livelihood diversification behaviour by rural households in Sub-Saharan Africa (SSA), brings into focus new forms of innovation that need to be researched on as they have direct implications for development. There is need to be clearly understood in order to inform development policy. New forces such as market liberalisation and rising poverty levels also keep reorienting the direction of livelihood diversification as individuals and households respond to new challenges and/or opportunities. This has, in turn, brought about new forms of entrepreneurship within smallholder agriculture in rural Africa, which has scantily been studied, despite their immense implications for income distribution and poverty reduction. This study intends to address this apparent gap in the existing knowledge.

4.0 Theoretical Framework and Literature Review

This study straddles five main theoretical models in development literature. These are value chain analysis; livelihood diversification; farm-nonfarm growth linkages; de-agrarianisation and small and micro-enterprise development (SMEs); and entrepreneurship and innovation. It also touches on poverty dynamics and reduction. The issue of structural adjustment will be revisited not as a theory in itself but only as a background theme, to shed light on what is happening in the agricultural sector after market liberalisation. It would be an impossible and unnecessary task to try to revisit all the relevant theories in detail. In this section, therefore, we will try to capture the key arguments of each relevant theory or school of thought in an attempt to place the proposed study within development theory in general and locate its appropriate conceptual niche, in particular.

4.1 Value Chain Analysis

Value chain analysis examines what happens to a commodity in its various stages from raw material to the finished product. It looks at issues of value addition and upgrading from production through distribution to marketing or access by the final consumer. Value chain analysis has been evolving for a long time in both Anglophone and Francophone countries, but became globalised between 1960 and 1980 (*Raikes and Gibbon, 2000; Raikes, Jensen and Ponte, 2000*)¹. It focuses on the emergence of a global manufacturing system in which economic integration goes beyond international trade in raw materials and final products, to include centrally co-ordinated, but internationally dispersed, production activities along chains of certain commodities or manufactured goods (*Raikes, Jensen and Ponte, 2000:3*).

Since a commodity chain is “a network of labour and production processes whose end result is a finished commodity”, (*Hopkins and Wallerstein, 1994:17*), it is reasonable to assume that this is not confined to industrial products alone but could also be extended to analyse agricultural production even for smallholders. The actors, be they individual farmers, groups or SMEs, are recipients of inputs from others, producers of inputs for others or both. All seek to control their resources and markets and consequently, chains intersect, converge or diverge, may be consolidated or sub-divided. Separate activities or processes along any given chain are mostly socially determined and help to define the boundaries of each actor’s “box”.

By describing the matrices of commodity flows, commodity chains seem to adhere to a version of Schumpeterian competition, which is the basis of the law of value. Under this law, value, which is added through innovation, or “new combinations”, produces a tendency towards “demonopolisation of any highly profitable box, which is, then, often countered by technological change, and/or redefinition of the organisational boundaries of the box, whereby production units seek to restore a high level of profit” (*Hopkins and Wallerstein, 1994:18*). In our case, the local chains will involve fewer links and shorter geographical distances from producer to consumer but will take into account new characteristics, mechanisms, circumstances, opportunities and challenges or demands, which may help to spur new innovations and forms of entrepreneurial behaviour.

These may also help one to understand how the various actors locate markets upstream and downstream and establish forward and backward linkages in fragmented supply and demand chains. How and why smallholders diversify production and trading interests across different crops or diversify their income sources (rather than increasing fixed investments in any particular crop) could also become clearer. This study could, therefore, augment the few current studies on post-liberalisation competition in smallholder African agriculture. Basically, therefore, the GCC paradigm explains industrial commodity chains in the developed industrialised countries (*Hopkins and Wallerstein, 1994; Gereffi, 1994; 1999a; Gereffi and Korzeniewicz 1994; Gereffi and Tam, 1999; Dolan, et al. 1999; Gibbon, 2000*).

The study, primarily, concerns itself with the organisational aspects of international trade such as proprietary technology, product differentiation, brand reputation, customer relations and constant industrial upgrading. It also looks at issues of value addition in terms of minimising production and transportation costs, quality control and identifying and sustaining comparative or competitive advantage for specific commodities. This limitation makes the GCC theory only marginally applicable in SSA agriculture except for fresh fruits and vegetables (FFVs), flowers, garments and footwear. The proposed study will adapt three aspects of this paradigm. First, what motivates product differentiation for small farmers and small businesses supplying services to producers? Second, where are profits located within a given chain? Lastly, what chains are associated with greater value-added at the local level: producer-driven or buyer-driven production chains?

4.2 Livelihood Diversification and Sustainability

Livelihood comprises “the capabilities, assets (stores, resources, claims and access) and activities required for a means of living” (*Chambers and Conway, 1992: 7*). While capabilities refer to social networks and individual or collective endowments or achievements such as education and skills, assets include natural, physical, financial and social capital. Activities are the actual undertakings of the individual, or the household, in earning or making a living (*Francis, 1999; 2000*). Livelihood diversification, on the other hand, is defined as the “process by which rural families construct a diverse portfolio of activities and social support capabilities in their struggle for survival and in order to improve their standards of living” (*Ellis, 1998: 4*). Livelihood diversification is not synonymous with income diversification. A livelihood includes “income (in both

cash and kind) as well as the social institutions...gender relations and property rights required to support and sustain a given standard of living" (*Ellis, ibid*). Social and kinship networks facilitate and sustain diverse income portfolios and are also important in interpreting constraints and options of individuals and families in terms of income, wealth, access to capital assets, such as land and credit, and gender (*Berry, 1989; 1993; Hart, 1995; Bryceson, 1996*). A livelihood also involves access to, and benefits derived from, social and public services provided by the state, such as education, health services, roads, water, etc. (*Lipton and van der Gaag, 1993; Blackwood and Lynch, 1994*).

Livelihoods may, therefore, be categorised as farm, off-farm and non-farm. In much of SSA, studies have shown that households derive 30-50% of their income from non-farm sources (*Reardon, 1997; Haggblade, Hazell and Brown, 1989; Sahn, 1994; von Braun and Pandya-Lorch, 1991*). The causes and motivations of diversification vary across families at a particular point in time and for the same families at different points in time. Some causes may be location-specific, e.g. semi-arid, drought-prone, or disaster-specific areas. Broadly, the determinants of diversification are seen as seasonality, labour markets, risks, coping, credit and accumulation. All of which are mediated by social institutions, such as kinship and community ties (*Berry, 1989; 1993*), property rights and obligations (*Berry, 1997; Bromley, 1989; 1991; Platteau, 1992*), and gender relations within the household (*Hart, 1995*). Migration, another determinant of diversification, is viewed as the individual's choice (*Todaro, 1969; Harris and Todaro, 1970*), due to inter-temporal family contracts (*Stark, 1980; Stark and Bloom, 1985; Stark and Lucas, 1988*), search for jobs in urban areas (*Bigsten, 1996; Larson and Mundlak, 1997*), or even as a risk-spreading strategy (*Stark and Levari, 1982; Katz and Stark, 1986*).

The failure of rural capital markets has also been cited as a reason for migration (*Collier and Lal, 1986*). As compared to Asia, poverty in Africa is more associated with location and lack of access to services and opportunities (roads, schools, markets, input supplies and power), and environmental constraints rather than access to land. In order to stem vulnerability, sometimes arising from credit market failures, some households adapt by either diversifying their sources of income, or by adopting new ways of sustaining the existing income portfolio. In semi-arid Mbeere, the introduction of small-scale irrigation techniques has improved fruit farming and, the zero-grazing of grade cows, for milk production, may be seen in this light.

For a long time, *livelihood diversification* has been understood within the context of the neo-classical model that treats the household as a single decision-making unit with a joint welfare function (*Francis, 1998; Becker, 1981; Folbre, 1986; 1994; Sen, 1990*). This model has been criticized, particularly by gender studies, for its failure to provide tools with which to analyse decision-making on resource allocation, within the household and, subsequently, for downplaying the importance of bargaining and contractual relations (*Becker, 1981; Folbre, 1986; 1994; Sen, 1990; Evans, 1993; Kabeer, 1994; Hart, 1995*). Since the 1980s, livelihood diversification, albeit with neo-classical overtones, emerged as a theoretical model in development studies. It has been seen as a survival strategy, for rural households in developing countries, especially those found in SSA. Its point of departure is that farming alone does not provide enough means of survival in rural areas.

Most households, therefore, depend on a diverse portfolio of activities and sources of income (including crop and animal production) for their well being. For this reason, diversification is necessarily socially embedded, as it involves a wide array of social networks and linkages that enable it to thrive and become sustainable, as demonstrated by recent studies on Kenya (*Ellis, 1998; 2000; Francis, 1995; 1998; 2000; Davidson, 1988; Heald, 1991; Odaga, 1991; Silberschmidt, 1992; von Bulow and Sorrensen, 1988; von Bulow, 1992; Mackenzie, 1993*). Household differentiation, however, shows that some households earn quite substantial incomes from farming, but augment these with earnings from small-scale trading, labour sales on farms of the wealthier households, and remittances from migrant labour. On the other hand, there are households with little or no land, and which also receive no remittances. Such households are forced to juggle several sources of income, some of which may be neither substantial nor reliable.

Livelihood diversification may be associated with distress management, in bad or deteriorating situations, but more positively, it may contribute to success in achieving livelihood security, under improving economic conditions (*Ellis, 1998; Collier, 1988; Preston, 1989*). Rural livelihood diversification cuts across several overlapping policy-relevant areas, such as rural poverty (*Jazairy, et. al, 1992*); household risk strategies, (*Carter, 1997*); household coping strategies (*Davies, 1996*); intra-household relations (*Hart, 1995*); rural growth or farm-nonfarm linkages (*Hazell and Haggblade, 1993*); rural non-farm activity

(Fisher, et al. 1997); and, rural-urban migration (Stark, 1991). Due to differences in its interpretation, diversification has been seen as a deliberate household strategy (Stark, 1991), or as an involuntary response to crisis (Davies, 1996). It may reduce rural inequalities (Adams, 1994), increase differentiation (Evans and Ngau, 1991), act as a safety valve for the rural poor (Zoomers and Kleinpenning, 1996), provide an avenue for accumulation by the rural rich (Hart, 1994), assist in agricultural investment and productivity (Carter, 1997) or lead to agricultural decline by withdrawing critical resources such as labour (Low, 1986).

Researchers have examined various aspects of diversification using recent case-study findings. From this literature, it is evident that the causes and consequences of diversification vary depending on location, assets, income, opportunity and social relations, which manifest themselves in different ways and under differing circumstances (Reardon, 1997; Chandrasekhar, 1993; Adams, 1994; Bigsten, 1996; Dercon and Krishnan, 1996; Taylor and Wyatt, 1996; Carter, 1997). This has put livelihood diversification at the centre of interpretations and policy recommendations of rural change in Africa and elsewhere (Bernstein, et al. 1992; Bryceson, 1996; Heyer, 1996; von Braun and Pandya-Lorch, 1991; Sahn and Sarris, 1991; Sahn, 1994; Reardon, 1997). In SSA, state withdrawal and the dismantling of meso-level policies due to structural adjustment has greatly interfered with the interface between macroeconomic policies and micro-level interventions. A better understanding of household decision-making after SAPs is, therefore, important in the design of appropriate micro-level interventions (Berry, 1986; Lipton and Ravallion, 1995).

Kenya has, in the past, been associated with success in large-scale commercial farming and smallholder boom (Heyer, 1976; Collier and Lal, 1986; Bendavid, et al., 1988; Carter and Wiebe, 1990; Evans and Ngau, 1991; Francis, 1998). This picture is rather erroneous mainly because many smallholders were unaffected by the expansion of high value crops. Secondly, the smallholder boom took place mainly in Central Kenya, which was/is well suited to the cash crops introduced (coffee, tea), in terms of altitude, rainfall and other agro-ecological conditions. The drier marginal areas lost out as no resources were allocated to raise productivity in lower-value food crops such as maize and pulses. Central Province also benefited from political patronage until the late 1970s, as well as its close proximity to Nairobi, the country's largest source of

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labour and product markets. Smallholders in other parts of the country such as Western Province have expanded commodity production using mainly remittances from migrant labour (*Kitching, 1980; Stichter, 1982*). Here, agricultural production has also been falling and population growth rising steadily over the years. As households fail to provision themselves from farming alone, labour migration has intensified as part of livelihood diversification. Rural sector diversification is therefore an important policy issue as it leads to increasing the survival options of the rural poor.

4.2.1 Farm-Nonfarm Growth Linkages

One model that has dominated rural development discourse since the mid-1970s is one that sees nonfarm growth as being stimulated by agricultural innovation. According to this model, "increased demand associated with rising farm income leads to the diversification of the local economy and the growth of jobs in non-farm activities" (*Evans and Ngau, 1991:520*). As rural households increasingly engage in non-farm activities, the proportion of total household income derived from these activities also rises. Thus, rising farm incomes lead to greater non-farm earnings among both rural and urban households (*Chinn, 1979; Low, 1981*). This is the rural growth linkages model that attributes non-farm activities to linkages with growth in the agricultural sector (*Johnston and Kilby, 1975; Mellor, 1976; Bell, et al. 1982; Hazell and Roell, 1983; Haggblade and Hazell, 1989; Haggblade, et al. 1989; Hazell and Haggblade, 1993; Delgado, et al. 1994*). One variant of this school looks at agriculture as the basis of rural non-farm enterprise (*Saith, 1992; Fisher, et al. 1997*) while another attributes the growth of rural small-scale industries to increased returns to agricultural investment (*Chuta and Sethuraman, 1984; Liedholm, McPherson and Chuta, 1994*).

Within this paradigm, livelihood diversification is seen to have a broadly equalising effect on rural incomes (*Haggblade and Hazell, 1989*), through the raising of incomes of the poor relative to the rich (*Valentine, 1993; Adams, 1994*). This may largely be contextual, as two different areas in Africa have shown contradictory evidence (*Reardon, et al. 1992*). The effect may be less direct, if poorer households were to be enabled to overcome credit and risk constraints on agricultural innovation (*Taylor and Wyatt, 1996*). By raising farm labour productivity, surplus labour would be released from agriculture into non-agricultural pursuits and also boost per capita incomes to levels that enable consumer diversification from food into non-food items (*Haggblade, et al.*

1987b: 31). This has been the basis of past agricultural policies aimed at raising agricultural productivity and output, by encouraging farmers to adopt new technologies.

There is an opposing viewpoint, which contends that increased non-farm income spurs agricultural growth. Diversification, therefore, encourages rural differentiation because it has a disequalising effect on rural incomes. For this reason, richer households derive a higher proportion of their incomes from non-farm sources than poorer households (*Collier and Lal, 1986, Evans and Ngau, 1991, Webb, et al, 1992, and Reardon, et al 1992*). Besides stating the importance of diversification for poorer households, these studies demonstrate that better-off families are more able to diversify in more lucrative labour markets than the poorer ones. The latter lack the necessary assets and are excluded from the more highly remunerated labour markets due to education and skill constraints (*Francis and Hoddinott, 1993; Dercon and Krishnan, 1996*).

The two variants of the model appear to underscore the fact that while some income sources have equalising effects, others have disequalising effects on rural incomes. For instance, livestock, non-farm wages, non-farm self-employment and domestic remittances were found to have an equalising effect on rural income distribution, while agriculture (cropping), rental income and international remittances had a tendency towards disequilibrium. This would, then, mean that livelihood diversification has adverse effects on the agricultural sector growth, for reasons that include investment in the social networks, needed to support diverse livelihoods, diverts resources away from agriculture (*Berry, 1989*) or that farm profits are invested in nonfarm enterprises (*Pottier, 1983*), or it withdraws productive labour from agriculture (*Lipton, 1977; 1980; Low, 1986*).

In terms of policy, diversification has implications for income distribution and poverty reduction. Removing constraints to and increasing opportunities for diversification at the micro-level would greatly enhance livelihood security and increase the pool of entitlements. Market liberalisation may remove the constraints (such as market failures) formerly posed by bureaucratic and inefficient state agencies. Diversification would also help in spreading risk and avoiding vulnerability. Provision of rural services could help in expansion of rural towns as growth points. Agriculture itself can play an important role in diversification options, as the proposed study hopes to show. The introduction of

new crops and cropping patterns, innovative production systems and livestock management systems are important aspects of diversification. It would be important for producers to take advantage of existing and emerging market opportunities to supply a wide range of differentiated products, created by economic growth and changes in trade regimes, especially in the post-liberalisation era. These will augment policy interventions related to targeting, risk reduction, micro-credit, rural services, rural non-farm enterprise, rural towns, infrastructure and education.

4.2.2 De-Agrarianisation and MSE Development

De-agrarianisation is a process associated with livelihood diversification in SSA. This process is associated with micro and small enterprise (MSE) growth and has been developing over a long time in Africa. Yet, the World Bank's structural reform policies have been rooted in the redundant assumption that Africa is the world's most agrarian continent and its future still lies in peasant agriculture and agricultural commodity exchange with the rest of the world. The reality, however, is that the African population is becoming less agrarian in nature every year (*Bryceson and Jamal, 1997*).

De-agrarianisation can be defined as a process by which "rural households increasingly engage in non-agricultural activities on a market basis in order to supplement their agricultural incomes" (*Pedersen 1994: 5*). These activities have been variously referred to as rural non-agricultural activities (RNAAs) (*Pedersen, 1997b; Bryceson and Jamal, 1997; Reardon, 1997; Møller, 1998*); rural non-farm employment (RNFE) and non-agricultural rural employment (NARE) or simply non-farm or off-farm activities (NFA) (*Tellegen, 1993; 1997; Bryceson and Jamal, 1997*). This categorisation is partly due to the declining analytical utility of the concept "informal sector". All these categories of non-farm activities describe the process of de-agrarianisation, which comprises four mutually non-exclusive elements: "occupational adjustment, income-earning reorientation, social identification and spatial relocation of rural dwellers away from strictly peasant modes of livelihood" (*Bryceson and Jamal, 1997:4; Bryceson, 1996*). Besides the often quoted reasons for engaging in RNFE such as "profit maximisation" (particularly by the wealthier households), "risk minimisation" and "income stabilisation", RNAAs appear to have acquired a new significance during the post-adjustment era.

The transition from cheaper, easily accessible to scarce market-mediated resources and a curtailment of public services to rural areas (especially inputs and output marketing and infrastructure) "have left demand suspended until a local market response is mustered" (*Bryceson and Jamal, ibid: 8*). The increasing demand for such services in the rural areas after SAPs, thus, provides fertile ground for local innovation and entrepreneurship, at least, in the Schumpeterian sense of introducing "new" products to the market (product differentiation); perceiving of and acquiring "new" markets for new and/or existing commodities (market segmentation); discovering a "new" source of raw materials (cost-effective input provisioning), and introducing a "new" method of production and organisation - technical and infrastructural improvement for increased production to meet existing and/or emerging market opportunities.

De-agrarianisation in SSA is gradually closing the gap between farmers and traders and between what is rural and what is urban, as farmers increasingly get involved in trading activities to supplement their agricultural earnings. This is more the case in marginal areas where frequent drought and structural reforms compound production and marketing problems further. More importantly, the farmer-trader or rural-urban interface provides an ideal facade on which to examine private and public sector activities after liberalisation and privatisation. For instance, the mushrooming of NARE activities, especially petty trade and services, may suggest a shift from agriculture to services.

Entrepreneurs could, therefore, introduce technical and marketing innovations to cut out their own market niches or segments (in credit provision, transport, new technologies, buyer specifications, etc.) without necessarily duplicating or undercutting others (*Bank, 1997*). Under a liberalised economic system, this could signal the end of the black market and entry into parallel and open markets. Small home-market-oriented enterprises then appear to be viable entry routes into a liberalised market economy. Available evidence points to high expenditure elasticities for services (*Livingstone, 1997*) and a tendency for market segmentation to be based on differences in delivery services rather than product specialisation (*Pedersen, 1997*). An expanded service sector catering first for the domestic market appears to be a more appealing post-liberalisation strategy. It, therefore, makes little sense to continue recommending "specialisation" in agricultural export commodities.

A variant of this school sees de-agrarianisation as a response to the processes of commercialization, industrialization and urbanization in the rural areas, especially those experiencing population and land pressure. This is well documented in studies of Zimbabwe (*Pedersen, 1994*) and Niger (*Moller, 1998*). It subsequently views rural non-agricultural activities within the market paradigm, as promoting trade and service delivery for agricultural and rural development and as providing multiplier effects to the rest of the economy through the springing up of rural growth centres (*Pedersen, 1994; 1996; 1997a; 1977b; 1999a; 1999b; 2001*). The RNAAs, which are viewed as having a growth potential by acting as "trading agents" and offering producer services (*Pedersen, 1999: 144-155*) fall into two categories. The first involves very small (micro) enterprises, basically household-based and run and operated seasonally or on part-time basis. The second category involves small to medium-size enterprises, urban-based, typically private, employing wage labour and serving a wider market (*Sverrisson and van Dijk, 2000*).

This paradigm is propounded further by Bathrick (1998), who argues that in order to respond meaningfully to the "new economic order" imposed by adjustment and globalisation, developing countries must abandon import-substitution. They should, instead, adopt market-led farming practices and spur growth, by exploiting the considerable emerging opportunities by diversifying both traditional and non-traditional exports. For this to happen, however, "new public and private roles are required for the facilitation of investment and equity needs" and for nurturing the "new" agricultural systems. The public and private sectors will also need to develop institutional capacities and technologies (*Pedersen, 2001: 2; Seppala, 1997*). The implementation and monitoring of such a strategy also needs to change from the traditional top-down to one that would involve dialogue between farmers and service providers (*Friis-Hansen, 1999; 2000*). The new input and output marketing structures required need to handle product differentiation, instead of the old system of collecting a limited range of crops produced in bulk and concentrating them in a few large urban centres. More importantly, if the poor smallholder rural farmers have to be reached, then large institutions (public or private) may not achieve efficiency. Instead, small enterprises need to take up the challenge as they have the potential to supply a larger variety of products in lesser quantities to small and big clients in both rural and urban areas. At present, some RNAAs have been performing this role but these do not appear to be attracting the attention of researchers.

Seasonal fluctuations in weather and production and lack of access to credit compel farmers to invest in non-agricultural activities as an income diversification strategy. The latter are indeed started with savings from agricultural activities or urban wage labour. Savings from RNAs and remittances from urban wage labour or pension funds may also be used to boost farming. This falls under the livelihoods perspective (*Ellis, 1999; 2000*). The ongoing employment freeze and civil service retrenchments, as well as inadequate compensation to retrenched due to structural reform have dealt a big blow to both agriculture and RNAs, especially trade. Thus, re-circulation of the same capital, several times a year (*Moller, 1998*), is becoming increasingly difficult. Urban workers also used to be a major source of new technologies for rural farmers but not any more. Thus, although agriculture still remains one of the main income-earners and employers in SSA, its future survival will largely depend on non-farm activities constituted as small enterprises.

In the post-adjustment era and beyond, it is these small enterprises that will prop up agriculture by supplying inputs and new technologies, and in sourcing new market opportunities both locally and abroad. In this interface, between agriculture and small non-agricultural activities, the middleman phenomenon will have to be looked at afresh, away from the old perspective of agents of exploitation to easily accessible buyers and suppliers of vital market information, particularly that on local, national and off-shore market demands, such as quality and quantity buyer specifications. In Mbeere, this is taking place in the fruit industry, dairy farming and small-scale irrigation where the middlemen channel information on improved production techniques back to the farmers. The dynamics of this emerging trend need to be investigated, for it is likely to shed more light on market segmentation and product differentiation, which should not be seen entirely as signs of market failure or obstacles to free competition. It has been established that, rather than compete on price, traders keep shifting the borders of their market segments, and this leads to improved utilisation of scarce capital, transport and labour resources from diverse sources (*Pedersen, 2001: 11*).

4.3 Innovation and Entrepreneurship in African Agriculture

Entrepreneurship is a central theme in development studies and is directly or indirectly related to livelihood diversification from an African context. It is defined as the ability to perceive of and exploit existing or emerging market opportunities for profit (*Kirzner, 1979; 1985*). This involves the ability to make

decisions or allocate resources under conditions of risk due to uncertainty (*Knight, 1921; Hebert and Link, 1988; Casson, 1982; Kilby, 1971*). For this reason, entrepreneurs are individuals who do new things or do things that are already being done in a new way. This is an innovation which Schumpeter calls “new combinations”. According to him, every act of production implies a “definite combination” of productive forces and every “new combination” distinguishes one method of production from another (*Schumpeter, 1934:12-14*). Innovation, therefore, is the defining characteristic of entrepreneurship and does not necessarily entail invention. As argued, “innovation is possible without anything we should identify as invention and invention does not necessarily induce innovation” (*Schumpeter, 1934: 84*).

The corollary of this is that innovators are not necessarily entrepreneurs because they may never put their innovations to productive use while entrepreneurs, besides innovating, could harness the innovations or resources of others for economic gain. Entrepreneurs may not own capital but could mobilise their little savings, pension benefits or credit to produce the best possible results. This distinguishes them from managers whose “best method” of producing is seen as the most advantageous among the alternative and familiar methods, but it is not the “best” of the methods currently possible. The objective function of entrepreneurs, on the other hand, is to obtain the maximum possible output by using the best of the methods currently possible (*Friedman, 1967; Kalirajan and Shand, 1993*). Entrepreneurs therefore constitute a special category of managers. Going by this, it is rational to assume that farmers with full knowledge of technical production possibilities are also likely to have the knowledge and ability to equate real marginal productivities with real factor prices.

Being the first individuals to take risk in trying new things or ideas not familiar to others in their immediate localities, entrepreneurs assume the role of “leaders” who break old traditions and establish new ones. The innovations of entrepreneurs disturb existing economic equilibria or restore skewed economies back to equilibrium, and this produces economic development (*Schultz, 1981*). It should be noted however that not every disturbance of the economy produces positive results. This is why entrepreneurs have been referred to as catalysts, or engineers of economic growth (*McClelland, 1961; Hagen, 1962; Cole, 1959*). However, according to Schumpeter, there are no individuals in society who are permanently or professionally entrepreneurial. Some individuals may exhibit

entrepreneurial behaviour only once in their lifetime. This realisation is important for researchers studying failed entrepreneurs.

Innovation is not a new phenomenon in African agriculture. The concepts of village technology, indigenous research and on-farm trials as well as farmer-to-farmer learning processes have been well documented since the early 1970s (*Johnson, 1972; Macpherson, et al., 1975; Mowery and Rosenberg, 1979; Brokensha, et al., 1980; Biggs and Clay, 1981; Lightfoot, 1987; Budelman, 1983; Bunch, 1984; Chambers, et al., 1989*). This group of literature largely challenges the old thinking that African peasants are static societies whose activities revolve around survival concerns and are generally risk-averse (*Shanin, 1971; Hyden, 1985; Richards 1991; Bernstein, 1979; Ellis, 1988; 1999; 2000*).

There is now evidence to the effect that African peasantries behave in a manner that is economically rational towards market opportunities and incentives (investment decisions) as well as in environmental conservation. This line of thinking also challenges the ToT model (*Rogers, 1983; 2000*) by positing that development may be induced by factors largely endogenous to a system such as shifts in relative factor prices or scarcities in the supply of such productive factors or demand for old as well as new products. This has been referred to as “induced institutional and technical innovation” under which the innovating farmer is now seen as the norm rather than the exception (*Hayami and Ruttan, 1970; 1971; 1993; Binswanger and Ruttan, 1978; Binswanger, 1978a; 1978c; Ruttan and Thirtle, 1989; Pomp, 1994; Critchley, 1999*). Market-oriented production is now quite visible in many parts of Africa (*Dommen, 1975; McDowell, 1975; Richards, 1991; Rhoades and Booth, 1987*).

While innovation may not be new in African smallholder agriculture, entrepreneurship is. Previous studies on the latter cite scarcities in entrepreneurial ability in Africa (and especially in agriculture) as one of the major constraints to development on the continent. For a long time, entrepreneurial activity has been associated with urban-based big business and industry (*Cole (1959), Kilby (1965, & 1971), Nafzinger (1977), Hart (1972), Marris and Somerset (1971), and Wilken (1979)*), and lately with small and medium-sized enterprises mostly in trade and manufacturing (*Pedersen and McCormick (1996 & 1999), McCormick (1992 & 1998b), McCormick, et al: (1997), and Spring and McDade (1998)*). In agriculture, only the pioneering

studies of Hill on cocoa in Ghana (1956; 1963) and Wrigley on cash crops in Uganda (1959) appear to have hinted at the existence of entrepreneurship in this sector. The post-adjustment era offers ample opportunities as well as challenges in the study of agricultural innovation as part of livelihood diversification and entrepreneurship within an African rural setting. The proposed study will adopt a neo-Schumpeterian approach in analysing entrepreneurial behaviour in diversification. Four relevant aspects of his theory of entrepreneurship that will be used by this study have been identified as follows:

- (i) ***The introduction of a new good (or service):*** For purposes of the proposed Mbeere study, the newness of a good or product is not synonymous with invention but is considered “new” with respect to its new economic orientation and production arrangements within the household or locality or the fact that someone is producing it for the first time in their lives. The current commercial production of improved fruit varieties, milk and horticultural products in Mbeere makes them pass for “new” products. The fabrication of animal-drawn carts and trucks-for-hire are new products and services entering the market.
- (ii) ***The introduction of a new method of production:*** The production of vegetables through small-scale irrigation and expansion of acreage under improved fruit varieties are considered to be new methods of production.
- (iii) ***The opening-up of a new market:*** The search for new markets for “new” or existing products (fruits, milk and vegetables) by entrepreneurs acting individually or in groups qualifies under “opening of new markets”. Here, acquisition of market information and means of accessing markets will be investigated.
- (iv) ***The conquest of a new source of raw materials:*** Mbeere is a semi-arid medium and low-potential area, ideally suited for the production of beef cattle, and removed from the main markets. As the increasing adoption of grade cows calls for zero-grazing amid increasing land shortage and soaring prices of modern commercial animal feeds and veterinary services, the study will investigate how farmers identify and use alternative feeds, veterinary medicine and pesticides for crop protection.

4.4 SAPs and Market Liberalisation

Structural adjustment is now entering its third decade in most of Sub-Saharan Africa (SSA). The impact has been far-reaching but extremely varied depending on the sector, actors, circumstances or country involved. With respect to the agricultural sector, numerous studies have already documented the reform experience and preliminary effects, especially of market liberalisation and privatisation after the retreat of the state (*Beynon (1989), Gibbon (1992, 1996 & 1998a), World Bank (1994a), Jones (1994), Cleaver and Donovan (1995), Gibbon and Olukoshi (1996), Pedersen, et al: (1996), Cromwell (1960), Badiane, et al: (1997), Hubbard (1999), Ponte (1990a, 1998, & 1999b)* and (*Friis-Hansen, 2000*). In all these studies, there is a general observation, including the Bank itself, that adjustment has not achieved its intended purpose in most of SSA and has subsequently posed more questions than answers (*World Bank, 1989; 1994a; 1996a; 1996b*).

In some instances, the service-providing and marketing (mostly monopolistic) public institutions have retreated, leaving behind an underdeveloped and unprepared private sector. In others, it has led to cut-throat competition among private entrepreneurs with the resultant cut-back in their profit margins. In others still, the ground has been prepared for a vibrant competition between the public and private sector players but there is currently scanty knowledge on key issues such as market segmentation, product differentiation and emerging mechanisms in livelihood diversification. In addition, little is known about the implications of the contracting home market due to rising food prices, retrenchment of civil servants and declining state subsidies, among others.

Part of the problem appears to emanate from three main factors. First, there is a tendency by the Bank as well as the impact studies to view adjustment and the related issues of liberalisation and privatisation as homogeneous phenomena affecting all countries, sectors, actors and communities in a uniform, predictable way. This could be part of the reason why the adjustment crusaders are crying foul over the failure to achieve the predicted results, and as argued below, "success stories" have been extremely few in SSA.

Secondly, for both producers (or sellers) and buyers to reap maximum benefits from a liberalised market regime, there is an underlying assumption that sufficient comparative advantage and scale economies can only be realised through specialisation (in either producing, selling or buying a given

the absence of state control is likely to lead to a breakdown in primary level quality control and a curtailment of forward or tender selling arrangements.

There is apparently general consensus that agricultural sector reforms in Africa have to date failed to attract a private sector with well functioning markets for inputs, output, producer credit, research and extension and rural infrastructure. This "missing markets" phenomenon is more severe in the remoter, marginal rural areas (*Cleaver and Donovan, 1995; Townsend, 1999; Griffon and Hilmi, 1998*). The retreating state appears to have left a gap that the private sector is either unwilling or ill equipped to fill. Meanwhile, adjustment crusaders continue to argue for private sector regulation without necessarily renewing wholesale state intervention (*World Bank, 1994; Friis-Hansen 2000:23*).

Available evidence suggests that post-adjustment results in much of SSA (except the Western Sahel) have been far from impressive. Real agricultural growth was only 2.3 per cent per year in the period 1989/91-97, increasing slightly to 2.6 per cent per year (*FAO, 1997:35*). Although food production is said to have increased by 2.7 per cent per year during the same period, and population by 3.0 per cent, per capita agricultural and food production both registered falls. Only 12 countries achieved agricultural growth rates of over 4 per cent by late 1990s, with Ghana, Uganda and Zimbabwe being touted as success stories. The case of Tanzania shows a spectacular rise in tobacco, cashew nuts and other export crops production, but for only two seasons, after liberalisation, then relapsing into earlier production levels (*World Bank, 1998: 17; Friis-Hansen, 2000: 30-31*). This may imply that in some countries, or for certain crops, liberalisation meant a "once-and-for all" type of supply response due to increased producer prices and efficient payments following the demise of state monopolies and introduction of a free market system.

Food crop production in most of SSA has responded rather unsatisfactorily to adjustment measures so far undertaken. Areas located far from major markets have become worse-off after policy reforms and the withdrawal of subsidies for inputs, credit and transport, while food prices have not been increasing. The available "success stories" are found mainly in the export crops sub-sector (e.g. Ugandan coffee and Zimbabwean cotton sub-sectors), even here, such success should not necessarily and automatically be attributed to market liberalisation. For instance, in Ghana and the Ivory Coast, the relatively good performance of cocoa has taken place in the context of minimal liberalisation (*Friis-Hansen,*

2000: 34). However, although the food-crop sub-sector in SSA provides a relatively good example of increased cost-effectiveness following market liberalisation, the control of food crop marketing and processing was transferred to the private sector in a relatively short period of time. Increased levels of buyer competition have considerably reduced the waiting time before payment to farmers. Competition and increased efficiency in marketing and processing have, nevertheless, decreased profit margins for the private sector actors. As a result, real prices for grain and grain meals have declined after the reforms, thus benefiting consumers, while real producer prices have remained relatively low.

Small and micro-enterprises composed of individuals or groups could play a more efficient and effective role in service provision after liberalisation. The policy changes since adjustment have only to a limited extent taken advantage of this potential and most African governments have contributed little to stimulate and support farmers to organise locally to take on new functions and responsibilities. Such support involves a participatory dialogue between state organisations on the one hand and farmers, local communities, NGOs and other sub-sectors of the civil society, on the other. There now appears to be an urgent need to give farmers choices and encourage them to innovate and experiment rather than compel them to adopt pre-determined or pre-packaged technologies by extension services.

4.5 The Study's Theoretical Basis

While fully acknowledging the above theoretical models, this study will rest on the premise that agricultural entrepreneurship is a conscious attempt to diversify and sustain livelihoods through innovation. Adoption of an entrepreneurial activity instead of or in addition to ordinary livelihoods derives from an individual's personal characteristics, ability to mobilise resources to exploit profit opportunities, and the incentives motivating the adopter. In this process, innovation guides value addition or product upgrading of agricultural commodities thereby laying the foundation for profit-based farming activities. This in turn creates the potential for poverty reduction by increasing household incomes or stabilising existing income regimes or creating employment opportunities on and off the farm. The cumulative effect of this process may then spread from the entrepreneur's immediate household to the macro level. This may occur through the creation of farm-non-farm linkages which occur in the form of vertical integration, whereby one agricultural activity spurs the evolution

or growth of other activities, all of which contribute to the production, distribution and consumption of any one given product.

In this way, agricultural entrepreneurship contributes to poverty reduction and economic development in one or a combination of the following: increased or more stable household incomes; employment creation; infrastructural growth and improvement; technological development and growth of rural industries; greater money circulation; group formation, such as in the form of co-operatives; increased investment in non-farm activities especially those related to agriculture and increased wellbeing.

4.6 Hypotheses

The proposed study will seek to prove or disprove four main hypotheses. These are:

- (i) That entrepreneurship is a function of an individual's personal characteristics, ability to mobilise productive resources to exploit profit opportunities, and the incentives motivating the adoption of a given profit-driven entrepreneurial activity;
- (ii) That knowledge of and access to market outlets is necessary but not sufficient for farmer innovation;
- (iii) That wellbeing in households belonging to the entrepreneurial farmers increases over time relative to that in those households whose members pursue ordinary, traditional farming or other common non-profit oriented livelihoods; and,
- (iv) That the developmental impact of agricultural entrepreneurship can be spread to other households with implications for poverty reduction at the micro and macro levels.

5.0 METHODOLOGY

5.1 Site Selection and Description

The study will be carried out in Mbeere, a semi-arid rural area of Eastern Kenya. Mbeere District covers an area of 2,092.5 square kilometres with an estimated population of 170,953 (1999 Kenya Population Census, Vol.1: 1/71-73). The current population density is 82. Geographically, it is classified under Arid and Semi-arid Lands (ASALs) and was one of the six areas selected in Kenya in the early 1970s for experimentation with the Special Rural Development Programme (SRDP). Three Agro-Ecological Zones (AEZs) criss-cross the district, namely:

AEZ 3 – good medium potential;

AEZ 4 – medium potential; and

AEZ 5 – low potential

Except for zone 3, which receives an average annual rainfall of 900-1000 mm, the rest of Mbeere is dry most of the year, with zone 5 sometimes receiving less than 600mm. Agricultural activities mainly involve crop cultivation and livestock rearing. This makes modern agricultural practices such as zero-grazing extremely risky and the search for alternatives to rain-fed agriculture more imperative.

Most Mbeere households practise ordinary farming and their livelihoods revolve around the husbanding of traditional crop and animal varieties. The failure of cash crops such as cotton since the early 1980s has led to the rise of "*Miraa*" (Khat) as a new cash crop although its adoption is still limited. It has also led to livelihood diversification in various ways such as commercialisation of traditional food crops (millet, sorghum, green grams, cowpeas, pigeon peas, maize, etc.) and income-earning activities across pre-existing gender divides. Increased access to information especially on new markets and technologies has led to increased production of improved fruit varieties (notably mango and papaya) and other biologically modified seeds, even by small-scale farmers. Land shortage due to adjudication and registration into individual parcels has created concerns for increasing productivity per unit, which in turn has led to issues of technology and crop choice and combination. The search for alternatives to rain-fed agriculture due to recurrent drought has seen a rise in hand and diesel-powered pump irrigation along the banks of permanent rivers. It has also led to increased experimentation with exotic dairy cattle through zero-grazing, a phenomenon deemed impracticable ten years ago due to climatic and

ecological harshness. All these are taking place at a time when the previously supportive framework of public institutions has largely collapsed.

Lying about 200 kilometres from Nairobi, and with dilapidated infrastructure, coupled with the absence of crop marketing boards, Mbeere has to contend with problems of accessing the main commodity markets, both internal and external. While liberalisation may have brought with it more and/or markets offering better prices than under previous state monopolies, the benefits of such emerging markets may go unexploited mainly due to lack of access to affordable inputs which may constrain production or lead to lower quality produce. Most Mbeere farmers are smallholders who are unlikely to realise sufficient economies of scale or comparative advantage to boost profits. For instance, in order to reduce production and transportation costs, mango and papaya farmers have organised themselves into what we call "informal marketing co-operatives" by which organised groups jointly hire trucks to take the fruit to Nairobi and other urban market centres.

It would be interesting, therefore, to investigate how such farmers access inputs, new technologies, organise processing, storage and transportation to markets and search for markets locally and abroad. Indeed, some of the richer farmers are now exporting mango and passion juice direct to markets in the Middle East, without assistance from the Kenya National Chamber of Commerce and Industry. A study of production and marketing innovations in marginal areas after liberalisation is important for two main reasons. First, it would reveal whether profit-based or entrepreneurial farming is possible in such areas and second, it would indicate whether such farming has any positive implications for poverty reduction and rural development.

5.2 Sources and Types of Data

Both qualitative and quantitative data will be sought. Qualitative or secondary data will be retrieved from all the relevant existing literature on Mbeere, especially one on agricultural innovation adoption. Quantitative or primary data will mainly come from a random sample survey of 100 farmers, selected from two locations of Mbeere where fruit and dairy farming activities are concentrated and which form the hinterland of the main market/town centre, Siakago. The other component of the primary data will be gathered from a purposefully selected innovators identified by a 1996/97 study of agricultural innovators in Mbeere. The third stream of primary data will come from in-depth interviews

conducted with carefully selected key informants. Field observations by the researcher are also expected to yield some useful data.

5.3 Sampling Procedures

5.3.1 Random Sampling

The research methodology will involve three aspects. The first will be a random sample survey of 100 farmers from two locations within close proximity of the main market centre, Siakago (i.e. Nthawa and Gitiburi). Four distance radii will first be established, which correspond to footing only, footing and cycling, cycling only and motorised transport. These distances are 0-2 km, 2-4 km, 4-6 km and over 6 km. 25 farmers will then be randomly selected from each of these distance radii and interviewed using a structured questionnaire. The sample size of 100 represents about 5 per cent of all Mbeere farm households according to the 1999 population census figures.

5.3.2 Purposeful Sampling: A Case Study of 64 Old Innovators

In a similar study carried out by the author in 1996/97, 64 farmers were identified as innovators out of a random sample of 200. Out of the 64, 35 were in improved fruit farming while 29 were dairy farmers. These innovators will be retraced and interviewed using an Interview Guide. The aim is to find out whether they are still involved in the same activities as in 1996/97, whether these activities have expanded, shrunk or collapsed, what other activities (farm or non-farm) they might have adopted, what their markets are, their input sources, methods of product upgrading and quality control, the constraints they have been facing and their coping mechanisms, and whether they are currently better or worse off than when they started. Due to natural attrition, we may not find all the 64 farmers alive but we shall interview all those that we find alive.

5.3.3 Key Informant Selection

This aspect of the methodology will involve interviews with at least 20 individuals considered to be key informants by virtue of the relevance of their roles and activities to the study. These will include individuals and businesses carefully selected from the following categories:

- (i) Private entrepreneurs (farm input suppliers, animal feeds stockists, irrigation pump dealers, etc);
- (ii) Animal-cart makers and motorised transporters;
- (iii) Credit providers;
- (iv) Pump repairers and mechanics;

- (v) Middlemen;
- (vi) Large-scale agribusiness (Yoder International);
- (vii) NGOs (Plan International; K-RFP); and
- (viii) Community-Based Organisations (Kamurugu Farmers Project).

In addition, a few selected officials of government institutions (at the national and local levels) that used to support farmers in three main areas i.e. basic inputs such as fertilisers, credit, and output marketing. Research and Extension officials will also be interviewed. These will be drawn from, among others:

- (i) Ministry of Agriculture
- (ii) Ministry of Co-operative Development;
- (iii) Agricultural Finance Corporation;
- (iv) Agricultural Extension Agents;
- (v) Ministry of Water Development;
- (vi) Kenya National Chamber of Commerce and Industry; and,
- (vii) The Mbeere District Dairy Board.

5.4 Data Collection Techniques and Tools

(i) **Secondary data** will be gathered through perusal of all available but relevant records and literature on the topic and study area.

(i) **Primary data** will be gathered through personal interviews with the randomly sampled farmers using a *Structured Questionnaire*. A semi-structured *Discussion Guide* will be used to collect data from the purposeful case-study sample of the old innovators identified during the 1996/97 Mbeere survey. In addition, key informant interviews will be conducted with carefully selected respondents, using an *Interview* or *Discussion Guide*. Throughout the research period, additional information will be collected through direct *Observation*, where the researcher's eye will be the data collection tool.

5.5 Methods of Data Analysis

The study is expected to yield both quantitative and qualitative data. The random sample will yield mainly quantitative data, which will be processed using the SPSS Program. The output, which will be in the forms of frequency distributions of the mean, median and mode and other descriptive statistics, will then be analysed to give possible scientific explanations of variable relationships. Each of the four study hypotheses will then be tested after a thorough disaggregation

conducted with carefully selected key informants. Field observations by the researcher are also expected to yield some useful data.

5.3 Sampling Procedures

5.3.1 Random Sampling

The research methodology will involve three aspects. The first will be a random sample survey of 100 farmers from two locations within close proximity of the main market centre, Siakago (i.e. Nthawa and Gitiburi). Four distance radii will first be established, which correspond to footing only, footing and cycling, cycling only and motorised transport. These distances are 0-2 km, 2-4 km, 4-6 km and over 6 km. 25 farmers will then be randomly selected from each of these distance radii and interviewed using a structured questionnaire. The sample size of 100 represents about 5 per cent of all Mbeere farm households according to the 1999 population census figures.

5.3.2 Purposeful Sampling: A Case Study of 64 Old Innovators

In a similar study carried out by the author in 1996/97, 64 farmers were identified as innovators out of a random sample of 200. Out of the 64, 35 were in improved fruit farming while 29 were dairy farmers. These innovators will be retraced and interviewed using an Interview Guide. The aim is to find out whether they are still involved in the same activities as in 1996/97, whether these activities have expanded, shrunk or collapsed, what other activities (farm or non-farm) they might have adopted, what their markets are, their input sources, methods of product upgrading and quality control, the constraints they have been facing and their coping mechanisms, and whether they are currently better or worse off than when they started. Due to natural attrition, we may not find all the 64 farmers alive but we shall interview all those that we find alive.

5.3.3 Key Informant Selection

This aspect of the methodology will involve interviews with at least 20 individuals considered to be key informants by virtue of the relevance of their roles and activities to the study. These will include individuals and businesses carefully selected from the following categories:

- (i) Private entrepreneurs (farm input suppliers, animal feeds stockists, irrigation pump dealers, etc);
- (ii) Animal-cart makers and motorised transporters;
- (iii) Credit providers;
- (iv) Pump repairers and mechanics;

- (v) Middlemen;
- (vi) Large-scale agribusiness (Yoder International);
- (vii) NGOs (Plan International; K-RFP); and
- (viii) Community-Based Organisations (Kamurugu Farmers Project).

In addition, a few selected officials of government institutions (at the national and local levels) that used to support farmers in three main areas i.e. basic inputs such as fertilisers, credit, and output marketing. Research and Extension officials will also be interviewed. These will be drawn from, among others:

- (i) Ministry of Agriculture
- (ii) Ministry of Co-operative Development;
- (iii) Agricultural Finance Corporation;
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- (v) Ministry of Water Development;
- (vi) Kenya National Chamber of Commerce and Industry; and,
- (vii) The Mbeere District Dairy Board.

5.4 Data Collection Techniques and Tools

(i) **Secondary data** will be gathered through perusal of all available but relevant records and literature on the topic and study area.

(i) **Primary data** will be gathered through personal interviews with the randomly sampled farmers using a *Structured Questionnaire*. A semi-structured *Discussion Guide* will be used to collect data from the purposeful case-study sample of the old innovators identified during the 1996/97 Mbeere survey. In addition, key informant interviews will be conducted with carefully selected respondents, using an *Interview* or *Discussion Guide*. Throughout the research period, additional information will be collected through direct *Observation*, where the researcher's eye will be the data collection tool.

5.5 Methods of Data Analysis

The study is expected to yield both quantitative and qualitative data. The random sample will yield mainly quantitative data, which will be processed using the SPSS Program. The output, which will be in the forms of frequency distributions of the mean, median and mode and other descriptive statistics, will then be analysed to give possible scientific explanations of variable relationships. Each of the four study hypotheses will then be tested after a thorough disaggregation

of the dependent and independent variables. The statistical significance of the findings and confidence intervals/margins of error will be given by the Chi-Square and T-tests. Qualitative data will come mainly from the purposeful sample of the "old innovators" as well as the key informant interviews. These data will not only provide descriptive information on a wide range of the issues under investigation but will also be used to construct selective innovator profiles in fruit and dairy farming.

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