

CHAPTER 7

CONCLUSIONS AND RECOMMENDATIONS

7.1 INTRODUCTION

This final chapter presents a summary of the thesis. It deduces relevant conclusions and forwards suggestions that may help to realise sustainable rural livelihoods in the Hararghe Highlands of Ethiopia. To this effect, the chapter is organised as follows. First, a brief summary of the background of the research and the problems addressed in the thesis are presented. This is followed by a brief description of the analytical framework that has guided the investigation and the research method used to acquire the relevant data and analyse the data. A wrap up of the major findings of the investigation is presented following the summary of the research method. Finally, the chapter winds up after making relevant conclusions and forwarding certain recommendations.

7.2 THE FOCUS AND THE PURPOSE OF THE THESIS

It is quite evident from all the available evidence that contemporary rural Ethiopia and the Hararghe Highlands are both characterised by fast population growth, accelerated natural resource degradation and deepening poverty. Hence, finding ways of achieving sustainable rural livelihoods is a formidable challenge. Sustainable rural livelihood is the one that generates sufficient living for the rural households to lead an active and a healthy life, whilst enhancing or at least maintaining the quantity and the quality of the renewable natural resource base.

Population and development theories predict either a regressive role of rural population growth through land fragmentation, deforestation, overgrazing, erosion, siltation, salination, soil acidification, etc. or a progressive role of rural population growth through increasing market size, changing factor proportions, inducing technological progress and creating demand for institutional innovations. Others emphasise institutional arrangements, arguing that the interactions between rural demography and rural development do not take place in an institution free environment.

In addition, the implications of rural demographics for human welfare and the sustainability of NRM are not only influenced by a host of institutional, political, technological and agro-climatic (climate, soil type, and slope characteristics) factors, but also vary across countries, in different agrarian systems within a country and across households in a village. Moreover, it was argued that decisions concerning fertility and the use of the local natural resource are reached at and implemented within households, but the interface of population, natural resource and human welfare at a spatially localised level has been a relatively neglected subject in empirical work in rural development.

The above observations have led to the conclusion that generalisation based on aggregate studies is imprecise and less insightful. Context specific policy, technological and institutional solutions are required to realise sustainable rural livelihoods in the circumstance of diverse local situations. The designing and implementation of context specific development strategies that integrate livelihood needs of the local people with sustainable NRM, in turn, calls for a thorough understanding of alternative livelihood strategies of rural households and communities. The latter is very important not to commit a limited resource available for rural development based on untested assumptions about the rural poor and its livelihood strategies.

Against this background, the researcher accepted the challenge to understand and explain rural livelihoods in the HHs. It assessed the human welfare outcome and underscored the sustainability implications of livelihood strategies pursued at household and community levels in the HHs in the context of the growing man-land ratio and the prevailing institutional, policy and agro-climatic factors. Specifically, the thesis has addressed the following issues: 1) critically reviewing the evolution and salient features of institutional and policy environment of the country in order to be able to understand whether it facilitates or constrains the realisation of sustainable rural livelihoods at the grassroots level in the subsequent analyses; 2) developing and describing rural households' typology in order to examine diversity in livelihood behaviour in the subsequent analyses; 3) identifying and describing land use strategies pursued at household and community levels; 4) investigating the nature,

extent and determinants of livelihood diversification and the role of reduced access to land in households' diversification decision; 5) exploring whether and to what extent households' demographic behaviour such as migration and household size or achieved/intended fertility are responsive to the increasing natural resource scarcity especially cropland; 6) assessing welfare outcome, in terms of food security status, of livelihood strategies pursued by households; and finally 7) highlighting sustainability implications of livelihood strategies pursued at household and community level.

To the researcher's knowledge, this study is the first attempt in the HHs, possibly in Ethiopia, to conduct such a comprehensive analyses of population, resource and welfare interface at a spatially localised level, using the livelihoods approach and drawing on concepts and theories from agriculture and natural resource, economic demography and rural sociology.

The rural livelihood analysis was expected to identify livelihood related opportunities and constraints, provide local insights and identify priorities of rural households that inform policy at higher levels. It was also expected to explain how the prevailing structures and processes affect rural livelihood behaviour at the grassroots level. The information generated by such research is believed to enrich the current policy debate on how to create an enabling environment to strengthen sustainable rural livelihoods and mitigate adverse welfare and resource consequences of unsustainable rural livelihood strategies.

7.3 ANALYTICAL FRAMEWORK AND RESEARCH METHOD

Analysing livelihood behaviour of rural households and underlying causes of their behaviour is a daunting task. A framework was needed to break the complex human behaviour into its constituent parts so that the human mind can effectively and systematically deal with it. It is an analytical framework that guides the research that should determine the nature of the required data, method of acquiring the necessary data. Analytical framework also serves as a 'lens' through which a researcher looks into and interprets behaviour. It further helps to systematically organise the reporting of research results.

A number of alternative conceptual and analytical frameworks to analyse rural livelihoods in general and the effect of population growth in particular have been suggested in the literature. Nevertheless, the available frameworks either concentrate on agriculture and natural resources and thus do not explicitly account for the possibility of diversification into off-farm/non-farm or neglect the importance of demographic adjustments like delayed marriage, fertility control within marriage and migration (e.g. Templeton and Scherr, 1997). Although the SLF (DFID, 1999; Ellis, 2000) provides a better option, it has its own shortcomings. The latter framework is static, de-emphasises permanent migration, and neither the analytical framework nor the empirical analysis does include fertility behaviour as an aspect of rural livelihood strategies. Furthermore, if application of the sustainable rural livelihood framework, as suggested by DFID, is attempted in the research context without any adaptation, it makes the research agenda open-ended and the research costly and unmanageable.

There was thus a need for a specific, but comprehensive framework that can systematically integrate all the contesting paradigms and accommodates all aspects of rural livelihood strategies in the context of rural demographic pressure. Hence, an alternative framework that explicitly accounts for the macro and micro socio-economic factors influencing rural livelihoods behaviour at the grassroots level, that accommodates all aspects of rural livelihood and that does not assume the final livelihoods outcome a priori was developed (Figure 2.3), and guided the investigation. However, the SLF (Scoones, 1998; Ashley and Carney, 1999; Ellis, 2000) and the 'microeconomic conceptual framework for hilly land management' (Templeton and Scherr, 1997) and the framework applied by von Braun *et al.* (1991) to analyse commercialisation of agriculture under population growth have informed the current framework despite their shortcomings.

Three research sites (Alemaya, Sabale and Kuni) were selected for the study purposely. The sites were selected to capture the different economic systems in the HHs in terms of the level of commercialisation of production and also taking into account the severity of land scarcity as perceived by the local MoA staff and accessibility during the rainy season. One hundred and ninety seven households

were then selected using proportional (to include female-headed households) systematic random sampling procedure from the lists of households provided by the respective PAs for the study.

The fieldwork was carried out from mid of March 2001 to mid of January 2002. A combination of the conventional survey methods (questionnaire surveys and once-off anthropometric measurements) and the participatory methods (group discussions, focus group discussions, group wealth ranking, transect walks, case studies, personal observations) were used to acquire the necessary primary data on different aspects of rural livelihoods. Each sample households had been visited at least five times during the fieldwork. The supplementary secondary data was obtained from zonal agriculture and economic planning offices, research reports, government policy documents, national statistical abstracts and reports of NGOs involved in rural development activities in the HHs.

The fieldwork generated qualitative as well as quantitative data. Verbal description, interpretation and appreciation of facts, highlights of household and community levels case studies, and descriptive statistics constitute part of the qualitative analyses. The multivariate techniques such as variance analysis, discriminant analysis and linear regression analysis, and a logit probability model, were used to analyse the quantitative data.

7.4 SUMMARY OF THE MAJOR FINDINGS OF THE THESIS

As it was rightly argued, it is the country-specific institutional arrangements and the overall policy environment that shape rural livelihoods behaviour at the grassroots level and thereby determine whether rural population growth is accompanied by a sustainable or an unsustainable rural development. Hence, Chapter 3 briefly, yet critically, reviewed the evolution and salient features of Ethiopia's institutional settings and the overall policy environment. It looked into the land tenure institution, organisational and institutional factors in NRM, access to the market and profitable productivity-enhancing and resource-conserving technologies by smallholder farmers in a historical perspective.

The review uncovered the fact that smallholder farmers of Ethiopia have never been granted land tenure security and have never been given the opportunities to use and manage the common property regimes collectively at the grassroots level. The farmers' participation in the input and output markets have been constrained by high transaction costs due to the poorly developed infrastructure, information asymmetry, high level of illiteracy and inability of smallholder farmers to influence the terms of market participation. On the policy front, it became evident that the smallholder sub-sector in this country had been neglected, purposely discriminated against and exploited by all account. Until recently, no genuine effort has been made by policymakers of the country to improve smallholder farmers' access to appropriate technologies and to create price incentives through adoption of favourable agricultural policies. All of these factors have had negative repercussions on the motivation and the capacity of the smallholder farm households as far as responding to the unprecedented demographic pressure in a sustainable way is concerned.

The economic systems of the three sites covered by the study were described in detail in Chapter 4 in order to see their influence on households' livelihood strategies at the latter stage. Because the SRLF requires socially disaggregated analysis, Chapter 4 primarily dealt with conceptualising, developing and describing rural household typology. Group wealth ranking exercises has been used to develop socio-economic categories of the households and to identify a number of local wealth ranking, most of which are resource-based criteria. Discriminant analysis was then applied to objectively confirm the number of socio-economic groups and to reclassify the limited misclassified cases on the basis of Mahalanobis squared distance and posterior group membership probability.

It became apparent from the results of the analysis that the 1975 land reform and subsequent measures of the socialist government between 1975 and 1990 in Ethiopia had indeed weakened rural differentiation. However, some degree of differential access to livelihood assets still exists or is in the making. Livestock and human resource endowment with the quality of cultivated land, though not size, are the main source of differentiation. Poor, less-poor and better-off, in that order, accounts for 42.6%, 35% and 22.3% of the entire sample households. Most of the resource-poor households live in Sabale (53.8%), whereas relatively few of the

resource-poor (30.4%) live in Alemaya. Further, the disaggregated data by gender of heads of the households highlighted that female-headed households are over represented in the lowest socio-economic stratum. On the whole, the analysis showed that households have differential access to livelihood assets, face heterogeneous constraints and incentives and, therefore, pursue different food and income security strategies.

Having examined the specific macro institutional and policy context of the country (Chapter 3) and the micro level differential access to livelihood assets (Chapter 4), Chapter 5 was concerned with the in depth qualitative and/or quantitative analyses of rural livelihood strategies at household as well as at community level. In the chapter, households land use strategies, livelihood diversification and, migration and fertility behaviour in the context of diminishing access to agricultural land were investigated extensively and intensively. The analyses revealed that households in the HHs pursue complex, diverse and continuously evolving livelihood strategies.

Cropland expansion at the expense of forest and grazing land was found to have been the most common strategy to maintain per capita food production until very recently. Currently, there is no potential for further expansion of cropland frontiers in the HHs. Intensive land use is an alternative land use strategy in the face of the increasing man-land ratio. Three types of intensification strategies have been identified and analysed. These include increased cropping intensity both spatially and temporally, the production of high-value crops and investment in soil conservation and soil fertility maintenance.

As predicted by Boserup, labour-based intensification has intensified with the increasing population pressure on the land to maintain per capita food production. Land use is maximised temporally through double and multiple cropping. The bimodal distribution of rainfall in the upper highlands and access to irrigation in the lower highland have made possible combining the production of crops with a short and a long maturity period in a season. The synchronisation of cropping patterns with micro soil quality (fertility and water holding capacity) variation is also an aspect of spatial intensification. The intensification practices help to maximise benefit and minimise risk and thereby stabilise aggregate output.

The production of high value crops such as chat and perishables is the second form of intensification (in terms of value from a given unit of land). Improved access to the market and high return have driven the shift to chat and vegetables production. This happened in areas where the soil has higher water retention capacity or where some small-scale irrigation (surface or otherwise) is available.

Investment in land improvements, i.e., labour-based soil and water conservation activities and use of purchased chemical inputs such as inorganic fertilisers are the other forms of intensification strategy. The adoption of crop and conservation technologies maintains soil fertility and increases productivity.

Soil and water conservation measures like ridges, bunds, terraces and planting of chat hedgerows are extensively practised on steeper slopes and forestland converted to cropland to deal with the problem of soil erosion. It was observed that labour investment in soil and water conservation activities increases with the slope and perception of soil erosion severity. Physical conservation structures (soil/stone bunds) are commonly reinforced by biological methods (planting chat hedgerows, grass strips, etc.). For the same purpose, perennials are intercropped with annuals on steeper slopes. This suggests that the increasing land scarcity together with the increasing threat of land degradation to survival is gradually increasing households' willingness to invest their labour in soil and water conservation activities.

The amount of organic fertilisers applied to the cropland has declined substantially along with the decline in the livestock population in the HHs. Thus, the use of purchased chemical fertilisers and high yielding cultivars is another important intensification strategy. The empirical quantitative analysis has indicated that the probability of the adoption and the intensity of use of inorganic fertilisers are influenced more by cash crop income than grain income. Cash crop growers invest more in technology based staple crop production in order to compensate for the shift of land to the production of high-value cash crops. Although the coefficient for cropland per adult equivalent in the logistic regression model has a negative sign, indicating a tendency to a positive association between land scarcity and the probability of using inorganic fertilisers, it failed to be significant.

The households further pursue livelihood diversification strategies, usually to supplement farming income and in a few cases as an alternative to farming. Livelihood diversification strategies in the area, besides crop production, include extensive and intensive (stall-feeding) livestock rearing, and employment and income diversification through temporary and seasonal migration, wage labour, crafts and trades. Subsistence crop production, cash crop production and off-farm/non-farm activities contribute roughly the same proportion to the average annual income of poor households.

Some households pursue livelihood diversification strategies for survival and others for accumulation. However, the empirical analysis has confirmed that, in general, survival takes precedence over accumulation strategies in households' diversification decisions. Among other thing, tiny arable land sizes per adult equivalent, low levels of food self-sufficiency and low proceeds from cash crop sales increase the probability that households will participate in the largely less remunerative and intermittent off-farm and non-farm activities. Most of the off-farm and non-farm activities in the area are related to farming, in other words they vary with crop income and are highly influenced by the performance of farming.

The final section of Chapter 5 dealt with migration and fertility as an aspect of rural livelihood strategies. Rural migration has been found to be less important in the area in households' livelihood strategies due to institutional and administrative constraints and limited employment opportunities in the other sectors of the economy. Only about 13% of the sampled households reported one or more migrant household member(s) at the time of the survey. Employment, marriage, education and family separation, in that order, were identified as the main reasons for a change in the place of residence. It was also learnt that rural-rural migration predominates over other types of migration and that the need to earn additional income is the dominant motive for migration.

The fertility analysis first looked at the prevailing socio-economic and socio-cultural factors influencing fertility decisions in the study area. Then it empirically explored whether and to what extent increasing natural resource scarcity (of arable land in

particular) influences households' demographic behaviour. The qualitative analysis underscored that the prevailing family system, which accommodates newly married couples within existing households, low levels of female education, and the generally low status of women in the community and their low decision-making power, including fertility decisions, in the family institution, externalities in reproductive choice, a total absence of alternative sources of old age insurance or government support mechanisms, and the collapse of the traditional community-based support system under deepening poverty and increasing vulnerability were all found to have a negative impact on fertility decisions.

According to the results of the quantitative exploratory analysis, there is a positive and statistically significant relationship between family size and resource endowment (agricultural land). The poorer a household is, the smaller its size in the HHs. Resource-poor households and sites tend to perceive large family sizes as a problem, and in response they displayed positive intentions, backed by some deliberate actions in terms of participation in family planning, to limit their size. This may suggest that the increasing population pressure is slowly stimulating the demand for lower family size.

However, investment in children's schooling as a long-term livelihood diversification strategy was unanimously endorsed, especially among the better-off and in Alemaya, as the method preferred to fertility control to deal with increasing population pressure on the land. Unfortunately, it seems as if the households prefer to send their sons to school rather than daughters. This is because socially, girls, unlike boys, cannot legitimately claim part of the land over which their parents hold use right when they get married. This may have negative repercussions for long-term fertility transition, as females' level of formal education is negatively related to the current family size as well as intended fertility in the area.

The first concern of the last analytical chapter of the thesis, Chapter 6, was assessing human welfare outcomes of the rural livelihood strategies in terms of food security status of the concerned households. Having looked at the pros and cons of alternative indicators to measure food security status of households as an outcome, caloric consumption was selected. Cereals account for 74% of the total calorie

consumption of an average rural household in Ethiopia. The net quantity of cereals available for consumption at household level for the study period was, thus, believed to be a good proxy indicator of food security status of the households. Besides, it was estimated that 236 kg of cereals is needed per adult equivalent per year to meet the minimum daily calorie requirement of 2 200 kcals. The same quantity was used as a cut-off point to distinguish the food secure households from the food insecure households in the study area.

Alemaya is the most food secure. Less than 33% of the households in Alemaya did not have sufficient quantity of cereal to meet the minimum calorie requirement. On the contrary, Kuni is the least food secure with more than 71% of the households not being able to meet the minimum calorie requirement, while the figure for Sabale is about 61%. By types of household, 68%, 44% and 39% of the resource-poor, the less resource-poor and the better-off households, respectively, are food insecure. Overall, 53% of the households in the three sites in the HHs are food insecure. The figure is comparable to the national food insecurity figure of 52% for rural households.

The results of the binary logistic regression analysis of household level determinants of food security status has indicated that cropland size per adult equivalent, commercial production of chat and vegetables, and TLU owned are correlated positively and significantly with the households' food security status. Participation in off-farm/non-farm activities has a negative sign and insignificant in predicting food security status of the households. This corresponds with the limited scope of the off-farm/non-farm economy in the survey region. Indeed, as the earlier analysis showed, it is the food insecure household who usually pursue diversification strategies as a coping mechanism.

To supplement the food security analysis, the nutritional status of preschoolers was determined and quantitative analysis of determinants of long-term nutritional status of the preschoolers was conducted. Both the OLS method and binary logistic regression were used for analysing the data. Growing chat for the market and TLU owned positively and significantly explain the nutritional status of preschoolers. Furthermore, prevalence of malnutrition among preschoolers, school age children and adolescents

(less than 18 years old) taken together is 37.5% in Alemaya (highly chat dominated area), 45% in Sabale (moderate chat growing area) and 50% in Kuni (where chat is not important). This lends support to the results of the previous food security analysis.

The major implications of the livelihood strategies pursued by households and communities in the HHs for sustainable management of renewable natural resources were also highlighted in Chapter 6. A narrower definition of the concept of 'sustainability' was used for the purpose of this study. A sustainable rural livelihood strategy was taken as a livelihood strategy that enables households to generate sufficient living without compromising the sustainability of NRM.

On the one hand, rural livelihood strategies in the HHs in the context of increasing man-land ratio and constraining physical environment, institutional and policy factors have resulted in natural resource degradation. On the other hand, increasing scarcity of natural resource and increasing threat of the resource degradation to rural survival have created incentives for investing in resource conservation and soil fertility management. Some households and villages tend to invest more in soil and water conservation, while others tend to invest more in inorganic fertilisers. Heterogeneous investment strategies are pursued due to differences in the nature of the degradation problem, relative resource scarcity and ability to bear the risks involved in the adoption of resource-conserving and productivity-enhancing technologies.

In addition, the households have attempted to diversify their livelihood away from farming. Yet, the strong correlation of the off-farm/non-farm activities with the performance of farming means that the former is neither adequate to reduce the risk of food insecurity during unfavourable agricultural seasons nor plays a significant role in terms of reducing the unprecedented pressure on the land. An interesting desirable change in rural households' perception in areas of fertility and family planning was observed too, notwithstanding the prevailing socio-economic and socio-cultural realities that would make the rapid decline in total fertility rates difficult.

In brief, the deliberations on sustainability concern underscored that in the context of the HHs, neither the nature and the extent of the degradation problem is uniform

across the study sites and among the farms, nor the degradation problem can sufficiently be explained by population growth alone nor are households passive victims. The local people have been continuously developing highly innovative and sustainable indigenous strategies appropriate to their dynamic physical and socio-economic circumstances. Eventually, a stage is reached where the rate of change is so fast that indigenous strategies are failing to cope with the rapid changes particularly in the absence of external intervention. External interventions and supports are needed in the form of market incentives, alternative technology and an enabling institutional and policy framework. Thus, it is asserted that if there is a meaningful association between the simple population density and the extent of natural resource degradation in the HHs, it is indeed, at least partially, a reflection of the failure to innovate responsive institutions, create the necessary incentives and institute effective policies.

Finally, rural livelihood strategies and livelihood outcomes were revisited and an attempt was made to develop a typology of rural livelihoods. Three such types were identified and the one that combines large-scale cash crop production with high external inputs staple crop production, intensive dairy production, and lucrative trade was found to be more successful in terms of human welfare and sustainable use of the renewable local natural resource-base as well.

7.5 CONCLUSIONS

This thesis has attempted to address the urgent and essential questions of welfare outcomes and sustainability implications of rural livelihood behaviour in the context of population pressure in the HHs of Ethiopia, accounting for the 'conditioning' or 'mediating' factors. An alternative framework for analysing rural livelihoods in the context of population pressure was developed and guided the analyses. The framework has made possible the systematic integration of all the contesting population-welfare- natural resource paradigms for unbiased and balanced analysis. It also integrated relevant issues and concepts from agricultural economics, natural resource management, economic demography and rural sociology. Then the practical application of this comprehensive and a more practical framework for analysing rural livelihoods in the context of population pressure was demonstrated on a case study basis.

The current study is different from other similar studies in that it reversed the conventional way of looking at the research problems. The population –resource –welfare interactions were studied at spatially localised level since the ultimate decisions concerning fertility and the use of the local natural resource base are reached at and implemented within households and communities. The rural households were put at the centre of the analysis, and the investigation looked into livelihood behaviours of the rural households and communities (their decision making processes, their priorities, motivations behind their decision, their livelihood strategies, etc.), and how local livelihood strategies are influenced by the macro institutional and policy context. It then looked at the issues of food security and natural resource management as livelihood outcomes. The neglected issues of diversity and rural differentiation in development studies in SSA in general and in Ethiopia in particular have also been deliberately put at the centre of the analysis. To this effect, the qualitative and quantitative techniques of developing typology of rural households (wealth categories) were combined and used in an innovative way.

The results clearly indicate that the subdivision of agricultural land into tiny, in some cases economically unviable, plots and land fragmentation at inheritance and re-emergency of landlessness have accompanied the unprecedented population explosion in the HHs. Inappropriate government policies, the 'missing' or 'thin' markets, and the fragile and risky physical environment have worsened the problem. Furthermore, the less client-oriented and inefficient technology generation and dissemination systems have failed to supplement successful local strategies and to effectively build the capacity of the rural households at the required pace to respond to the demographic pressure. For instance, appropriate and profitable crop and conservation technologies are scarce, and the rate of adoption of the available ones has been disappointingly low.

Consequently, the majority of the rural households in the HHs are food insecure. Moreover, the rate of change in the physical environment following the demographic change is so fast that the indigenous countervailing innovation and adaptation have reached the point where they could not cope any longer in the constraining social,

economic, institutional and policy environments. This has generally led to adverse sustainability outcomes of rural livelihood strategies, particularly in farming.

Nevertheless, rural households are not a 'homogenous group'. Contrary to the conventional wisdom in the country, there is substantial differentiation in endowment of livelihood assets across the sites and among different households, in fact the former being more pronounced than the latter. The poor, such as the female-headed households, the elderly and the recently established younger households who are eking out a living by cultivating marginal land do not only face uncertainty related to the right to land and have limited access to publicly provided services, but also face an absolute shortage of crucial resources needed to form a viable rural livelihoods – land, labour, cattle, etc.

The rural households in the HHs are differentiated in resource endowment, have different incentives, face different constraints and, therefore, pursued different livelihood strategies in farming, off-farm and non-farm, and in reproduction. The livelihood behaviour is diverse across sites and among different households. It follows that the nature and the extent of welfare and sustainability outcomes of rural livelihoods are different from site to site and from household to household. Therefore, one type of rural livelihood can be more successful than the other in terms of food security and the sustainable use of the natural resource base. The rural livelihood type that integrates cash crop production with high external input intensive staple crop production was found to be the most promising and sustainable one. This supports the observation in a very recent publication (Govere and Jayne, 2003) regarding the potential synergies between cash cropping and food crop productivity in the SSA's context where the capital and insurance markets are 'missing' or 'thin'.

In conclusion, the observation regarding diversity in rural livelihoods questions the current untargeted and uniform intervention that is based on the assumption that only farming and the intensification of staple crop production to achieve households' food self-sufficiency is the remedy for all rural development ills and equally important to all households. Indeed, the poorest of the poor have hitherto benefited little from the MoA's crop production intensification campaign. Further, the thesis challenges the over simplified generalisation in the literature concerning welfare and resource

outcomes of rural demographic pressure in the Ethiopia's settings as if the interactions between them were taking place in an institutional, political and agro-climatical vacuum and as if rural households in a country, a region, a sub-region or a village were a 'homogenous group'. Relatively sustainable rural livelihoods could exist alongside unsustainable rural livelihoods in a sub-region or village.

The most important policy implication of the thesis is that there is an urgent need for decentralisation of rural development planning and building of the capacity of institutions functioning at the grassroots level so that they may be able to understand local rural livelihoods. It is the local institutions that should design innovative and locally specific integrated interventions. Ensuring active popular participation in the development process is equally important to support sustainable aspects of rural livelihoods and mitigate adverse impacts of unsuccessful rural livelihood strategies.

7.6 POLICY RECOMMENDATIONS

A number of policy implications have come out naturally from the rural livelihoods analysis. Some of them are of national in nature and must be addressed at such level, while others are typical to the study area. Some of the recommendations can be implemented in a short-term, whereas others can only be implemented in mid-term or long-term. Furthermore, the recommendations are not necessarily exclusive; they complement and reinforce each other and must be integrated while designing development intervention. For convenience of presentation, most of the recommendations are organised in the order in which they were implied in the analysis. These recommendations clearly reflect the central arguments of the thesis that realising sustainable rural development in the face of increasing demographic pressure requires more than having measures that address higher rural fertility rates alone.

7.6.1 IMPROVING STRUCTURES AND PROCESSES

Ensuring land tenure security

The land tenure insecurity is the most important problem that must be addressed should Ethiopia realise sustainable rural development. Insecure land tenure in the country and its negative repercussions on the efficiency and sustainability of NRM has long been recognised. Unfortunately, the current government seems determined

to retain the status quo. The government argues, from a social equity point of view, that 'commoditisation' of land would recreate rural inequality, encourage distress disposal of land by the poor rural households which would, in turn, lead to landlessness, rural-urban migration, unemployment and rural social unrest. Therefore, retaining the public ownership of rural land and periodic land redistribution, it was argued, are the only way to ensure the rural poor's access to agricultural land (prime minister Meles Zenawi, 2000, cited in Devereux, 2000). Experience elsewhere in SSA in land titling (e.g. Kenya, Botswana and Nigeria) partially supports this argument (see Cleaver and Schreiber, 1994).

Nevertheless, a counter argument to the government view is that allowing the prevailing land tenure system to remain rigid and unresponsive to the rapidly changing rural demography and physical environment can only postpone the problems the government is much concerned about. It undoubtedly aggravates the already worse food and environmental poverty situation in the country, which would eventually lead to collective failure. The hard fact on the ground forces a realistic observer to believe that the possibility of continuing the policy of further land redistribution, as envisaged by the land policy, as a 'sponge' that absorbs the growing rural labour force in the Ethiopia's Highlands has reached its maximum limit. The 'sponge' has already been saturated. The cropland size cultivated by the majority of the rural households has been diminished into what has been called a 'starvation plot'.

In the second place, as insights from empirical analysis of rural households' coping strategies in the circumstances of food insecurity in Ethiopia and elsewhere in SSA indicate, avoiding the disposal of productive capital such as draught power, live alone cropland, is the first priority of rural households even in situation of famine. Rural households would prefer to get starved rather than risking their future productive capacity to the last minute, until the situation is totally out of control. Similarly, Cleaver and Schreiber (1994:57) argue that "*smallholders anywhere in the world are extremely reluctant to mortgage, and hence risk losing, their land*" where such transaction is legal.

In short, the current land tenure system has failed to ensure land tenure security and it seems that there is no alternative left for policymakers of the country except trying the 'unknown', and therefore, fear-provoking alternative. Indeed, the possible political economic explanation for the rigid current policy stance of the government, beyond its understandable concern for social equity, is the fact that land is the most important source of power for the federal and regional governments to exercise control over the rural people. This is to the detriment of the empowerment of the latter and the development of self-reliant community-based governance. Transparency together with active popular participation, for example, can reduce the risk of the legal and administrative systems manipulation by the economic and political elites for their own benefit at the expense of the majority of the rural poor. The government should face, with support from the donor community, the challenge of ensuring land tenure security whilst designing strategies to minimise the accompanying negative social consequences.

Land tenure security, however, should not always be equated with private ownership of land. An innovative solution ought to be sought to address the government's concern and strike the balance between social equity and efficiency in consultation with all stakeholders. The sooner some initiatives in this direction are launched is the better. Perhaps, the regional governments may be given the mandate to formulate a land policy appropriate to their respective regions since the extent of land scarcity varies from region to region, despite the capacity problem for formulation and implementation of such crucial and politically sensitive policy. The necessary technical support can be mobilised from the federal ministries, higher learning institutions, research institutions and NGOs to circumvent the capacity problem.

Natural resource management strategies cannot be seen in isolation from the general land policy. It is necessary for the government to give up claim of ownership on the natural resource at local level since this has, arguably, alienated the rural people from the resource and has made the resource *de facto* open-access. Empirical studies in many countries have indicated that the success rate of government land use regulation and land policy to ensure sustainable NRM has been very low. Fortunately, introducing institutional change in this area is politically less sensitive than introducing change that affects cropland on which individual

households hold use right. As an alternative to privatisation, the local community could be encouraged and given the necessary technical support to own, use and manage the local natural resource base, including forest, soil, water and pasture in environmentally sustainable way. This needs a policy that grants land right to the local community in exchange for management responsibility with the necessary implementation modalities put in place to effectively enforce the latter at the grassroots level.

The elimination of open-access to fuelwood is also believed to correct the distorted price of the latter (that reflects only transportation cost) and encourages tree planting (agroforestry) on individually used plots (Cleaver and Schreiber, 1994). Searching for alternative source of energy and promoting energy saving affordable technology such as stove should also be taken into consideration to gradually reduce rural as well as urban dependence on forest as the sole source of energy. This has an additional advantage of reducing women's workload with favourable effect on fertility. Spearheading the emergence of small-scale alternative construction material manufacturing such as bricks making and promotion of their wider use not only creates a substitute for the dwindling forest resource, but also generates alternative employment opportunities.

Improving the smallholders' access to the markets

Improving smallholder farmers' access to the market is another area which though well recognised, still needs due attention. Smallholder farmers do respond to strong market incentives even in the absence of functional research and extension as the chat case has clearly demonstrated. By implication, the government intervention via research and extension in the absence of market incentives would most probably fail and lead to inefficient use of scarce resources. Thus the priority of the government should be doing away with the barriers to smallholder farmers' market participation from medium to long-term. The constraints include physical (distance), political (inability to influence the terms of trade because of illiteracy, lack of organisation and information) and structural.

Investment in rural roads, reinitiating development of marketing cooperatives on voluntary basis, creating an enabling environment for increasing private traders

participation in agricultural marketing, providing marketing information to farmers (e.g. through marketing cooperatives) and revitalising parastatal marketing corporation are needed. The parastatal marketing corporation can play a vital role in supplying inputs, basic household goods and procuring output particularly in remote inaccessible areas until the private traders and cooperatives develop their capacity sufficiently to entirely takeover the activities. The measures could together help to address the barriers to market participation by smallholder farmers.

Improving the efficacy and efficiency of research and extension

Once the enabling environment and the necessary incentives are put in place, investment in agricultural research and extension plays a very crucial role. The initiatives that are already underway to build the capacity of the NARS and the extension system and to re-orient them to address the real needs of their clients have to be sustained with determination.

What is needed to mobilise the necessary financial and technical resources required for the envisioned restructuring and transformation of processes, and to implement the other recommendations yet to be discussed are:

- the government's determination to get its priorities right, including avoiding unproductive use of the scarce resources of the country; and
- convincing and working with the donor community in partnership to shift their attention from their current emphasis on mitigating short-term food deficit through food aid distribution to providing the necessary supports to realise sustainable rural livelihoods.

7.6.2 BUILDING HOUSEHOLDS' LIVELIHOOD ASSET BASE

The problem of the absolute shortage of assets crucial to form viable rural livelihoods, at household and/or community level, is as critical as the quality of natural resource management problem in the Hararghe Highlands. Active intervention of GOs and NGOs is needed to assist communities and households, particularly the resource-poor, in building up rural livelihoods assets. The intervention in this line encompasses investment in rural physical and human capital such as feeder roads, safe potable water, education, health, soil and water conservation, reforestation or establishing community woodlots and assisting development of

indigenous small-scale irrigation infrastructure and ensuring efficient use of irrigation water.

The HHs has relatively better road networks, but feeder rural roads are scarce, and where available they are in bad condition due to lack of maintenance. Provision of safe potable water and health infrastructure in the highlands is improving and should be strengthened. These services are necessary to reduce the demand for females' labour service and child mortality rate with a significant desirable effect on the rates of fertility. The number of rural primary schools in the area is increasing. Most parents saw investing in their children's education as a solution that would enable them to bypass the scarcity of cropland and as a strategy to diversify their livelihoods in the long-term. They almost take for granted that once their sons are educated they would find jobs in the towns particularly in the civil service. This recent development is expected to increase the demand for educational infrastructure. However, there is a need for a special effort to ensure equal gender participation in schooling to deal with the apparent tendency to disfavour investment on female children's education.

Poverty could also divert attention away from investment in resource conservation. The latter is by nature a long-term undertaking and there is huge disparity between the social cost and the private cost of degradation. Therefore, it is to the best interest of the society to bear costs needed for soil and water conservation activities partially or entirely. Assistance from GOs and NGOs is important to establish community woodlots on the deforested and fragile steep slopes. In addition, awareness creation, active grassroots level participation and organisation of users' group are of paramount importance to ensure that the local people own, use and manage the resource in a sustainable manner after phasing out the intervention.

Assisting the development of indigenous small-scale irrigation and promoting the efficient use of water resource substantially contribute to the rural livelihoods. The need for stabilising yield is as important as increasing yield in rainfed agriculture. Assisting the development of small-scale irrigation facilities where unexploited potential exists is an effective strategy not only to reduce drought risk, but also to intensify high value crops production. The indigenous water harvesting technique

such as collecting runoff and directing it to crop fields, which is being practised by some farmers in the area, should also be considered.

Livestock is another very important rural livelihood asset. Livestock ownership is positively and significantly associated with intensification of staple crop production and, food and nutritional security of the households. Unfortunately, the majority of the resource-poor households do not own a cow, an ox or even a couple of goats. The deepening rural poverty and the increasing vulnerability have led to the erosion of this crucial livelihood asset. Replacing the existing exchange system between oxen and labour service that is often unfair to the resource-poor through creation of rental market for draught power may alleviate the draught power shortage for timely land preparation. This may also create alternative livelihoods opportunities for households who would like to engage in provision of such service.

Providing credit service to purchase cow on favourable term can substantially contribute to the improvement of the households' food security and preschoolers' nutrition. Women commonly control income from sales of livestock products, and children are traditionally given priority in milk consumption. An innovative credit strategy used by an NGO (Farm Africa) involved in a dairy goat development project in the area can be considered for large-scale adoption. Farm Africa provides dairy goat to women from poor households. The beneficiaries pay the credit in kind, young dairy goat, after the one they originally received gave birth. The young dairy goat, in turn, is extended as in kind credit to another women. The system works just like revolving saving and credit in cash and was found more sustainable.

7.6.3 RE-ORIENTING THE FOCUS OF RURAL DEVELOPMENT INTERVENTIONS

The current rural development interventions by the government agencies, besides provision of infrastructure, focus on achieving food self-sufficiency through promotion of intensification of staple crops production on subsistence farms. Food self-sufficiency is almost taken as synonymous with food security as the majority of the rural households are assumed to produce their own food. Nonetheless, commercialisation of agricultural production receives cursory attention and there is no government agency with a mandate of supporting rural livelihoods diversification. There is an urgent need, at least in the study area, to shift the focus of rural

development interventions away from food self-sufficiency to ensuring households' food security and to pursuing an integrated approach to rural poverty alleviation. The multifaceted approach should encompass the intensification of staple crop production, commercialisation of agricultural production, natural resource conservation and creation of an enabling environment for rural livelihood diversification.

It is absolutely imperative to promote external inputs (cultivars and agro-chemicals) based intensive staple crop production on smallholder farms as the land frontier has reached its maximum limit in the area. Nonetheless, achieving and sustaining capital and technology based intensive staple crop production on the smallholder farms is one of the formidable challenges that the extension system has faced in many areas. Farmers are either reluctant to adopt productivity-enhancing Green revolution type crop technologies or they discontinue using them after trying for one or two seasons.

Besides the bias of the extension system against the resource-poor households, there are various other explanations for the extension system's failure to create an effective demand for sustainable intensification. The chief ones are liquidity constraint, risk of drought and profitability. Although loans for purchasing inputs (fertilisers and seeds) are available, poor households might not have enough cash to settle the required down payment at the beginning of the planting season to qualify for the loan. The intensification policy hitherto does not include price incentives despite the sky rocketing input prices following the devaluation of the national currency and the phasing out of input subsidies following implementation of the SAPs. Further, there is no provision in the loan policy to either give grace period, refinance adoption of inputs or write-off the loan when farmers are unable to repay the loan due to unfavourable rainfall. The latter, for instance, had forced some households to dispose of their crucial livelihood assets such as oxen to settle the loan with its interest. Besides, the beneficiaries have to settle the loan immediately after the harvest season, where crop prices are at their lowest level.

Arguably, it is to the best interest of the poor and the environment for policymakers to reconsider 'judicious' use of input subsidies in the short to medium term. One of the conventional strong arguments directed against input subsidies is related to its

budgetary burden. One could simply argue that the country cannot afford this. The counter argument is that it is to the best long-term interest of the country and the international donor community as well to invest in the intensification of crop production, including subsidising inputs, so that the rural households can produce enough food for themselves. The latter is apparently better than indefinitely distributing food aid or subsidising consumption with all its negative consequences.

It is worthwhile, in this regard, to experiment, at a pilot level, with other suggested innovative approaches to circumvent the inputs affordability problem. The suggestions include fertilisers-for-work (Shank, 1996) and input subsidy tied with resource conservation requirements on the cropland used by individual households (Shiferaw and Holden, 2000) for their possible future inclusion in input policy. The latter has the potential to address the seemingly paradoxical relationship between adoption of agricultural policy that makes farming profitable and the possibility of increasing natural resource degradation in the empirical literature. Of course, supporting the development of indigenous small-scale irrigation, as mentioned earlier, substantially reduces the risk of crop failure due to drought and thereby encourages the adoption of improved technologies.

Active promotion of commercialisation, i.e., cash crop production is perhaps the most promising and financially the most sustainable way of encouraging intensification of staple crop production. Despite certain reservation by some researchers, from a food security point of view, there are synergies between cash crop production and capital and technology based intensification of staple crop production at least in the Hararghe Highlands (also see Govereh and Jayne, 2003 for a similar finding in Zimbabwe). Higher income from cash crop production has helped the producers to bypass the liquidity constraint to acquire improved seeds and fertilisers. The increased yields of staple grain as a result of technology-based intensification, in turn, has made it possible to shift more land from subsistence crop to cash crop production without compromising the need to reduce food security risks associated with households' over reliance on the market for grain. Cash crop production is positively and strongly associated with higher income, higher rate and intensity of use of purchased inputs and higher yield, and hence improved food security status of households and lessened land degradation problem.

The rural non-farm/off-farm sector provides supplementary or alternative employment and income in the scenario of reduced access to land and diminishing farm sizes. However, the sector has not yet developed in the study area to contribute significantly to the rural households' welfare. Still the contribution of the rural non-farm/off-farm income to income of poor households cannot be undermined. Subsistence crop production, cash crop production and off-farm/non-farm contribute roughly the same proportion to the average annual income of the poor households. The rate of households' participation in off-farm/non-farm activities is also high in cereal dominated less commercialised villages. Therefore, rural livelihood diversification has a potential supplementary role to play in rural poverty alleviation if consciously supported by policy.

7.6.4 REDUCING VULNERABILITY THROUGH INSTITUTIONALISED SOCIAL SAFETY NET

The labour absorptive capacity of farming has declined with reduced access to land, creating a high level of unemployment and underemployment. The labour surplus has increased households' demand for diversifying their livelihoods in situations where rural off-farm and non-farm sector provides insufficient employment opportunities that are highly correlated with farming. Furthermore, the pervasive poverty and the rising risks of food insecurity with recurrent drought have led to the erosion of households' resource base and resulted in worse human welfare situation specially in less commercialised villages. About 53% of the sample households were unable to meet their minimum daily calories requirement even in the 2000/2001 cropping season, which was considered by most of the households as fairly normal year.

An institutionalised social safety net in the form of labour intensive public work programs can be an effective instrument to ameliorate the vulnerability of the rural poor to food insecurity in the medium term. This intervention is consistent with the earlier recommendations and therefore must be integrated. Among others, the need for improving rural infrastructure such as development and maintenance of feeder rural roads and initiating and strengthening soil and water conservation activities is imperative. These can effectively be integrated into, and achieved through, labour

intensive public work programs. Besides creating the necessary physical resource base for sustainable rural livelihoods for the community in the long-term, this kind of intervention enables the nearly assetless rural poor to create assets needed to form viable livelihoods by saving part of the income. The experience of some countries in SSA, including Ethiopia, and Asian countries with labour intensive public work programs could provide important insights as to how similar programs can effectively be designed and integrated into the overall plan for supporting sustainable rural development (see von Braun, Teklu and Webb, 1991).

7.6.5 IMPROVING EFFORTS TO ACCELERATE FERTILITY REDUCTION

Improving the rural households' knowledge of family planning and the availability of contraceptives at the grassroots level is necessary as there is a tendency for changing households' perception in favour of having small family size with the increasing hardship and resource scarcity. However, the supply side intervention should not be emphasised. The formidable challenge is how to create effective demand among the majority of the rural households for small family size. The determination and sustained commitment of the leadership coupled with mobilisation of leaders of PAs and local community groups is imperative to strengthen the emerging change in perception and to use informal social pressure on couples in their reproductive age to use contraceptives (see also McNicoll and Cain, 1990). The promotion of the desirable behavioural change in the area of fertility can be effected through a variety of means including effective communication, information and education (IEC) programs (Cleaver and Schreiber, 1994).

Moreover, the fertility behaviour of rural households is generally influenced by a number of complex socio-economic and socio-cultural factors. Ensuring land tenure security, reducing vulnerability of households, public provision of social infrastructure such as safe potable water in nearby villages, increasing education and health coverage, and above all empowering rural women through improved access to education, productive employment and improved decision making power in the family institution are needed to bring about meaningful fertility decline. This implies that family planning service provision cannot be seen in isolation and ought to be integrated into the overall policy package recommended for the fruition of the endeavours to realise sustainable rural development.

7.6.6 VOLUNTARY RESETTLEMENT

Voluntary resettlement is actually among the solutions suggested by representatives of the communities themselves during group discussions and also being considered by the local government. It is apparently too late for the family planning service provision to serve as scapegoat since the next generation, entering the rural labour force as farmers in the coming decades, have already been borne. Even at present, the Hararghe Highlands are over-crowded and community woodlots need to be established on the deforested and currently cultivated land with steeper slopes before the land would be converted into barren rock and entirely abandoned. One obvious solution is resettling households cultivating the fragile land and others on voluntary basis in the lowlands located in the neighbouring Bale Zone in the long-term.

However, it is easier to suggest resettlement than practically implementing it! There are technical, economic, social and political issues that need to be carefully thought out before actualising resettlement. First of all, lowlands are generally drier with two short rain seasons both of which are insufficient to grow the traditional staple crops unless irrigation facility is provided with the necessary measures put in place to minimise soil salinisation and irrigation-induced spread of diseases (Gebre Egziabher, 1996). Lowlands are also prone to human diseases such as malaria and animal diseases such as tsetse fly. Irrigation, health, marketing and other social and economic infrastructure must be put in place and the beneficiaries need continuous technical support and food aid until they settle well. Socially, resettlement may result in the breakdown of important fabrics of local social institutions that have created harmony among members of the communities and have helped them to survive a number of hardships at their place of origin. The ITK of the highlanders is probably irrelevant and even in certain cases environmentally damaging in the new environment. Politically, the nomadic lowlanders may not cheerfully welcome the occupation of their territory by agriculturalists with an anticipated detrimental effect on their continuous and free mobility, which is an integral component of their survival strategies. Protecting interests and livelihoods of the pastoralists is, therefore, as important as that of agriculturalists.

7.6.7 INDUSTRIALISATION

Some argue that the country as a whole has no bright future unless it reduces its dependency on the highly risky agricultural sector in the long-term via industrialisation- agro-industry/ labour intensive manufacturing or rural tourism (e.g. Devereux, 2000). Surprisingly, one representative of a community who participated in a group discussion on what the local community considers as a long-term solution to the increasing land scarcity in their locality at one of the research sites seems to share the idea of industrialisation. In his own words:

“ My friends suggested that educating our children would solve the land scarcity problem. In my opinion, this is not necessarily the case. We all know one of our sons who recently committed suicide because he couldn't find a job in the civil service after completing his high school education. We also know that some of our educated sons are unable to get job in the civil service and thus are wasting their time by sitting and chewing chat the longest part of everyday. These are additional burdens to our community. I believe that the government should seek ways of promoting industry by forging relationship with the 'faranji' (white people). Those people produce match-box, car window, everything from raw materials available in our locality and sell them to us at exorbitant prices. Let them come to our country with their capital, technology and managerial skills, and create employment opportunities for the local people, generate hard currency for the country and also benefit themselves. It is only in this way that educating our children can solve our problem.” *Mr. Ahmed Yuya Tahir.*

The suggestion of industrialisation, to begin with, is attractive and also reflected in the government's so-called ADLI development strategy. However, it is the agricultural sector that has to play the leading role and must provide the necessary resource, and create effective demand for industrialisation to succeed in the Ethiopia's settings. The battle for growth and poverty alleviation in this part of the world is won or lost in the countryside, specifically in the agricultural sector, which has, paradoxically, remained Achilles' heel of the country's economy.

7.7 METHODOLOGICAL RECOMMENDATION

The framework for analysing rural livelihood strategies in the context of population pressure, developed and used in the thesis, was found to be more comprehensive, yet specific. It is flexible and accommodates all the contesting population-resource-welfare paradigms, and systematically integrates all aspects of rural livelihood strategies. Besides, the current framework accounts for the so-called 'mediating' factors. The framework for analysing rural livelihood strategies in the context of population pressure is quite suitable and recommended for analysing rural livelihoods and livelihood outcomes at spatially localised level by a team of experts from agriculture, natural resource, rural demography and rural sociology. The result will enable the multi-disciplinary team for planning rural development not only to come up with a meaningful and well integrated intervention to support sustainable rural livelihoods, but also to achieve effective targeting.

This methodology will assist a planning team to come up with a well integrated programme for rural development which will allow each organisation such as GOs, NGOs and private sectors to perform their respective mandates in their area of competence in a specialised, but integrated manner. This will allow the various role players to do what they are good at or in which they specialise, but at the same time there activities support the common objectives and shared responsibilities.