

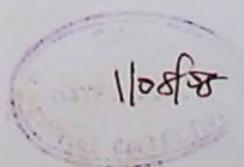
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**Participatory Rural Development Approaches
for Supporting Community Based Activities:
Case of the Uluguru Mountains, Tanzania**

2008

Franklin Ndyetabula RWEZIMULA

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Supporting Community Based Activities:
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**Thesis to Fulfil the Requirements For the Degree of Doctor in Global
Environmental Studies, Graduate School of Global Environmental
Studies, Kyoto University, Japan.**



Participatory Rural Development Approaches for
Supporting Community Based Activities:
Case of the Uguru Mountains, Tanzania

To my late father (Jason Rwezimula) and to my mother (Angela Rwezimula)

and

To Mainda, Humphrey Mwombeki, and Evelyn Kagemulo

Franklin Ndyetabala RWEZIMULA

I thank to Allah the Most Gracious for the Degree of Doctor in Global
Development Studies (GDS) from the School of Global Environmental
Studies, Kijicho University, Japan



Abstract

It is widely acknowledged that past rural development strategies have signally failed to raise rural living standards in Tanzania. For many years, the government of Tanzania and development assistance agencies tried different approaches and strategies, however, the efforts were not always able to effect the intended results. One of the key reasons stems from central driven top-down approaches which were lacking in comprehending the dynamics of rural life and appreciating the skills of rural communities. More specifically, these approaches did not stand on the understanding of the complexities of the agro-ecological, socioeconomic and cultural contexts in which indigenous livelihood and production systems function. The problems currently facing the rural areas in Tanzania include lack of income sources, degradation of environment and natural resources, limited infrastructure, poor extension services, insufficient marketing integration and rural-to-urban migration. Among those, the depreciation of environment and natural resources proceeds severely due to ever increasing land use pressure underlined by the immediate needs of rural community for survival.

One of the central issues to solve the problems is re-appraisal of rural development approaches based on the peoples' participation with available local resources. This study stands on the hypotheses i) there are untapped/ forgotten resources and knowledge in most rural areas of the Uluguru Mountains, ii) farmers may have some potentials being utilized for rural development, and iii) feasible rural development model can be derived based on the farmers' potentiality and available local resources (refer page 14). In this thesis the identification of the agro-ecological and socio-economics characteristics of the Uluguru Mountains area was the first step towards achieving the above objectives. These characteristics are based on the diversity of farming systems, spatial and temporal diversity of land uses and farming plots, diversified cropping calendar, diversity in home-garden agroforestry (HGA) components, diverse market places, inherent risk reduction mechanisms and different roles of farming systems. These characteristics have been reflected in the planning of rural development activities. Based on the identified characteristics, an attempt was made by SUA Centre for Sustainable Rural Development (SCSRD) from (1999 – 2004) by designing the community based activities aimed at involving the rural community using locally available materials and resources. This thesis has investigated the background, process and outcome of "SCSRD" project. The results show different processes such as preliminary field studies, participatory village survey

and baseline surveys. Different options of activities such as beekeeping, vanilla, temperate and tropical fruits cultivation trials were planned, designed and implemented jointly by rural community and outsiders. Ways of community participation in these trial activities were suggested in order to encourage forms of learning, wider participation, knowledge exchange, strengthening of social interaction and networking among rural communities. The overall effectiveness of participatory approaches are documented in terms of i) community empowerment, ii) interactive learning and innovation, iii) information transfer, iv) active participation of local community, and v) changes of farmers' attitudes and behaviours.

The thesis has also presented an evaluation of the effectiveness of the participatory approaches using a case of vanilla cultivation trial. The results showed the impact of vanilla cultivation trial in terms of i) expansion of the vanilla cultivation, ii) farmer-to-farmer dissemination, iii) partnership among stakeholders, iv) farmers' innovativeness, and v) co-existence of vanilla with other crops. The thesis also has identified achievements and constraints concerning vanilla cultivation in the Uluguru Mountains based on i) vanilla management, ii) looping, iii) vanilla processing, iv) theft of planting materials, and v) extension services. Based on the identified obstacles, the thesis has suggested the following i) affordable means of supplying planting materials, ii) vanilla marketing, iii) training of farmers and extension workers, iv) cost-effective knowledge dissemination methods, and v) support from different stakeholders. Finally, based on the overall discussion in this thesis, approaches for supporting community based activities has been summarised (refer page 90). Various steps and methods to be followed have been highlighted and the expected outcomes per each step and is guided by requisite features such as i) understanding of local realities, ii) incentives to motives peoples' participation, iii) community involvement, and iv) innovative approach.

Keyword: agro-ecological diversity, community based activities, farmers' networking, indigenous farming systems, information dissemination, land uses, marketing behavior, participation, risk-reduction, rural development, socio-economic characteristics, Uluguru Mountains, vanilla cultivation.

"Sustainable wealth creation without local knowledge and participation does not lead to sustainable development, but rather to mass poverty and environmental degradation"
(Ojo and Ashton-Jones 1998).

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Table of Contents

<i>Abstract</i>	iii
<i>Acknowledgements</i>	v
<i>Table of Contents</i>	vii
<i>List of Tables</i>	xi
<i>List of Figures</i>	xiii
<i>List of Plates</i>	xiv
<i>Acronyms & Abbreviations</i>	xv
Chapter One: Introduction	1
1.1 <i>Setting / Background of the Current Study</i>	1
1.2 <i>Definition of Rural Development</i>	2
1.3 <i>Theories and Themes of Rural Development</i>	3
1.3.1 <i>Rural Development Timeline</i>	3
1.3.2 <i>Rural Development Thinking</i>	4
1.3.3 <i>Phases in Rural Development Practice</i>	6
1.4 <i>Review of Rural Development Initiatives and Policies in Tanzania</i>	6
1.4.1 <i>Rural Development before Colonial Period (Until 1884)</i>	7
1.4.2 <i>Colonial Period (1885 - 1960)</i>	8
1.4.3 <i>The Period between 1961 – Early 1980s (After Independence)</i>	9
1.4.4 <i>The Period from Mid 1980s - To date (In Market Liberalization)</i>	13
1.5 <i>Problems and issues on Rural Development in Tanzania</i>	15
1.5.1 <i>Rural Poverty and Degradation of Land Resources</i>	15
1.5.2 <i>Limited Rural Infrastructure</i>	15
1.5.3 <i>Urban-Rural Linkages</i>	16
1.6 <i>Objectives of the Study</i>	16
1.7 <i>Data Collection</i>	18
1.7.1 <i>Types of Data and Methods</i>	18
1.7.2 <i>Data Analysis</i>	19
1.8 <i>Thesis Structure</i>	19
Chapter Two: Agro-ecological Characteristics of the Study Area	21
2.1 <i>Overview</i>	21
2.2 <i>Overview of the Research Area</i>	21
2.2.1 <i>Geographical Setting</i>	21

2.2.2	Climate and Vegetation.....	24
2.3	<i>The Importance of Mountains Areas.....</i>	24
2.4	<i>Smallholders Production Systems.....</i>	25
2.5	<i>Types of Land Use.....</i>	26
2.5.1	Home-garden Agroforestry (HGA) Field	26
2.5.2	Fallow Cultivation (Shifting Cultivation) Field.....	30
2.5.3	Valley Bottom Cultivation Field.....	32
2.5.4	Semi-Continuous Cultivation Field	32
2.5.5	Forestland Cultivation Field	33
2.6	<i>Remarkable Agro-ecological Characteristics.....</i>	34
2.6.1	Diversity of Farming Systems	34
2.6.2	Spatial and Temporal Diversity of Land Uses and Farming Plots.....	40
2.6.3	Inherent Mechanisms for Risk-reduction.....	45
Chapter Three: Socio-economic Characteristics of the Study Area		49
3.1	<i>Overview</i>	49
3.2	<i>Description of the Socio-Economic Characteristics.....</i>	49
3.2.1	The People	49
3.2.2	Population and Migration Trends	50
3.2.3	Population Size in Relation with Farming Systems.....	52
3.2.4	Land Tenure	53
3.3	<i>Characteristics of the Area Focusing on Marketing Conditions and Behaviours..</i>	55
3.3.1	Sources of Cash Income.....	55
3.3.2	Location of Rural Markets and Peoples' Behaviour.....	57
3.3.3	Commodity Sales	58
3.3.4	Functions of Rural Markets	60
3.4	<i>Livestock Keeping</i>	63
Chapter Four: Participatory Approaches in Community Based Activities: A Case of SCSRD Project in the Uluguru Mountains		65
4.1	<i>Overview</i>	65
4.2	<i>The Definition and Concept of Participation.....</i>	66
4.2.1	Background and Definition of Participation	66
4.2.3	Typology of Participation	67
4.2.4	Participation as an Empowerment Process of Individuals and Communities.	68
4.3	<i>Roles and Functions of Outsider's Participation in Community Based Activities .</i>	69

4.4	<i>SCSRD Approaches in Designing of Community Based Activities</i>	69
4.4.1	Preliminary Field Survey	70
4.4.2	Participatory Village Survey Involving Volunteered Villagers.....	71
4.5	<i>Designing of Activity Options</i>	71
4.5.1	Prerequisites to the Design of Activity Options	71
4.5.2	Encouragement of Rural Community's Participation.....	74
4.5.3	Examples of Rural Community Participation in the Trial Activities.....	74
4.6	<i>Effectiveness of Participatory Approaches</i>	76
4.6.1	Community Empowerment.....	76
4.6.2	Interactive Learning and Innovation.....	77
4.6.3	Information Transfer through "Farmer-to-Farmer" Communication	77
4.6.4	Active Participation of Rural Community	78
4.6.5	Farmers' Attitudes and Behaviour in Community Based Activities	78
4.6.6	Overall Remarks	80

Chapter Five: Evaluation of the Impacts of a Community Based Participatory

Activity: A case of Vanilla Cultivation	81
5.1 <i>Overview</i>	81
5.2 <i>An overview of the Advantages of Vanilla Cultivation</i>	81
5.3 <i>Description of the Vanilla Plant, its Cultivation and Marketing</i>	82
5.4 <i>An overview of Vanilla Cultivation in Tanzania</i>	83
5.4.1 Vanilla Production Areas.....	83
5.4.2 Example of Vanilla Stakeholders and Their Roles in Bukoba District	84
5.5 <i>Vanilla Cultivation in the Uluguru Mountains</i>	85
5.5.1 Trial Phase	85
5.5.2 Extension to Other Villages	86
5.6 <i>Impact of the Vanilla Cultivation Trial</i>	88
5.6.1 Expansion of Vanilla Cultivation within Uluguru Mountains.....	88
5.6.2 Potential of Farmer-to-Farmer (FF) Communication	89
5.6.3 Farmer's Innovativeness.	89
5.6.4 Partnership and Collaboration Among Different Stakeholders	90
5.6.5 Co-existence of Vanilla With Other Crops.....	91
5.7 <i>Current Achievements and Problems in Vanilla Cultivation in the Uluguru Mountains</i>	92
5.7.1 Vanilla Management.....	92

5.7.2	Looping.....	93
5.7.3	Vanilla Processing	93
5.7.4	Theft of Planting Materials	93
5.7.5	Extension Services.....	94
5.8	<i>Suggested Solutions for Problems in Vanilla Cultivation</i>	94
5.8.1	Planting Materials.....	94
5.8.2	Vanilla Marketing.....	94
5.8.3	Training.....	95
5.8.4	Methods of Cost-Effective Know-how Dissemination.....	95
5.8.5	Research on Vanilla Related Activities	96
5.8.6	Supports from Different Stakeholders	96
Chapter Six: Summary and Conclusions.....		99
6.1	<i>Summary (Objectives Revisited)</i>	99
6.1.1	Identification of Local Characteristics.....	99
6.1.2	Verification of the Participatory Approaches on Rural Development.....	101
6.1.3	Evaluation of Participatory Approaches Based on Existing Conditions	103
6.2	<i>Participatory Approaches Based on Study Findings</i>	104
6.3	<i>Areas for Further Research Activities</i>	106
References.....		107

List of Tables

Table 1-1: Summarised Rural Development Ideas	4
Table 1-2: Phases of Rural Development	6
Table 1-3: Tanzania's Rural Development Based Policies and Directives (1961 – Early 1980s).....	12
Table 1-4: Tanzania's Rural Development Based Policies and Strategies (1990s - to date)	14
Table: 2-1: List of Home-garden and Farmland Crop and Plant Species at Kibogwa Village.....	36
Table 2-2: List of home-garden and Farmland Crop and Plant Species at Nyachilo Village	37
Table 2-2: List of home-garden and Farmland Crop and Plant Species at Nyachilo Village	38
Table 2-3: Types of Land Uses and Numbers of Farming Plots of 11 Households Surveyed, Nov. 2005.....	41
Table 2-4: Location of Farmland Fields of Mr. Jerani Shabani.....	43
Table 2-5: The Diversified Crop Calendar in Kibogwa Village.....	44
Table 3-1: Household Distribution of Live Children in Kibogwa Village (2001)	52
Table 3-2: The Relationship Between the Number of Wives, Children, Plot and Total Size of Land	53
Table 3-3: Types of Cash Incomes Sources from Non-farming Activities	55
Table 3-4: Types of Cash Income Sources from Agricultural Products in Kibogwa Village.....	56
Table 3-5: The Rural Markets in the Uluguru Mountains	57
Table 3-6: Commodity Sales from Nyachilo/ Kibogwa Village to Langali Market (Results of the Surveys on June 14 and 26 and July 5, 2001)	59
Table 3-7: Commodity Sales from Nyachilo/ Kibogwa to Bunduki Market on 24 June, 2001.....	60
Table 3-8: Commodities Purchased from the Market in Bunduki/ Langali (June, 2001). 61	
Table 3-9: Livestock Keeping in Kibogwa Village	64
Table 4-1: Methods to Encourage the Participation of Rural Communities.....	74
Table 4-2: Steps of Rural Community in Some Trial Activities in Kibogwa Village	75
Table 4-3: Participatory Approaches Used in Beekeeping Trial in Kibogwa Village.....	76
Table 4-4: Changes of Farmer's Attitudes in the Trial Activities in Kibogwa Village	79

Table 5-1: World Vanilla Imports (MT) 1997-2002.....	83
Table 5-2: Timing of Vanilla Distribution in Kibogwa Village by November 2005	86
Table 5-3: Number of Vanilla Farmers and Plants in the Uluguru Mountains (2006).....	88
Table 5-4: Mulching Materials Applied in Kibogwa Village.....	90
Table 5-5: Number of Vanilla Beans Harvested in Kibogwa, August 2006	92
Table 5-6: Farmers Views Concerning the Future of Vanilla Marketing	95

List of Figures

Fig. 2-1: The Location of the Study Area	23
Fig. 2-2: The Sub-villages in Kibogwa Village	23
Fig. 2-3: The Distribution of Farming Plots Owned by 2 Household Surveyed (Nov, 2005)	42
Fig. 3-1: The population of Matombo Division by Wards	51
Fig. 3-2: Kibogwa Village Population Pyramid 1988 and 2002.....	51
Fig. 3-3: Outbound of the Agricultural Commodities from Kibogwa and Nyachilo Villages to the Rural Markets in the Uluguru Mountains.....	58
Fig. 4-1: Activity Options and the Expected Impacts to the Villages	72
Fig. 4-2: Schematic Diagram of the Processes and Expected Benefits Related With Beekeeping Activity.....	73
Fig. 5-1: Collaboration Among Vanilla Stakeholders in Kagera Region	85
Fig. 5-2: Vanilla Cultivation Areas in the Uluguru Mountains	87
Fig. 5-3: Collaboration of Vanilla Stakeholders in the Uluguru Mountains.....	91
Fig. 6-1: Participatory Approaches for Supporting Community Based Activities	105

List of Plates

Plate 2-1: A Typical View of Home-garden Agroforestry (HGA) System 27

Plate 2-2: Fallow Cultivation Fields. 31

Plate 2-3: Valley bottom Cultivation Field..... 32

Plate 2-4: Semi-continuous Cultivation Field..... 33

Plate 2-5: Forestland Cultivation Fields 34

Plate 2-6: Upland Rice Cultivation in Kibogwa Village 40

Plate 3-1: Head Carrying of Cassava to the Market. 60

Acronyms & Abbreviations

ASDS	Agricultural Sector Development Strategy
ARI	Agricultural Research Institute
DEO	District Extension Office
DFID	Department for International Development
ESAF	Enhanced Structural Adjustment Facility
ERP	Economic Recovery Program
FEC	Farmer's Exchange Centre
GOT	Government of Tanzania
HBS	Household Baseline Survey
HGA	Home-garden Agroforestry
IFAD	International Fund for Agricultural Development
JICA	Japan International Cooperation Agency
KAEMP	Kagera Agricultural and Environmental Management Project
MAFSC	Ministry of Agriculture Food Security and Cooperatives
MAYAWA	Maendeleo ya Wakulima (Progress for Farmers)
MDGs	Millennium Development Goals
NESP	National Economic Survival Program
NPES	National Poverty Eradication Strategy
NSGRP	National Strategy for Growth and Reduction of Poverty
PRA	Participatory Rural Appraisal
PRSP	Poverty Reduction Strategy Paper
RDS	Rural Development Strategy
RRA	Rapid Rural Appraisal
SAF	Structural Adjustment Facility
SAP	Structural Adjustment Program
SARD	Sustainable Agriculture and Rural Development
SUA	Sokoine University of Agriculture
SCSRD	SUA Centre for Sustainable Rural Development
TEKS	Traditional Environmental Knowledge Systems
TShs	Tanzanian Shillings (Tanzania currency)
UEPB	Uganda Export Promotion Board
UMADEP	Uluguru Mountains Agricultural Development Project

Chapter One:

Introduction

1.1 Setting / Background of the Current Study

Rural areas are central to Tanzania's overall development. They account for more than half of the country's income, more than 60% of foreign exchange earnings and support the livelihood of more than 80% of the population. For many years, the government of Tanzania and development assistance agencies tried different approaches and strategies to improve the quality of life in rural areas. They were, however not always able to effect the intended results. About 85% of the poor live in rural areas and 59% of the people living in rural households are categorized as being poor and 44% being very poor (URT, 2002). Among the major cause for the failure was the lack of people's participation. In recognition of the failures of past interventions and ever continuing poverty associated with environmental degradation, rethinking the appropriate approaches is inevitable. One possible approach may be a participatory approach which respects peoples' experiences, insights and knowledge as a basis for rural development interventions (SCSRD, 2004).

It is widely acknowledged that past rural development strategies have signally failed to raise rural living standards in Tanzania (URT, 2001; Limbu, 1995). They typically adopted centrally driven, top-down approaches, often failing to appreciate the skills, perceptions, knowledge and aspirations of those whom the programmes were designed to assist. To date there have been many instances of programs failing to reach the poor, particularly those living in remoter rural areas.

One of the key reasons for the failure of many rural development schemes may stem from the fact that they were derived from inappropriate methodologies which failed to fully comprehend the dynamics of rural life. More specifically, these methodologies failed to understand the complexities of the agro-ecological, socioeconomic and cultural contexts in which indigenous livelihood and production systems function. Also, the search for universal solutions, rather than trying to identify appropriate strategies for the particular local context. In addition, a lack of understanding and developers' inability to

communicate with the supposed beneficiaries of development sometimes led to antagonism.

A positive trend in recent years has been a notable shift in the focus of rural development strategies from the 'top-down' approaches of the past to locally based 'bottom-up' strategies. At the same time advocating the participation of different stakeholders in rural development. The UN Conference on Environment and Development (UNCED, 1992), strongly recommends management practices to ensure their sustainable development in its chapter 14 'Sustainable Agriculture and Rural Development (SARD)'. The success of SARD will depend largely on the support and participation of rural people, national governments, the private sector and international aid cooperation including technical and scientific cooperation. Chapter 26 of UNCED recommends the recognition and strengthening the role of indigenous people and their communities. The chapter also strongly insist active participation of indigenous people and their communities, incorporation of their values, views and knowledge in all programmes relating to resources management. These ideas serve as a broad agenda setting for the current study.

1.2 Definition of Rural Development

The term 'rural' is ambiguous. The main reason is due to various perceptions of what is and what is not rural and of the elements characterizing rurality (natural, economic, cultural, etc). Also, the difficulty to collect relevant data at the level of basic geographical units (administrative unit, grid cell, plot, etc) poses another challenge. The Tanzania Rural Development Strategy (2001) defines rural as "*an area concerns with geographical areas in which primary production takes place and where populations are found in varying densities. These areas are characterized by activities related to primary and secondary processing, marketing and services that serve rural and urban populations.*" The South Africa Rural Development Framework (1997) defines a rural area as "*a sparsely populated area in which people farm or depend on natural resources, including the villages and small towns that are dispersed through these areas, also includes large settlements in the former homelands, created by apartheid removals*". Most obviously, both two definitions above have pointed out that rural areas constitute the space where human settlement and infrastructure occupy only small patches of the landscape, most of which is dominated by fields and pastures, woods and forest, water,

mountains and desert. They are also places where most people spend most of their working time in farms and where land is abundant and cheap (Ashley *et al.*, 2001).

Nyerere (1968) defined rural development as “*the participation of people in a mutual learning experience involving themselves, their local resources, external change agents and outside resources. People cannot be developed, they can only develop themselves by participating in decision and co-operatives activities which affect their well-being. People are not being developed when they are herded like animals into new ventures*”. This definition forms the backbone of rural development thinking and applications in Tanzania as it involve the improvement of rural incomes and rural welfare through ‘people centred approaches’. From this perspective concerns of rural development are; helping rural people set the priorities in their own communities, by providing the local capacity, involving the community in finding solutions to their problems, involving rural people in decisions that affect their lives through participation in rural local government and ensuring social sustainability in rural areas.

1.3 Theories and Themes of Rural Development

1.3.1 Rural Development Timeline

Different theories, themes and policy thrusts have influenced rural development thinking since the 1950s. Different schools of thought emerged differing significantly in regard to their approach of key issues concerned in rural development. Ideas that first appear in one decade often gain strength in the following decade, and only begin to effect rural development practice in a significant way ten or fifteen years after they were first put forward. This is true, for example, of the sustainable livelihoods approach (Carney, 1998), which is listed as an idea of the current decade because this is the period when it is being widely deployed as a guiding principle for rural development through 1980s and 1990s (Chambers and Cornway, 1992; Bernstein *et al.*, 1992). Some themes can be characterised as development ‘spins’ whereby ways of mobilising the development lobby in rich countries are phrased in different ways over time, as in the case of ‘poverty eradication’ (1980), ‘poverty alleviation’ (1990s) and ‘poverty reduction’ (2000s).

In the 1970s, the ideas of ‘basic needs’ and ‘redistribution with growth’ contributed to the pursuit of specifically rural policies and programmes (e.g. integrated rural development projects). This targeted specifically with the identification of ‘rural’

with ‘poverty’. Also 1970s, rural development discourse was dominated by ‘political economy of agrarian change’ strand of thinking inspired largely by Marxist or Neo-Marxist social science approaches and methods. Here, the emphases were on class, power, inequality, and social differentiation in agrarian setting. Structural adjustment and its adjuncts in the form of trade and markets liberalization (1980s), downstream extensions in the areas of state-market relations and good governance (1990s and 2000s).

Table 1-1: Summarised Rural Development Ideas

Timeline	Evolution of rural development ideas
1950s	Modernization/ Dual economy/ backward agriculture/ community development/ lazy peasants
1960s	Transformation approach/ technology transfer/ mechanization/ agricultural extension/ growth role of agriculture/ green revolution (start)/ rational peasants
1970s	Redistribution with growth/ basic needs/ integrated rural development/ state agricultural policies/ state lead credit/ induced innovation / green revolution (cont.)/ rural growth linkages
1980s	Structural adjustment/ free markets/ rise of NGOs/ rapid rural appraisal (RRA)/ farming system research (FSR)/ food security and famine analysis/ RD as process not product/ women in development/ poverty alleviation
1990s	Micro credit/ participatory rural appraisal (PRA)/ actor oriented RD/ stakeholders analysis/ rural safety nets/ environment & sustainability/ poverty reduction
2000s	Sustainable livelihoods/ good governance/ decentralization/ social protection/ sector-wide approaches/ poverty eradication

Source: Adapted from Ellis, F and Biggs, S. 2001.

1.3.2 Rural Development Thinking

Economics and agricultural development theories dominated rural development thought throughout the last century. Back to the 1950s, a model based on small farmer development has been dominant. This is the ‘agricultural growth based on small-farm efficiency’ paradigm or ‘small-farm first discourse’ (Ellis and Biggs, 2001). The major contribution was the publication in 1964 of Schultz’s *Transformation Traditional Agriculture*, in which the rational allocation of resources by ‘traditional’ small farmer was a central proposition. The small-farm narrative begins with the propositions that agriculture plays a key role in overall growth, by providing labour, capital, food, foreign exchange, and a market in consumer goods for the growing industrial sector in a low-income country.

This idea was supported by ‘traditional’ or ‘subsistence’ agriculturalists in low-income countries that could form the basis of agriculture-led processes of economic

development, embodied in the dual-economy theories of development of the 1950s (Lewis, 1954). According to these theories, the subsistence sector possessed negligible prospects of economic prospect for rising productivity or growth, and therefore could play only a passive role in the process of economic development, supplying resources to the modern sector of the economy until it later eventually expanded to take its place.

The second 'paradigm shift' occurred in the 1980s and 1990s from the top-down or 'blueprint' approach to rural development, characterised by external technologies and national-level policies, to the bottom-up, grassroots, or 'process' approach (Rondinelli, 1983; Mosse et al., 1998). This envisages rural development as a participatory process that empowers rural dwellers to take control of their own priorities for change. Some key strands in this period were;

- a) The advent of farming systems research (FSR), and the growing argument that the Green Revolution in monocrop farming systems (rice and wheat), mainly in Asia, might not necessarily work for raising incomes in diverse, risk-prone and resources-poor environments (Chambers et al., 1989);
- b) A growing acknowledgement of the validity of indigenous technical knowledge (ITK), and of the ability of the poor themselves to contribute to solutions to the problems they confront (Richards, 1985);
- c) The rise of the participatory method, originating RRA techniques in the 1980s and evolving into PRA, and PLA during the 1990s (Chambers, 1994; 1997);
- d) The advent of an 'actor oriented' perspective on rural policies, that all participants in rural development are actors with differing understandings (Long and Long, 1992);
- e) Structural adjustment and market liberalisation beginning in the early 1980s, leading to the withdrawal of governments from previous large-scale of the agricultural sector;
- f) The rise of NGOs as agents for rural development, occurring at the same time as, and benefiting from, the decline in enthusiasm for developed countries;
- g) The rise of gender as a concern in rural development.

In most cases, these strands are interlocking even if they emerge from different directions. This period is dominated by the advocates of grassroots approaches to development, and World Bank market liberalisers. Grassroots action flourished from the

mid-1980s onwards by the backing out by developed countries from heavy-handed involvement in the rural economy. The World Bank has subsequently adopted, many of the ideas associated with bottom-up approaches, as manifested in the Vision to Action statement (World Bank, 1997) and in the energetic pursuit of participatory poverty assessment, leading to the publication of *Voices of the Poor* (Narayan *et al.*, 2000).

Finally, is the “*Sustainable livelihood*” (SL) approach which came as a challenge to farming first approach (Carney, 1998; Scoones, 1998), while at the same time being entirely compatible with progress made in bottom-up rural development. In this approach, ‘assets vulnerability framework is the centre piece, and it engages with the factors that make rural families vulnerable to shocks, and policies and processes that can improve resilience in the face of disaster. The starting point of the livelihood approach—the assets and diverse strategies of a poor household, is therefore, fundamentally different from the principles underlying ‘small-farm first’ thinking, and can lead to analysis in new directions.

1.3.3 Phases in Rural Development Practice

The practices of donor and governments to a greater extent have influenced the broader thinking about social, non-agricultural and national development. An example is the community development or integrated rural development (World Bank, 1975; 1988), under which donors set their priorities for development assistance in rural areas over particular periods of historical time. Table 1-2 shows rural development phases.

Table 1-2: Phases of Rural Development

Timeline	Emphasis
1950s	Community development
1960s	Small-farm growth
1970s	Continuing small-farm within integrated rural development, state-led rural development
1980s	Process, participation, empowerment and actor approaches
1990s	Emergence of sustainable livelihoods as an integrated framework
2000s	Mainstreaming rural development in poverty reduction strategy papers

1.4 Review of Rural Development Initiatives and Policies in Tanzania

Section 1.3 reviewed theories, themes and policy thrusts emerged in rural development worldwide, this section will review Tanzania’s experience in rural development before colonial period to a market economy period. Tanzania, has gone

through different experiences in rural development from pre-colonial era to a programme linking rural households to social services and, finally to a market economy. Therefore, this part will examine the insight of rural development initiatives in Tanzania.

1.4.1 Rural Development before Colonial Period (Until 1884)

During pre-colonial era, local communities, predominantly smallholder farmers and pastoralists had their production systems based on traditional environmental knowledge systems (TEKS) in meeting their basic needs and sustain environmental productivity. This period is marked by community initiatives within different parts of Tanzania. Prior to colonization, the majority of mainland Tanzania consisted of independent producers. The village majority was the dominant socio-economic unit with the primary purpose of production being the maintenance and reproduction of the communal system. As pointed out by Iliffe (1971) that pre-colonial Tanganyika (Tanzania mainland) was a spatially indifferent territory. For example, he points out that, although the most common pattern of agriculture was the cultivation of millet and sorghum by means of shifting cultivation, there were other more specialized environments that supported different agricultural systems. So, one had pastoralism in some area and banana cultivation in other areas especially in well watered regions like the Kilimanjaro and Usambara areas. Also, there were particular areas of intensive cultivation such as the integrated livestock and crop husbandry of Ukara Island in Lake Victoria which, according to Iliffe, have been capable of supporting up to 500 people per square mile through the use of irrigation and animal and vegetable manure.

Luttrell (1972-73) mentions that in pre-colonial times, the people of Tanzania were concentrated in the parts of the country that gave the best living conditions. Places with favourable natural conditions, such as fertile soils, abundant water and good climate attracted settlements. The settlements were spread mainly along the rim of the country. But also large portion of the dry areas in the central mainland Tanzania was inhabited by pastoralists and semi-pastoralists. Pastoralists had adapted earlier cattle farming systems and developed their own intensive practices, including browse species selection, breeding, seasonal grazing reserves and enclosures (Ruthenberg, 1980). Among the small dispersed settlement units there were major villages which were centres for all commercial, administrative, religious and social activities.

During this period, agricultural systems were developed with a combination of food crops for self-support and cash crops for sale on the market, supplemented by cattle that served as a source of food and as savings. Food crops such as maize and rice, cooking banana, cassava, sweet potatoes and various types of fruit were added to the African staples of millet and sorghum. Also in the 19th century, farmers started to use iron farm implements and applied several other agricultural innovations: animal manure to maintain soil fertility, double cropping and crop rotations systems, and irrigation. These resulted in higher yields and made it possible to build-up food reserves, which gave the farmers more food security (Ilfie, 1971; Rweyemamu, 1973; McCall, 1995)

Boserup (1965) cited Ukerewe Island, in Lake Victoria, where population pressure had triggered agricultural intensification through technological inventions thus averting food shortage and maintaining soil productivity. Further, the ability of the farmers to adopt new crops such as rice and maize in the nineteenth century and to incorporate them successfully in their farming systems (Ilfie, 1972) is a positive indicator of the farmers' ingenuity in sound land husbandry. It is further reported that during the same period, the Sukuma people residing south of Lake Victoria, had already developed mechanical soil conservation technology (Rounce and Thornton 1939). Farmers constructed tie-ridges to address the problem of soil-water loss, fertility depletion and decreased yields.

1.4.2 Colonial Period (1885 - 1960)

During colonial period, there was minimal investment in indigenous smallholders' agriculture, and no effort to develop manufacturing, services and other sectors. The Tanzanian economy was dependent on primary commodity exports. New commercial crops such as coffee, cotton, tobacco, and later sisal, pyrethrum, wheat and sunflower were introduced under the influence of colonial powers. The colonial state of what was then German East Africa (Tanganyika) needed income, therefore tried to set up capitalist plantation agriculture, but with little success. In several districts cotton was introduced as a compulsory cash crop in order to facilitate taxation of farmers. Some authors associate German time with the outbreak of epidemics, especially rinderpest, small pox and famine. Famine combined with the loss of human life that came with the German colonization, claimed some three quarters of a million victims in five years, followed by other famines after Maji Maji rebellion war (1895-1906) and World War I, especially in the south of the

country. As a result, the population was probably worse off in 1920 than in 1850 (Hyden, 1980; Coulson, 1982). Under German rule (until 1917), also an extensive infrastructure of railroads, schools, roads, churches and hospital were built.

After the German defeat in World War I, Tanganyika became subject to British rule as a mandate of the League of Nations. The British focused on extension and other support to “progressive” farmers comparatively large farms, which in turn would set an example for the remaining rural population. As a result of this the production of maize, coffee and cotton increased dramatically between 1924 and 1934 (Hyden, 1980). However mono-cropping often caused soil erosion, disease and vermin in the crops.

It was until mid 1950s, British tried a different approach, that of “persistent persuasion”: i.e. the growing of export crops was stimulated by extension based on agricultural research. In addition, the government promoted co-operatives in order to improve produce marketing. Ultimately, all this resulted in a significant expansion of commercial farming on small farms, especially in those parts of the country with a favourable resource position. Large scale capitalist farming provided more than half of the export earnings and officially marketed produce during the 1940s and 1950s, led by the sisal industry which earned some 61% of total export earnings at its peak in 1951 (Mbilinyi, 1991, 1994). The considerable demand for tropical agricultural produces on the world market in the 1950s resulted in price increases and thus raised incomes for small farmers (Iliffe, 1979).

1.4.3 The Period between 1961 – Early 1980s (After Independence)

Rural development in Tanzania has passed through various phases in the first two decades after independence. The development policies of the colonial era were carried over into post-independence era until 1967 when the Arusha Declaration and Julius Nyerere’s (1967) policy paper “Socialism and Rural Development” introduced a marked change of approach. The Arusha Declaration (Ujamaa Policy) in 1967 ushered in substantive changes in resources allocation in agriculture, as well as rural development and the economy overall. Arusha policies led to the development of principles of redistribution and equity, with concrete dividends for the poor majority. Former labour reserves in the south and west of the country were opened up by means of improved transport and communication and market infrastructures. Crop schemes, soft credit programmes and extension services-all funded by major development agencies including

World Bank –targeted smallholders farmers, with dramatic increase in the quantity and quality of resources which reached small scale agriculture (Mbilinyi, 2000).

After Independence, the government initiated agricultural development policy with a two-prolonged approach, inspired by the World Bank (1960). The Three-Years Plan prepared immediately after independence (1961/62 – 1963/64) marked the first medium-term plan. This was followed by the first Five-Year Plan (1964/65 – 1968/69) and subsequently the second Five-Year Plan (1969/70 – 1973/74). Both the Three-Year Plan and subsequent Five-Year Plans relied heavily on external sources of finance which did not come from as expected, resulting poor implementation and non-fulfilment of the goals set.

Amani *et al.*, (1987) mention that the regional rural development pattern and strategy in Tanzania has passed through various phases in the first two decade after Independence. Between 1961 and 1969 the colonial model of development was maintained with national interest substitute for colonial ones. Both the Three-Year Plan to Tanganyika and the first Five-Year Plan adopted a laissez-faire attitude towards rural development with some sectoral planning at national level. Economic activities and opportunities tended to concentrate in those areas which had first accessibility to transport infrastructure and proximity to export points. Amani et al. also mentioned that the Three-Year Plan for Tanganyika (1961 – 64), which was based on a World Bank report (World Bank, 1961) prepared before independence, stated that “concentration on economic projects which would yield the quickest and highest returns in the near future should be the policy that the country should follow”. The plan was mainly concerned with the government budget and priority was given to agricultural improvement, development of communication and development and development of secondary education. In these early years after independence there was increased production of traditional export crops, and the towns which formed the nodes of these export producing “islands” continued to benefit as they had done during colonial period. Bukoba and Moshi continued to depend on coffee, Mwanza on cotton, Morogoro and Tanga on sisal, Mtwara on sisal and cashew nuts.

Kazi (1989) sees the period 1961-1966 a concerted effort by the Tanzania Government to define and implement a rural development policy aimed at improving the living standards of farmers and their families through agricultural transformation. He says, however, for agriculture to be able to bring about rural development, the national

leadership concluded that it was necessary to reorganize it for two main reasons. Firstly, reorganization was deemed necessary because of the fragmented and sporadic nature of much peasant agriculture. Secondly, reorganization was considered essential to enable farmers to take full advantage of existing extension and credit services.

During that period two approaches to rural development, conceived by the World Bank (1961), were elaborated and implemented—(a) the improvement approach, sought to bring about rural development through encouraging progressive farmers to increase their agricultural production; and (b) the transformation approach, aimed at improving agricultural production by resettling farmers of semi-desert areas and then introducing innovations among these farmers. The transformation approach led to the establishment of village settlement schemes in selected areas. The declared aim was to build new villages and to resettle families on government controlled and potentially productive land. On average 250 families per village were planned. It was hoped that by 1980 about one million peasants would be living in modern village settlements created through villagization program.

It is widely accepted that the settlements experienced many difficulties in their attempts to bring about agricultural transformation. According to Lundquist (1981), by the end of 1975, about 20 settlement schemes were established in the central and south-central parts of the country. Hopes for transformation of the rural sector through these schemes, however, soon faded. Besides a heavy overcapitalization the schemes were haunted by insufficient planning and problems with infrastructure, especially water. Coulson (1982) analyses that, the settlements had been provided with much costly agricultural machinery, which was debited to the villages. Chambers (1969) finds that one of the main difficulties that adversely affected the economic performance of these settlement schemes, and which led to the termination of the program, lay in the fact that most of them were over-ambitious, ignoring experiment and gradualism. The transformation approach was a dismal failure and the improvement approach had no visible impact of agricultural productivity. Although agricultural production continued to rise, this was chiefly the result of area expansion coupled with population growth (Hyden, 1980; Limbu, 1995).

During the 1970s, there was a rapid expansion and diversification of local economic activities, including farming and non-farming. Local employment opportunities increased for women as well as men (Koda *et al.*, 1987; Mbilinyi, 1991). Class and

regional differences also grew, both locally and internationally, and gender inequalities heightened. For example, people in the highlands received the bulk of small credit and farm inputs, and well-to-do small farmers monopolised the same –most like men. By the late 1970s, some 50% of export earnings and 30% of total value of agricultural production were produced by small and large growers in the highlands (Mbilinyi, 1994). Other areas received fewer resources, with almost complete neglect of smallholder livestock-keeping and pastoral communities in particular.

Moreover, farm support systems such as pan-territorial pricing, crop schemes and soft credit were delivered at high cost, and were not sustainable without external support. Marketing development boards and other market structures were bureaucratic and increasingly corrupt, with high over-head costs which absorbed a high percentage of world crop prices. Monopolistic marketing structures were established which denied producers free choice of potential buyer, so long as they restricted crop/livestock sales to the official market (Gibbon and Raikes, 1995). Producer prices were low and crops were often purchased on credit terms, which acted as an additional tax on farmers' income, and subsidised the government through its control over the foreign embodied in crop sales. A growing portion of both food and export crops were sold in parallel markets – up to 90% of maize, for example, and 25% of coffee (Mbilinyi, 1994).

Table 1-3: Tanzania's Rural Development Based Policies and Directives (1961 – Early 1980s)

Year	Policy	Major concerns
1972	Siasa ni Kilimo (Politics is Agriculture)	To increase rural incomes and to improve smallholders agriculture through the use of improved technologies (modern farming systems)
1974	Kilimo cha Umwagiliaji (Irrigated Agriculture)	The emphasis was put on small- scale traditional irrigation schemes. The government provided materials, machinery and technicians.
1975	Kilimo cha Kufa na Kupona (Agriculture as the matter of life and death)	An attempt to achieve food self-sufficiency. The directive required every employed individual in urban areas to have farm at least 1 acre (0.4 ha) in nearby villages.
1983	The National Agricultural Policy (NAP)	To develop an egalitarian farming society on the basis of socialism and self-reliance. Ensuring food security and improving nutrition.
1983	The National Livestock Policy (NLP)	A policy which is directed towards reduction of poverty among the people whose principal occupation and way of life depends on pastoralism.

This period is marked by contradictory policies (Table 1-3). In 1972 the government introduced decentralization policy in order to ensure that “planning and control of development in the country is exercised at the grass-root level.....” (Nyerere, 1972). Before this policy was adequately implemented the country was hit by severe drought in 1973/74. In response to this, the government launched the so-called “*Kilimo cha kufa na Kupona*” campaign. This campaign could not bear fruits because it was almost during the same time the government embarked on ambitious villagization (forcible resettlement) programme and the world was hit by the oil crisis. Resettlement disrupted local farming patterns and led to loss of income and short-term famine in some areas. Local resistance by villagers led to even more coercive practices among many local officials, including forced production of certain export and food crops. In 1976, the government dissolved very successful co-operatives unions, and abolished democratically elected local governments. These were replaced by local authorities appointed by the President in the form of Regional Commissioners, District commissioners etc. These authorities were used to implement unpopular policies, and there was no effective coordination of programmes among different departments (Limbu, 1995).

In 1977, the East African Community broke down. In the following year, 1978/79 Tanzania went to war with Uganda’s Iddi Amin. Resources had to be mobilized away from agricultural production. Another oil crisis hit the world in 1979 which, combined the drought of 1978/79, brought about mounting economic difficulties. The President of the United Republic of Tanzania announced eighteen months of hardship during which he asked the citizens to tighten their belt. The eighteen months took longer than expected (Limbu, 1995). The country entered the beginning of 1980s under enormous difficulties. As a last resort, the government started formulating a national agricultural policy, an assignment which was completed in 1983.

1.4.4 The Period from Mid 1980s - To date (In Market Liberalization)

In mid 1980s the Government of Tanzania was forced to adopt and implement policy and institutional reforms through emergency strategies and programs due to experienced economic crisis. Tanzania tried its own structural adjustment programs in early 1980s (the National Economic Survival Program (NESP) in 1981-1982 and the Structural Adjustment Program (SAP) in 1983-1985 but the government could not muster enough external resources to implement them successfully. Due to failure of its home-

grown reforms, Tanzania adopted a series of donor supported reform programs starting in 1986. The first of these was Economic Recovery Program (ERP I) adopted in 1986-1989, followed by ERPII in 1989-1992 and the Structural Adjustment Facility (SAF) and the Enhanced Structural Adjustment Facility (ESAF) - 1995/96. These reforms were launched to reduce the role of the state in managing the economy and promote a greater role for the decisions of individual farmers, the government removed extensive controls on consumer prices and liberalized agricultural markets took place. The government re-instating co-operatives in 1984/85 after realizing a mistake was made to dissolve them in 1976.

In this period a number of Government policies and strategies (Table 1-4) are formulated and implemented because of unsatisfactory performance of agricultural sector, the economic base of the rural areas. These strategies were based on economic growth, poverty alleviation and community empowerment.

Table 1-4: Tanzania's Rural Development Based Policies and Strategies (1990s - to date)

Year	Policy	Major concerns
1998	National Poverty Eradication Strategy (NPES)	A framework to concentrate and consolidate national efforts towards achieving a broadly agreed national development objective of 50% of absolute poverty by 2010, and complete eradication by 2025.
1999	Tanzania Development Vision (Vision 2025)	Long term national developmental goals, priorities, direction and perspectives to be attained by the year 2025. These are based on; high quality livelihood, peace, stability and unity, good governance, a well educated and learning society, and international competitiveness.
2000-2003	Poverty Reduction Strategy paper (PRSP)	Medium-term national strategy of poverty reduction based on Heavily Indebted Poor Countries (HIPC) Initiative. A three years framework for prioritizing development interventions to ensure impact on reducing poverty.
2001	Agriculture Sector Development Strategy	To ensure coherent of the various interventions within PRSP.
2001	Rural Development Strategy (RDS)	RDS supported the implementation of the Poverty Reduction Strategy and created a development environment for rural communities and households in achieving sustainable livelihoods.
2003	Rural Development Policy	Quantitative and qualitative interventions in rural setting aimed at poverty reduction, raising standard of living and improving welfare of the rural communities
2005-2010	National strategy for growth and reduction of poverty (NSGRP)	A national framework for putting the focus on poverty reduction informed by the aspirations of Tanzania's development vision (Vision 2025)

In 1999, the Government launched the National Development Vision 2025 which spells out national long-term development goals, priorities and national direction. The Rural Development Strategy was formulated to translate this vision into a medium-term implementable programme in rural areas. Also, in achieving the goals of Vision 2025, the government developed and started the implementation of a five year program (2005 – 2010), the National Strategy for Growth and Reduction of Poverty (NSGRP) – or popularly known by its Swahili acronym as MKUKUTA. The objective of this program is two fold: growth of the economy, and reduction of poverty (URT, 2005b).

1.5 Problems and issues on Rural Development in Tanzania

1.5.1 Rural Poverty and Degradation of Land Resources

The links between poverty and environment are self-enforcing. WCED (1987) wrote: *Many parts of the World are caught in a vicious downward spiral: poor people are forced to overuse environmental resources to survive from day-to-day and their impoverishment of their environment further impoverishes them making their survival ever more difficult and uncertain.* Poor people largely depend on the natural resources and surrounding environment to get their livelihood. With no margins and no buffers against economic downturn, poor people are largely unable to pay attention to their future generations (UNCED, 1992). They have to meet their immediate needs for survival and consequently forced to disregard long-term environmental considerations. For example, the Uluguru Mountains are facing severe degradation of forest, soil, water resources and human habitation due to ever increasing land use pressure. Consequently, most of the ridges have been completely deforested of the natural woodlands and replaced by agricultural activities and/ or settlements due to limited land resources and competing land uses (Temple, 1972a; Lovett, 1998).

1.5.2 Limited Rural Infrastructure

Lack of adequate, affordable and reliable rural infrastructure is a major barrier to rural poverty reduction. It impedes market integration within the rural economy and limiting opportunities for trade in essential commodities. There is a great scarcity of physical infrastructure in the Uluguru Mountains particularly road networks within rural areas and between rural and urban areas (Bhatia and Ringia, 1996). In Uluguru

Mountains, the family raises crops and animals, but they struggle to move beyond subsistence because they have little access to markets and vital information. Local roads are not there or often impassable, the available ones were largely constructed through community mobilization. Walking and head-loading of luggage is the major means of transport and transportation. Poor road network has resulted into; high transportation cost, very limited market-orientation on the smallholder farmers and low price for agricultural produces (SCSRD, 2004; Bhatia and Ringia, 1996; Hartley and Kaare, 2001).

1.5.3 Urban-Rural Linkages

Environmental sustainability: Rural agriculture, besides of providing part of the basic urban food supply, also serves as a source of raw materials for a good share of all agro-industries. Apart from that, rural areas are sources of major water supply in urban areas, for example, Uluguru Mountains is the water sources for Dar es Salaam city (the largest city in Tanzania) and Morogoro town. The degradation of rural environments diminishes the resource base from which the people and economies of the present and future generations of both rural and urban settlements must sustain themselves. Therefore, environmental problems that is present in rural areas, such as the degradation and loss of forests, have tremendous repercussions for the existence and sustainability of urban areas themselves. Hence, these 'rural environmental problems' are also critical urban environmental problems. When rural-urban environmental linkages are scrutinized from the perspective of sustainability, it is apparent that traditional 'rural' and 'urban' problems of resource management are not just linked, but are shared. Some villages located in the Uluguru Mountains are complaining that, despite the fact that the water sources for Dar es Salaam city comes from their area, but no incentives have been provided to motivate these farmers who are conserving the water catchments.

1.6 Objectives of the Study

This study was designed based on the prevailing and existing situation particularly in most 'remote areas' in Tanzania. The study area is one of the least explored villages in Morogoro Region and is backward in many social and economic infrastructures. This study is a kind of eye opener to researchers, policy makers, and bureaucratic, that, in remote areas there are plenty of untapped/ forgotten resources and knowledge. Based on Nyerere's rural development definition, un-answered puzzle is how

smallholders can be participated in their areas using their own resources. Then, the challenging questions are; how can resource-limited, small-scale farmers be empowered to recognize and resist inappropriate development initiatives?; how can they influence decisions about what essential development is to them?; and how can the participation of smallholders be facilitated in designing of development activities that are meant to find solutions to their problems and the deteriorating natural resource base? Action taken to find credible answers to these and related question, should take into consideration the role of local people and their contribution to reverse both poverty and environmental degradation.

Local people have the right to seek a livelihood within their environment. This right is coupled with a responsibility to protect the environment both for their own benefit and humankind as a whole. Such rights and duties imply that people need to maintain control over their own local development and interest in protecting and improving their environment as well as the necessary knowledge to do so. It should be remembered that, sustainable wealth creation without local knowledge and participation does not lead to sustainable development, but rather to mass poverty and environmental degradation (Ojo and Ashton-Jones 1998).

The specific objectives of this study are;

- a) To examine the potential/ uniqueness/ remarkable existing opportunities of the study area in terms of agricultural, socio-economically based on agro-ecological diversity, farmers' practices, food security, and livelihood strategies.
- b) To verify and assess the effectiveness of participatory approaches on rural development based on indigenusness, innovativeness, people-to-people communication and people's networking.
- c) To present participatory rural development approaches based on the existing and prevailing environmental, social and economical conditions. These are based on feasible and practical approach, community empowerment, plural options based on indigenous systems and poverty alleviation.

1.7 Data Collection

1.7.1 Types of Data and Methods

This study made use of both primary and secondary data types of data. The primary data were generated during SCSRD-JICA project (1999-2004) and field researches in 2005 and 2006. I participated in SCSRD project (from 2001 to 2004) at least in every step, activity and procedure in the Uluguru Mountains site. Also, I conducted field researches in 2005 (November- December) and August 2006 in order to supplement the missing data and information. Secondary data constitutes the review of books, journals and other documents in order to gather necessary information on rural development and participatory approaches. The following data collection methods were employed;

a) Preliminary field survey: Preliminary field surveys (1999-2000) were conducted in order to clearly observe the area, understanding community norms, customs, peoples' interaction, socio-economic infrastructure, income sources, livelihood strategies, marketing channels, land use types, farming types, environmental and ecological aspects. Through these surveys we identified: i) commodity marketing channels, ii) some ecological, agronomic, and socio-economic characteristics of the area, iii) crop calendar for various crops, and iv) a focal feature of the area (SCSRD, 2004). Then, SCSRD focused to the eastern Uluguru Mountains for participatory village surveys.

b) Village surveys involving volunteered villagers: Kibogwa and Nyachilo Villages were selected as pilot villages for testing participatory rural development activity. Participatory village surveys including participatory rural appraisal (PRA) and baseline surveys were then conducted in 2001 in order to understanding village communities in terms of its geographical location and resources. PRA can be described as a growing family of approaches and methods to enable local people to share, enhance and analyse their knowledge of life and conditions, and to plan, act, monitor and evaluate (Farrington, 1998; Philips, 1994). In total, 44 and 47 households were researched in Kibogwa and Nyachilo Villages respectively.

c) Participant observation and field measurement using GPS: This study applied this method to determine or measure the size of 68 farms/plots in November-December 2005 field research. In total 11 farmers were involved and 68 plots were measured using GPS. These fields are located within six sub-villages. The list of farmers

was selected from 2001 names who were involved in a baseline survey. For accuracy, household heads participated in identifying field's boundaries, ownerships and cropping history. The results of these field measurements were used to supplement data gathered during baseline surveys in 2001.

d) Key informant interviews: This study carried this method in a vanilla follow-up research in August 2006 to evaluate the trends of vanilla cultivation in Uluguru Mountains since its introduction in 2002. In total, 66 farmers were surveyed and interviewed, and 738 vanilla plants were observed. At the same time, vanilla production data in Tanzania were collected through stakeholders' interview. Among the people involved were government officers (in Morogoro and Bukoba District), staff from MAYAWA NGOs, officials from MAFSC and vanilla farmers in Morogoro and Bukoba. Structured questionnaire and checklist were used to collect and elicit information from interviewees. The gathered data and information were used to assess the impact of rural development initiatives and the status of vanilla crop in Tanzania.

1.7.2 Data Analysis

Data from the existing maps were processed and analyzed by mapping through Geographic Information Systems (GIS), and various physical characteristics of the area have been mapped using ERDAS IMAGINE 8.7 and ArcGIS 9. Aerial photo printout (1:20,000 scale) was used during the field, and farmers were able to locate the position of their field. Information generated through key informant interviews and focus group discussions were qualitatively analyzed. GPS data were converted and exported into a GIS for overlaying with aerial photos and topographical maps. Sketch maps drawn during PRA exercise, were used to delineate the village boundaries from top map (1:50,000 scale). Finally GIS used to integrate various data from different sources into a common spatial database. The household survey data were coded and entered into a computer for analysis. Data analysis involved tabulation and cross-tabulation, computation of frequencies and percentages.

1.8 Thesis Structure

So as to achieve the above mentioned objectives, this study is organized into six chapters including this introduction chapter. Chapters 2 to 6 are organized as follows;

Chapter 2 deals with the description of the agro-ecological characteristics of the area. Special attention is given to the diversity aspects e.g. farming systems, land uses, crops and useful plants. This identification is expected to be reflected in the planning of rural development activities in chapters 4 and 5.

Chapter 3 is devoted to the description of socio-economic characteristics of the area. The major emphasis is placed on income sources employed by the rural community in utilizing available resources and institutions. This chapter presents the demographic attributes, land tenure, marketing opportunities, migration trends and income sources.

Chapter 4 investigates on the background, process and outcome of SUA Centre for Sustainable Rural Development (SCSRD) project in designing of community based activities aimed at involving the rural community using the locally available materials and resources.

Chapter 5 analyses on how rural community can be participated in their own development. An evaluation is made using a vanilla trial to describe the process of participation, and the involvement of stakeholders using SCSR project.

Chapter 6 concludes the study based on the participatory approaches targeted to local community. It provides recommendations and suggests a number of points as a direction for further research activities.

Chapter Two:

Agro-ecological Characteristics of the Study Area

2.1 *Overview*

This chapter focuses on study area, and particularly on its agro-ecological characteristics. Special attention is paid on the diversity aspects e.g. agro-ecological, farming systems, land uses, crops and useful plants. The background of the production systems based on smallholders' initiatives is explained focusing on the economic importance. The diversity of crop and plant components in home-garden agroforestry is mentioned as one of the remarkable feature comparatively with similar areas in Tanzania. Spatial and temporal variation of land uses and farming plots which resulted into the different types of land uses, mosaic distribution of farming fields and the diversified crop calendar are also explained. Finally, risks-reduction mechanisms such as diverse products derived from farming systems, the benefits of mixed/intercropping of annual crops with perennial crops and trees/shrubs, and the traditional roles of fallow cultivation for meeting the food requirements are explained. This chapter is mostly based on the research activities conducted in 2005. The identification of the agro-ecological characteristics is expected to be reflected in the planning of rural development activities that will be presented in chapter four and five.

2.2 *Overview of the Research Area.*

2.2.1 *Geographical Setting*

The Uluguru Mountains in Central-Eastern Tanzania (06'51" – 07'12" South and 37'36"–37'45" East) form one of the component blocks of the Eastern Arc Mountains of Kenya and Tanzania (Lovett 1996). The mountains consist of two major catchments (Uluguru North and South forest reserves). The Uluguru Mountains are located 240km inland from the coast of the Indian Ocean. The altitude of the Uluguru Mountains ranges from around 150m on their south-eastern margin, and exceeds 2600m at their highest point. In total they cover around 1500sq km with a ridge running almost north-south, and



a few outlying hills around the main ridge (Lovett, 1996). The presence of these features have resulted in creating different climatic conditions, land uses, farming systems and vegetation types over the entire mountain range.

The study area, Kibogwa Village (Fig.2-1; Fig. 2-2) is located in Matombo Division of Morogoro District in Morogoro Region that forms one of the 21 administrative regions in Tanzania. Kibogwa village itself has various topographic features, such as ridges, peaks, depressions and stream valleys within an altitudinal range of 350m and 1400m. The altitude range and the topographic features result in diverse micro-climate, vegetation, land use types and cropping patterns. Kibogwa was officially recognized as a village in 1974 after villagization operation. Before that operation, community members in the area used to live scattered in small clusters of defined clans. Kibogwa Village administratively consist of seven sub-villages: Kilambazi A, Kilambazi B, Kiseneke, Changa, Mvule, Mungi and Ludewa. The village borders with Tawa and Hewe Villages on the east, Kifuru village on the south, the forest reserve on the southwest, Nyachiro Village on the west to northwest and Rubwe Village on the north. Over 90% of the village is mountainous with slopes varying from gentle to very steep. The most outstanding mountains are those, which make a border between Kiseneke and Kilambazi A sub-villages. They are a series of mountains marked by peaks named as Lukwaso, Kilangilangi, Mhengele, Kibebeto, Negembe, and Luguruni, in that order from south, near the forest reserve, to north at the valley of Mvuha River.

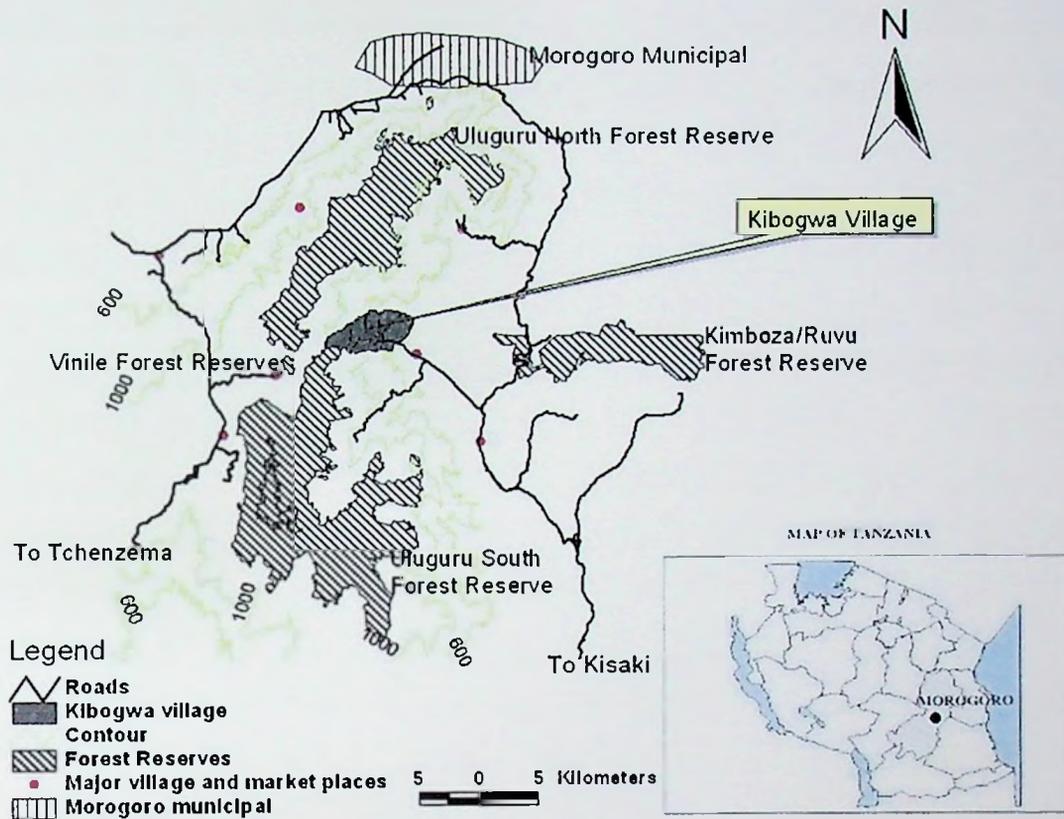


Fig. 2-1: The Location of the Study Area

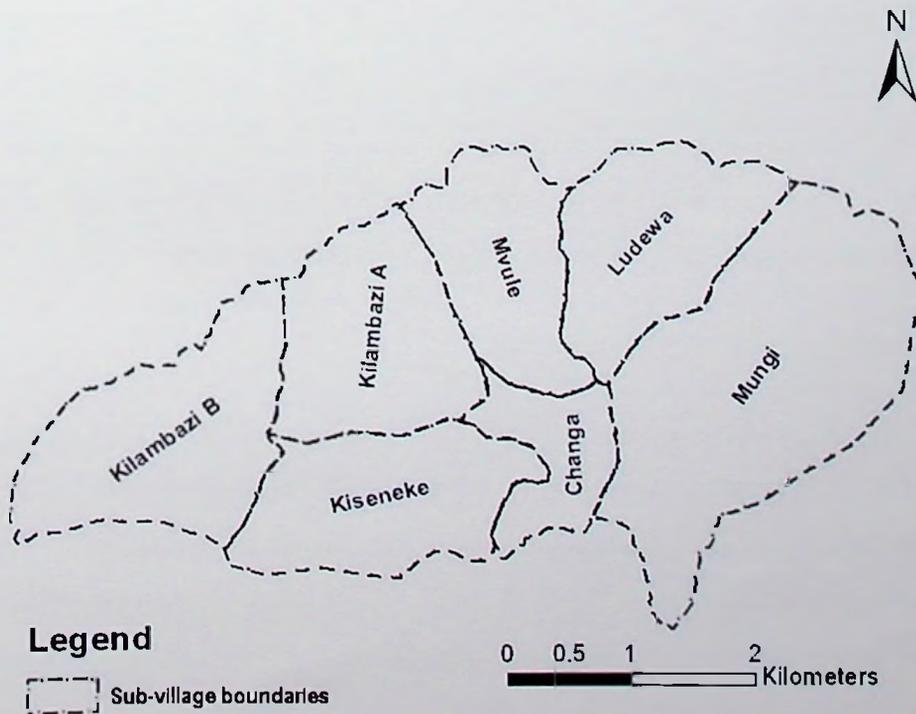


Fig. 2-2: The Sub-villages in Kibogwa Village

2.2.2 Climate and Vegetation

The Eastern slope of Northern Uluguru Mountains, where Kibogwa Village (Fig.2-2) is located, receives 1,800 to 2,500 mm annual rainfall. It is located on the windward side and intercepts the humid South East Trade Winds (SETW) from Indian Ocean. Rainfall distribution show a bimodal pattern, with short rains locally known as "vuli" between October and the end of December, and a long and heavy rainfall called "masika" between March and May. The mean annual temperature is between 23°C in December and 17°C in July at lower altitudes (Temple *et al.*, 1972). The dominant soils are Acidic lithosols and ferralitic red, yellow and brown latosols developed over Precambrian granulite, gneiss and migmatite rocks (Sampson, 1964; Rap *et al.*, 1972; Pócs, 1976).

The mountains harbour a wide range of vegetation communities closely related with forest types or their remnants as documented by Pócs (1976). Sub montane forest is found on the eastern slopes between 800 - 1500 m.a.s.l. On the Western slopes this type of forest is restricted to valley bottoms near the lower edges of the reserve. Montane forest occurs between 1500 - 1900 m.a.s.l. Upper montane forest is found above 1900 m.a.s.l. on wetter slopes and ridges in the cloud belts. This is characterised by stunted elfin forest on the higher ridges. The sub montane forest is dominated mainly by *Albizia gummifera*, *Aningeria adolfi friedericii*, *Anthocleista grandiflora* and *Cephalosphaera usambarensis*. It is however, currently occupied by human settlements, cultivated fields and fallowing vegetation. The aerial photographs taken in the 1960s show how the forest cover gradually disappeared and cultivation lands become dominated.

2.3 The Importance of Mountains Areas

Since the Rio de Janeiro Earth Summit (UNCED, 1992), the awareness on the global importance of mountain areas, the fragility of their resources and the often difficult living conditions of many mountain people has grown significantly. Worldwide, Mountains are important source of water, energy, forest products, agricultural commodities and recreation. They are storehouses of biological diversity with endangered species and an essential component of the global ecosystem. In East Africa, mountain regions provide commodities, not only locally but also for other lowland and urban areas. Mountain people in Tanzania have developed several farming systems, water

use, forestry and communication systems. As a result of remoteness and difficult access, mountain peoples are often economically and politically marginalized and have little access to social infrastructure and education.

The Uluguru Mountain area is one of the remarkable landscapes in East Africa for the conservation of biological diversity. In view of its high level of endemism such as among vertebrates, it has been recognized as a priority area for biodiversity conservation (Mittermeier *et al.*, 1998; Lovett, 1996). The Uluguru Mountain's catchment areas receive the highest rainfalls in Tanzania without a marked dry season. The most remarkable phenomenon is the flows of water from the Uluguru Mountains continue throughout the year. Forests in the mountains play an important role as the catchment for the Ruvu River which supplies water to Dar es Salaam for various uses, as well as Morogoro town and villages on the mountain slopes (Lyamuya, et al., 1994; Bhatia and Ringia, 1996).

From 1999 to 2004, Sokoine University of Agriculture (SUA) and Japan International Cooperation Agency (JICA) launched a joint project called "SUA Centre for Sustainable Rural Development" in two mountainous areas of Tanzania (SCSRD, 2004). As part of the SCSR project, the Eastern slopes of the Uluguru Mountains were selected in order to seek an approach for participatory rural development with respect to the indigenous practices and potentiality of the area. As an essential step for any rural development project, understanding of agro-ecological and socio-economic potentials i.e. indigenous farming systems, land uses, crop and plant components and the environment-human interactions is a prerequisite.

2.4 *Smallholders Production Systems*

The term 'smallholders' has been defined differently by different people. Smallholder production systems are as complicated as the societies within which they exist. The term is commonly linked to the size of the landholding or livestock owned. However, when defined in this manner, a number of problematic issues arise. The notion of "small" changes in different contexts particularly different crops and across regions. Therefore, rather than defining the term smallholder in this chapter, I characterize smallholder in the Uluguru Mountains as a farmer practicing a mix of commercial and subsistence production or either, where the family provides the majority of labour and the farm provides the principal sources of income. Crops are grown sometimes for cash and

sometimes for domestic consumption. Choices of allocating time and effort, tools, land, and capital for specific uses, in a context of changing climate, resources availability, and markets must be made daily, and these economic decisions are intelligible in rational and utilitarian terms.

Many studies in Africa associate smallholders farming with intensive and land scarcity. Netting (1993) argue that intensive, smallholder agriculture is likely to be highly diversified as a strategy for preventing overall crop failure, that intercropping is likely to reduce insect pests, and that multiple crops with different work requirements smooth out farm labour expenditure over the year. Lambert (1996) argues that, high rainfall environments may allow cultivation of a wider range of crops than is possible in areas with low precipitation. Because of the labour costs of cultivating different crops, fields close to the homestead are more likely to contain a wide variety of crops than fields at a distance (Richards, 1985). In the Uluguru Mountains, farming practices employed by majority of smallholder farmers are characterized by short fallow and rudimentary tools including fire for bush clearing, and no mechanization, chemical inputs or animal traction. Traditionally, agricultural activities in Kibogwa Village are done using personal labour and the labour of relatives including children. The fact that the homestead production is basically labour dependent meant that, more people in a homestead had the better chance to produce a substantial surplus for exchange.

2.5 Types of Land Use

Land uses in Eastern Uluguru Mountains are mainly dominated by agricultural activities. Agriculture is the most important socio-economic activity of the people for their livelihood. Much of the area is well suited for agricultural production and there is a potential in many areas for a broad diversification of both food and cash crops production (Bhatia and Ringia, 1996). Farming land uses in Kibogwa Village can be categorised into; a)home-garden agro-forestry (HGA) field, b)fallow cultivation or shifting cultivation field, c)valley bottomland field, d) semi-continuous cultivation field, and e) forestland field.

2.5.1 Home-garden Agroforestry (HGA) Field

Home-garden fields, locally known as '*jalalani*' are found near areas of habitation and play an important role for agroforestry and fruit trees. Home-gardens are essentially

residential areas and many farmers are accustomed to retain and integrate trees into their home-gardens. The arrangement of components in this system is irregular and haphazard. It is a traditional practice to grow perennial crops in home gardens such as banana, coffee, cloves, pineapple, jackfruit, mango, papaya, coco palm and fruit trees. Community members believe that these crops do well in home-gardens because of availability of much fertility that is maintained through dumping of household wastes. Home-gardens provide easy access (particularly during the rainy seasons) to the various resources the communities need such as food, fuel wood and medicines throughout the year.



Plate 2-1: A Typical View of Home-garden Agroforestry (HGA) System

Spice crops are dominant in the HGA system. The origin of these spice crops (cloves, cinnamon, black pepper, cardamom, etc) grown in Uluguru is directly connected with Zanzibar. Spices are best described as the dried parts of aromatic plants whose qualities are perceived through smell and taste. The section below will explain about the background and history of spice crops in the Uluguru Mountains.

History of the spices in the Uluguru Mountain: The history of spice and fruit trees in the Uluguru Mountain is dated back since colonial period especially during the coming of Arabs, German and British colonial periods. At the same time, individuals who migrated into Zanzibar during colonial period escaping from paying head levy (poll tax) have mentioned to bring spice trees through unofficial channels from Zanzibar to Uluguru

Mountains. During the field research in August 2006, the names of people believed to be the pioneers were collected from different key informants. The known pioneers are; Rashid Mohamed, Sanze, Rajabu Magana and Hamisi Abdallah from Rubwe village.

Through the discussion with some of the elder men in Rubwe village, they pointed out that most of the “*Waluguru*” went in Zanzibar in the 1930s escaping from paying head levy which was imposed by the colonial government. By that time in Zanzibar, this kind of tax was not imposed by the Arabs government. Among the early waluguru to stay in Zanzibar are; Abdallah Mkimbo, Juma Mkimbo, Shabani Adballa and Juma Madunda. Because of inter and intra marriages among waluguru, these people obliged to come back in Uluguru for marriage purposes. Later, some of their relatives decided to follow them for example Rashid Mohamed went in Zanzibar in 1944. Most of these Waluguru stayed in Dole, Kidichi and Kiboje areas, and worked in the spice plantations owned by the Arabs.

It is believed that, the first person to bring the seed of clove was Shabani Abdallah in the 1960s from Zanzibar. He brought the seeds inside a bottle from Zanzibar and planted them in his home garden in Rubwe village. The seeds sprouted and the rate of growth was promising. After some years, some Waluguru who were in Zanzibar (Hamisi Abdallah, Rashid Mohamed, Rajabu Magana, and Sanze) visited him and saw those plants in his home-garden. They knew the importance and decided to take some seedlings. In the 1970s, many farmers in Rubwe and nearby villages such as Kibogwa, lower Nyachilo, Mambani and Tegetero started cloves cultivation. Ramadhani Kanoga, who was one of the respected elder men in Kibogwa village, planted a tree of clove in 1970 obtained from Rubwe village.

Cinnamon was introduced in the early 1960s pioneered by Athumani Kinyogoli in Rubwe village. He started with one tree obtained from Kiboje area in Zanzibar. He died in 2002 at the age of more than 100 years. Like clove, this crop expanded in the 1980s after early growers sold the harvested cinnamon to traders who came in Rubwe village at 100TShs per kg. At the same time, seedlings were sold at 10TShs per seedling. In Kibogwa village, Abdu Ng’abenwa is believed to be the first person to grow cinnamon in his home-garden obtained from Zanzibar. Until mid 1990s, at least every household was growing cinnamon and there was an influx of traders from different parts of Tanzania buying this crop.

Cardamom is another spice grown in the Eastern Uluguru Mountains. Cardamom was introduced in the village even before 1960s but then it had no commercial value until in 1980s. Rashid Mohamed noted that, formerly in 1970s he harvested 20 kgs. of cardamom and sold at 3TShs per kg. to the Indians in Morogoro town. Then, from that time he shifted his concentration to other highly paid crops. The origin of cardamom is not clear among farmers because of different answers such as Zanzibar and Tanga Region. Coconuts and black pepper were grown in Kibogwa and Rubwe for the first time in the 1970s. Seedlings were brought from neighbouring villages of Tawa, Mkuyuni, and Matombo.

It has been learnt that, spice crops cultivation in Uluguru Mountains gain popularity and expanded between 1970s up to 1980s. The reason for its expansion was the price of 300TShs per kg because by that time no any other crop could have fetched such price per kg. The cloves gain popularity in mid 1980s when some traders from towns started to buy cloves direct from the farmers. At the same time, centres like Tawa and Mkuyuni became popular as spice collection points, and some local people were involved as middlemen. Due to the fact that all spice crops perform well in home-gardens, it becomes simple and easy for farmers to plant these crops. Many households are growing cardamom in a combination with cloves, cinnamon and other spice crops as these crops require similar conditions.

Other people and institutions played a great role in the expansion of spice and fruit tree expansion includes Chief Kingalu, the famous traditional leader of the Waluguru. Kingalu had keen interest in planting trees for spice and fruits by requesting the Arabs, long time ago to bring him clove trees. Also, the Catholic Church mission in Tegetero contributed enormously especially in strengthening the home-garden agroforestry by bringing to farmers many tree species including *Grevillea robusta*, *Persea americana*, *Artocarpus altilis* and *Khaya anthotheca*. The later seeds were brought from Morogoro town.

Halidi Hamisi (a spice middlemen) born in Rubwe has been actively involved in spice business since 1976. According to his experience, he highlighted the following concerned spices in the Uluguru Mountains;

- a) The price for black pepper rose from 30TShs in 1977 to 100TShs in 1979 and 300TShs per kg in 1981.

- b) The price for cinnamon rose from 100TShs in 1981 to 300-400TShs in 1992-2004 and 500-600TShs in 2005 to date per kg.
- c) The price for cloves rose from 300TShs in 1979 to 500-600TShs in 1981, 1000TShs in 1983, 2000-3000TShs in 1984 – 2000, 4000TShs in 2001 and 3000TShs in 2003-2005 per kg.
- d) The peak of planting cinnamon and cloves was 1988 as many farmers planted cinnamons and cloves simply because early growers benefited a lot after selling their cinnamon to traders. He pointed out that, the rise of price for these crops was the major contributing factor to the expansion of spice cultivation. The rise of price was accelerated by the increase of demand from different parts within and outside of the country.
- e) The major consumers of spices are in Dar es Salaam especially those people originated from Zanzibar popularly known as 'Wapemba'. Other places include, Mwanza, Kigoma, Dodoma, and Uganda.
- f) The uses of spices include; medicinal uses especially cloves and black pepper, and food additives. Locally, the demand of spices goes up during feast season by Moslems because spices are highly used during preparations of different meals.

2.5.2 Fallow Cultivation (Shifting Cultivation) Field

Historically, shifting cultivation was the main cultivation system in the Uluguru Mountains. This shifting cultivation was interrupted by the enforcement of the first measures in 1909 (Rapp *et al.*, 1972), when the colonial government (German) established 277km² Forest Reserve including some of the area formally under native possession and cultivation. However during the First World War, a number of those expelled from the Forest Reserve by the German, returned to their original plots and were not expelled by the early British administration (Temple, 1972b). After some years, the British Administration re-demarcated the forest reserve and another land was included to provide a buffer zone for forest reserves.

In Kibogwa village, fallow cultivation is a traditional practice for recovery of soil fertility. Fallow cultivation is characterized by staple crops cultivation such as upland rice, roots and tubers (cassava, yam, sweet potato) and mixed grains (maize, kidney beans, sorghum). Fallow cultivation in Kibogwa village can be divided into categories of

cassava based slash-and-burn cultivation on sloping land, banana and root crop based cultivation at the periphery of forests and cassava or rice cultivation in valley bottoms (SCSRD, 2004).

Farmers practice fallow after some years of cultivation, and locally it is differently named based on the length of time a field is left unused between cultivation. A one-year fallow (seasonal fallow) is named as *lusengeti/lubuha*; two to four years fallow (short fallow) is named as *luvinze* which means wilderness or bush land; five years and above fallow (long fallow) is termed as *gonela*, which means forest like, and sometimes called *kisitu*, which means a forest (SCSRD, 2004). The farming fields are located at varying distances from the homestead and fallow periods increase with increasing distance from the homestead. Farmers in Kibogwa village experienced that when a field is grown with rice or beans or maize in the first two or three seasons, soil fertility become too low for production of these crops. The field is then planted with cassava for as long as the yields are satisfactory, normally up to three seasons. The field is left under fallow when cassava yields are no longer satisfactory. Farmers recognize levels of soil fertility recovery by observing the type and density of vegetation on the land. Growth of shrubs and grasses locally known as *ngoda*, *cheza kisasi*, *kizabi* or *masiru* and *bumu* are indicators of soil recovery.



Plate 2-2: Fallow Cultivation Fields

2.5.3 Valley Bottom Cultivation Field

This cultivation fields locally known as '*shamba la bondeni*' or '*zava*' are located along the river valleys or springs, and is always wet. In some areas, valley bottom are found at the margin of the homegarden where seasonal crops such as upland rice, maize, cassava and beans are grown. Valley bottoms are used for production of annual and perennial crops, and in particularly for production of wetland rice, wetland yams, sugarcane and banana. Maize is relay cropped with rice on valleys. Maize is often intercropped with other crops such as eggplant, beans, sorghum and cassava. The output of rice production in the valley bottom fields is very high compared to other cultivation fields due to different factors such as soil fertility and moisture availability. Because of agricultural expansion towards the forest area, erosion on steep slopes is rampant hence valley bottomlands become depositional sites.



Plate 2-3: Valley bottom Cultivation Field

2.5.4 Semi-Continuous Cultivation Field

Semi-continuous cultivation field locally known as '*shamba la kondeni*' or '*weru*' is an area found in a transitional zone with home-gardens. That is the area where seasonal crops such as upland rice, maize, cassava and beans are grown. Some of the fields with young perennial crops such as spice trees and coconuts may be seen in the area. The areas

look to have been under agricultural activities for quite some time. This area is famous for income sources and food crop production.



Plate 2-4: Semi-continuous Cultivation Field

2.5.5 Forestland Cultivation Field

Forestland cultivation field or locally known as '*shamba la mwituni*' or '*kumuhulo*' located on higher altitudes close to the forest. It is mainly used for extensive banana, maize and cassava mainly for commercial purposes. In Kibogwa village, forest fields are normally maize fields planted during short rain (Nov-Dec). Farmers intercropped maize with other crops such as green peas, pigeon peas, and beans. It is considered the most fertile area and it experiences relatively good rainfall regime. Some coffee fields, apparently abandoned, may be seen in the forestland. Banana plants are intercropped with variety of vegetables and legumes.



Plate 2-5: Forestland Cultivation Fields

2.6 Remarkable Agro-ecological Characteristics

2.6.1 Diversity of Farming Systems

The term farming systems has different specific meaning in various fields of study depending on the research interests. In this section, social sciences approach of farming systems as advocated by Turner and Bush (1987) will be used. According to them, farming system is any level of unit(s) engaged in agriculture production as it is weeded in a social, political, economic and environmental context. Okigbo (1985) expanded further as an enterprise or business in which sets of inputs or resources are uniquely orchestrated by the farmers in such a way as to satisfy needs and to achieve desired objectives in a given environmental setting. In Tanzania, the farming systems comprises the activity of one or more individuals, usually a family unit, with some or all members of the family participating for some or most of their time in farm work. According to Parsons (1970), the farming system functions as a decision making unit as it transforms land, capital, and knowledge into useful products that can be consumed or sold.

a) Types of farming systems: Types of farming systems found in the area are mainly divided into three groups: a) fallow cultivation (shifting cultivation); b) semi-continuous cultivation; and c) home-garden agroforestry. Fallow cultivation, including valley bottom cultivation and forest land cultivation, is a dominant farming system in Kibogwa Village mainly for producing food crops, such as cassava, upland rice, maize and kidney beans. Semi-continuous cultivation is practiced for agricultural products, e.g.

maize and kidney bean which are used both for household consumption and marketing. Home-garden agroforestry has a wider variation in the components of crops and useful plants as described in section 2.5.1. Though different crops are being grown everywhere within the village, but the degree, extent and productivity differ between sub-villages. Some sub-villages are well known for surplus production of certain type of crops, for example Kilambazi is famous for surplus production of cassava, maize, beans and banana. Due to surplus production, these sub-villages supplies cassava in particular to the neighbouring villages and nearby town.

b) Diversity in Home-garden Agroforestry (HGA) components: One of the most striking features of indigenous agro-forestry practices in tropical environments is their great diversity (Nair, 1991; Sanchez, 1995). The diversity and complex nature of the home-garden agroforestry fields in Kibogwa village is the major distinctive characteristic comparative with Kihamba system found in Kilimanjaro, Tanzania (Fernandes, et al., 1989). SCSR (2004) documented 65 crops and plants (Table 2-1; 2-2) which provide food, marketing commodities, medicinal materials, etc. The main food crops include maize, upland rice, sorghum, cassava, sweet potatoes, banana, e.t.c. The cash crops produced include banana, spices, coffee, coconuts and beans. The diversity of crops and plants is maintained through multi-cropping, as well as inter-cropping. The diversity in crop combinations, with the other advantages of relatively low labour requirement and material input, also contributes to buffer price fluctuations and, thus, effective for risk management in household economy.

Table 2-1: List of Home-garden and Farmland Crop and Plant Species at Kibogwa Village

Plant			Home-Garden	Farmland (multiple answer)	
English Name	Swahili Name (Kiluguru)	Botanical Name	Plots (n=44)	HH (n=44)	Plots n=274
Cereal/grain (2)					
Maize	Mahindi	<i>Zea mays</i>	6	25	52
Rice	Mpunga	<i>Oryza sativa</i>	1	39	97
Root/starch crop (5)					
Banana	Migomba	<i>Musa spp.</i>	43	28	63
Cassava	Mihogo	<i>Manihot esculenta</i>	12	36	83
Cocoyam/Tannia	Maghimbi	<i>Colocasia esculenta</i>	19	18	32
Sweet Potato	Kiazi kitamu	<i>Ipomoea batatas</i>	14	8	9
Yam	Kiazi kikuu	<i>Dioscorea spp.</i>	8	3	4
Legumes/Pulses (4)					
Cow peas	Kunde	<i>Vigna unguiculata</i>	1	2	2
Groundnuts	Karanga	<i>Arachis hypogaea</i>		1	1
Kidney beans	Maharage	<i>Phaseolus vulgaris</i>	2	15	23
Pigeon peas	Mbaazi	<i>Cajanus cajan</i>	2		
Vegetables (7)					
Amaranthus	Mchicha	<i>Amaranthus spp.</i>	5		
Bitter tomato	Ngogwe/ Nyanya chungu	<i>Solanum spp.</i>	23	3	3
Egg plant	Bilingani	<i>Solanum melongena</i>	1		
Pumpkin	Maboga	<i>Cucurbita maxima</i>	3		
Tomato	Nyanya	<i>Lycopersicon esculentum</i>	9	2	3
Tree cassava	Mpira(Msamvu)	<i>Manihot glaziovii</i>	3		
Nightshade	(Derega)	<i>Basella rubra/alba</i>	15		
Spices/Herbs (8)					
Cardamom	Iliki	<i>Elettaria cardamomum</i>	23	6	8
Chilli (pepper)	Pilipili mbuzi/ hoho/kichaa	<i>Capsicum cinencis/ Capsicum annuum/ Capsicum flutescence</i>	31	2	2
Cinnamon	Mdarasini	<i>Cinnamomum zeylanicum</i>	40	23	50
Clove	Mkarafuu	<i>Syzygium aromaticum</i>	34	12	18
Ginger	Tangawizi	<i>Zingiber officinale Rosc.</i>	10		
Lemon grass	Mchaichai	<i>Cymbopogon spp.</i>	3		
Pepper (Black)	Pilipili manga	<i>Piper nigrum</i>	35	18	30
Turmeric	Binzari	<i>Curcuma longa</i>	1		
Other crops (7)					
Black Wattle	Mwati	<i>Acacia mearnsii</i>	1		
Bread Fruit	Msherisheri	<i>Treculia Africana</i>	37	10	12
Coffee(Robusta/ Arabica)	Mbuni/ Kahawa	<i>Coffea Arabica/ robusta</i>	16	14	18
Kapok	Msufi	<i>Ceiba pentandra</i>	2		
Sisal	Mkongge	<i>Agave sisalana</i>	1		
Sugarcane	Miwa	<i>Saccharum officinarum</i>	11	8	10
Tobacco	Tumbako	<i>Nicotiana tabacum</i>	5		

Table: 2-1: Continued

English Name	Swahili Name (Kiluguru)	Botanical Name	Plots (n=44)	HH (n=44)	Plots (n=274)
Fruits/Nuts/Oil seeds (23)					
Avocado	Mparachichi	<i>Persea Americana</i>	5		
Castor-oil plant	Mnyonyo	<i>Ricinus communis</i>	7		
Coco Palm	Mnazi	<i>Cocos nucifera</i>	36	19	31
Custard apple	Mtopetope (Mtomoko)	<i>Annona squamosa</i>	1		
Guava	Mpera	<i>Psidium guajava</i>	10		
Jack Fruit	Mfenesi	<i>Artocarpus heterophyllus</i>	43	7	10
Lemon+Lime	Mlimau+Mdimu	<i>Citrus limon</i>	18		
Jambolan/ Java plum	Mzambarau/ Mzambarawe	<i>Syzygium cuminii</i>	4		
Loquat	Msambwa	<i>Eriobotrya japonica</i>	1		
Mango	Mwembe	<i>Mangifera indica</i>	23	11	17
Oil palm	Mchikichi	<i>Elaeis guineensis</i>	1	1	1
Orange	Mchungwa	<i>Citrus sinensis/ C. aurantium</i>	12	5	7
Oyster nuts	Mkweme	<i>Telfairia pedata</i>	2		
Passion fruits	(Matunda kamba)	<i>Passiflora edulis</i>	3		
Papaya/Pawpaw	Mpapai	<i>Carica papaya</i>	15		
Peas	Mpeasi	<i>Pyrus spp.</i>	1		
Pineapple	Mnanasi	<i>Ananas comosus</i>	21	5	5
Rose apple tree	Mtofaa	<i>Eugenia malaccensis</i>	2		
Soursop	Mstafeli	<i>Annona muricata</i>	6		
Tangerine(Orange)	Mchenza	<i>Citrus reticulate</i>	9		
?	(Mzaituni)	<i>Lucuma spp.</i>	3		
Marula	(Mwembe Ng'ong'o)	<i>Sclerocarya caffra</i>	23		
Other plants (10)					
Bamboo	Mwanzi	<i>Phyllostachys spp</i>	7		
Fig tree	Mkuyu	<i>Ficus sycomorus</i>	1		
Vetiver grass	(Kasikasi)	<i>Vetiveria zizanioides</i>	28		
Jatropha	(Mbono)	<i>Jatropha curcas</i>	3		
African Mahogany	(Mkangazi)	<i>Khaya anthotheca</i>	1		
?	(Mkonzongo)		1		
?	(Mlongelonge)	<i>Chrysophyllum sp.</i>	1		
?	(Mtamba)	<i>Ficus stuhlmanii</i>	1		
Bridelia	(Mwiza)	<i>Bridelia micrantha</i>	1		
Total (65)					

NOTE: HH stands for Household Head

Table 2-2: List of home-garden and Farmland Crop and Plant Species at Nyachilo Village

English Name	Plant		Home-Garden	Farmland (multiple answers)	
	Swahili Name (Kiluguru)	Botanical Name	Plots (n=47)	HH (n=47)	Plots (n=210)
Cereal/grain (3)					
Maize	Mahindi	<i>Zea mays</i>	44	46	145
Rice	Mpunga	<i>Oryza sativa</i>		14	17
Sorghum	Mtama	<i>Sorghum vulgare</i>	2	3	4
Root/starch crop (5)					
Banana	Migomba	<i>Musa spp.</i>	47	25	52
Cassava	Mihogo	<i>Manihot esculenta</i>	30	30	60
Cocoyam/	Maghimbi	<i>Colocasia esculenta</i>	37	40	83
Sweet Potato	Kiazi kitamu	<i>Ipomoea batatas</i>	18	3	3
Yam	Kiazi kikuu	<i>Dioscorea spp.</i>	29	5	5
Legumes/Pulses (4)					
Cow peas	Kunde	<i>Vigna unguiculata</i>	1	8	9
Green peas	Njegere	<i>Pisum sativum</i>	2	7	10
Groundnuts	Karanga	<i>Arachis hypogaea</i>	1		
Kidney beans	Maharage	<i>Phaseolus vulgaris</i>	36	19	39
Vegetables (8)					
Amaranthus	Mchicha	<i>Amaranthus spp.</i>	8		
Bitter tomato	Ngogwe/ Nyanya chungu	<i>Solanum spp.</i>	16	1	1
Cabbage	Kabichi	<i>Brassica oleracea</i>		4	4
Onion	Kitunguu	<i>Allium cepa</i>	1		
Pumpkin	Maboga	<i>Cucurbita maxima</i>	35	2	2
Tomato	Nyanya	<i>Lycopersicon esculentum</i>	24	2	2
Tree cassava	Mpira(Msamvu)	<i>Manihot glaziovii</i>	13		
Nightshade	(Derega)	<i>Basella rubra</i>	39		
Spices/Herbs (6)					
Cardamom	Iliki	<i>Elettaria cardamomum</i>	3		
Cinnamon	Mdarasini	<i>Cinnamomum zeylanicum</i>	8	2	2
Ginger	Tangawizi	<i>Zingiber officinale Rosc.</i>	8		
Lemon grass	Mchaichai	<i>Cymbopogon spp.</i>	9		
Pepper(Black Pepper)	Pilipili manga	<i>Piper nigrum</i>	32		
Turmeric	Binzari	<i>Curcuma longa</i>	25	1	1
Other crops (7)					
Black Wattle	Mwati	<i>Acacia mearnsii</i>	1		
Bread Fruit	Msherisheri	<i>Treulia Africana</i>	2		
Coffee(Robusta/Arabica)	Mbuni/Kahawa	<i>Coffea arabica/ robusta</i>	15	5	5
Eucalyptus	Mkaratusi	<i>Eucalyptus spp.</i>	6		
Sugarcane	Miwa	<i>Saccharum officinarum</i>	23	23	35
Tea	Chai	<i>Camellia sinensis</i>	1		
Tobacco	Tumbako	<i>Nicotiana tabacum</i>	8		

Table 2-2: Continued.

English Name	Swahili Name (Kiluguru)	Botanical Name	Plots (n=47)	HH (n=47)	Plots (n=210)
Fruits/Nuts/Oil seeds (20)					
Apple	(Epulusi)	<i>Malus domestica</i>	10		
Avocado	Mparachichi	<i>Persea Americana</i>	6		
Castor-oil plant	Mnyoyo	<i>Ricinus communis</i>	3		
Coco Palm	Mnazi	<i>Cocos nucifera</i>	1		
Guava	Mpera	<i>Psidium guajava</i>	15		
Jack Fruit	Mfenesi	<i>Artocarpus heterophyllus</i>	13	1	1
Jambolan/Java plum	Mzambarau/ Mzambarawe	<i>Syzygium cuminii</i>	3		
Lemon+Lime	Mlimau+Mndimu	<i>Citrus limon</i>	8		
Loquat	(Msambwa)	<i>Eriobotrya japonica</i>	24		
Mango	Mwembe	<i>Mangifera indica</i>	7	1	1
Orange	Mchungwa	<i>Citrus sinensis/ C. aurantium</i>	4		
Passion fruits	(Matunda kamba)	<i>Passiflora edulis</i>	7		
Papaya/Pawpaw	Mpapai	<i>Carica papaya</i>	3		
Peach	(Mfindisi/ pichesi)	<i>Prunus americana</i>	23	2	2
Pears	Mpeasi	<i>Pyrus spp.</i>	2		
Pineapple	Mnanasi	<i>Ananas comosus</i>	12		
Plum	Plamsi	<i>Prunus sakiciforia</i>	9	1	1
Tangerine(Orange)	Mchenza	<i>Citrus reticulate</i>	2		
?	(Bwigabwiga)	<i>Spermacose princeae</i>	1		
Marula	(Mwembe)	<i>Sclerocarya caffra</i>	2		
Other plants(8)					
Bamboo	Mwanzi	<i>Phyllostachys spp.</i>	1		
Vetiver grass	(Kasikasi)	<i>Vetiveria zizanioides</i>	45		
Long-leaved dragon tree	(Mdigisi)	<i>Dracaena</i>	1		
African mahogany	(Mkangazi)	<i>Khaya anthotheca</i>	1		
?	(Mkangazi)	<i>Khaya anthotheca</i>	1		
Creek oak	(Mvinje)	<i>Casuarina cunninghamiana?</i>	3		
Mitzeeri	(Mwiza)	<i>Bridelia micrantha</i>	1		
Total (60)					

NOTE: HH stands for "Household Head"

c) **Roles of traditional crops cultivation:** Paddy rice is among the traditional crop in Kibogwa village. Farmers put value in upland rice cultivation though the output is very small. Paddy rice cultivation of local breed plays a major role in Kibogwa's farming calendar, and farmers have continued to cultivate this crop over a long time. Rice is a

traditional crop however, the output has been diminishing time after time compared to previous years. Even though the output of rice has been decreasing, farmers have continued to grow it due to the following reasons; i) villagers feel proud when eating Kibogwa grown rice as they say, the taste is unique compared to other non-local varieties; ii) mixed cropping where one field can be used for many crops at a time; iii) even if they spend plenty of time, farmers don't care about time because it is within the crop calendar, iv) it is a traditionally agriculture, as farmers exploit the full range of microenvironments which differ in soil, water, temperature, altitude, slope, fertility, etc. within the village; v) most fields used for rice cultivation are rented fields where payment depends on the output; and vi) rice is largely consumed during initiation ceremonies for girls performed in the months of October to November. Therefore, upland paddy rice cultivation and its use have been integrated into the society's cultural values and diversity despite of decreasing in quantity.



Plate 2-6: Upland Rice Cultivation in Kibogwa Village

2.6.2 Spatial and Temporal Diversity of Land Uses and Farming Plots

a) **Types of land uses:** Land use systems are characterized by smallholders' production of subsistence and cash crops. The land use types related to farming activities are: 1) fallow cultivation field; 2) home-garden agroforestry field; 3) semi-continuous cultivation field; 4) valley bottom cultivation field; and 5) forest land cultivation field. The details of these land uses are obtained in section 2.5. These types are decided

according to the topographic features, needs of household economy and access from a residential quarter. At household level, these types of cultivation and fallow fields are scattered under different topographic features throughout the village territory.

Land use is based on kinship structures which are matrilineal in terms of ownership and inheritance (section 3.2.4). In Kibogwa Village, a farmer can occupy about 7 plots located separately in the different topography of the area (Table 2-3). Generally, farming plots are very small with the total size of less than 7 acres. The plot sizes are between 0.51 and 3 acres. This kind of land fragmentation offer farmers advantages such as in managing risk, and in overcoming seasonal labour bottlenecks. On the other side, tiny plots of land, measuring a fraction of an acre, are not conducive to technical innovation especially in ploughing, weeding and harvesting, consequently, farmers produce so little from these tiny plots.

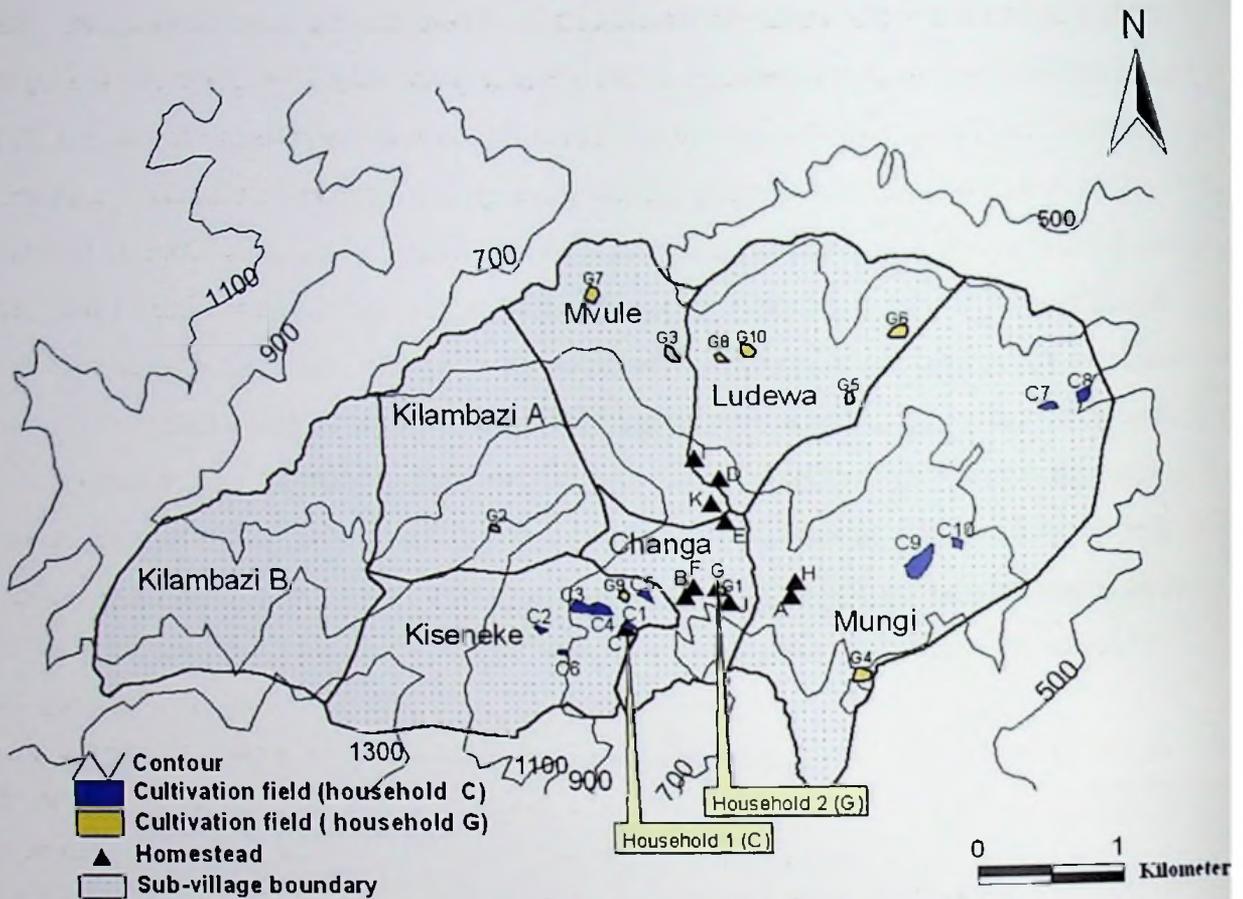
Table 2-3: Types of Land Uses and Numbers of Farming Plots of 11 Households Surveyed, Nov. 2005

Household surveyed	Types of land uses					Number Of plots
	Valley bottom	Home garden	Semi-continuous cultivation	Fallow cultivation	Forestland cultivation	
A	-----	1 (0.5)	2 (1.7)	1 (1.5)	-----	4 (5.4)
B	2 (2.0)	1 (2.1)	-----	-----	2 (2.0)	5 (10.1)
C	2 (1.0)	1 (0.9)	-----	4 (2.7)	3 (2.0)	10 (19.7)
D	-----	1 (0.6)	3 (1.2)	-----	1 (2.4)	5 (6.6)
E	2 (2.5)	1 (0.5)	1 (1.0)	3 (2.0)	1 (2.3)	8 (14.8)
F	1 (0.5)	1 (0.9)	1 (0.5)	-----	-----	3 (1.9)
G	-----	1 (0.8)	3 (1.5)	4 (2.0)	2 (1.0)	10 (15.3)
H	1 (1.4)	1 (1.0)	1 (2.2)	1 (1.4)	-----	4 (6.0)
J	2 (1.0)	1 (0.8)	1 (0.9)	2 (1.6)	1 (1.0)	7 (7.9)
K	1 (0.8)	1 (1.1)	3 (1.5)	1 (0.5)	1 (1.0)	7 (7.8)
L	1 (1.6)	1 (3.2)	1 (1.0)	1 (0.5)	1 (1.0)	5 (7.5)

Note: 1) Figures in parentheses show the average sizes of farming plots in acre(s).

2) A, B, C through L are the identification letters representing households surveyed.

b) Distribution of farming plots: The scattering distribution of cultivation fields in different parts of the landscape (Fig. 2-3) is one of the characteristics in the area. It brings the diversity in pattern, timing and type of cropping. Figure 2-3 shows the distribution and number of farming plots using the farmers in the case study. The farming plots are scattered and distributed within the entire village and it is the farmer who decide the uses for a particular farming plot.



NOTE: C1-C10 (fields for households 1), and G1-G10 (fields for household 2)

Fig. 2-3: The Distribution of Farming Plots Owned by 2 Household Surveyed (Nov, 2005)

c) **Farmland fragmentation:** In Tanzania, the average family farm measures only two acres and 93% of all the smallholder families cultivate less than five acres (Bagachwa, 1997: 138). The other aspect of Tanzanian smallholders' agriculture is that although the family owns a very small amount of agricultural land but, this land is not held in one continuous plot. Land fragmentation is common and this has increased after nucleated villages were institutionalized in the 1970s. In the 1970s and 1980s there was a political pressure put on smallholder farmers to remain in the official nucleated villages. In the 1950s and 1960s, a family owned a farm of about ten acres, but this has now gone down to four or five acres. This is because it is hard to expand farmland because of close settlement in the nucleated official villages. Walking to farm in the margin of the village may be uneconomical in some villages especially for those settled near the village centre.

The causes of land fragmentation in Kibogwa Village fall under three main groups: socio-cultural and demographic causes (inheritance transfer); economic causes (risk minimization, transfer through gift, sale or purchase, rental); physical or

environmental causes such as variations in microclimate, soil, altitude, etc. Some researchers have underscored the advantage of fragmentation like Igbozurike (1970) who contends that, fragmentation is actually beneficial to small farmers in West Africa simply because agro-ecological diversity allows for a greater number of farmers to survive. In Kibogwa village, some farmers have gained certain advantages from a degree of fragmentation as it enabled them to have the use of a variety of different land types suitable for various crops by exploiting a greater diversity of agro-ecological conditions. This in turn, helps sequence crops and reduces the risks of total crop failure.

In order to show the extent of farm fragmentation, a sample case of Jerani Shabani is used (Table 2-4). Jerani Shabani has got 10 fields located in different places. The size of his fields differs. Mr. Jerani explained how he managed to get many fields; *" I have three elder brothers, the first-born finished standard seven in 1974 and decided to go to Dar es Salaam. Even the second did the same. When I finished standard seven in 1984, I wanted to follow my brother's paths, but my father refused. He wanted me to remain in order to assist him because of his physical condition (handicapped). Therefore, I decided to marry on 22/03/1988 though I was still young. I became an assistant of my father till when he passed away in 1993. Because I assisted my father when he was sick, I came to know and use most of his fields, and I planted permanent crops and trees. Therefore, all the farms I used and planted permanent crops, became my property when my father passed away. Even if my brothers complained later, but nothing changed. Jerani Shabani-12/11/2005*

Table 2-4: Location of Farmland Fields of Mr. Jerani Shabani

No.	Location	Place	Sub-village	Acreage	Time from Homestead (min)	Land use type
1	Lowland	Mvuha	Mvule	2.07	45	Fallow
2	Upland	Kizanga	Ludewa	2.36	42	Fallow
3	Lowland	Mufu	Ludewa	0.87	40	Semi-permanent
4	Upland	Momvu	Mungi	2.42	35	Semi-permanent
5	Lowland	Kizigo	Ludewa	0.9	34	Valley bottom
6	Lowland	Videte	Ludewa	1.81	30	Valley bottom
7	Upland	Fune	Kilambazi A	0.86	25	Fallow
8	Forest	Kitwange	Kiseneke	0.97	20	Forest land
9	Lowland	Ngome	Mvule	1.73	15	Fallow
10	Homegarden	Changa	Changa	0.83	-	Home-garden

Farmland fragmentation in Kibogwa is being favoured by the tendency of farmers to have many children which motivate them to occupy many plots on the expectation that their children will settle on them. Using the example of Jerani Shabani at his age of 39

years, currently he has got 8 children (4 sons and 4 daughters) from 2 wives. But we can notice also the disadvantages of land fragmentation particularly those fields located far from homestead. To get to the furthest farm Jerani Shabani spends 45 minutes, but this is not a good example as some farmers spend at least 1 hour and half to reach their furthest fields. It become more worse during harvesting as farmers need to spend more time in their fields guarding and chasing for vermin/ wild animals such as monkey and baboons.

d) **Diversified crop calendar:** There is a great diversity in terms of operations for various crop productions in the area due to altitudinal variation. The cropping seasons runs throughout the year. In some areas, land preparation starts immediately after harvesting especially in high altitudes because the growing season is very long. Most farmers indicated that August to November is the labour peak period where land preparation, planting, and weeding are done. In maize-beans and maize plots, harvesting coincides with land preparation and sowing of rice fields.

Table 2-5: The Diversified Crop Calendar in Kibogwa Village

Farming plots	Month Crop	1	2	3	4	5	6	7	8	9	10	11	12
Forestland cultivation	Maize	Harvesting				Planting		Planting		Weeding			
	Beans					Planting		Planting		Weeding	Harvesting		
	Pigeon peas					Planting		Planting		Weeding	Harvesting		
Semi-continuous cultivation	Rice	Weeding				Harvesting				Planting		Planting	
	Maize					Planting		Planting		Weeding	Harvesting		
	Beans					Planting		Planting		Weeding	Harvesting		
	Cassava	Planting											
Valley Bottomland cultivation	Rice	Weeding				Harvesting		Planting		Planting			Weeding
	Maize							Planting	Planting	Weeding	Harvesting		
	Beans							Planting	Planting	Weeding	Harvesting		
	Sorghum							Planting	Planting	Weeding	Harvesting		

Diversified crop calendar (Table 2-5) was generated from farmers experience and knowledge. Kibogwa farmers have an intimate knowledge on agricultural aspects of their surroundings. Over centuries, farmers have learned and knew what varieties of crops to plant, when to sow and weed, and how to maintain their environment in a state of stability. Their knowledge leads into a formulation of a diversified cropping calendar. The diversity in crop calendar contributes to effective labour allocation and harvest

timing. Taking beans, for example, land preparation starts in May for the fields located in forestland and semi-continuous cultivation fields, and in July for valley bottomland fields. Even within the same crop, there is different harvesting periods. Another example is for maize crop. The crop is harvested in January and February from forestland fields, November and December from Semi-continuous cultivation and valley bottomland fields. This harvesting timing serves the purpose for food security.

2.6.3 Inherent Mechanisms for Risk-reduction

2.6.3.1 Roles of Diverse Farming Systems and Land Uses

The farming systems practiced in tiny plots with altitudinal distribution bring diversity to cropping calendar and enable production of foods and marketing commodities year round. The limited amount of products from tiny plot can not be a disadvantage, since the capacity of farmers carrying commodities on head is also limited. If the harvest happens at one time, the tiny local markets become saturated and the products are spoiled. The lag of growth stage of crops at different altitudinal location compensates damages by pests, diseases and drought. Harvest of diverse crops at different timing contributes to the stability of household income and food supply as a “living granary”. These facts suggest that the diverse farming systems and land uses in the area function as a mechanism for risk-reduction.

The land uses and farming systems practiced in Kibogwa village have many desirable characteristics. Efficient land uses and farming systems through crop diversification is achieved by using indigenous knowledge through traditional intercropping and multi-cropping techniques. Land is utilized to produce diverse products, including both household goods and crops for commercial sale. Well-adapted local crop varieties, particularly those of beans, maize and rice, give fairly high yields and have a good level of resistance against insects and diseases. The benefits of mixed/intercropping of annual crops with or without perennial crops and trees/shrubs can be summarised as: (a) better use of space, nutrients and moisture; (b) reduced risks due to unpredictable drought and pests; (c) continuity and variety in food supply; (d) extended soil cover and effective erosion control; (e) flexibility in labour utilization and demand; and (f) fair satisfaction of farmers' present multiple needs.

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2.6.3.2 Roles of HGA in the Area

HGA system has been a coping strategy for local people in Kibogwa village. It provides goods and services including foods, fuel, building materials, saleable commodities and protection of the soils and crops. The sale of HGA products contributes over 50% of the family income. Besides improving cash income, HGA in Kibogwa village promotes changes in land uses, thereby providing environmental benefits and reducing the pressure on forest. Through realizing the benefits of HGA components, some farmers have expanded or planted HGA trees to some fields which formerly used in slash-and-burn cultivation.

The home-garden is also an important source of fuelwood for households. Kibogwa depend mostly on wood plants for firewood and construction materials. In the rainy season, firewood is mainly collected from nearby individual lots though plants/trees are rarely grown only for this purpose. Instead the dead wood of trees and shrubs, large dry coconut leaves, coconut shell and fiber, dry cassava stems and bread fruits are used. Also after peeling of cinnamon backs, the remaining parts are used as firewood or construction materials.

In addition to subsistence food and income, the home-garden also fulfils certain social and cultural prestige. It is believed that a person is categorized as 'rich' if he/she posses about 100 cinnamon trees, 50-100 banana plants and 20-40 clove trees. HGA system in Kibogwa is considered as a stable system in terms of useful production from season to season. In some parts where home-garden is located near a well or open water source, annual crops are grown throughout the year. Some fruit trees, such as coconuts and pineapple, produce fruit all year. Typically, subsistence plants are harvested daily according to need e.g., yam, vegetables ('*derega*'), some chili peppers, and a basket of cassava leaves may be picked. Throughout the year there is a constant supply of produce of one kind or another.

2.6.3.3 Inherent Roles of Fallow Cultivation

Fallow cultivation has been practiced in the Uluguru Mountains for generations and still held promise for meeting the food requirements as explained in section 2.5.2. From the view of risk-management, the fallow cultivation system has some inherent mechanisms as follows.

a) Soil conservation: Soil erosion happens essentially in slope land. Generally, fallow cultivation is associated with its negative aspects such as damaging vegetation and soil through the 'slashing-and-burning' practice. It is, however, not observed serious in the fallow cultivation of the area. Possible reasons are the mosaic distribution of land under cultivation and fallow vegetation, which is partly derived from the scattered distribution of cultivation plots, where eroded soil from cultivation plot is trapped at the adjacent fallow plot. Minimum tillage practiced also helps preventing erosion. From this background, local people rejected a soil conservation measure introduced by the colonial government in 1947 and rioted with the slogan of "*we don't want terraces*" (Maack, 1996).

b) Provision of relief crop: The major crop component of the fallow cultivation is cassava, which is usually harvested two or three years after planting. Farmers also open the access to the cultivation field for people outside the village who come to harvest, pay for it and transport by themselves. Cassava is not completely harvested, and some are remained in the plots under fallow vegetation three to four years after abandoned cultivation. This fact means that the area always store the stock of relief crop for a possible year of poor harvest.

Chapter Three:

Socio-economic Characteristics of the Study Area

3.1 Overview

This chapter is dealing with the identification and analysis of the socio-economic characteristics of the study area. The major emphasis is placed on income sources employed by the rural community in utilizing available resources and institutions. This chapter presents the demographic attributes, land tenure dynamics, marketing opportunities, migration trends, income sources and livestock keeping. The interdependent and inter-relation of these socio-economics attributes with the agro-ecological potentials will be explained. As was for the identification of agro-ecological characteristics in chapter 2, the identification of socio-economic characteristics was expected to be reflected in the planning of rural development activities that will be presented in chapters four and five.

3.2 Description of the Socio-Economic Characteristics

3.2.1 The People

The Uluguru Mountains is mostly inhabited by the “*waluguru*” tribe. Waluguru people are said to be the dominant ethnic group living in the Uluguru Mountains and they live mainly by subsistence agriculture which is the main economic activity in the area. Waluguru are among the 20% of ethnic groups which have a principally matrilineal structure in Tanzania. They are divided into matrilineal clans, which are associated with certain general area through histories and traditions (Beidelman, 1967). “*Luguru*” is basically a geographic expression meaning “the people of the big mountains” (Young and Fosbrooke, 1960). The Waluguru are said to have settled in the Uluguru Mountains and surrounding plains in either 1660 (Young and Fosbrooke, 1960), 1800 (Bagshawe, 1930) or 1884 (Saville, 1947 cited by Maack 1996). They are said to have come from Ubena in Iringa in the southern highlands of Tanzania (Young and Fosbrooke, 1960; Temple and Rapp, 1972). Mgeta area, on the western side of the mountains is generally regarded to be

the centre of the culture with a history of long continuous settlement (Beidelman, 1967). Waluguru first settled in the lower plains of the mountains but slowly expanded up into the densely wooded areas as the lowland became impoverished and was abandoned. Waluguru are divided into different clans. The socio-economic survey from 44 households in Kibogwa Village conducted by SCSRD in 2001 showed that, the dominant clans are 'Mwingu' with 36.4% of heads of households and 30.4% of spouses, 'Mbiki' with 27.3% and 10.1%, and 'Mwenda' with 15.9% and 26.1% (SCSRD, 2004).

3.2.2 Population and Migration Trends

On average, a farming household is comprised by six members and headed by a male (over 95% of households) and 39% have received primary education. Polygamy is common and dominant, usually two to four wives being supported by Moslem religion (99%) in the village. Matrilocality is uncommon and unusual in Kibogwa village though it has been common and practised in many Uluguru villages in conjunction with the matrilineal kinship system. Matrilocality involves the husband moving to live with his wife and in-laws on land owned by the wife's clan.

Historically, population increase and pressure on land resources has been cited as one of the factors attributing to forest degradation (Temple *et al.*, 1972). Population density in some slopes is high (>150 persons/km² in many areas) (Lyamuya *et al.*, 1994). The high population density is a result of the favourable nature of the mountains for agriculture (relatively low temperatures, reducing water loss, and lack of a pronounced dry season, both factors lower the risks of crop failure). Other reasons include the relatively lower rates of malaria on the mountain and the 200 years old tradition of the Lugurus of living on the slopes (Lyamuya *et al.*, 1994). The mean annual population increase is 2.8 % per annum to 6.5 % per annum in some places (Lyamuya *et al.*, 1994). Fig. 3-1 shows the population figures of six wards found in Matombo Division. The figure show minor population changes in Kibogwa and Kibungo Wards. The possible causes for population lower population growth rate in Kibogwa Ward is explained below.

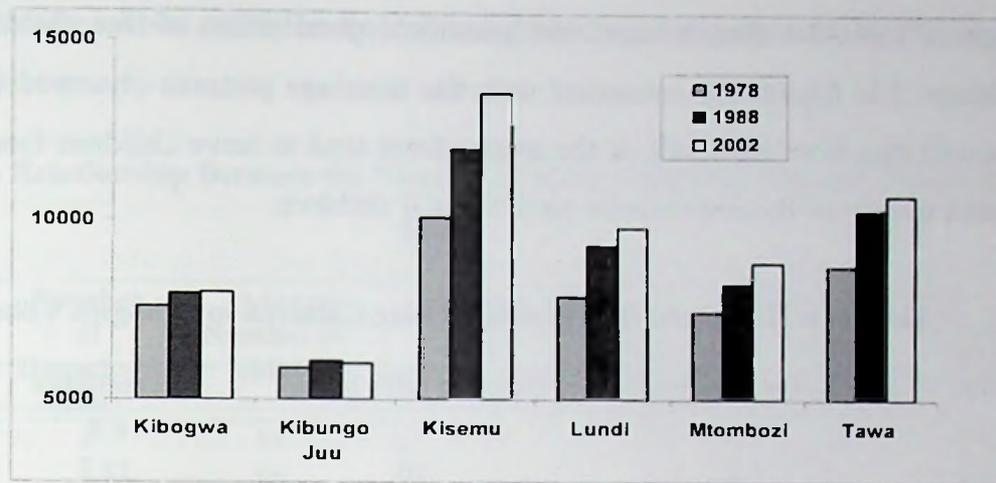
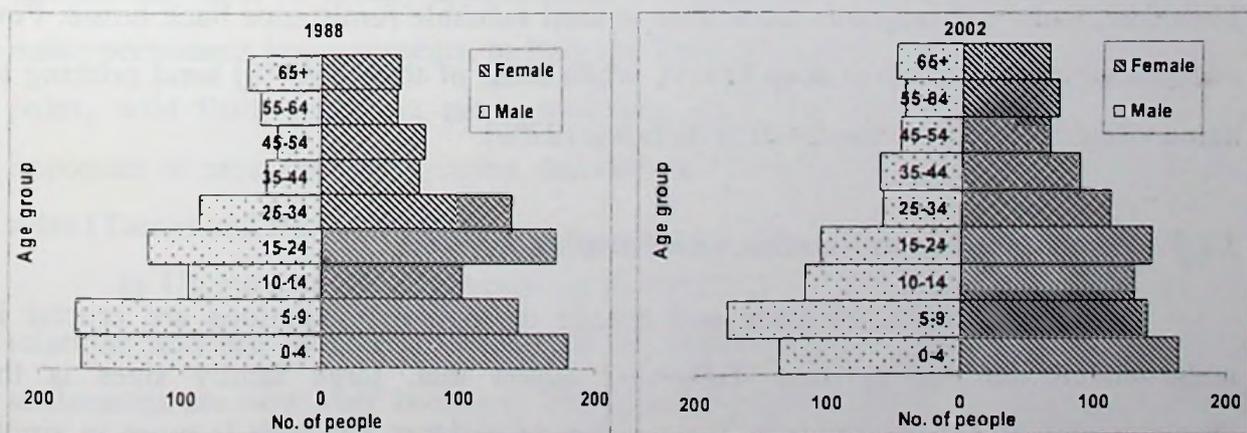


Fig. 3-1: The population of Matombo Division by Wards

Kibogwa Village consists of seven sub-villages (Fig. 2-2) with scattered settlement patterns. According to 2002 population census (URT, 2005a), the population of Kibogwa Village was comprised by 317 households with a population of 1,772 persons. The population figures reveal the imbalance between female and male population (Fig. 3-2). The population of Kibogwa Village has been decreasing for the past 15 year from 1988. The 1988 data shows that the numbers of women and men are 988 and 818 persons respectively totalling 1,806 persons; while in 2002 the numbers were 980 and 792 with a total of 1,772 persons. More cautious is the trend of outflow of young adults aged between 15 to 24 years. The outflow of male’s population account about 50.4% while female population accounts about 48.5% between 1988 and 2002.



Source: Tanzania Central Census Office, National Bureau of Statistics, 2005

Fig. 3-2: Kibogwa Village Population Pyramid 1988 and 2002

The population figures of Kibogwa Village are influenced by local demographic factors. While the numbers of people are decreasing (Fig.3-2), the family sizes are still

reality, however, very complex procedures and processes exist within the community. In recent years, the most widespread means of transferring land are through inheritance (over 80%) followed by purchase (6%), given by the village government (2%) and rental arrangements (1%).

The Waluguru are traditionally both matrilineal and matriarchal. Matrilineal sub group or lineage plays a great role in land tenure matters. Land belongs to the mothers of the lineage. Land circulated from mothers to daughters, however, nowadays there are some cases where land circulates from mother to sons. The lineage was the autonomous land-holding group and had leader known as maternal uncle/mother's brother or *mjomba wa ukoo*. The maternal uncle wields great authority in the Waluguru society. His main task is to allocate and distribute land to the members of a lineage. The lineage maintained the ownership of the area while the community members exercise the right to use the land for their subsistence (Young and Fosbrooke, 1960). Boys may inherit maternal lands but their children will not. It is their sisters' children who will inherit that land. The gradual development of land scarcity has started to create some problems and there are emerging instances nowadays whereby some children inherit from their fathers as well. Therefore, two parallel inheritance land patterns tend to exist in some cases.

The social structure in this society has developed around the control and allocation of land to the lineage members. In many households both spouses holds plots through their membership in their respective lineages. Thus young women reaching menarche are allocated land belonging to their mother's lineage. This land would be retained by her even after her marriage. This is family land and her husband has no right over the land of his wife's family. Some field or other goods are products of joint labour (*lima*) and these are controlled by both wife and husband. Some fields of land are individually owned locally known as (*gani*) and are exclusively under control of the cultivator regardless of that person's sex or marital status, and is inherited by that person's heirs (Beidelman, 1967). According to the socio-economic surveys conducted by SCSRD, there are 311 plots owned by the 44 researched households in Kibogwa village. Out of 311 plots, 60 plots were inherited by the male household heads from their *wajomba wa ukoo*, while 15 plots were inherited by the wives (or female households) from their *wajomba wa ukoo*. On the other hands, male heads received 42 plots from their mother, and wives (or female heads) got 33 plots from their mother. Including the

plots from other clan members, 209 plots were obtained through multiclans, while 84 plots were acquired from the relatives but out of the same clan in Kibogwa Village.

Historically a land tenure system called “ngoto” existed, whereby individuals with a surplus of inherited land would rent part of their land, so long as they have received lineage consent (Beidelman, 1967). Usually ngoto depend on the amount of harvests, but normally is a basket or two of the field produce, is just a small token payment in kind to the head of the owner of the matrilineage. The person renting the land had no right to sublet it or to plant permanent trees. His children however could continue to use this land with the consent of the owner.

3.3 Characteristics of the Area Focusing on Marketing Conditions and Behaviours

3.3.1 Sources of Cash Income

The living of Uluguru Mountains people is mainly supported by farming, and partly by non-farming activities (SCSRD, 2004). Household incomes are low with per capita incomes estimated to be around 150 – 200 US dollar/household/year. However, the accurate estimation is somewhat difficult since most commodities do not appear in the statistics or census reports. Farmers in the Uluguru Mountains employ different livelihood strategies in meeting their daily life as indicated in Table 3-3 and 3-4. Livelihood strategies is defined by DFID (2001) as a range of activities adopted and choices made by smallholders in pursuit of household economic and social security.

Table 3-3: Types of Cash Incomes Sources from Non-farming Activities

Income source	Household engaged ¹⁾	
	Number (n=44)	Percentage
Petty trade/shop	5	12.2
Processed food making/sale	12	29.2
Mason	2	4.9
Tobacco making/sale	1	2.4
Brick making/sale	2	4.9
Basket making/sale	3	7.3
Bamboo basket making/sale	2	4.9
Mat making/sale	1	2.4
Gravel making/sale	2	4.9
Porter	2	4.9
Middlemen (crop)	2	4.9
Casual work	7	17.1

- 1) Multiple answers. The % is the value to the total number of the non-farming activities answered

The people of Kibogwa engage in both farming and non-farming activities. Agricultural products sales remain the major source of cash income as indicated in Table 3-4. Some of those non-farming activities are gender specific such as brick making and mason (men's work). Recently, indigenous people who had once moved to town have returned back and have introduced different livelihoods activities such as opening small shops and diesel machine milling. Generally, households diversify portfolios of activities for the following reasons: i) to spread or manage risk, ii) to cope with insufficiency (coping response to shortcomings in other activities), iii) to the seasonality especially for crop farming which depends on the weather and seasons, and iv) to build on complementarities (home-based).

Table 3-4: Types of Cash Income Sources from Agricultural Products in Kibogwa Village

Income source ¹⁾	Item	Household engaged ²⁾	
		Number (n=44)	Percentage
Cereal/grain		12	5.5
	Maize	4	1.7
	Rice	9	3.8
Root/starch crop		42	32.2
	Banana	42	17.8
	Bread fruit	6	2.5
	Cassava	8	3.4
	Cocoyam	12	5.1
	Sweet potatoes	8	3.4
Legumes/Pulses		11	4.7
	Kidney beans	11	4.7
Vegetables		6	3.0
	Tomato	6	2.5
Spices/Herbs		35	32.6
	Cardamom	8	3.4
	Chilli	1	0.4
	Cinnamon	22	9.3
	Clove	16	6.8
	Ginger	3	1.3
	Black pepper	27	11.4
Fruits/nuts/oil seeds		19	12.7
	Coconuts	9	3.8
	Jack fruit	12	5.1
	Mango	5	2.1
	Orange	2	0.8
Other plants /crops		10	5.1
	Coffee	6	2.5
	Sugar cane	5	2.1
	Vetiver grass	1	0.4
Livestock		8	4.2
	Goat	6	2.5
	Chicken	4	1.7

1) Sales at markets, at farmyards and homestead

2) Multiple answers. The % is the value to the total number of items answered

3.3.2 Location of Rural Markets and Peoples' Behaviour

In the Uluguru Mountains, smallholders farming are characterised by diversity of farming systems and land uses, diversity of crops, scattering of land plots in different locations and diversified crop calendar. These factors in combination have favoured commodity supply to the market places throughout the year. The diversity of crop components in the Uluguru Mountains has largely influenced the availability of small-scale market places handling different commodities (Fig. 3-3; Table 3-5). Some of these centres have attracted potential commodity traders from different parts of the country and neighbouring countries e.g. Kenya and Uganda.

Table 3-3: The Rural Markets in the Uluguru Mountains

Name	Operation Day	Remarks
Tawa	Friday & Sunday	It is commercial centre with many middlemen dealing with spices crops. A modern market has been constructed serving nearby villages
Mtamba	Friday & Saturday	It is a banana market supplying to Dar es Salaam city and Morogoro town. Farmers prefer this market because of the better price offered.
Mkuyuni	Friday & Sunday	It is a business centre since colonial. Crop traders are coming from Dodoma, Morogoro, Dar es Salaam and Kenya.
Kinole	Friday	It is a spice market due to the production capacity from the entire surrounding area attracting traders from Dar es salaam, Mwanza, and Zanzibar. A modern rural market is in place.
Bunduki	Sunday	It is a cassava and sugarcane market.
Langali	Monday & Thursday	It is a major market place in the western side of the Uluguru Mountains attracting many crop traders from major cities.
Mlali	Sunday	It is a banana and tomato market located close to Morogoro town. This place is served by a reliable road transport.
Tangeni	Sunday	It is a banana and chicken market. Using foot-path, Kibogwa and Nyachilo farmers, sells their produce here to fetch better price.

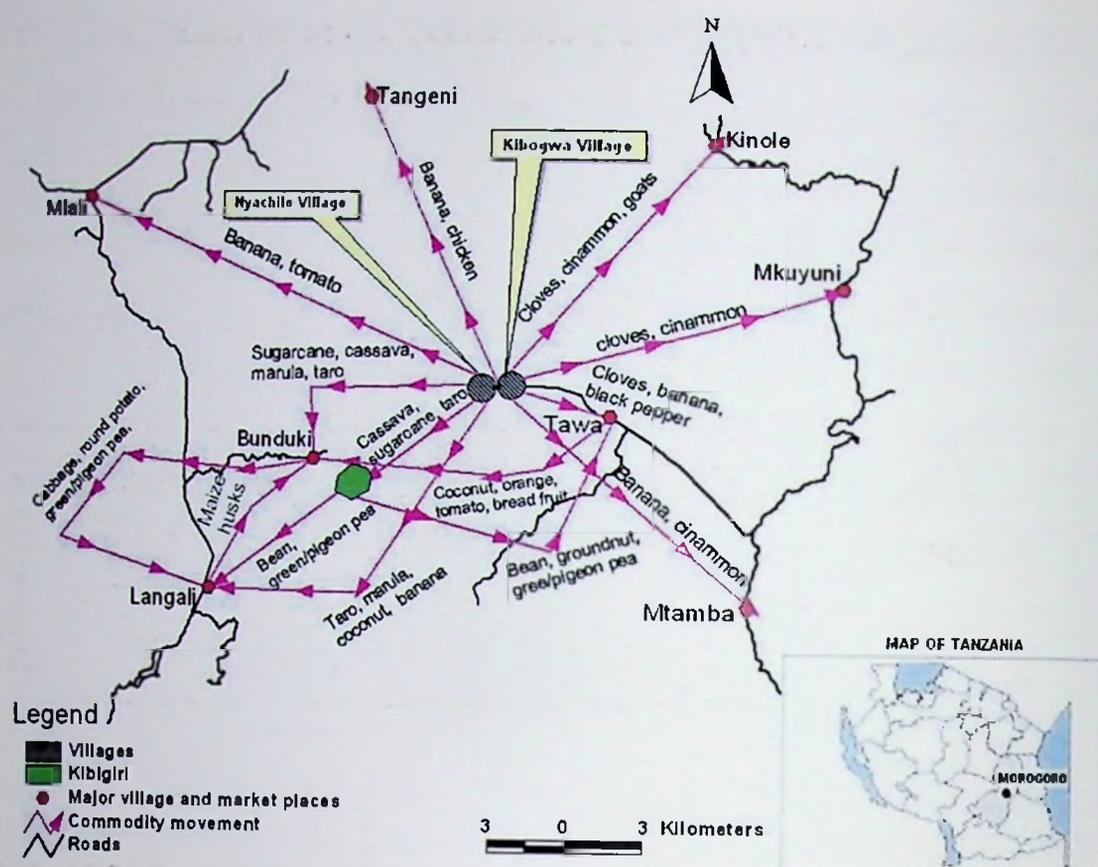


Fig. 3-3: Outbound of the Agricultural Commodities from Kibogwa and Nyachilo Villages to the Rural Markets in the Uluguru Mountains.

3.3.3 Commodity Sales

Commodity sales play a major role in the livelihoods of rural people and are greatly affected by the opportunities available to participate in food markets. In particular, the extent to which households can participate in commodity and labour markets is a major determinant of poverty rates among households. In the surveys conducted in 2001, SCSR found that the participation of farmers to the market is largely affected by distance. Table 3-6 shows the participation of farmers and the movement of their commodities to Langali market which is a bit far from Nyachilo/ Kibogwa Villages. The statistics shows that 63 males (70%) and 38 females (40%) were able to carry 6 different commodities such as, cassava, taro, marula (*Sclerocarya caffra*), banana, coconut, beans and mats to Langali market. Sometimes smallholder farmers are forced to hire porters who are to be paid after selling the commodities. Normally porters are paid about half of the returns. Some farmers prefer Langali market because of better price offered by crop traders mainly from Dar es Salaam city and Morogoro town.

During this survey, it was observed that, commodity markets and prices are not stable forcing some farmers to sell their produce at their farms to middlemen who always buy at a low price. This problem to a larger extent has been attributed by poor road condition.

Table 3-4: Commodity Sales from Nyachilo/ Kibogwa Village to Langali Market (Results of the Surveys on June 14 and 26 and July 5, 2001)

Date	Time	Carrier		Commodity	Quantity	Place of produce
		Male	Female			
14-06-2001 Nyachilo	5.25	4		Banana	4.5 bunches	Nyachilo
	-	3	3	Coconuts	6.5 sacks	Tawa
	6.46	7	4	Taro	11 sacks	Nyachilo
		2		Cassava	2 sacks	Nyachilo
			1	Marula	1 tenga	Kibogwa
Sub-total		16	8			
28-06-2001	6.20	3	1	Coconuts	2 sacks	Tawa
	-	7	3	Taro	6 sacks	Nyachilo
Tanana sub-village	7.55	5	4	Marula	8 tenga	Kibogwa
		1		Cassava	1 sack	Cassava
		5	5	Bean	70kgs	Kibigiri
Sub-total		21	13			
05-07-2001	6.10	4		Marula	4 tenga	Kibogwa
	-	1	8	Cassava	7 tenga	Nyachilo
Tanana sub-village	7.05	1		Banana	1 bunch	Nyachilo
		3		Taro	4 tenga	Nyachilo
			1	Coconut	1 tenga	Kibogwa /
		1		Mats	1	Tawa
Sub-total		10	9			
Total		63	38			

NOTE: 'Tenga' is the bamboo basket varying in sizes

In contrast with Table 3-6, Table 3-7 shows the participation of farmers to the nearby rural market located at Bunduki Village. We can see the changes of trend where women are the majority (71%). Also the commodities traded (Table 3-7) are diverse compared to table 3-6. Due to rough road condition, the issue of easy penetration to interior especially in Nyachilo, Kibigiri, Bunduki and Kibogwa are still impossible to crop traders. The only reliable means of transporting commodities from these villages is head carrying (Plate 3-1).



Plate 3-1: Head Carrying of Cassava to the Market

Table 3-5: Commodity Sales from Nyachilo/ Kibogwa to Bunduki Market on 24 June, 2001

Date	Time	Carrier		Kind	Quantity	Place of Produce
		Male	Female			
24-06-2001	5.20	8	15	Banana	24 bunches	Nyachilo/ Kibogwa
	-	12	26	Taro	32 sacks	Nyachilo/ Kibogwa
	9.30	11	46	Cassava	50 sacks	Nyachilo/ Kibogwa
		1		Bitter tomato	0.5 sack	Kibogwa
			2	Turmeric	2 sack	Nyachilo
		2	4	Sweet potatoes	6 sacks	Nyachilo/ Kibogwa
			12	Bread Fruit	12 tenga	Kibogwa
		2	6	Sugar cane	7 bundles	Nyachilo
		7	32	Rice	2-25 kgs	Nyachilo/ Kibogwa
		2		Orange	2 tenga	Tawa
		3		Matt	6	Nyachilo
		2		Eggs	12	Nyachilo
		1		Jack fruit	1 tenga	Kibogwa
		10	14	Marula	23 tenga	Kibogwa
		2	1	Chili	3 tenga	Kibogwa
		5	6	Coconuts	9 tenga	Kibogwa/ Tawa
Total		68	165			

NOTE: 'Tenga' is the bamboo basket varying in sizes

3.3.4 Functions of Rural Markets

Easy access to the rural markets for instance allows households to sell and buy necessary food (Table 3-7; 3-8). It was learned that, participation in food markets can avoid situations of hunger and famine and can motivate households to use available land

optimally, e.g. by engaging in production of both for markets and food needs. In most cases, people go to the market especially to buy households' items as indicated in Table 3-8. The figures show that women are the majority going to the market (80%), while men are 20%. Many farmers use rural markets regularly. Frequent visits to multiple markets on foot are the attitude of rural community in the area. According to the baseline conducted by SCSRD in 2001, the numbers of market centres used are; 14% reported to use one market, 36% two markets, 36% three markets, 7% four markets and 7% five markets per week. Therefore, the majority of rural community visit 2 to 3 rural markets per week. Banana is the most important cash crop (42%) traded mostly in Matombo (71%).

Table 3-6: Commodities Purchased from the Market in Bunduki/ Langali (June, 2001)

Item	Number of Persons Interviewed	
	Male	Female
Bean	15	54
Bean + garlic	1	
Bean + soap	3	2
Bean + cooking oil	2	31
Bean + cooking oil + cabbage	2	
Bean + cooking oil + others	2	6
Bean + onion + others	4	12
Marula + cabbage	1	11
Dagaa (sardine)	3	
' <i>Rastrineobola argentea</i> '		
Cooking oil + soap + salt	7	37
Tomato + bean	2	
Sugar cane	1	
Leak + tomato + others	2	5
Dried cassava flour		2
Kerosene		7
Cooking oil + salt + others		16
Total	45	185

Traditionally, Luguru people apart from regarding the market as places of sales and exchange of commodities and opportunities for obtaining the rare commodities, but also enjoy unique atmosphere around the market as well as exchanging and meeting with people from different places (SCSRD, 2004). In fact some people are very relaxed when they meet friends at the market and join hands in drink bars especially for men. Some items are consumed at the market such as local brew, snacks, bans, smoked meat, tea and soft drinks. One old man was asked why he preferred to visit the market, he replied that; "I always enjoy a taste of a cup of tea sold at the market". Farmers especially men

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having the same kind of feeling are many and this has got economic repercussion on the family's income. Part of the money earned from commodity sales at the market as a profit is utilized immediately at the market. The experience from the field revealed that, the money from commodity selling can be better coordinated and managed well if women are the majority participating in the commodity sales and controller of the gained income. Due to the prevailing community's norms and customs, the practicability of this is somewhat difficult.

It was also observed that, the rural market operates in Friday (Tawa) and Sunday (Bunduki) as these places are dominated by Moslem and Christian followers. Generally during rural market days, farmers don't perform serious farming activities. It was observed that, there is a link between market centres and church/ mosque. For example, the majority residents of Bunduki ward are Catholic Church followers and therefore people from different areas come to attend divine services at Bunduki on Sunday, at the same time attending the market to sell and buy their day-to-day needs. These rural markets operate in a very complex way linking rural markets and villages together in a way that is difficult to draw a demarcation of line in terms of influence and importance and the side effects to one another. The fact that these rural markets operate at least every day provide a diverse opportunity for rural community to trade whatever commodity is available. We should note that in the Uluguru Mountains, a rural market is a special form of a social institution. It is a resource allocation mechanism or an exchange system based on constraints, primarily prices, determined by impersonal forces of demand and supply rather by public authorities or social planners.

Finally, the availability of the rural market places has created alternative income sources for young people as porters or middlemen. Farmers or middlemen with large luggage to the market, always hire energetic people to assist in head carrying their luggage to the market. The markets have also attracted farmers to engage as middlemen especially for spice crops. Various reasons for their involvement ranged from those related to income generation to occupational interest. Besides scarcity of land and poor performance of agriculture, some argued that, they have interest in middlemen activities, and want to be self employed because the income from agriculture is not enough.

3.4 *Livestock Keeping*

Apart from crop production, few villagers keep livestock as shown in Table 3-9. These include goats, sheep, chicken and ducks. There is no cattle kept in the village. These livestock are local breeds. The chickens are kept around the homestead through free-range system whereas goats and sheep are grazed in bushes and forest by tethering or free range grazing. Villagers have opted to keep their goats and sheep in the forests in contrast to old days where labour was enough (supplied by children) to graze them away from home in the day and drive them back to their homesteads during the evening. The change of grazing patterns started in the late 1970s when schools were introduced in villages and children were obliged to attend school, hence creating labour shortage. Also another reason is the rural-urban migration mentioned earlier especially for young men to big cities and town remaining behind the elders and women who cannot manage to do farming and grazing.

The livestock sizes are characteristically small with the majority being the combination of goat and chicken (55 %). In most cases, livestock rearing is mainly a man's responsibility. Livestock are kept for different purposes such as for home consumption and as a source of income. Livestock is used as a bank for quick money during emergencies. Livestock also save as quick meal for guests or during ceremonies and communal functions. The use of farmyard manure is very minimal, often used in home-garden crops such as banana, coco-palm, and bitter tomato.

Goats and sheep are normally left to graze freely from April to late June, while from July to late March they are tethered to avoid crop destruction. Similarly, chicken are also pegged during July to September to avoid their destruction to bean flowers. Villagers reported some advantages and disadvantages associated with the shift in keeping goats/sheep in bushes and forests. The advantages include the lack of disturbance of grazing the livestock out from home driving them back to the homestead area. But, the disadvantages include; theft, wastage of farmyard manure, predation of juvenile goats/sheep by eagles, dogs and other predators as well as death risk due to flue and strangulation by ropes used for tying up the animals. In additional, other disadvantage is the destruction of food crops.

Table 3-7: Livestock Keeping in Kibogwa Village

Type of Livestock	Number of Household	Household (%)
Goat	5	11
Chicken	10	23
Goat + Chicken	24	55
Goat + Sheep + Chicken	1	2
Goat + Sheep + Chicken + Duck	1	2
No livestock	3	7
Total	44	100

Chapter Four:

Participatory Approaches in Community Based Activities: A Case of SCSR D Project in the Uluguru Mountains

4.1 Overview

Chapters 2 and 3 introduced the characteristics of the study area which are the basis for designing of community based activities. This chapter investigates on the background, process and outcome of SCSR D project in designing of community based activities. These activities were aimed at involving the rural community in realizing using the locally available materials and resources. The community-based activities took into consideration the fact that local people are the major actors and SCSR D is a facilitator and collaborator to support the activities. This chapter has explored various process employed by SCSR D project aimed at understanding the reality or learning from the rural community as an entrance for outsiders to build necessary rapport with the community. These processes included field surveys, preliminary studies and participatory researches composed of participatory rural appraisal (PRA) and baseline survey. To involve a very heterogeneous target population, different options of activities such as beekeeping, vanilla and temperate fruits trials were planned, designed and implemented jointly by rural community and outsiders. Systems of community participation in these trial activities were suggested in order to encourage forms of learning, wider participation, knowledge exchange, strengthen social interaction and networking among rural communities. The systems include; participatory trials, farmer's seminar and exchange visits. Finally, the effectiveness of these participatory approaches are discussed.

4.2 *The Definition and Concept of Participation*

4.2.1 **Background and Definition of Participation**

The participatory methods and approaches grew alongside the “sustainable development” debate (Pretty *et al.*, 1995). The postwar rush towards increased agricultural production and technological advancement to rebuild and feed created a divide between the actions, including experimentation, of scientific and of so-called “end-user” (Chambers and Jiggins, 1987). That pushed the “transfer of technology” model of development to its extreme. But the direct consequences on the environment and the failure to address the needs and conditions of rural smallholder farmers demanded a rethinking of the unsustainable mainstream development model. Thus arose such terms as “bottom-up,” “participatory,” “holistic,” and “system view” since the 1960s. The bottom-up approaches holds that, decisions and power should be as close to the bottom as possible and coming from a region rather than being imposed from outside. Holistic approach has to be based on a thorough understanding of the local context and culture. This approach demands time, compassion and dedication. In this way the people are recognised from the beginning as equal partners and not as receivers of imposed ideas (Oakley *et al.*, 1991; Mikkelsen, 1995).

Participation has been a major force in the political liberation movements of some oppressed elements of communities during 19th century. The major changes that have occurred in the education thinking in Latin America can be related back to participation by local people in their own development processes as documented by Freire (1972) and Illich (1971). The concern for the specific role of women in the research and development process has also contributed to the evolution of wider participation theory (Schrijvers, 1995). The development of participatory action research (PAR) as a self-mobilising mechanism for marginalised communities has a long and involved history (Fals-Borda and Rahman, 1991; Rahman, 1993; Greenwood and Levin, 1998). It has been used as a major means for enabling and empowering communities. It has also been used by development planners and problem solvers as a quick and often effective method of designing interventions.

Within the research and development context, terms relating to participation are often used interchangeably. Oakley and Marsden (1984) commented that; “*participation defies definition due to its multiple uses*”. This has led to considerable confusion about

what is, and what is not participatory. Generally, the term is used to describe a situation where people are merely co-opted into someone else's activities. However, participation is much more concerned with fostering relationships, partnerships, with ways of thinking and with structures and processes - all of which combine to create an integrated and harmonious approach to the way development is practiced. Participation in development projects and programmes is widely seen as both a means and an end. As a means, participation is a process in which people and communities cooperate and collaborate in development projects and programmes (Clayton *et al.*, 1998), and to help ensure sustainable development (Uphoff, 1991). As an end, participation is seen as the empowerment of individuals and communities in terms of acquiring skills, knowledge and experience, leading to greater self-reliance (Clayton *et al.*, 1998).

4.2.3 Typology of Participation

Pretty *et al.* (1995) listed seven kinds typologies of participation, which are based on local roles in particular stages of development as summarised below:

- a) **Passive participation:** Local people are told what is going to happen or has already happened, external agents announced projects to be (or have been) implemented
- b) **Participation in giving information:** Local people answer questions posed by external researcher; research findings are neither shared nor checked for accuracy
- c) **Participation by consultation:** Local people relate their views and an external agency define the problem and solutions according to people's response.
- d) **Participation for material incentives:** local people participate by providing resources, e.g. labour in return to for material incentive to from external generated projects, which stop when incentives end.
- e) **Functional participation:** Local people form groups (after external agencies have decided) to meet pre-determined objectives of a project dependent on external initiators and facilitators.
- f) **Interactive participation:** Local people participate in joint analysis leading to action plans; formation of new or strengthening of existing institutions that ensure local involvement; decision making and continuity.
- g) **Self mobilization:** Local people take initiatives and develop networks for external support, but retain control over local development process.

This categorization recognises a wide spectrum between the “passive” and the “active” kind of participation. But for purposes of sustainable development, the active end carries more weight because of the need for local resource managers to engage with the complex processes in rural development. This study views participation from the active end; in fact, it views active participation as a pre-requisite for designing community based activities wherein, local and outsiders engage in joint analysis of the problem situation which the local people will ultimately struggle in. Although participation for their empowerment must undergo a process that may initially involve them in joint activities with outsiders for material incentives, the ultimate goal is for them to carry on with themselves at their controls.

4.2.4 Participation as an Empowerment Process of Individuals and Communities

Empowerment concept is based on people-*centred* paradigm which emerged in the mid-1970s. The paradigm advocated for more inclusive procedures for policy making and project planning focused on community-level actions. The main goal of these progressive efforts was poverty reduction and empowerment of vulnerable groups. Conceptually, participation and empowerment are mutually reinforcing and enable people to assume their rights and responsibilities. For example, people’s participation at the micro-level, people can be empowered and have a greater sense of ownership of a particular initiative (or process) if they are actively involved in the identification, preparation, implementation, monitoring and evaluation of that initiative.

How empowerment is understood varies among different perspectives. Rapport (1984) noted that it is easy to define empowerment by its absence but difficult to define it in action as it takes on different forms in different people and contexts. A common understanding of empowerment is necessary however, we can know empowerment when we see it in people with whom we are working, and for program evaluation. According to Bailey (1992), empowerment is a process that fosters power (the capacity to implement) in people, for use in their own lives, their communities, and in their society, by acting on issues that they define as important. Empowerment also occurs at various levels, such as individual, group, and community. SCSRD recognized that individual change was a prerequisite for community and social change and empowerment. It should be noted that,

people empower themselves, projects or researchers can facilitate empowerment by making available information and skills that people want.

4.3 Roles and Functions of Outsider's Participation in Community Based Activities

The major players in participation process include: grassroots groups, leaders, and outsiders. Outsiders are people who do not reside or have roots in a rural community but who care deeply about improving the quality of life in those communities. There are different levels of participation in a community project or activity such as; no participation, consultation, shared decision making and community control (Castelloe, 2002). The main concern of this chapter is on two levels of participation (shared decision making and community control). Shared decision making occurs when outsiders and grassroots actors work in partnership to create a community improvement project. The two parties interact as much as possible as equals. Each starts with the realization that the other has something to offer and contribute. Grassroots actors and outsiders share authority and responsibility for the community improvement project. Another level called "community control" occurs when grassroots parties have the authority and responsibility for planning and carrying out the community improvement effort. In this instance, outsiders play the role of coach and provider of technical assistance, but, the direction, and power to shape community improvement come from within the community.

SCSRD as an outsider behaved as a facilitator and supporter. This role evolved as a change from target orientation (top-down approach) to task orientation (bottom-up approach). SCSRD kept an attitude of a collaborative learning and sharing relationships between local people in identifying the problems and potentials and designing the activity options with an affinity to the local community. To build sustainability in rural development, SCSR project in the Uluguru Mountains was based on a common ground of shared understanding through the social acts of facilitation and participation. This process demands attitudinal change and creativity from project staff, patience and commitment from local people.

4.4 SCSR Approaches in Designing of Community Based Activities

Background: SUA Centre for Sustainable Rural Development (SCSRD) project was a five years (1999-2004) project, implemented jointly between Sokoine University of

Agriculture (SUA) in Morogoro and Japan International Cooperation Agency (JICA). The objective of the project was to develop participatory approaches to rural development based on endogenous development and knowledge in two model areas, Mbinga district and Uluguru Mountains in Morogoro District. The Uluguru Mountains site was selected based on agro-ecological and socio-economic characteristics described in chapter 2 and 3.

Approaches: The terms approaches or methodologies and methods in participation need to be understood. Chambers (1998:123) says: "*methodology (and approach) refers to a system of principles and methods. Methods refer to a way of doing something*". Approaches include the systems and processes, the philosophy of why participation is being used, the relationships and the power balance. *Methods* are the tools used to make the approach come alive. The approaches also involve a change of attitude, by the researcher towards the communities concerned, from that of the professional using the knowledge and facilities of the villagers, to one of a partnership in the research and development processes. Participation is not a tool or mechanism which is applied to a group of people, it is an approach. Associated with each approach is a set of methods which that approach would tend to use most frequently and which would be adapted to suit the approach. The major processes applied by SCSR D were aimed at understanding the reality of the area. These include preliminary field surveys and studies and participatory researches (PRA and baseline survey).

4.4.1 Preliminary Field Survey

Preliminary field surveys (1999-2000) involved a range of data collection methods such as; visiting and conducting interviews to rural markets, visiting and conducting interviews to different farmer's groups, interviewing different government officials, general field sites observation and taking photographs relevant to the study topic. This led to the identification of: i) commodity marketing channels, ii) ecological, agronomic, and socio-economic characteristics of the area, iii) crop calendar for various crops, and iv) a focal feature of the area (SCSR D, 2004). Based on the collected information, we focused to the Eastern Uluguru Mountains for participatory village surveys. The preliminary surveys provided baseline information for subsequent socio-economic surveys.

4.4.2 Participatory Village Survey Involving Volunteered Villagers

Participatory village surveys including participatory rural appraisal (PRA) and baseline surveys were conducted in 2001 in order to understanding village communities in terms of its geographical location and resources. PRA can be described as a growing family of approaches and methods to enable local people to share, enhance and analyse their knowledge of life and conditions, and to plan, act, monitor and evaluate (Farrington, 1998; Philips, 1994). The baseline surveys in Kibogwa and Nyachilo villages were conducted in November 2001 and January 2002 to understand the 'reality' of the livelihood at household level and relations among households. In total 44 and 47 households were researched in Kibogwa and Nyachilo villages respectively.

After field surveys and studies, selections of pilot villages for testing participatory rural development activity with local communities were selected. Participatory researches were conducted in 2001 in order to understanding a community in terms of its geographical location and resources in 2001. This step included a participatory rural appraisal (PRA) and several types of preliminary researches jointly conducted by the SCSR members and volunteered villagers. Involvement of local community from the initial stage of rural development project was essential to foster the sense of ownership and self-reliance among the people. Through this step, local community also had chance of re-discovery and re-appraisal of the indigenusness and the inherent potentials of the area.

4.5 *Designing of Activity Options*

4.5.1 Prerequisites to the Design of Activity Options

a) Adaptation to the diversity

Small scaled participatory trials shown in Fig.4-1 were designed based on agro-ecological, socio-economic and technological aspects. As discussed in chapter 3, the area is characterised by small farming plots, diverse crop and plant components, different cropping calendar, and marketing places. The activity options aimed at maintaining, improving or strengthening the existed components and structure without causing any disturbance. For example, vanilla cultivation trial was introduced in Kibogwa village because it fits well into the existing home-garden agroforestry system. The introduction

of tropical and temperate fruits aimed at improving the existed local variety. Kibogwa and Nyachilo villages are characterised by different topographical features with altitudes between 350m and 1,500m. Activities such as, beekeeping, log mushroom cultivation, tea cultivation and processing, cultivation of temperate fruits and strawberry were introduced in the Nyachilo village located at the higher altitude, and beekeeping, cultivation of tropical fruits and vanilla at the lower altitude (Kibogwa village).

b) Consideration to the time lag

The activities presented in Fig. 4-1 were designed and implemented focusing on short, medium and long-term incentives to farmers. Some activities such as beekeeping, mushroom and strawberry can be realized within short-time period. These activities aimed at meeting and improving nutrition levels and providing more varieties of dishes and a richer diet. For example, honey derived from beekeeping activity is a source of food and can be used as medicine as well as for reducing consumption of sugar. The long-term activities include tropical and temperate fruits whereby the benefits can be realized after several years such as seven year or more.

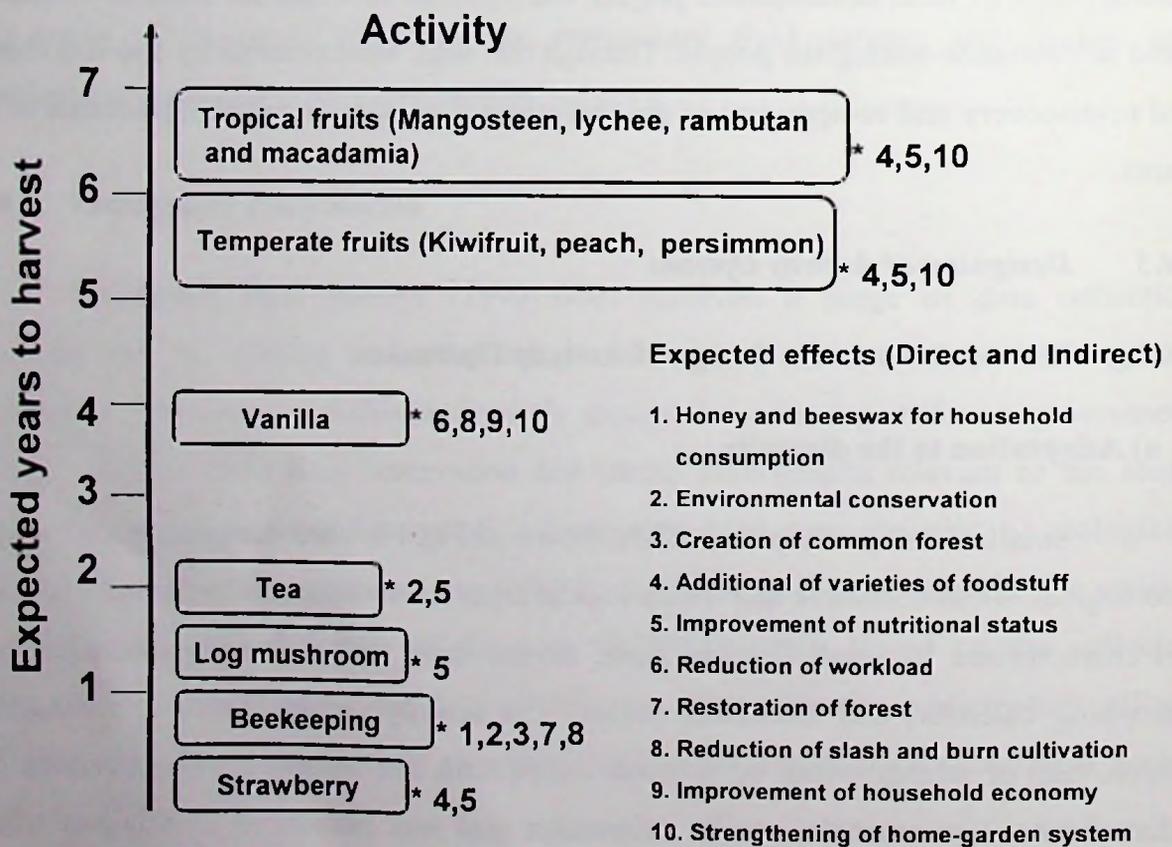


Fig. 4-1: Activity Options and the Expected Impacts to the Villages

c) Inherent potentials

The trial activities were implemented in regard with both direct and indirect benefits to the community. Apart from the direct benefits such as improving the household economy and household's diets, indirectly these activities serve as environmental protection. Since we considered conservation of natural resources might not appeal to local community as a desirable goal in its own right or for the sake of future generations, but would be important as direct incentives such as honey and beeswax from beekeeping activity (Fig.4-2). Vegetation characteristics are considered to be an important indicator of its potential for beekeeping activity. Beekeeping plays a major role in improving biodiversity and increasing crop production through pollination (Mwakatobe and Mlingwa, 2005). Honey is produced from herbs, shrubs and trees growing in unmanaged bush land and various types of woodland.

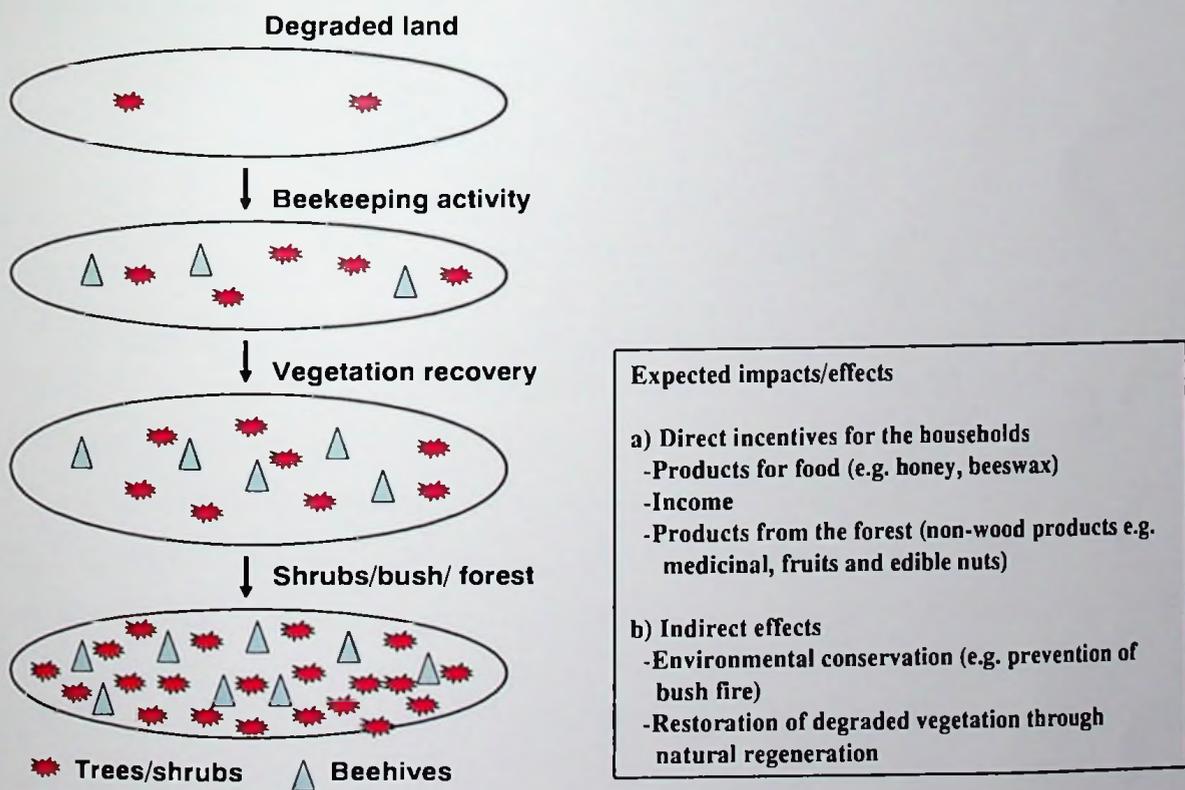


Fig. 4-2: Schematic Diagram of the Processes and Expected Benefits Related With Beekeeping Activity

4.5.2 Encouragement of Rural Community's Participation

In community based activities, local community are the major actors and beneficiaries of such activity. For the sustainability of the trial activities, potentials of rural communities and their indigenous knowledge were considered in the design of participation methods (Table 4-1). These methods were designed and introduced to; re-appraisal of potentiality of the area (e.g. local knowledge and techniques, agro-ecological characteristics, experiences in the past); encourage participation of rural communities and; empower rural communities. A stock of information and experiences among the rural community was a source of driving forces for further development efforts in the area.

Table 4-1: Methods to Encourage the Participation of Rural Communities

Method	Expected Effects
Group trials	Interactive learning; fostering "sense of ownership" and "self-confidence"; enhancing own ideas/innovation from local people; emerge local experts/pioneers.
Farmers' seminar	Information transfer and learning of necessary knowledge and skills from outsiders; interactive learning among villagers; assuring of transparency and openness; sharing of experiences, knowledge and skills; encouragement of wider participation; emergence of local experts/pioneers; fostering of self-reliance; self decision-making.
Exchange visit	Farmer-to-farmer contact; networking of farmers; interactive learning enhancement; acquisition of necessary knowledge, information/skills and materials.

4.5.3 Examples of Rural Community Participation in the Trial Activities

As described in sections 4.4 and 4.5.2 above, the involvement of local community from the initial stage of project was essential to foster the sense of ownership and self-reliance among the people. The interaction between SCSRD and rural community was crucial for the sustainability of the trial activities. Using examples of three trial activities implemented in Kibogwa village (Table 4-2), it shows how local community actively participated. Ways of participation encouraged local community to build confidence, commitment and empowerment.

Table 4-2: Steps of Rural Community in Some Trial Activities in Kibogwa Village

Trial activity	Step
Beekeeping	a) Volunteered participatory surveys at Kibogwa village. b) Formation of a farmers' group (6 farmers). c) Farmer' seminar on pre-treatment for attracting honey and installation of Tanzania transition hives (TTH). d) Joint survey on indigenous of beekeeping. e) Farmers seminar' on harvesting and processing of honey and bees-wax f) Farmers' seminar on using local materials i.e. clay pots, coconut trunks.
Vanilla	a) Formation of a villagers' group (9 members) b) Farmers seminar on vanilla cultivation c) Vanilla trial at each farmers' home-garden d) Study visit to Zanzibar to learn vanilla management and planting materials collection e) Briefing farmers seminar on vanilla cultivation in Zanzibar f) Establishment of a vanilla demo plot g) Farmers' seminar on vanilla management using video materials h) Farmers' exchange visit to Zanzibar to learn hand pollination and processing i) Farmers networking seminar at Mkuyuni
Tropical fruits	a) Formation of a villagers group (6 members) b) Establishment of a trial at a demo plot and home-garden for mangosteen, lychee, rambutan, durian, avocado, and macadamia c) Farmers seminar to encourage other participants d) Farmers seminar on fruit tree propagation (grafting and budding)

This study takes beekeeping activity as an example (Table 4-3) to show the involvement of farmer's group in different stages of the activity implementation. The background reasons for this activity have been explained in section 4.5.1. Beekeeping trial group was comprised by 7 members (5 men and 2 women) and was locally named as "*Twakwanza Sambu*" literally means "we are starting now this technology which was lacking in this village". Beekeeping activity was a revival of once forgotten activity used to be practised in Kibogwa. Table 4-3 summarises the approaches applied in this activity. The impact of this activity will be explained in section 4.6.

Table 4-3: Participatory Approaches Used in Beekeeping Trial in Kibogwa Village

Step	Description	Remarks
Participatory surveys	Beekeeping group were involved in site selection, identification of flowers, bee keeping calendar, identification of local beekeepers, identification of locally available materials for bee-keeping, and market opportunities.	<ul style="list-style-type: none"> a) Survey of indigenous knowledge of beekeeping from the local beekeepers b) Documentation of local trees and shrubs suitable for flowers Survey on the use of local materials (clay pots, coconut trunk, bombax trees)
Beekeeping group trial	The trial functioned as an opportunity for interactive learning, experiments, new discoveries and innovations and acquisition of new management skills.	<ul style="list-style-type: none"> a) Selection and other logistic for beekeeping site b) Installation of beehives (TTH, coconut trunk, clay pots, bombax) c) Decision making about beekeeping (inviting local beekeepers to join a group, common beekeeping plot, welcoming new members).
Farmers seminar	Used for awareness rising, feedback, openness and transparency among group members and non-members.	<ul style="list-style-type: none"> a) Local participants received training on environmentally friendly beekeeping techniques (use of TTH, flowers documentation, bee attracting methods, honey harvesting and processing). b) Exchange seminar on how to use clay pot beehives. c) Members proposed tool rental system to make their own beehives and encouragement of wider participation.

4.6 Effectiveness of Participatory Approaches

4.6.1 Community Empowerment

The participatory approaches were intended to shape the interaction among rural stakeholders and attention was paid on core values. The core values centred on: community empowerment, draw out of people's wisdom, functional participation, community take control and initiatives, technology dissemination, and building relationships. Based on the different participatory approaches employed by SCSR project, empowerment is viewed as a process that strengthens what groups of people were capable of collectively doing and being, especially when farmer's mind change and took initiatives in expanding some activities by themselves (Rwezimula *et al.*,2004).

In beekeeping activity, individual change became a bridge to community connectedness and social change. To create change, individuals' especially local beekeepers were welcomed to become partners in solving the complex issues facing the activity in the early stages. In collaborations based on mutual respect, diverse perspectives, people work toward creative and realistic solutions such as the use of local methods to attract bees into beehives, tool rental systems to enable individuals make their own beehives, establishment of a multi-purpose beekeeping common plot, the use of unutilized local materials in making beehives, profit from honey selling used in beekeeping activity expansion, etc. Therefore, to empower farmers, there must be an intentional ongoing process which emphasises the farmer as the centre, involving mutual respect, caring and group participation.

4.6.2 Interactive Learning and Innovation

Beekeeping activity is a good case to show the farmer's ability in learning and innovating. In the initial stage, members of participatory research paid attention to different types of trees/ shrubs producing flowers, wild honeybees and experience of elder person who used to practice beekeeping in the village. Once the beekeeping trial started, the members worked toward creative and realistic solutions, e.g. usage of unused local material (trunk of coconut (*Cocos mucifera*), bombax tree (*Ceiba pentandra*) and broken clay pot) to make beehives. They also commenced tool rental systems for ease of making beehives and expanding more participants, as well as submitting the proposal to the village authority asking for a common plot for beekeeping.

4.6.3 Information Transfer through "Farmer-to-Farmer" Communication

Information, experience and techniques are not necessarily disseminated by governmental extension system, but also by "farmers-to-farmers" communication. The latter encourages mutual contact among rural communities and, thus, leads to wider participation of local people to rural development activities. Since agricultural extension service in Tanzania hardly cover the entire country, the "farmers-to-farmers" communication channel seems to be effective for a while. The above was obviously observed in the case of vanilla cultivation activity and will be presented in chapter 5.

4.6.4 Active Participation of Rural Community

Through involving rural community, SCSR D realized that participatory approaches are built from the knowledge and wisdom that people have gained from their experiences—the main job for outsiders was to draw forth people’s wisdom, knowledge and ideas. Many rural development issues are, in fact, localised and specific, and require local and ecologically responses. Therefore, mobilising and building on existing local skills and experiences, the sustainability of different trials were ensured. Functional participation can be seen in the shifting of initiatives from outsiders to local people gradually. This shift was facilitated by seminars, practical involvement of local people, usage of local available materials, and people’s potentials. Ending of SCSR D project in March 2004 means community took control the activities.

4.6.5 Farmers’ Attitudes and Behaviour in Community Based Activities

(1) Number of the participants to the trials

We can observe the changes of farmer’s attitudes from 2002 to 2004 as depicted in Table 4-4. The changes mainly occurred when their mindset changed by taking the responsibilities (shift of the initiatives to the local community). As we can observe from Table 4-4, in 2002 the trial activities were limited to few members who belonged to the farmers’ group. With time the farmers’ group expanded from 25 members to 53 members. Up to March 2004, 34 new non-members within the village started their own activity as indicated in Table 4-4. We should not that; the trial activities not only attracted non-members within Kibogwa village but also new non-members from other villages. For example, 13 new non-members joined in different trial activities. Generally, Table 4-4 shows the increase of 75 non-members who participated in different activities. This increase is partly because of people’s inherent potentials, usage of locally available materials, farmer-to-farmer communication and incentives that became obvious with the trial progress.

Table 4-4: Changes of Farmer's Attitudes in the Trial Activities in Kibogwa Village

Trial activity	Numbers of original participants (2002)			Total
	Group member	Non-group member	Other villages	
Vanilla	9	0	0	9
Tropical fruits	6	0	0	6
Beekeeping	6	0	0	6
Sub-total (a)	25	0	0	25
Numbers of new participants (March, 2004)				
Vanilla (V)	12	24	11	47
Tropical fruits (TF)	3	1	0	4
Beekeeping (B)	0	0	0	0
Sub-total (b)	15	25	11	51
V+TF	7	9	2	18
V+B	1	0	0	1
B+TF	2	0	0	2
V+TF+B	3	0	0	3
Sub-total (c)	13	9	2	24
Sub-total (b + c)	28	34	13	75
Total (a + b + c)	53	34	13	100

(2) Remarkable episodes

Emergence of local leaders/teachers: Vanilla cultivation trial is used as an example. Vanilla was a new crop in these villages and nobody knew how to manage the crop. At first, the group members and SCSRD staff were students, utilizing effectively farmers' exchange visit to learn and acquire necessary knowledge. With time some farmers emerged having vanilla knowledge who became vanilla teachers to other farmers. Their capabilities were observed in farmer's seminars, answering question, explanation and discussions, and practically demonstration of vanilla management. Currently, these local teachers have facilitated vanilla cultivation to be accepted and expanded to other wards like Mkuyuni, Kinole and Tegetero.

Mushroom to tea: Log mushroom cultivation trial was planned aimed at improving nutritional level, but the trial failed due to unexpectedly rapid deterioration of logs and dominance of contaminating fungi. After the failure, farmers group had to mobilise themselves and shifted to tea trial. Remnants of tea left by German settlers during the colonial era were observed, but a farmer group prepared more seedlings and transplanted them in their home-garden. This is a kind of self-mobilization type of participation advocated by Pretty, *et al.* (1995). It shows a certain kind of local initiatives aimed at retaining control over local development process.

4.6.6 Overall Remarks

Experiences in the entire activities of SCSRD project suggested that spending enough time to initial stages of designing (sections 4.4 and 4.5) allowed flexible feedback to optimize the development activities, which resulted in fostering a sense of ownership, stock of ideas, emergence of local experts/pioneers and information/experiences dissemination. Cautious and ample time is needed because progress will not happen overnight. Consequently, one may have to be patient while rural development gets up to speed. Rural communities need support from outsiders with technical expertise and know-how in order to build mutual partnership. As farmers learn and take on greater responsibilities in the process, trial activities potentially transformed in scale and structure, for example, from village level into ward or division level. Therefore impact evaluation need to be carefully undertaken looking into the community participation, expansion of trial activities and the processes involved in technology dissemination.

Chapter Five:

Evaluation of the Impacts of a Community Based Participatory Activity: A case of Vanilla Cultivation

5.1 Overview

This chapter analyzes how rural community can perform a participatory role for their own development. Vanilla trial is used to describe the process of participation, and the involvement of stakeholders is highlighted using SCSR project in the Uluguru Mountains. Vanilla crop is an example regarded as the most profitable and alternative cash crop for small-holder farmers. The crop can be introduced and harmoniously fit into the traditional farming systems as described in chapter two and is environmental friendly.

This chapter starts with an overview of the advantages of vanilla cultivation, a description of a vanilla plant and its growing requirements and the current status of vanilla production in Tanzania and Uluguru Mountains in particular. The core part of this chapter discusses and presents an analysis of the vanilla trial established during SCSR Project in the Uluguru Mountains. The objectives of SCSR project in the Uluguru Mountains have been discussed in chapter four. Moreover, the sustainability of this activity after SCSR project is presented based on the findings derived from the field survey conducted in 2006. Vanilla was established in 2002 through various steps designed and followed by SCSR staff and farmers' group as presented in sections 4.5 and 4.6. After the completion of SCSR project in April 2004, there was a shift of the management and responsibilities of the vanilla activities to farmers' group. Therefore, the impact evaluation was taken as a process which included analysing the intended and unintended consequences, both positive and negative of planned interventions (policies, programs) and any social and environmental change.

5.2 An overview of the Advantages of Vanilla Cultivation

Vanilla crop has a lot of advantages to farmers as well as to the local, regional and national economy. For example, in Uganda, vanilla brought unprecedented wealth to poor

rural communities especially in Mukono, Kayunga, Masaka, Kiboga, Kasese and Bundibugyo districts (UEPB, 2005). Villagers living on less than US\$2 a day had added a few vanilla vines to the more traditional pineapples, potatoes and bananas in their small plots. Similar advantages have been observed in Madagascar. Farmers grow vanilla as a cash crop, intercropped with coffee, banana and beans and can bring in a useful additional income of \$300 to \$400 a year (Cadot *et al.*, 2006). In Tonga, Vanilla has been successfully introduced and commercially established throughout Tonga and has continued to be Tonga's second major export commodity, contributing about 16% of the total agricultural export earnings over 1994-2004. Vanilla fits well into the traditional farming systems and is intercropped with a wide range of food and cash crops such as kava and taro for the first three years of the production cycle (Viliami, 2006).

5.3 *Description of the Vanilla Plant, its Cultivation and Marketing*

Origins and uses: Vanilla plant is the only edible orchid. Vanilla is the most widely used flavouring material and, second most expensive (next to saffron) spice traded in the world market. Vanilla belongs to the *Orchidaceae* family of Plant Kingdom. About 110 species of Vanilla are reported, of which, three are commercially cultivated. They are *Vanilla planifolia* Andrews, *Vanilla pompona* Schiede (West Indian Vanilla) and *Vanilla tahitensis* J.W.Moore (Tahitian Vanilla). *Vanilla planifolia* Andrews is the most popular cultivated variety. The plant originates in Mexico, Guatemala and other parts of Central America though it is now widely grown throughout the tropics (Pureseglove *et al.*, 1981; Ranadive, 2003). Today vanilla has been domesticated and is widely cultivated for its highly aromatic pods or beans. The characteristic of flavour and aromatic principals are developed only after fermenting and curing the fruit (bean) from the vanilla plant. The most important component of the beans is the aromatic substance known as vanillin. Vanillin is mainly responsible for the fragrance, flavour and aroma of vanilla essence. It is used in the preparation of ice creams, chocolates, cakes, pastries, puddings, soft drinks, pharmaceuticals, liquors, perfumery and in nutraceuticals (UEPB, 2005; Ranadive, 2003).

Growing requirements: Vanilla grows well in warm and moist climatic conditions with well distributed annual rainfall of more than 1000mm and a temperature with range of 21- 32° C (Anilkumar, 2004; Ranadive, 2003). Land with gentle slope, light porous soil and good drainage is preferred because of its shallow roots. Also it does require a short dry season (2 to 4 months) to stimulate flowers. Land preparation for

vanilla crop should take into account the need for support upon which the crop can climb. The ideal support trees would be one that is readily propagated, fairly fast growing, sufficiently strong to support the weight of the plant and sufficiently deep rooted to assist heavy winds. Preferably, the support trees need to be resistant to insect and disease attacks, for example Casuarina pine and Jatropha curcas (used in Madagascar), Erythrina (dwarf bucare), Jobo, and Casuarina pines (used in Central America), Glyricidia and Jatropha locally known as *Kilowa* (used in Uganda), and in some areas ficus and mango are used (Ranadive, 2003).

World vanilla imports and exports: World production of cured vanilla beans averages between 2,000 and 3,000 Mts. per year although production varies widely depending on climatic factors in the main producing countries. The major importers of vanilla beans are; USA, Germany, France, Japan, and Canada (Anand and Smith, 1986; Ranadive, 2003). The aggregate global demand for vanilla is estimated at 2,500 Mts. to 3,000 Mts. per year. USA continues to be the leading import market for vanilla as shown in Table 5-1.

Table 5-1: World Vanilla Imports (MT) 1997-2002

Year	USA	EU	Others	Total
1997	1530	702	60	2292
1998	1475	656	65	2196
1999	1240	923	65	2228
2000	1185	816	80	2081
2001	1470	625	85	2180
2002	1117	542	95	1754

Source: Adapted from (Ranadive, 2003). Data compiled using Foreign Trade Statistics, U.S. Census Bureau, Dept. of Commerce 1998-2002, FEMA Reports IM 145, 1998-2003, and Eurostat-EU trade statistics published in Brussels 2003.

5.4 *An overview of Vanilla Cultivation in Tanzania*

5.4.1 **Vanilla Production Areas**

In Tanzania, vanilla is grown in Kagera region, Zanzibar, Morogoro district, Dar es Salaam (small scale), Coastal and Tanga regions. Also, few farmers in Kilimanjaro, Kigoma and Mbeya have started small scale vanilla production. In all these areas vanilla was introduced largely as an attempt to establish a variety of cash earning hence an alternative cash crop to coffee and tea in Kagera and cloves in Zanzibar. In order to

stimulate the process of sustained agricultural development in Bukoba, for example, the government of Tanzania accepted vanilla as the second cash crop to coffee. This initiative is in keeping with the Tanzania Policy Framework for Poverty Reduction Strategies as defined in Tanzania Development Vision (TDV) to 2025, the National Poverty Eradication Strategy (NPES), and the Agricultural Sector Development Strategy (ASDS) described in chapter 1. Substantial amount of vanilla are produced in Zanzibar. In Morogoro district, vanilla cultivation started in 2002 in Matombo Division, Morogoro District (SCSRD, 2004).

The data concerning vanilla production in Tanzania was difficult to get because few studies and researches have been conducted and documented either by different people or institutions. The only reliable data comprehensive could be obtained from a non-governmental organisation known as “*Maendeleo ya Wakulima*” (MAYAWA) based in Bukoba District. Currently MAYAWA counts 6,750 farmers who belong to 276 farmers groups in 159 villages. In Bukoba, vanilla is grown by smallholder farmers in their home garden plots averaged by 21.7 plants per farmer in 2003, 23.4 plants per farmer in 2004 and 30.7 plants per farmer in 2005 (MAYAWA, 2005). The production of green vanilla beans in Kagera has been increased with time from 120kg in 1998 to 15,000kg in 2006. At the same time, processed vanilla has increased from 20kg in 1998 to 2,900kg in 2006 (MAYAWA, 2005).

5.4.2 Example of Vanilla Stakeholders and Their Roles in Bukoba District

Bukoba District is the major vanilla producing area in Tanzania. Vanilla crop has attracted a number of stakeholders such as Non-governmental Organizations (NGO), Central and Local government, Research institutes, individual and private companies as shown in Fig. 5-1. Figure 5-1 shows the collaborations and contributions of vanilla stakeholders in Bukoba District. Some stakeholders have got tremendous impacts on the expansion and extension of vanilla cultivation in Kagera Region. Unregistered vanilla buyers and other NGOs have placed out in Fig. 5-2 because they are not accredited as other stakeholders as some don't have offices and their purposes are not clear to farmers (Rwezimula, 2007).

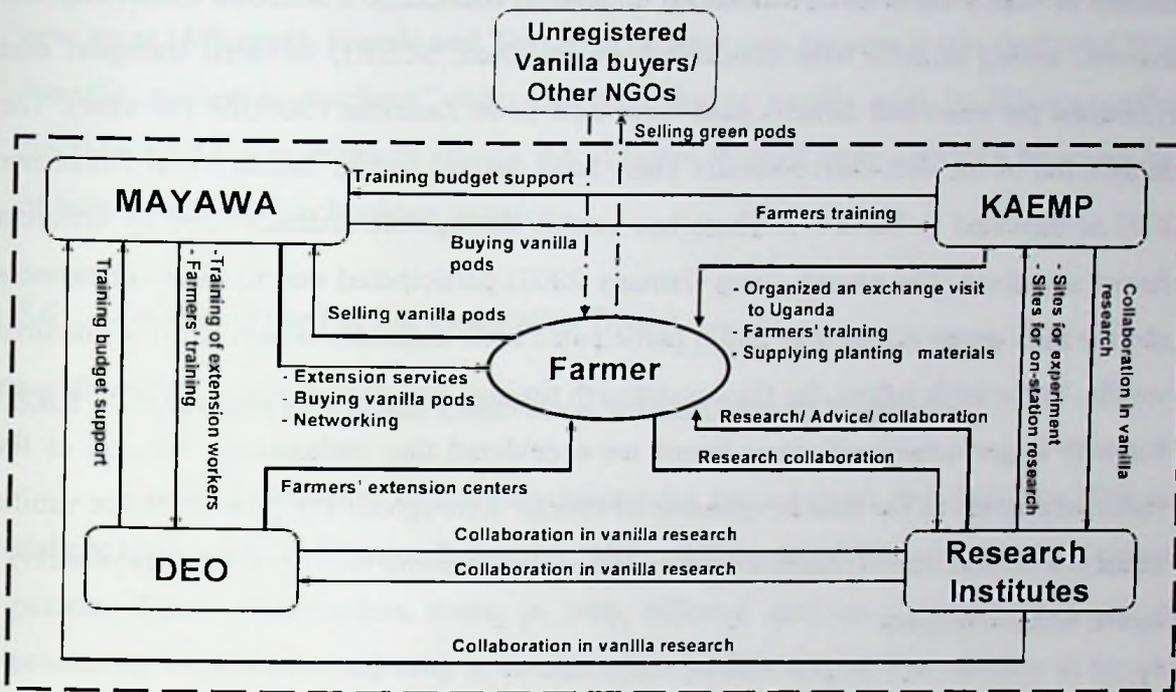


Fig. 5-1: Collaboration Among Vanilla Stakeholders in Kagera Region

5.5 Vanilla Cultivation in the Uluguru Mountains

5.5.1 Trial Phase

Vanilla cultivation in the Uluguru Mountains was introduced by SCSR in 2002 as one of the participatory trials as described in section 4.6.1. Vanilla was established in order to strengthen the functions of home-garden agro-forestry. Home-garden agro forestry farming systems in Uluguru have been clearly described in chapter 2 sections 2.5.1 and 2.6.1. To encourage farmers' participation in decision making, villagers selected 8 farmers to form a vanilla group, and members received free vanilla vines in April 2002 and transplanted them in their home-gardens. SCSR suggested "farmers' seminar" to group members, and villagers voluntary joined from inside and outside the village. Farmers' exchange visits to Zanzibar were organized in December 2002 and June 2003. These exchange visits aimed at learning about vanilla management, exchanging ideas, knowledge and farmers' networking. Briefing seminars at village level were conducted afterwards.

Other non-vanilla members enthusiastically observed the progress of vanilla and became interested and eager to introduce vanilla in their home-gardens. The trial group and SCSR realized that this was a good chance to encourage a wider participation of

farmers in vanilla cultivation. Modalities on how to encourage a sense of ownership and free-will among farmers were considered and reached. SCSR D covered transport cost (1,000tshs per vine) and farmers paid vines cost from Zanzibar (500tshs per vine). The distribution of the cost-shared vanilla vines were carried out in January and December 2003 as indicated in Table 5-2. These two vanilla timings are characterized by different farmer's motives. The second group (January 2003) participated due to their curiousness and the third group (December 2003) participated after carefully observation of matured vanilla. In the table below, the third and fourth timings are characterized by few farmers but with larger number of vines; hence we considered this enthusiastic farmers as the potential element in the future expansion of vanilla. Throughout the process, some vanilla members became knowledgeable, skilful and called "*vanilla teachers /experts/pioneers*" by the fellow villagers.

Table 5-2: Timing of Vanilla Distribution in Kibogwa Village by November 2005

Timing and date	Number of farmers	Number of vanilla
1 st timing(04/2002- free vines)	8	62
2 nd timing (01/2003- cost-shared vines)	54	160
3 rd timing(12/2003- cost-shared vines)	21	120
4 th timing(12/2004- cost-shared vines)	6	38
5 th timing(MAFSC-04/2006- free vines)	7	302
6 th timing(cuttings from individual plots)	7	56
Total	103	738

5.5.2 Extension to Other Villages

Vanilla extension to other villages within Uluguru Mountains started in 2004. SCSR D organized a stakeholders' seminar on 6th April 2004 and 13 participants attended. The purposes of this seminar were; i) to establish a network of the institutions/organizations working in the Uluguru Mountains; ii) to exchange information, experiences and ideas of activity options; and iii) to seek the possibility of collaborations in the near future. Later, Uluguru Mountains Agricultural Development Project (UMADEP) organized a farmers networking seminar on 7th April 2004 at Mfumbwe village and more than 80 farmers attended. Two activities (vanilla and bee keeping) were presented and the seminar participants were very interested in the vanilla cultivation and some requested assistance especially on how to get the planting materials.

On 19th April 2004 SCSR D brought and distributed 250 vines to Mkuyuni and Kinole wards for a cost of 500tshs per vine. At the same time, three Kibogwa farmers

it is indicated in Table 5-3. The transfer and smooth acceptance of vanilla plants to these new areas (Mkuyuni, Kinole and Tegetero) became ease because it was facilitated by the “vanilla pioneers/ teachers” who emerged during vanilla trial in Kibogwa village (section 5.5.1). The contacts among the villagers through daily activities became a base of information and technology transfer.

5.6 Impact of the Vanilla Cultivation Trial

5.6.1 Expansion of Vanilla Cultivation within Uluguru Mountains

Vanilla cultivation in Uluguru Mountains has received attention from different stakeholders such as District Extension Office (DEO), MAFSC, and pioneered private person. These stakeholders came in with different motives and interests, such as promoting vanilla as a cash crop or an alternative income source. The numbers of farmers and vanilla plants have increased respectively from 8 to 396 farmers and from 56 to 7,563 plants by 2006 (Table 5-3). The government has conducted two vanilla seminars and distributed 6700 free vines through involvement of extension workers and early vanilla growers in April 2006. The pioneered private person has developed a collaborated network with vanilla farmers since 2005. This collaboration has resulted in the establishment of a vanilla group comprised by 12 members and the trial of a simple vanilla drying method. Penetration and collaboration of different vanilla stakeholders with farmers were undemanding because the previous experiences gained through SCSR project provided a base of vanilla cultivation in the area.

Table 5-3: Number of Vanilla Farmers and Plants in the Uluguru Mountains (2006)

Ward	Year of Introduction	Number of Farmers	Number of Plants
Kibogwa	2002	8	62
	2003	75	280
	2004	6	38
	2006	14	358
Mkuyuni	2004	149	651
	2006	16	2450
Kinole	2004	72	464
	2006	11	2440
Tegetero	2004	30	90
Bigwa	2006	15	730
Total		396	7563

delivered a seminar on vanilla cultivation in collaboration of 2 extension workers from Mkuyuni. The presence of extension workers was an added advantage for technical support. In December 2004, Morogoro District Extension Office (DEO) workers facilitated and distributed 1000 vines to farmers in Mkuyuni and Kinole ward. Also in 2006, the Ministry of Agriculture Food Security and Cooperatives intervened in vanilla cultivation by distributing planting materials and conducting seminars on vanilla cultivation.

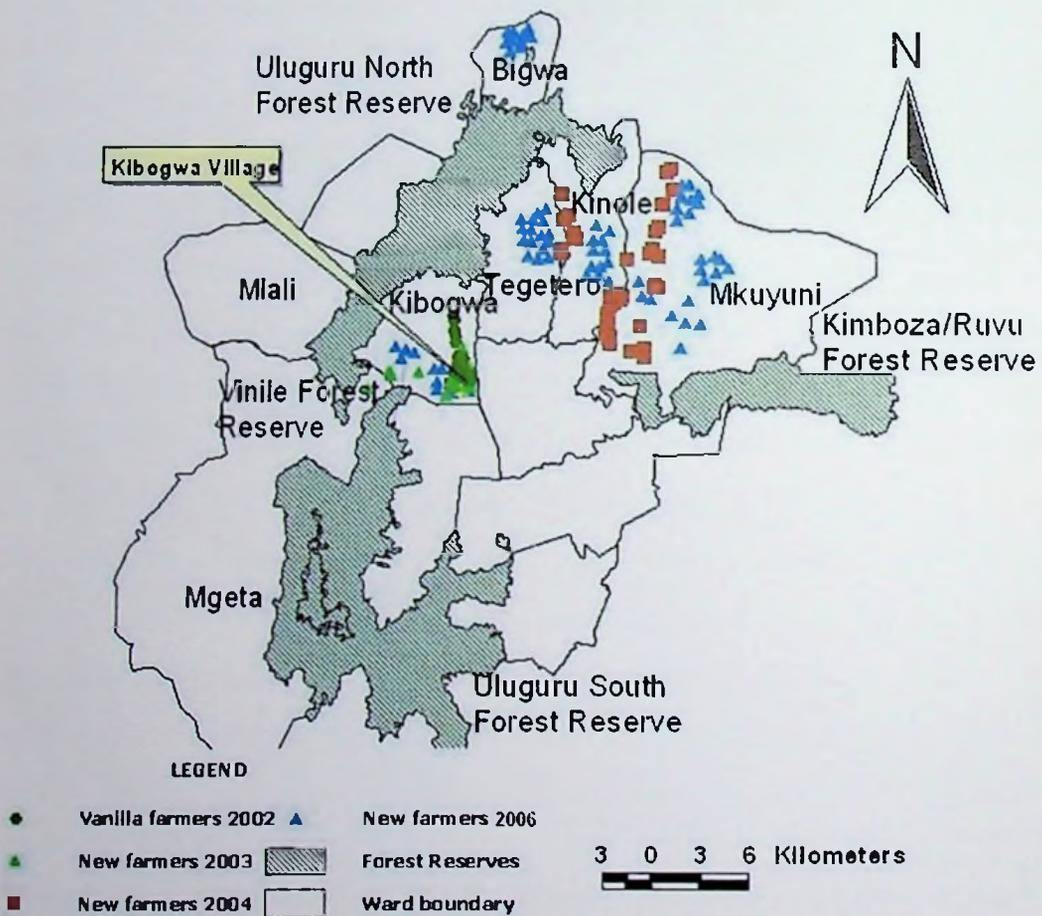


Fig. 5-2: Vanilla Cultivation Areas in the Uluguru Mountains

Figure 5-2 shows the map of the Uluguru Mountains indicating the areas currently cultivating vanilla. Vanilla cultivation started in Kibogwa village in 2002. It was expanded to new areas especially the neighbouring villages of Rubwe, Mambani, Nyachilo and Kifuru villages in 2003. In 2004 vanilla cultivation expanded further to other wards of Mkuyuni, Kinole and Tegetero. In 2006, the Ministry of Agriculture Food Security and Cooperatives supplied enormous amount of planting materials to farmers as

5.6.2 Potential of Farmer-to-Farmer (FF) Communication

Many farmers depend much in getting valuable information from their fellow farmers, hence FF proves to be the most dissemination method. This was revealed by interview results which indicated the sources of information were from; fellow farmers (33%), radio (20%), NGOs and researchers (17%), DEO and workers (14%), newspapers (12%), and finally is from traders (4%). FF dissemination channels and networks are thriving in Uluguru Mountain as a way for farmers to pool ideas, exchange perspectives and learn from each other. In this process, farmers have developed their own ways of dissemination, primarily using local resources and on their own initiative, without pressure or direct support from formal research or development agents. For many years, this channel has been effective in diffusing knowledge and technologies among farmers through the process of learning and teaching. FF channel is done through visiting to another places, visits by ordinary farmer to farmer, visits by farmer innovators/ trainers to other farmers to train them, and interactive with a wider group of local farmers at village/ward/division level.

The achievement of vanilla cultivation in technology generation and dissemination may be measured on the basis of the number of farmers who joined the vanilla cultivation (Table 5-3). New vanilla farmers visited Kibogwa-farmers privately seeking for new knowledge on vanilla cultivation. Also farmers exchange visits to Kibogwa from Mkuyuni and Kinole was organised by district officials in 2005 to learn on vanilla management.

5.6.3 Farmer's Innovativeness.

Innovativeness has been observed on the use of local materials and ideas. Vanilla plant needs mulching material to lighten the soil, provide the ideal rooting environment, suppress the weeds and conserve moisture. In the Uluguru Mountains, mulching is being done using locally available materials such as coco shells, banana trunks, dried grass and banana leaves (Table 5-4). As indicated in Table 5-4, farmers have tried different mulching materials. This shows some kind of innovativeness from farmers because they are not sure which material will do better. Observed also was the use of local plants for protecting vanilla against snails and ants, and simple fencing against chicken scratching.

Table 5-4: Mulching Materials Applied in Kibogwa Village

Materials	Number of Farmers
Dried grass	7
Coco shell	28
Banana trunk	14
Dried grass and banana leaves	10
Coco shell and banana trunk	5
Dried grass and coco shell	2
Total	66

5.6.4 Partnership and Collaboration Among Different Stakeholders

The collaboration between SCSR and a farmer's group through a small trial was the foundation of vanilla cultivation in the Uluguru Mountains. Farmer's group played a major role in influencing neighbouring villages as well as non-group members within Kibogwa village to join in the vanilla cultivation. Within the group some farmers became facilitators and negotiators especially when new stakeholders such as private person and MAFSC intervened in vanilla cultivation as explained in section 5.6.1. Currently, the collaborative efforts between farmers and private sector to forge vanilla programs into a comprehensive strategy have been created and a new farmers' group in Nyachilo village has been formed. This partnership has resulted into drawing attention from the government by receiving vanilla planting materials and training.

Figure 5-3 shows the collaboration among vanilla stakeholders from 2002 to date. There is a mutual partnership between private individual, farmers and the government. The private individual is playing different roles as a vanilla trainer, invented a simple curing method and a member in a farmers' group. Farmers provided a plot for vanilla cultivation and members for a group, and the government provided planting materials, seminars on vanilla cultivation and extension services. The government sometimes contracts a private individual to train new vanilla farmers. The impact of stakeholders' collaboration is seen in the expansion of vanilla cultivation to new wards.

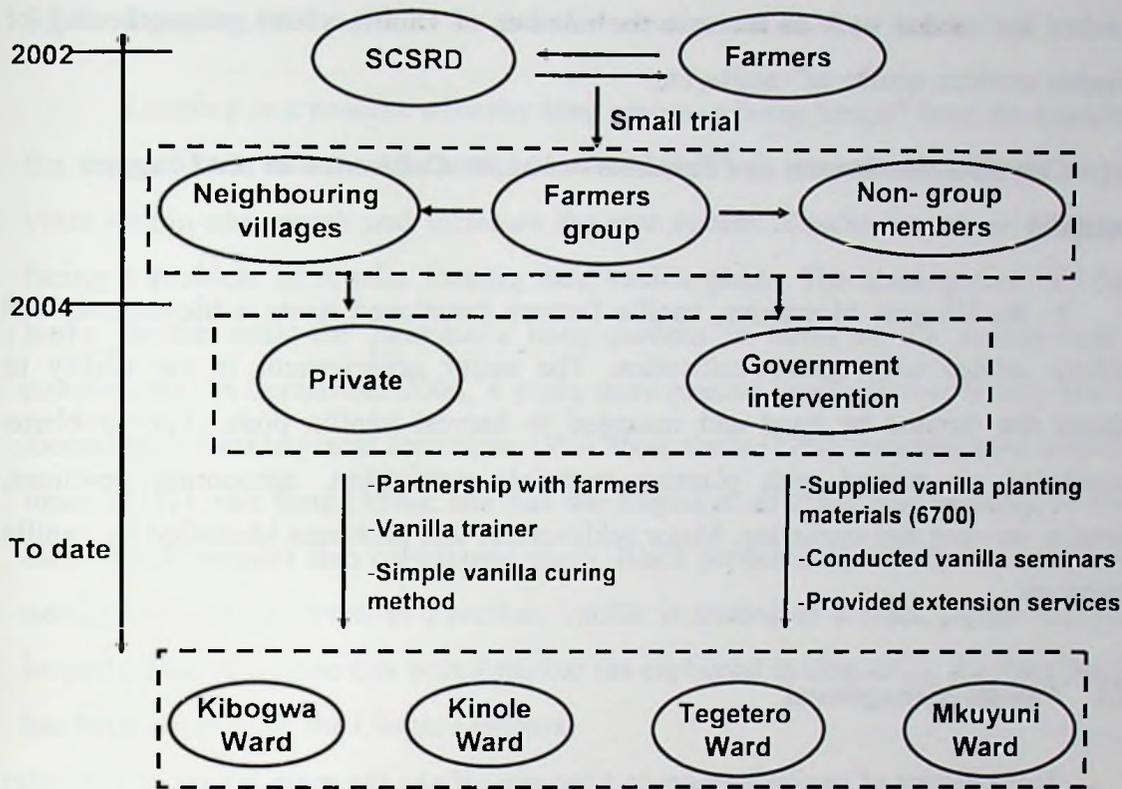


Fig. 5-3: Collaboration of Vanilla Stakeholders in the Uluguru Mountains

5.6.5 Co-existence of Vanilla With Other Crops

The interview results from vanilla farmers show that; 38% supported the friendly relationship with other crops, 21% haven't tried vanilla to other places, 20% argued that it simple and easy to manage, 14% mentioned shade advantage from banana and other trees, and 7% mentioned the unsuitability in areas with many trees. The figures above supports the co-existence of vanilla with other crops though vanilla cultivation still in the initial stages. Also in Uganda and Bukoba vanilla has been intercropped successfully with other home-garden agroforestry components such as coffee and banana (MAYAWA, 2005; UEPC, 2005).

There are lots of positive expectations from farmers concerned the future impact of vanilla to other crops such as; attracting buyers to come into the village (33%), influencing marketing for other crops (20%), some argue that, farmers may shift to vanilla crop (14%) and stimulate the combination uses with other spices (14%). In Zanzibar, the emergence of small-scale industries which process and mix different spices i.e. cardamom, clove, vanilla, and cinnamon into one package has stimulated the marketing of vanilla into different uses. To achieve the farmer's expectations, some pre-

requisites are needed such as increase the number of vanilla plants, strengthening of extension services, quality of vanilla, etc.

5.7 Current Achievements and Problems in Vanilla Cultivation in the Uluguru Mountains

In the Uluguru Mountains, vanilla farmers mentioned some achievements and problems related with vanilla cultivation. The major achievement is the ability to pollinate the flowers by hand and managed to harvest vanilla pods. The problems encountered are related with planting materials acquisition, agronomic practices, extension services and marketing. Major achievement and problems identified by vanilla farmers are;

5.7.1 Vanilla Management

The majority of vanilla farmers in Kibogwa village the most laborious activities are; hand pollination (56%), pests and disease control (24%), weeding (14%), planting of vanilla (5%), and processing (2%). The above figures show that, many farmers are still struggling to understand how to pollinate the flowers manually. It took about 3 year for a vanilla plant to produce flowers in Kibogwa village. From September to November 2005, a total of 17 vanilla plants from 12 farmers have produced flowers as indicated in Table 5-5. In 2005 many flowers were not pollinated (thus fell down) because farmers were unable to conduct hand pollination due to their inexperience. Even though the number of vanilla pods pollinated are few (between 3 and 82) but it is a good start. It is expected that many farmers will be able to pollinate vanilla flowers with the assistance from fellow farmers who are knowledgeable enough to conduct hand pollination.

Table 5-5: Number of Vanilla Beans Harvested in Kibogwa, August 2006

Number of green pod	Number of household
3	3
8	2
9	2
15	1
21	1
35	1
68	1
82	1
247	12

5.7.2 Looping

Looping is a process whereby long vines are being hanged from the branches of the support tree and passed throughout the mulch/soil (Ranadive, 2003). It keeps the vines within easy reach and increases the root system. Vanilla farmers in Uluguru are facing a problem of regular looping their vanilla plants. The home-garden of Uluguru looks similar with the Zanzibar's home-gardens in terms of the management and components. In September 2006, 4 years since planted vanilla, however only few have looped their vanilla plants four times (3%), three times (17%), majority have looped two times (41%), one time (35%), and had not looped at all (5%). The presence of similar crop (black pepper) also contributes much. Black pepper is also a climber but does not need to be looped. Even in Zanzibar, vanilla is treated as a black pepper (i.e. is not looped). Due to a close ties with Zanzibar (as explained in chapter 2), the Zanzibar style has been adopted by the Uluguru farmers.

5.7.3 Vanilla Processing

More than 80 percent of vanilla farmers in Uluguru Mountains are still in the initial stage and 12 farmers have harvested vanilla beans (Table 5-5) and tried to cure them locally. The processed vanilla indeed is of poor quality because vanilla processing techniques is lacking. Farmer's comments concerning the causes of poor quality are; 11% don't have processing gears, 51% don't know how to process vanilla beans and 38% haven't harvested.

5.7.4 Theft of Planting Materials

Stealing of planting materials and beans were reported by 26%, and 3% of vanilla farmers respectively. This retards the rate of vanilla growth as pointed out by the affected farmers. Among the causes include; farmers who wanted the vines decided to cut or uproot (steal) vanilla from those with vanilla (33%); some vanilla farmers sold vines because they needed quick cash (22%); and the demand of planting materials exceeded the supply (35%).

5.7.5 Extension Services

For some parts of Uluguru Mountains such as Kibogwa, Rubwe, Nyachilo villages, no extension services have been delivered to them for a long time. Farmers are relying on farmer-to-farmer dissemination method. For the case of vanilla crop, strong extension services from qualified vanilla extension staff are needed. Because of this disadvantage, some problems aroused for example 47% responded to have dead plants. The reasons mentioned include; snails (32%), chicken scratching the mulch kept around the vines and cause injuries to the roots (29%), ants (7%), weeds (3%), late deliveries of planting materials by DALDO's office (13%), and some are not sure (16%).

5.8 Suggested Solutions for Problems in Vanilla Cultivation

5.8.1 Planting Materials

The unavailability of planting materials hinders the expansion of vanilla cultivation in Uluguru Mountains. Planting materials were obtained through stem cuttings from Zanzibar and Kagera. Currently, the majority of vanilla farmers are still in the initial stage, and there is a great demand of vines from many farmers. As a short-term measure, vanilla multiplication plots need to be established in order to guarantee a stable, affordable and regular supply of inputs. The collaboration and support of different stakeholders is needed.

5.8.2 Vanilla Marketing

Vanilla marketing is a challenging issue. Among the problems smallholders in Tanzania face in marketing their produce are; low quality of produce, lack of processing skills, poor infrastructure, lack of farmers group, and lack of marketing promotion (TARP II, 2002). Apart from these problems, the major obstacle farmers face is the lack of reliable and stable market to sell their crops. The interview results in the Uluguru Mountains in regard to marketing show that; 42% don't know until they harvest, 23% don't know because it is a new crop, and 35% know nothing. The farmers in Kibogwa village knew that they need to do something as shown in Table 5-6 before thinking about vanilla marketing.

Table 5-6: Farmers Views Concerning the Future of Vanilla Marketing

Concerns	Farmer	
	Number	Percentage
Increase of vanilla plants	12	18.2
Better quality vanilla	14	21.2
Know how to process vanilla	13	19.7
Time will tell (don't know yet)	18	27.3
Buyers can come in our area	9	13.6
Total	66	100

Farmers need to be educated on how to process vanilla so that they can enjoy added value from processing, also ensuring them to utilize some locally. The market price needs to be the basic incentive of vanilla production. Farmers should produce vanilla not only for market sales but also for domestic consumption. Local processing of vanilla may encourage domestic consumption e.g. vanilla sugar, in snacks, in beverages, etc.

5.8.3 Training

Vanilla needs strong extension services. Currently there are few vanilla extension workers. Despite the fact that farmer-to-farmer dissemination is very effective in the Uluguru Mountains, vanilla is a new crop and need special and strong extension services. Special training is needed to new farmers putting emphasis on planting, shade management, mulching, looping and pollination. Farmers training should include farmers' seminar and individual farm visit. Farm visits will help farmers to discuss different issues concerning vanilla, individual farmers to interact and seek advice. The seminar should be comprised by vanilla growers from various villages and should be conducted at the villages growing vanilla so as to share experience, knowledge, and create more room for active participation. Knowledgeable vanilla farmers should be utilized in training of new farmers.

5.8.4 Methods of Cost-Effective Know-how Dissemination

Apart from the shortage of field extension workers to reach large number of vanilla farmers in the Uluguru Mountains areas, inadequate transportation facilities are another problem. Some extension functions such as awareness creation, information delivery, motivational campaigns, etc. can be more effectively and efficiently performed

by other means, channels, or non-extension groups, under the coordination and supervision of extension workers.

Cost-effective multi-media approach can be used by mobilizing appropriate rural and community-based resources, including the increasingly accessible and low-cost mass communication channels (i.e., radio stations, posters, flip-charts, printed materials, audio-cassettes, audio-video materials, leaflets, comics, etc.) to disseminate standardized and packaged extension messages. Local volunteers (such as school teachers and children, local/religious leaders, etc.) can be utilized to serve as “intermediaries” in reaching farmers. Such an approach does not imply that extension workers can or will be substituted by these community-resources. Rather, it is a rational approach of using available resources most effectively and efficiently for certain tasks, such as the need to use extension workers for educational or instructional purposes which requires two-way interactions, field demonstrations, group discussion, etc., which cannot be done as effectively by mass communication channels. Therefore a combination of mass, personal and group communication channels (including extension workers and trainers) and materials need to be efficiently utilized to reduce extension gap and cost, and to increase its effectiveness in dealing with larger number of target audience more rapidly.

5.8.5 Research on Vanilla Related Activities

There is no complete research output/ package highlighting favourable condition, agronomic practices as well as socio-economics recommendations for vanilla production in Tanzania. More researches about vanilla crop are needed. Universities and research stations should take a major role involving farmers in the research process. Researches need to provide feedback to vanilla farmers so as they can know which part need to be improved. Farmers in different parts of Tanzania have shown interested to grow vanilla because of its high price compared with other crops but they need to be guided by research findings and extension services.

5.8.6 Supports from Different Stakeholders

Lessons learned from major vanilla producing countries revealed that, the promotion of vanilla crop can not be left to smallholder farmers without the support from other stakeholders i.e. governmental and non-governmental organizations. Supports are

required in the form of planting materials, research and extension activities, processing, curing and storage facilities. For example, in Uganda before 1996, annual exports of cured vanilla beans were generally under five tones, since USAID project named “The Uganda smallholders Vanilla Extension Project”, production and exports have been increasing rapidly to 66 tons in 2001, 75 tons in 2002, 120 in 2003, and 185 in 2005 (UEPB, 2005). In Tonga, the Government approved a T\$2.5 million project which aims at intensification of the production of vanilla for export through replanting, improving productivity and promotion of certified organic vanilla for export (Viliami, 2006).

Supports are needed in the form of; harmonized and timely information flow, capacity building for farmers and extension workers, facilitation of regular local meetings to share experiences and insights. Vanilla crop can be the best alternative cash crop if farmers are encouraged, motivated and supported. Therefore, despite the favourable conditions suitable for vanilla cultivation, the introduction of vanilla should take into consideration the pre-requisite for its sustainability. In other words need to be concurrent undertaken with the required skills stepwise.

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Chapter Six:

Summary and Conclusions

6.1 Summary (Objectives Revisited)

In this section, the research objectives are revisited in order to see how far this thesis has achieved in meeting them. Therefore, in order to assess how far the study objectives have been achieved, each objective will be synthesized accordingly.

6.1.1 Identification of Local Characteristics

As discussed mainly in chapters 2 and 3, this thesis was able to identify the existing opportunities and livelihood diversification sources, diversities and potentials of indigenes, effectiveness of the indigenous farming systems, and risk management mechanisms. These are summarized below.

6.1.1.1 Existing Opportunities and Different Livelihood Diversification Sources

As discussed in chapters 2 and 3, the opportunities available ranging from ecological and human resources have been identified. Agriculture remains the key source of livelihood for the people in the study area. Livelihoods are diversified through engagement in farm and non-farm activities as explained in chapter 3. The reasons for livelihood diversification include; increasing income and income prospects, smoothing consumption, and reducing risks associated with crop failures. It was also observed that both agricultural and non-agricultural activities provide employment and income to farmers.

In chapter 2, the traditional role of diverse farming systems and land uses have been explained in detail. The spatial and temporal distributions of farming plots are utilized effectively by farmers to cultivate different varieties of crops. Farmers are able to exploit the full range of micro-environments which differ in soil, water, temperature, altitude, slope, fertility, etc. These opportunities are utilized to provide goods and

services including foods, fuel, building materials, saleable commodities and protection of the soils and crops.

Both chapters 2 and 3 have stressed the roles of agricultural and non-agricultural activities to; enhance the effectiveness of poverty reduction strategies, promote the participation of rural community, improve markets for farms and non-farm products, improve and conserve the environment and promote rural-urban development.

6.1.1.2 Diversities and Potentials of Indigenoussness

Interlinked diversified production systems are comprised by crop husbandry, animal husbandry (goat, sheep and poultry) and forest resources. Also the area for long time has been faced by inaccessibility, environmental heterogeneity and ecological fragility that favoured the evolution of subsistence production systems. Such production systems are the reservoirs of a huge variety of crops and plants many of which are still lesser known to the mainstream societies because of little research and documentation.

Experience in Kibogwa village reveals a long tradition of well adopted local experience for sustained environmental productivity as documented in chapter 2. With respect to skills, innovativeness and creativity, for example, knowledge on the following aspects have been reported;

- a) **Farming systems and land uses:** Local categorization of fallow cultivation fields based on the length of time a field is left unused between cultivation. This help in soil fertility recovery and as inherent food security mechanisms
- b) **Mechanisms to curb food insecurity:** Utilization of residual moisture in the valley bottomland fields, mixed cropping where one field is used for many crops at a time, and exploitation of the full range of microenvironments which differ in soil, water, temperature, altitude, slope and fertility
- c) **The use of local varieties in agriculture:** Local varieties such as maize and rice are believed to be resistance to pests and disease
- d) **Adopted local experience for sustained local sustainability:** The practice of the indigenous farming practices (flat cultivation) which is characterized by minimum tillage that is believed to sustains the erosion and fertility of the soil

6.1.1.3 The Effectiveness of the Indigenous Farming Systems and Land Uses on Food Security and Environmental Management

The Uluguru Mountains are endowed with various remarkable farming systems and land uses as it is documented in chapter 2. In many parts, for example, indigenous home-garden agroforestry systems have been developed and existed for many years. They represent permanent types of land use which provide a wide range of products. Within one village, for example Kibogwa, up to 65 different species of diverse biological types may be grown which include annual herbs, perennial herbaceous plants, climbing vines, shrubs and trees varying in height. Livestock form an important component particularly poultry, but also goat and sheep. Also fish ponds are nowadays common.

Shifting cultivation or bush-fallow cultivation has been and still is practised to maintain soil fertility. Shifting cultivation involves an alternation between crops and long-term fallow. Crop yields are typically high for the first few years but then fall on account of declining soil fertility or invasion of weeds or pests. The fields are then left into fallow depending to the distance from a homestead.

6.1.1.4 Risk Management

As explained in chapters 2 and 3, rural households and communities have developed strategies for mitigating and coping with risk. To lessen the impact of shocks, households attempt to diversify their sources of income by planting different crops and plants, and combining income from sources on and off the farm. Families establish self-insurance networks through networks and reciprocal gift giving. Farmers take advantage of the ability of cropping systems to reuse their own stored nutrients. Crops yields are absolutely depending upon the input of locally available organic manure derived from crop and plant residues.

6.1.2 Verification of the Participatory Approaches on Rural Development

6.1.2.1 Effectiveness of Participatory Approaches

Chapter 4 gives an account of issues related to participatory approaches. Participatory approaches used include participatory survey, seminars, visits, and community development support activities or trials. The typical form of community

development support was group formation and beneficiary training such as farmer's seminar and exchange visits. Incentives used to attract farmer's participation were;

- a) **Vanilla activity:** group members received planting materials for free, planting materials were subsidized, farmers' seminar and farmers exchange visit;
- b) **Beekeeping activity:** provision of TTH beehives, beekeeping seminars, provision of gears for honey harvesting;
- c) **Tropical fruits:** provisional of free seedlings, provisional of subsidized seedlings and seminar.

6.1.2.2 Farmer-to-Farmer Communication

Chapter 4 provided details on the effectiveness of this approach especially on the expansion of different trial activities. Absence of extension workers in some of the area in the Uluguru Mountains forced farmers to plan an alternative approach that was effective and feasible as a communication channel. Farmer-to-farmer communication was a means of enhancing farmers' technology generation and dissemination. Also as documented in chapter 5, vanilla cultivation trial is a good example to show the strength and effectiveness of farmer-to-farmer communication channel.

6.1.2.3 Farmer's Innovativeness

Chapters 4 and 5 both have analysed different kind of innovativeness pioneered by local community. The innovativeness is seen in ideas, materials, revival of the once forgotten activity, etc. Taking beekeeping activity as an example, farmers' group worked towards realistic solutions such as the use of locally available materials, local beekeeper's knowledge, and revival and modification of once forgotten knowledge of using clay pot as beehives. Emergence of local experts was the feasible outcome from farmers' innovativeness. For example, in vanilla cultivation nobody knew how to manage vanilla, but with time some farmers became knowledgeable of vanilla cultivation. These farmers later became vanilla teachers and their capability was revealed in farmer's seminar, in answering question, explanation and discussion. It was observed that, within rural community some people are very talented and can lead others towards improving rural development. Therefore, the strength of rural people's knowledge is based not only on acute observation but also on trial and error and experimental learning.

6.1.2.4 Networking

Chapter 4 has explained the details of participatory methods used to encourage farmers' networking such as exchange visits and daily contact. Chapter 5 also pointed out how farmers' networking were motivated and strengthened by farmers themselves with the collaboration of outsiders in vanilla cultivation. The networking among farmers leads into cutting cost of information sharing and exchange, spread of ideas and expansion of some activity. Outsider's initiatives i.e. a networking seminar by UMADEP was a catalyst for giving feedback concerned rural development issues.

6.1.3 Evaluation of Participatory Approaches Based on Existing Conditions

6.1.3.1 Feasible and Practical Approach in Rural Development

Experience gained from vanilla trial is that, rural community are dynamic in terms of the habits, attitude, and modes of participation. Therefore, the approaches to be applied need to be explored and understood among stakeholders. Some commonage among stakeholders is required. The approaches for rural development can be divided into three namely the bottom-up, top-down approach and combination of the two approaches. The approach can be measured in terms of the realized benefit to the intended audiences. Two methods (bottom-up and top-down) can be implemented con-currently if both aim at the same goal. SCSRD project in the Uluguru Mountains applied the bottom-up approach in participating rural community from the beginning as explained in chapter 5. In the expansion of vanilla cultivation, MAFSC in collaboration with the DEO distributed vanilla planting materials for free in 2006 as a kind of top-down approach (see Chapter 5). It was observed that the free vines farmers received are poorly managed because there is no cost consciousness. For many years, top-down approaches for rural development in Tanzania had proved failures, therefore we need to learn from the past experience.

6.1.3.2 Community Empowerment

While we cannot give people power and we cannot make them "empowered", but we can provide the opportunities, resources and support that they need to become involved themselves. The challenge is how can we identify empowerment among the community? Chapter 4 explained how we can identify empowerment to people whom we

work with. Also in chapter 5, specific examples using vanilla cultivation are shown based on peoples' empowerment. In these chapters we can observe empowerment when communities take initiatives, or in other words when the responsibility concerned trial activities are in control of the local community. Vivid examples can be drawn from beekeeping and vanilla cultivation trials.

Beekeeping: The trial group negotiated with the village authority concerning a land plot and two common beekeeping plots were set, one along the riverside and one on the mountains and some households privately started beekeeping in their own plots.

Vanilla: Some farmers became negotiators and facilitators to other stakeholders like private people and government ministry; some Kibogwa farmers used to deliver vanilla seminars to other villages; people often comes to Kibogwa village to learn how to manage vanilla crops.

6.2 *Participatory Approaches Based on Study Findings*

Based on the discussions in the entire thesis, this study can be concluded that the general objective of developing participatory approaches for the community based activities has been achieved. This study has contributed to highlight that even the forgotten areas has something to offer especially in the resource management and participatory methods. Based on the outputs derived from this study, Fig. 6-1 presents seven steps that can be applied at village, ward or division levels with similar agro-ecological and socio-economic condition. Step 4, 5, and 6 are concurrent undertaken for a smooth implementation of a given activity.

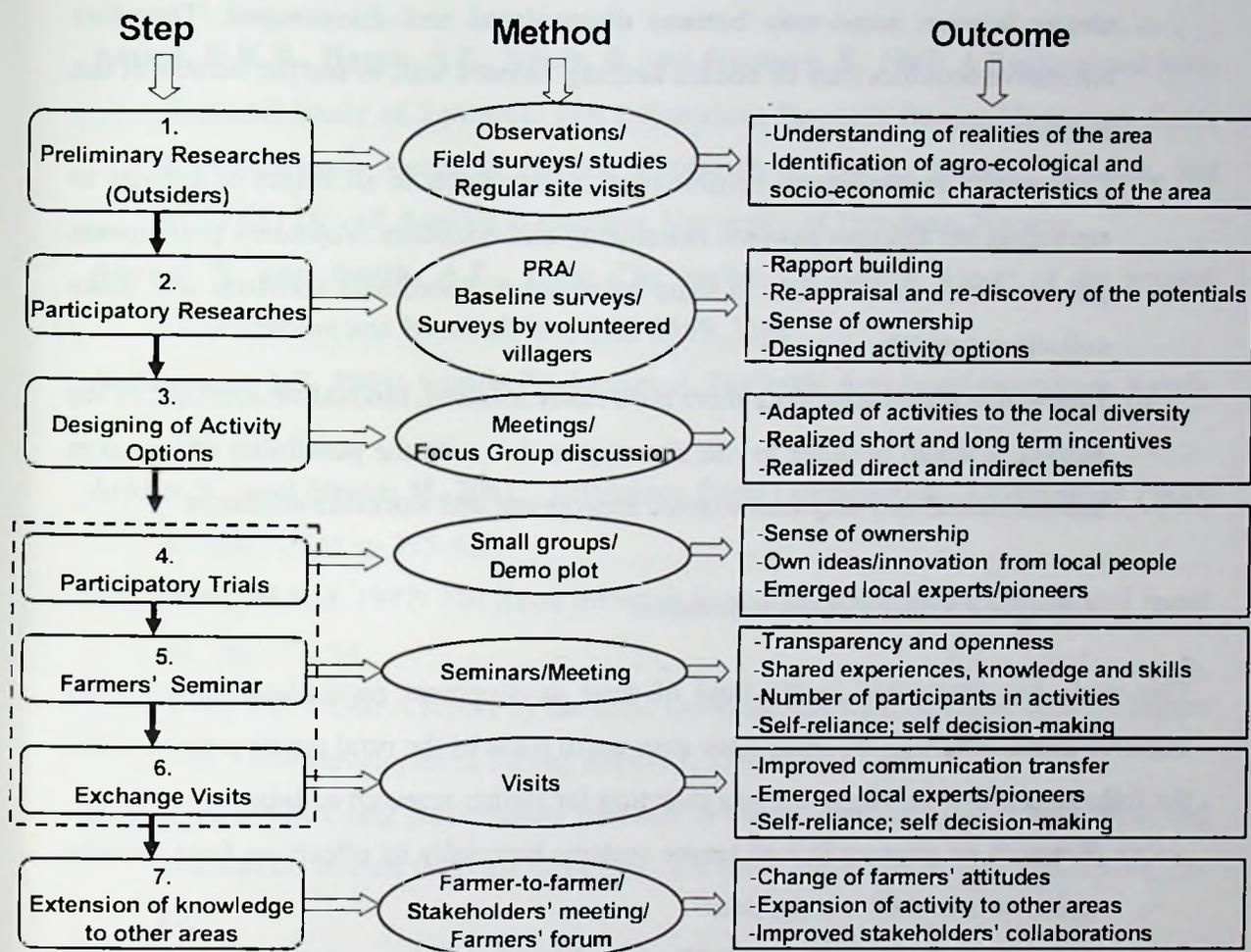


Fig. 6-1: Participatory Approaches for Supporting Community Based Activities

The guiding features of the approaches are;

- a) **Understanding of local realities:** A thorough understanding of local realities in the design of project interventions is the driver of success. Thorough field studies at the project designing stage and encourage the design of local solutions for local problems based on local realities. Participation may be used as one of the tools at the design stage to obtain local knowledge. Sufficient time and resources are needed to conduct thorough fieldwork at the grassroots level (steps 1, 2 and 3).
- b) **Incentives to motivate people's participation:** Understanding farmers' motivations is essential for the sustainability of rural development activities. Yet if their motivations are ignored, these farmers can lose their interest to participate. Some rural development activities may take long period e.g. in this study tropical fruits will take more than six years to bear fruits. Likewise, farmers have to wait

to realize the benefits of such activity. Sometimes tolerance is very difficult among farmers, some may become disappointed and discouraged. Therefore alternative activities may be needed keeping farmers wait to see the benefit of the first activities.

- c) **Community involvement:** Involve rural communities in all stages of activity to strengthen the linkages between community and outsiders. Voluntary participants provide forum for members to share information, coordinate activities and make collective decision.
- d) **Innovative approach:** Since there is no ready solution, innovative approaches are needed. It would be better to risk new approaches with the possibility of mistakes and failures, if they may lead to more appropriate and workable solutions.

6.3 Areas for Further Research Activities

This study has researched in the field of rural development particularly in the least explored areas. Although the study gave answers to some of the rural development issues, the following points are suggested as a direction for further research activities;

- a) Research on changes in land tenure systems especially its effects on food security and environmental management
- b) The effects of declining landholdings on household's income and the capacity of farmers to maintain the land.
- c) Research on the precise nature of linkages between the farm sector and the non-farm sector in particular, production and expenditure linkages for these two sectors
- d) The effects of interaction of rural markets, social institutions and globalization on rural development
- e) Research activities aimed at monitoring and evaluation of the trial activities established under SCSR project in particular on the local people behaviour/ positive and negative impacts.
- f) How to encourage, motivate and support vanilla farmers in Tanzania.

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